German Protestant Institute of Archaeology
(GPIA)
*
Biblical Archaeological Institute Wuppertal
(BAI)

Tall Zirāʿa

The Gadara Region Project (2001–2011)

Final Report

Volume 2
Early and Middle Bronze Age
(Strata 25–17)

Dieter Vieweger

With contributions by

Andrea Schwermer

Editors of the Tall Zirāʿa Final Reports

Dieter Vieweger and Jutta Häser

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Front and back cover: Tall Zirāʿa and Wādī al-ʿArab; aerial view, looking from east to west; by courtesy of APAAME, David Kennedy, 2011

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List of Abbreviations

Abbreviated Journals and Series

AA	Archäologischer Anzeiger
AAJ	Annual of the Department of Antiquities of Jordan
AASOR	Annual of the American Society of Oriental Research
ADPV	Abhandlungen des Deutschen Palästina-Vereins
AJA	American Journal of Archaeology
AW	Antike Welt
AnSt	Anatolian Studies
BAH	Bibliothèque archéologique et historique
BaF	Baghdader Forschungen
BarIntSer	British Archaeological Reports. International Series
BASOR	Bulletin of the American Schools of Oriental Research
Berytus	Berytus. Archaeological Studies
BibAr	The Biblical Archaeologist
BSOAS	Bulletin of the School of Oriental and African Studies (London)
DaF	Damaszener Forschungen
DaM	Damaszener Mitteilungen
GrRomByzSt	Greek, Roman and Byzantine Studies
Eretz-Israel	Eretz-Israel. Archaeological, Historical and Geographical Studies
HdArch	Handbuch der Archäologie
IEJ	Israel Exploration Journal
IES	Israel Exploration Society
JAA	Journal of Anthropology and Archaeology
JASc	Journal of Archaeological Science
JEA	The Journal of Egyptian Archaeology
JFieldA	Journal of Field Archaeology
JMedA	Journal of Mediterranean Archaeology
LA	Liber Annuus
LAA	Late Antiquity Archaeology
MEFRA	Mélanges de l´École francaise de Rome. Antiquité
MKT	Menschen – Kulturen – Traditionen
NEA	Near Eastern Archaeology
NEAEHL	The New Encyclopedia of Archaeological Excavations in the Holy Land
Newsletter PotTech	Newsletter. Department of Pottery Technology. University Leiden
OrA	Orient Archäologie
OccOr	Occident and Orient
PEF	Palestine Exploration Fund
PEFA	Palestine Exploration Fund Annual
PEQ	Palestine Exploration Quarterly
QDAP	Quarterly of the Department of Antiquities of Palestine
RB	Revue biblique
RDAC	Report of the Department of Antiquities, Cyprus
SaalburgJb	Saalburg-Jahrbuch. Bericht des Saalburg-Museums
SHAJ	Studies in the History and Archaeology of Jordan
SyrMesopSt	Syro-Mesopotamian Studies
SIMA	Studies in Mediterranean Archaeology
SMEA	Studi micenei ed egeo-anatolici
StBiFranc	Studium biblicum Franciscanum. Liber Annuus
TAVO	Tübinger Atlas des Vorderen Orients
TelAvivJA	Tel Aviv. Journal of the Institute of Archaeology of Tel Aviv University
ZDPV	Zeitschrift des Deutschen Palästina-Vereins
ZOrA	Zeitschrift für Orient-Archäologie

General Abbrevations

Abb.	Abbasid
approx.	approximately
App(s).	Appendix
BAI	Biblical Archaeological Institute Wuppertal
Byz.	Byzantine
c.	circa
CAD	Computer Aided Design
CCA	Canonical Correspondence Analysis
cf.	confer
Chap(s).	Chapter(s)
CIE	Commission Internationale de l´Éclairage/ International Lighting Commission
CIELAB	Commission Internationale de L´Éclairage, International Lighting Commission
Diss.	Dissertation
DCA	Detronded Correspondence Analysis
DGPS	Differential Global Positioning System
DoA	Department of Antiquities (Jordan)
EB	Early Bronze Age
ed(s)	editor(s)
e.g.	for example
E Isl	Early Islamic
etc.	et cetera
Fig(s)	Figure(s)
GIS	Geographic Information System
GPIA	German Protestant Institute of Archaeology
GPR	Ground Penetrating Radar
GPS	Global Positioning System
Hell.	Hellenistic
IA	Iron Age
ICP	Inductively Coupled Plasma
i.a.	inter alia
i.e.	id est
INAA	Instrumental Neutron Activation Analysis
Isl.	Islamic
LB	Late Bronze Age
L Isl	Late Islamic
Maml.	Mamluk
max.	maximum
MB	Middle Bronze Age
min.	minimum
n.	note
no(s).	number(s)
Pl(s)	Plate(s)
QGIS	Quantum Geographic Information System
RFA	Röntgenfluoreszenzanalyse
Rom.	Roman
TZ	Tall Zirā‘a
Um	Umayyad
undet.	undetermined
VBA	Visual Basic Applications
XRD	X-Ray Diffraction
XRF	X-Ray Fluorescence

Legend for the Abbrevations used in the Catalogues of Chap. I, II and III (Pottery, Glass, Stone)

D	Diameter
g	Gram
H	Height
L	Length
Th	Thickness
W	Width
Wt	Weight
W Th	Wall Thickness

Preface

by Dieter Vieweger/Jutta Häser

Fig. 0.1 Tall Zirāʿa. View from west to east. Photograph taken in 2011 (Source: APAAMEE, David Kennedy).

When the German engineer G. Schumacher explored Transjordan in 1885, Tall Zirāʿa was among his discoveries[1]. He was the first European since the time of the Crusaders to enter the region. However, after thousands of years of prosperity, the valley had changed dramatically during the Ottoman period. The bedouins told Schumacher that the wādī had declined to become a "popular shelter for all sorts of refugees and criminal scum".

Except for a few sugar mills, operated by water power, there were only a few small hamlets. A water flow of about 0.75 m^3 per second flowed through the Wādī al-ʿArab in June 1885, and the Wādī az-Zaḥar added the same amount of spring water. C. Steuernagel wrote:

> "Where the valley widens and the water becomes shallow, there are large numbers of trout that are easy to catch. Once while bathing, Schumacher saw a black water snake, almost a metre long. These are said to be very common here and are highly dreaded"[2].

The archaeologist N. Glueck visited Tall Zirāʿa in 1942. He reported the

> "singularly imposing and completely isolated hill of Tall Zeraʿah (...)"[3]

and mentioned a water source on the plateau of the tall as the

> "result of a natural siphon phenomenon leading the underground flow of the water from the higher level of the hills beyond down to below the bottom and, as through a pipe piercing its center, up to the top of Tall Zeraʿah".

Although the tall[4] had already attracted attention due to its location and imposing appearance, no intensive research was conducted at this time, because of the hill's location close to the border of Israel in the west (c. 7 km) and Syria in the north (c. 14 km). During the foundation of the State of Israel in 1948 and again during the Six

1 Schumacher 1890, 110. 142 f. Schumacher visited Tall Zirāʿa and described remains of rectangular buildings. His obeservations are published by C. Steuernagel (1926, 81).

2 Steuernagel 1926, 80. Citation is given in English translation; cf. also Schumacher 1890, 142 f. For Schumachers travels see in general: Schumacher 1886.

3 Glueck 1951a, 182 Fig. 71.

4 The Arabic word 'tell' or 'tall' as well as the Hebrew word 'tel' will be written in this publication in the standard literary Arab version 'tall' or 'Tall NN'.

Day War in 1967, the western part of the Wādī al-ʻArab was declared by the Jordanians as a military zone. A passage which had been open in all directions for millennia was thus essentially cut off from sections of its surroundings. The territory around Gadara and the Wādī al- ʻArab, in the triangle where Jordan, Syria and Israel meet, became the north-westernmost corner of the Hashemite Kingdom, and there was not even a paved road to the tall.

Also the construction of the Wādī al-ʻArab Dam in 1978 did not make a significant difference to the *status quo*. The archaeologists who investigated the area within the scope of a rescue survey prior to the dam construction did not appreciate the archaeological potential of the tall, which majestically overlooked the future reservoir.

Another period of time passed until the Oslo Peace Agreement was ratified in 1993, but it was only after the peace treaty between Jordan and Israel, which King Hussein and Prime Minister Yitzhak Rabin signed on October 26, 1994, that the area again became accessible to the public.

D. Vieweger, director of the Biblical Archaeological Institute Wuppertal (BAI) and since 2005 also of the German Protestant Institute of Archaeology (GPIA), travelled many times through the north-western part of Jordan between 1998 and 2000, exploring the area for a suitable tall site, which would serve as an authoritative chronological record for the region's long and important cultural history. He found it in the Wādī al-ʻArab.

Tall Zirāʻa is located in the middle of the Wādī al-ʻArab (*Figs. 0.1* and *0.2*), was continuously occupied for at least 5,000 years, and offers an unique insight into the way of life of the region's people. Its outstanding archaeological significance results from the artesian spring in its centre, which created optimal settlement conditions over thousands of years. For this reason, Tall Zirāʻa offers an unusual opportunity to compile a comparative stratigraphy for northern Jordan from the Early Bronze Age to the Islamic period, while also making it possible to trace cultural developments in urban life, handicrafts and the history of religion over long periods. Moreover, here it is possible to study abundant remains from the Biblical periods in a broad cultural and historical context.

As mentioned above, a major trade route passed through the valley, connecting Egypt in the south with the Syrian-Mesopotamian region in the north (*Fig. 1.22*). The Wādī al-ʻArab also connects the Jordan Valley to the Mediterranean coast via the northern Jordan ford at Ǧisr al-Maǧāmiʻ (Gešer), as well as the plains of Jezreel and Tall al-Ḥiṣn (Beth Shean) to the eastern Jordanian highlands. It was possible to climb from the Jordan Valley, at some 290 m below sea level, to the fertile and very early populated Irbid-Ramtha basin, which lies around 560 m above sea level. Direct routes led from the Irbid-Ramtha basin to Dimašq (Damascus) in the north, Baġdād in the east, and ʻAmmān in the south. Because the Yarmuk Valley to the north and the Wādī Ziqlāb in the south are too steep and narrow to serve as major transport routes, the Wādī al-ʻArab played a prominent geopolitical role. Not surprisingly, economic success and the hard work of residents across the millennia have left a profusion of traces in the valley. More than 200 sites of human habitation, from the very earliest settlements to the Islamic period, provide an eloquent testimony to the history of this region: settlements, channels, water mills, cisterns, oil presses, wine presses, watchtowers and grave sites.

Tall Zirāʻa offered good living conditions for a settlement. The artesian spring offered an unfailing water supply, and the hill provided security. The tall rises impressively (depending on the direction) between 22–45 m above ground. As the only prominent natural elevation in the lower Wādī al-ʻArab, Tall Zirāʻa dominates the valley. From here one cannot only see Gadara, but also easily monitor the narrow entrance of the wādī to the west.

The adjacent fertile wādī ensured adequate nourishment, with potentially arable land in the western and central valley, terraced slopes and spurs suited for rainfed agriculture in the east, as well as the wādī slopes that are suitable for grazing small livestock, forming a broad semicircle from the east and south to the west. As a result of his observations, D. Vieweger decided to implement preliminary investigations here from 1998 to 2000.

The 'Gadara Region Project' was launched in 2001 by the Biblical Archaeological Institute Wuppertal (BAI), Germany. In the first season, the surface of Tall Zirāʻa

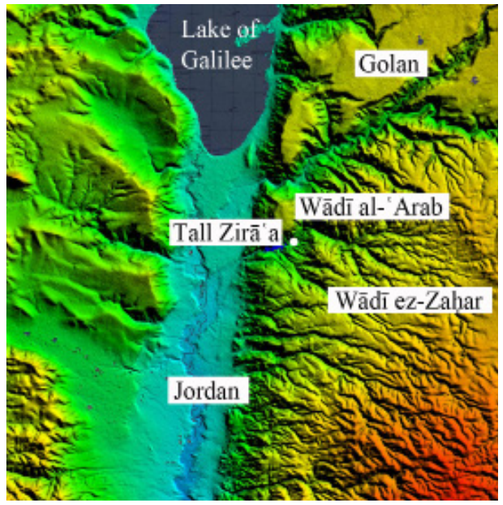

Fig. 0.2 Map showing the area around Tall Zirāʻa (Source: BAI/GPIA).

5 See *Vol. 1., Chap. 2*. For this survey see also Vieweger et al. 2003, 191–216.

was explored[5], the tall was accurately surveyed, and more than 22,000 pottery sherds and many other finds were systematically collected and analysed. The survey findings helped to formulate the objectives of the excavation program, and to select suitable areas (residential, religious, administrative and craft production) for investigation.

The first excavation season on the tall was in 2003. The team was financed by the 'Society of Friends of the BAI Wuppertal' and travelled by Volkswagen bus from Wuppertal to Amman via Turkey and Syria, under the direction of D. Vieweger. An Ottoman period house inside the Gadara/Umm Qēs archaeological site was used both as living and working quarters; it was in a state of very poor repair at that time, but has been systematically restored during later seasons, providing modern bathroom and kitchen facilities. The results of the first season on Tall Zirāʻa were so promising that the 'Gadara Region Project' was inaugurated, with a planned timeframe of between ten to twenty years.

In 2004, the Biblical Archaeological Institute Wuppertal (BAI) under the directorship of D. Vieweger, and the German Protestant Institute of Archaeology (GPIA) in Amman (which also served as the research unit for the German Archaeological Institute [DAI]), under the directorship of J. Häser, agreed to a close partnership, which ensured ongoing archaeological and interdisciplinary collaboration for the remainder of the archaeological seasons. The German Protestant Institute of Archaeology in Jerusalem (GPIA), run by D. Vieweger since 2005, also joined the work in 2006. The cooperation with the GPIA Amman was confirmed by the new director of the Institute, F. Kenkel, from 2013 to 2016, and by K. Schmidt since autumn 2016.

During the course of the subsequent 18 seasons, twenty five strata in three areas have been uncovered, and several scientific processes and archaeological experiments have been carried out; archaeological surface surveys were also completed for the area surrounding Tall Zirāʻa, the Wādī al-ʻArab, and the Wādī az-Zaḥar.

The slopes of Wādī al-ʻArab from Tall Zirāʻa upwards to the region of Ṣēdūr and Dōqara, and the region around the Wādī al-ʻArab Dam were surveyed in 2009; large parts of this region had not been studied in detail before. In total 78 locations were documented, 30 of which were previously unknown. The survey was continued until 2012. All in all 327 sites were registered which cover an area from Tall Zirāʻa to North Šūna.

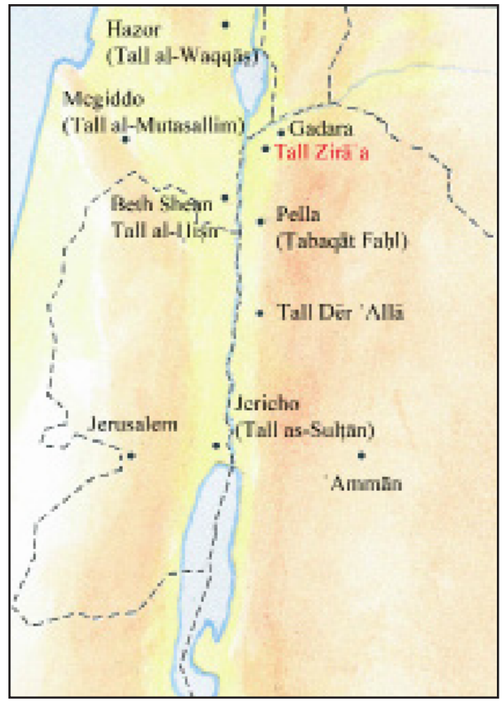

Fig. 0.3 Tall Zirāʻa and its geographic location (Source: BAI/GPIA).

All finds were stored at the excavation house in Umm Qēs. Some of the more important finds were exported to the Biblical Archaeological Institute Wuppertal (BAI) and restored by M. Blana; they were returned to the 'Department of Antiquities of Jordan' (DoA) over several stages, with the final delivering to Jordan in the spring of 2015. Furthermore, more than 50 objects discovered during the project are on display in the Jordan Museum in Amman.

Excavation results have been presented as articles in several journals, together with separate publications and dissertations[6]. In addition, the Tall Zirāʻa website provides information about current activities on and around the tall in German and English[7].

After 18 intensive seasons of work researching the tall and its environment, it was decided to interrupt

6 See e.g. Vieweger et al. 2002a, 12–14; Vieweger et al. 2002b, 157–177; Vieweger et. al. 2003, 191–216; Vieweger et al. 2016, 431–441; Vieweger 2003a, 10; Vieweger 2003b, 459–461; Vieweger 2007, 497–502; Vieweger 2010, 755–768; Vieweger 2013, 231–242; Häser et al. 2016a, 121–137; Häser et al. 2016b, 497–507; Häser – Vieweger 2005, 135–146; Häser – Vieweger 2007, 526–530; Häser – Vieweger 2009, 20–23; Häser – Vieweger 2012a, 693–696; Häser – Vieweger 2012b, 251–268; Häser – Vieweger 2014, 640; Häser – Vieweger 2015, 20–23; Vieweger – Häser 2005, 1–30; Vieweger – Häser 2007a, 1–27; Vieweger – Häser 2007b, 147–167; Vieweger – Häser 2009, 1–36; Vieweger – Häser 2010, 1–28; Vieweger – Häser 2015; Vieweger – Häser 2017a; Vieweger – Häser 2017b; Kenkel 2012; Kenkel 2013a, 1–24; Kenkel 2013b, 301–308; Kenkel 2016, 765–781; Kenkel – Vieweger 2014, 12; Schwermer 2014; Gropp 2013; Lehmann – Schulze 2015, 28–30; Schulze et al. 2014, 13; Soennecken – Leiverkus 2014, 14; Soennecken – Leiverkus 2016, 509–518; Soennecken 2017.

7 For an overview of publications see www.tallziraa.de (9.6.2018).

excavation and survey activities in order to publish a complete record of the results thus far. To this end, it was decided that from 2012 until 2017 work would be comprised of study seasons in the excavation house at Umm Qēs, to process data and results gathered to date (for the excavations carried out see the film in *App. 0.1*).

A total of nine volumes are planned on the following topics:

Volume 1: Introduction.
Aims of the 'Gadara Region Project'; Tall Zirā'a and the Wādī al-'Arab; Research History of Tall Zirā'a; the 2001 Tall Zirā'a Survey; Scientific Methods; Framework of Archaeological Work on Tall Zirā'a.

Volume 2: Early and Middle Bronze Age (Strata 25–17)

Volume 3: Late Bronze Age (Strata 16–14)

Volume 4: Iron Age and Persian Period (Strata 13–9)

Volume 5: From Hellenistic to Umayyad Period (Strata 8–3). Stratigraphy

Volume 6: From Hellenistic to Umayyad Period (Strata 8–3). Finds

Volume 7: From Abbasid to Ottoman Period (Strata 2–1)

Volume 8: Wādī al-'Arab Survey

Volume 9: Archaeometry

All nine volumes will be published online in English, in order to make the results free of charge and accessible to a wide audience. In addition to this, publishing online enables the 3D-images and reconstructions, together with digital films, to be included with the material, which can thus be integrated and used interactively. Furthermore, an online publication will enable the attachment of original data from the excavations, such as plans and database extracts, which would be otherwise impossible. These additional documents will be published in German and will provide professional researchers with the ability to access the primary data itself, not only as they are interpreted.

General remarks regarding systems and processes used within the publications follow herewith:

- The Israel or Palestine Grid 1923 is the basis for the geographical grid system used for the project. It was first used in autumn 2001 for 5 m x 5 m squares on Tall Zirā'a, and was consequently applied for excavation and survey work alike (see *Vol 1., Chap. 4.1.*).
- Citation styles are based on the directives provided by the German Archaeological Institute (DAI), but have been adapted to the conventions of English language publications.
- In order to minimise misunderstanding, the problem of transliterating Arabic and Hebrew words into English spelling using Latin letters for local sites and family names is dealt with by using the transcription system of the 'Deutsche Morgenländische Gesellschaft', based on the directives of TAVO (see the Tübinger Bibelatlas).
- For detailed explanations of the chronology of the Southern Levant in the scope of the history of Egypt, Syria and Mesopotamia, see Vieweger 2012, 459–507 (*Vol. 1., Chap. 4.3.*).
- In this report the name of the site is called *Tall Zirā'a*. Other transcriptions are e.g.: *Tell Zer'ah* (MEGA Jordan; Jadis; Kerestes et al. 1977/1978; Glueck 1951a; Glueck 1951b); *Tell Zer'a* (Reicke – Rost 1979); *Tell Zara'a/ Tell Zara'a* (Schumacher 1890 and Steuernagel 1926); *Tell Zira'a* (Hanbury-Tenison 1984).
- All dimensions in the catalogues as well as in the figure captions are given as cm, if not otherwise stated.
- Besides Figures, Plates and Tables also Appendices are presented in this volume showing films, 3D-models, Panorama and charts. They can be seen on the website www.tallziraa.de (http://www.tallziraa.de/Final-publication/Appendix-Vol-1/1_473.html).

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Johann Wolfgang von Goethe (1749–1832)

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Dieter Vieweger and Jutta Häser

Introduction

by Dieter Vieweger/Jutta Häser

Early and Middle Bronze Age (Strata 25–17)

The present volume is the second in a series of nine planned volumes of the final report about the excavations on Tall Zirā‘a carried out by D. Vieweger and J. Häser. It will provide the results of the investigations of the Early Bronze Age, Intermediate Period, and Middle Bronze Age levels, i.e. the Strata 25–17. Although they could be investigated only in a small area, they are important for the settlement history of the tall and mirror the overall cultural development in the southern Levant.

There are earlier settlement strata on Tall Zirā‘a. They are not to explore in Area I anymore due to safety reasons[1].

So far on Tall Zirā‘a, three areas (I–III) or excavation sites, have been opened, all serving different aims. In Area I we explore residential areas, especially the living quarters and working areas of the tall's artisans. In Area II we focus mainly on administrative buildings, and in Area III on a prestigious building from the (Roman-) Byzantine era.

The Early Bronze Age, Intermediate Period, and Middle Bronze Age strata 25–17 were reached only in Area I on Tall Zirā‘a. And even there, the dig was only possible in small parts of the 1750 m² large area, corresponding to 70 5 m × 5 m squares, since a landslide did not only destroy the settlements of these early periods but let them completely vanish. This catastrophe happened in the time of stratum 16 before 1500 BC according to the radiocarbon dates[2].

The landslide destroyed the western area of the settlement. The trigger for the landslide was probably an earthquake or heavy rain and most probably the collapse of calcareous sinter caves[3] beneath the settlement layers. The inhabitants of the hill, however, were obviously unable to leave the western part of the tall unsettled, which is why they put a great deal of effort into carefully rebuilding the lost area. The excavations unearthed several infill layers with a total depth of at least 4.5 m. Here, the residents heaped up layers of earth, each 30–45 cm deep, on which they put stone paving. They had

Fig. 0.4 Area I. View from west (Source: BAI/GPIA).

1 See page 13.
2 Vieweger – Häser 2017a; Vieweger – Häser 2017b, 250–253.
3 The natural hill under the settlement layers of the Tall was built up by the artesian spring itself. The spring water carried dissolved minerals and lime that were deposited when the minerals precipitated out. Rock was laid down in a series of crust-like coatings on the slopes of the hill, eventually growing into a circular hill with a roughly horizontal surface. However, the sedimentary rock is soft and contains large caves, in which stalactites and stalagmites form. It is possible that short before 1500 BC such cavities collapsed due to the weight of the settlement layers above, or because of an earthquake, resulting in the devastating landslide. Vgl. Vieweger – Häser 2017a; Vieweger – Häser 2017b, 19.

Fig. 0.5 Excavation area of Strata 24–17 in the cental eastern section of Area I (Source: BAI/GPIA).

repeated this process at least seven times (*Fig. 0.4*). We have not yet reached the base of these infill layers during our excavations.

In a section of about 120 m² situated in the centre of Area I, it was possible to explore earlier, not from the landslide affected strata below Stratum 16. Structures from the Early Bronze Age, from the Intermediate Period, and from the Middle Bronze Age were uncovered. The excavated area of the deep cut in the central eastern section of Area I is too small to justify a confident statement about the settlement activity throughout the tall, especially as the area near the spring would have offered far better living conditions. This volume presents the up to now excavated preliminary results and waits to be updated with much better results from Area II and IV (artesian spring).

Fig. 0.6 Refilling layers, Stratum 15, Area I (Source: BAI/GPIA).

The cataclysmal landslide provoked a sharp break in the settlement history on Tall Zirā'a towards the end of the Middle Bronze Age. However, the remaining architecture of Stratum 16 (MB IIC/LB I), the refilling layers of Stratum 15 and the rebuilding of the settlement of Stratum 14 were strongly connected in respect of structure as well as of function. Therefore, the description of the Bronze Age strata has been divided at this point and the last Middle Bronze Age Stratum 16 will be discussed together with the Late Bronze Age Strata 15 and 14 in Volume 3 of this publication series.

4 Information about the surface surveys in 2001 are given in Vieweger – Häser 2017a, 59–155.

Fig. 0.7 Early Bronze Age city wall, Area I (Source: BAI/GPIA).

Early Bronze Age II–III (3000–2300 BC; Strata 25–22)

The very high concentration of Early Bronze Age finds that were encountered in the north-west of the tall during the surface surveys let expect outstanding settlement residues[4]. These actually seem to exist, but because younger layers overlie them, only the impressive outer surface of a massive Early Bronze Age defensive wall could be investigated (Stratum 25 a, Squares AM–AO 114–116.). This has been excavated to a depth of 4.85 m measured from the surface.

The Early Bronze Age city wall is also visible at some other places around the tall in the same absolute height as in Squares AM–AO 114–116.

The impressive remains of an imposing city wall (Stratum 25 a) and a glacis (Stratum 25 c) at its base dominate the lower section of the western slope of the tall and protect the younger strata above this wall from slipping. There are definitely older Early Bronze Age (and possible also Chalcolithic) layers and probably also older defensiv structures but they cannot be investigated on the west slope due to security reasons.

Strata 23–22 represent the formerly large occupation on the tall. They can be dated to the Early Bronze Age III and II. As the area studied so far is relatively small, we cannot yet draw firm conclusions. It is also unclear whether the massive Early Bronze Age wall surrounded the previously explored strata or belonged—as we expect—to an earlier settlement layer.

Intermediate Period: Early Bronze Age IV–Middle Bronze Age I (2300–1950 BC; Strata 21–20)

During the Early Bronze Age IV/Middle Bronze Age I, the finds reflect a profound cultural upheaval on Tall Zirā'a —like everywhere in the southern Levant. The demise of the once-thriving urban culture of the Early Bronze Age II/III clearly comes to mind. Storage pits, hearths and fragmentary remains of walls now characterize the settlement pattern. Only in the following Middle Bronze Age II residential houses could be detected again in the central eastern part of Area I.

The material evidence from the two periods of the Early Bronze Age IV and the Middle Bronze Age I on the tall—in particular the pottery—speaks for cultural continuation of the Early Bronze Age at an extremely low level, rather than for a redesign or a harbinger of the Middle Bronze Age culture. This observation corresponds to the general picture of the decline of the Early Bronze Age urban culture at the end of third millennium BC and its revival in the Middle Bronze Age after 1950 BC. However, the evidence of continuous settlement of Early and Middle Bronze Age settlements in the same location is of great significance, since such findings are rare.

Middle Bronze Age II (1950–1550 BC; Strata 19–16)

Respectable residential and craft areas arose in the subsequent Middle Bronze Age II, marking the beginning of a long tradition of courtyard houses. No city wall has been found, as present in some other Middle Bronze Age cities. However, this is very likely due to the specific situation on the tall. The landslide tore away that part of the hill where the Middle Bronze Age town wall might have stood. The parts that the landslide has left untouched have all the signs of urban development, including a tight, closely spaced building area optimally aligned towards the slope. From Middle to Late Bronze Age, there is a smooth transition with an extremely impressive continuity of land boundaries, forms of architecture and craft traditions.

Stratum 16 represents the transition from the Middle Bronze Age IIC to the Late Bronze Age I. As explained above, it will not described here but in Volume 3.

Volume 2 of the Gadara Region Project's excavation report will be divided into the following thematic blocks:

1. In the volume's first topic block, Dieter Vieweger will introduce the Strata 25–22, this means to Early Bronze Age II–III contexts (*Chap. 1.*).

2. The second topic block deals with the Intermediate Period Strata 21–20 (*Chap. 2.*).

3. The third topic block will introduce the Middle Bronze Age IIA/B Strata 19–17 (*Chap. 3.*).

He will discuss in each chapter the era in general (*Chap. 1.1./2.1./3.1.*), the excavated contexts of the Strata 25–22 (*Chap. 1.2.1./2.2.1./3.2.1.*) and present selected finds chronologically (*Chap. 1.2.2./2.2.2./3.2.2.*). The ceramic research (*Chap. 1.2.2.5./2.2.2.5./3.2.2.5.*) will be presented by Andrea Schwermer.

4. The typology of cooking pots from the Early to the Middle/Late Bronze Age will be published by Andrea Schwermer (continued in Volumes 3 and 4).

A chapter about the typology of cooking pots and baking trays from the Early Bronze Age to the Middle/Late Bronze Age will be added to this volume. A study of developments in cooking ware is particularly helpful in addressing questions of technical history, and with it the socio-economic evolution of a settlement.

In order to fulfil their basic function as cooking pots, materials and forms had to be found which remained thermostable (at temperatures above 1000° C on the external surface) and, in general case of lack of fuel, allowed an efficient transfer of heat, in other words, thin walls and a useful ratio of surface to volume. There are also other important, although not essential, considerations, such as for example ease of carrying or the ability to copse the vessel with a lid, in other words, weight, size, the addition of handles, the working of the rim etc. Certainly there were also aesthetic considerations, such as form, surface appearance, colour etc.

All of these determined, depending on the socio-economic context, the demands of the market on the manufacturers. As a result of these demands, the changes that occurred in the form and embodiment of cooking vessels, in other words, the rate of innovation, was particularly high over these periods, and can be observed distinctly on Tall Zirā'a due to its having continuous settlement over such a long period of time.

1. The Early Bronze Age I–III (3600–2300 BC)

by Dieter Vieweger

Egypt[1]		Southern Levant[2]		
Upper Egypt/Middle Egypt: **Badārī-Culture; Negade I–IIb period** Lower Egypt: **Fayyūm A-Culture, Merimde-Culture, Maʿādī-Culture (early)**		**Chalcolithic period** (Copper Age)	**5000/4500–3600 BC**	Tall ʻArād Stratum 5
		Early Bronze Age	**3600–2150 BC**	
Negade IIc–d2 period	3600–3300 BC	**Early Bronze Age I** Early Bronze Age IA Early Bronze Age IB	3600–3000 BC	Tall ʻArād Stratum 4
Negade III period (Dynasty 0)	3300–3000 BC			
Early Dynastic Kings Upper Egypt: 'Scorpion', Kā, Narmer				
Thinite period/Early Dynastic 1st Dynasty 2nd Dynasty	 2955–2780 BC 2780–2635 BC	**Early Bronze Age II/III** Early Bronze Age II	3000–2300 BC 3000–2700 BC	Tall ʻArād Stratum 3 Tall ʻArād Stratum 2–1
Old Kingdom 3rd Dynasty 4th Dynasty 5th Dynasty 6th Dynasty	 2635–2570 BC 2570–2450 BC 2450–2290 BC 2290–2155 BC	Early Bronze Age III	2700–2300 BC	
First Transition period	2155–1987 BC	**Non-urban Transition period** or Early Bronze Age IV/Middle Bronze Age I	2300–1950 BC	

Tab. 1.1. Chronology of the Chalcolithic period and Early Bronze Age in Egypt and the southern Levant (Source: BAI/GPIA).

1.1. The Early Bronze Age I–III in the Southern Levant

1.1.1. 'Urban Revolution'

From the beginning of the fourth millennium BC, the Southern Levant underwent tremendous changes. These were mainly initiated by external influences. On the Syrian-Palestinian land bridge connecting the two important economic and cultural centres of the now dawning era, Mesopotamia and Egypt, a first type of 'urban culture' emerged during the Early Bronze Ages II and III.

However, the actual extent of this Early Bronze Age urbanity is highly disputed. Was the urban society organized as a centralized, hierarchical urban community led by elites, or was it rather a 'heterarchy' of decentralized villages that were tribal or clan-oriented?

The emergence of the Early Bronze Age culture in the southern Levant is closely linked to trade relations with Egypt. For the Egyptians, access to the copper mining areas of the southern Levant was of the essence, as was the trade route leading to these mines on which donkeys carried their goods from one station to the next across the northern Sinai. As the Early Bronze Age progressed, however, the maritime route (day passage) from Egypt to

1 Vgl. Vieweger 2012, 464–507.

2 See Greenberg 2014, 269–277 (Levant): EB I/II 3600–2800 BC, EB III 2800–2400 BC, EB IV 2400–2000 BC; Richard 2014, 330–352 (Cisjordan): FB I 3600–3100 BC, EB II 3100–2750 BC, EB III 2750–2300 BC, EB IV 2300–2000 BC; de Miroschedji 2014, 307–329; Regev et al. 2012, 505–525 (Cisjordan): EB IA 3700–3400 BC, EB IB 3400–3100/3000 BC, Transition EB I/II during the 31st century, EB II before 3000–2900/2850 BC, EB III 2850–2500/2400 BC.

the areas of present-day Lebanon and Syria gained importance. As a consequence, towards the end of the Early Bronze Age II and during the Early Bronze Age III, Egypt's trade contacts with the Southern Levant became subsidiary to those with the Lebanese-Syrian region.

The major rivers in the geographical greater area of Mesopotamia and Egypt did not only ensure a reliable supply of drinking and processing water but also guaranteed the necessary food production. In this respect, irrigation systems as well as the annual flooding of the Nile played an important role. The watercourses also promoted an extensive exchange of trade goods, innovations, and knowledge. Rivalry and competition between the different urban centres were one of the reasons for the emergence of larger political units[3]. This centralized exercise of political power, founded on a solid economic basis in Egypt and Mesopotamia, ensured transregional power and influence to both regions.

In contrast to Egypt and Mesopotamia, the deeply incised topography of the southern Levant neither promoted a sense of alliance and solidarity within the population that lived dispersed in separate settlements, nor did it enable individual political centres to create transregional political unities. Instead, the regionalism invoked by natural conditions strengthened the economic (and military) superiority of the southern Levant's neighbouring regions, especially that of Egypt[4].

Among the Early Bronze Age's (II and/or III) urban settlements are e.g. those of Tall ʻArād (Arad)[5], Tall aš-Šēḫ Aḥmad al-Arhēnī (Tēl ʻĒrānī), Ǧabal ar-Rumēda (Hebron), and Tall al-Ḥāsī in the south; Yarmut (Tēl Yarmūt), At-Tall (Ai), Tēl Ăfēḳ, and Tall as-Sulṭān (Jericho) in the central area, and Tall al-Mutasallim (Megiddo), Tall al-Kābrī (Tēl Kābrī), Tall al-Ḥiṣn (Beth Shean), Ḫirbat al-Karak (Bēt-Yeraḥ) in the north. In Transjordan, e.g. Ḫirbat az-Zeraqōn and Tall Zirāʻa in the north are noteworthy; Ḫirbat aš-Šūna, Ṭabqāt Faḥl (Pella) and Tall as-Saʻīdiya (Tell Saidiyeh) in the Jordan Rift Valley, and Tall al-Ḥammām, Bāb aḏ-Ḏrāʻ, and Tall an-Numēra in the south. All these towns depended on an agricultural surplus production. Subject to the availability of water and to regional progress, they expanded at different times and reached expanses of between two (Tall al-Mutasallim [Megiddo] XVIIIB) and 25 ha (Tall aš-Šēḫ Aḥmad al-Arhēnī [Tēl ʻĒrānī]) and populations of between approx. 1,000 and 8,000 inhabitants[6]. Some of these places were enclosed by impressively tall and well-protected walls, some of them with huge gates. The presence of

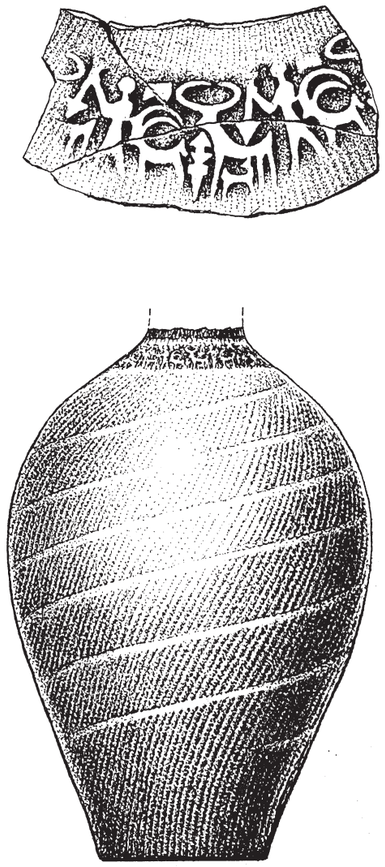


Fig. 1.1. Early Bronze Age seal impression from Ḫirbat az-Zeraqōn (Source: Vieweger 2012, 279 Fig. 248).

fortification walls is a prerequisite for classifying a settlement as a 'city'[7].

The agricultural techniques that had already been common during the Chalcolithic period were now further improved. During the Early Bronze Age, irrigation by floodwater, deep ploughing by means of an ox-drawn plough, and the intensive cultivation of plant and tree fruits, especially of olive trees and grapevines, were developed. In the process, the donkey assumed an important role as a beast of burden.

3 The urban culture that developed during the second half of the fourth millennium BC in (southern) Mesopotamia is being largely attributed to the Sumerians and is reflected in the rise of urban centres during the Early Dynastic period.

4 The close economic connections between Egypt and southern Palestine are well documented; a political dominance on Egypt's part, however, is as yet unproven.

5 The city florished only during the Early Bronze Age II.

6 As a rule, approx. 40 inhabitants per dunam (400 per hectare) are assumed; cf. Shiloh 1980, 26.

7 Settlements were not always immured. In their early stages, Bāb aḏ-Ḏrāʻ or Tall al-Mutasallim (Megiddo) also had residential buildings outside the city walls.

Solid metals such as gold and copper had already been extracted from ores and sometimes been worked very artistically, mostly into pieces of jewellery or other prestigious objects, in the 'lost form' (cf. Wādī Mahras [Naḥal Mišmār]) during the Chalcolithic period. However, bronze—usually an alloy of copper and tin—was not yet available in the southern Levant during the Early Bronze Age[8]. As the mined ores were never completely pure, many copper objects contained additives such as arsenic, lead, and/or antimony. Casting the metals in stone moulds allowed the serial production of work pieces. In order to guarantee a reliable supply of the markets with copper (alloys) during the Early Bronze Age the mining areas in Fēnān (Fenan) and Ḫirbat Manāʻiya (Timna) had to be developed and the delivery and trade channels had to be ensured.

Tin bronze (available from approx. 2500 BC at the earliest[9]) constituted a considerably stronger alloy that was more suited for the production of weapons and tools. Moreover, the melting point of bronze was much lower than that of pure copper (1084º C) as tin already melts at 231.8 ºC.

In the course of this economic boom and given the long-distance trading that was necessary for the metal production, script systems evolved in Mesopotamia and Egypt. In view of their geographical size and their organizational complexity, these countries anyway needed a strict government that could communicate clear orders to all their agents. Official seals served for documenting and authenticating economic treaties and public acts of administration.

All this required local elites, especially for planning and organizing settlement projects such as the construction of defensive works, irrigation systems, or storage facilities.

1.1.2. The Early Bronze Age I (3600–3000 BC)[10]

In the course of the Early Bronze Ages I–III, the character of settlements evolved from Chalcolithic village communities into a culture of urbanity. Initially, however, during the Early Bronze Age IA, only gradual evolutionary transitions from the Chalcolithic way of life are discernible. At this stage, both the technical specialisations and the transregional trading contacts were rather limited.

Many of the Chalcolithic settlements were abandoned and numerous new settlements were founded in the coastal region and in the Shephelah, mostly on new sites. Generally, there also was a tendency to move into the wooded hills and mountainous regions. In the Western Jordanian highlands, smaller settlements developed (that should be of great importance during the Middle and Late Bronze Ages and in the Iron Age)[11]. New settlements can be found even in the extensions of the Negev[12].

The following examples of settlements in Transjordan illustrate the diversity of the Early Bronze Age foundations: the isolated cemetery of Bāb aḏ-Ḏrāʻ, which was used by nomadic communities, the cultic site of Al-Muġērāt, the fortified grounds of Ǧāwa (Jawa), or the Tall as-Saʻīdiya (Tell Saidiyeh), equipped with hydraulic technology, vividly reflect different patterns of society and of organization.

During the Early Bronze Age IB, permanently inhabited villages, some of which covered an impressive area of more than 15 ha[13], were predominant. Regional centres evolved. Large cemeteries were at the centre of inhabited regions, mostly funeral caves or shaft graves sunk into the ground.

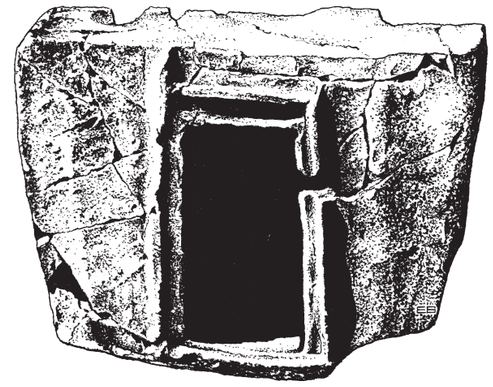


Fig. 1.2. Early Bronze Age house model from Tall ʻArād (Source: Vieweger 2012, 279 Fig. 247).

In Bāb aḏ-Ḏrāʻ, there were also charmel houses (from the Early Bronze Ages IB/II on)[14]. They marked the re-

8 Thus, the term 'Bronze Age' for the period between the fourth and third millennia BC seems indeed fallacious.

9 Richard 1987; Richard 2003.

10 On the *Chap. 1.1.1.–1.1.4.* cf. esp. the depictions by Greenberg 2014, 269–277; de Miroschedji 2014, 307–329; Richard 2014, 330–352; Prag 2014, 338–400.

11 de Miroschedji 1971, 76–84; Getzov et al. 2001.

12 Rosen 2008, 123.

13 The settlement of Yarmut (Tēl Yarmūt) even reached 16 ha, and Ḫirbat al-Karak (Bēt Yeraḥ) and Tall al-Mutasallim (Megiddo) 25 ha.

14 Usually the shaft graves in Bāb aḏ-Ḏrāʻ from the Early Bronze Age IA with piles of bones and skull repositories are interpreted as funeral sites of nomadic communities whereas the graves of the Early Bronze Age IB with primary burials and new ceramic forms are considered those of sedentary people (Schaub – Rast 1989, 548–557).

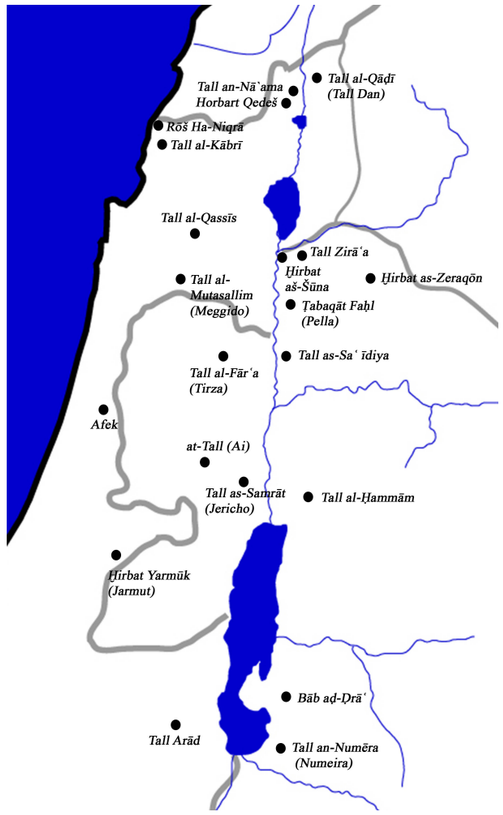


Fig. 1.3 Map of the southern Levant in the Early Bronze Age (Source: BAI/GPIA).

spective centres of the (formerly and partially still) nomadic population groups[15]. The multiple occupancy of these gravesites over a long period of time by families or clans gives testimony to the stability of the newly established settlements[16] and to the incipient population concentration. Dolmens (and caves) were primarily used as burial grounds by pastoral people. The diversity of the types of graves corresponds to the multitude of different villages throughout the Early Bronze Age I.

The majority of (residential) buildings comprised a broad-room house with a yard in front of it—like the houses already known since the Late Neolithic. Now, houses that had an oval or oblong groundplan with apses on both ends were introduced[17]. During the Early Bronze Age IB, also larger houses with multiple partitions on the inside were erected (e.g. in Bāb aḍ-Ḍrā' and Tall al-Fār'a North [Tirza]). They served for cultic purposes (temples)[18] or were used for storage.

The contacts with pre-dynastic Egypt and, afterwards, the First Dynasty of the Old Kingdom were crucial for the southern Levantine development. The (economic-) colonial endeavours of early dynastic Egypt[19] were due to its high demand of ores, bitumen[20], oil, and wine.

The relations with Egypt promoted not only commerce but also the hierarchical organisation of the Southern Levantine society which now had to provide and coordinate a large number of workmen to meet the mercantile demands.

During the time span from Naqāda IIc to IIIa-2, no Egyptian settlement activity is known to have taken place in the southern Levant. Nevertheless, single Egyptian luxury objects (e.g. stone vessels and make-up palettes) could be found there. It was not until the Early Bronze Age IB that Egyptian (border/trade) stations were erected, such as 'Ēn aš-Šallāle ('En Besor). However, these were abandoned at the onset of the First Dynasty in Egypt during the Early Bronze Age II.

Innovative agricultural techniques were imported to the Levant from Egypt[21]. Husbandry and stock farming, i.e. crop and pulse as well as olives and winegrowing on the one hand[22] and stock (sheep, goat, pig, and cattle)[23] on the other formed the basis for the people's nutrition during the Early Bronze Age I. Expanding the arable land, the introduction of the plough, and techniques of floodwater irrigation[24] allowed a significant population increase.

The donkey as a beast of burden now became indispensible for transporting goods. In the highlands and in the areas close to the desert, a pastoral culture developed (wool/milk).

The ceramic offers many different regional types and thus gives testimony of its decentralized production at many different locations[25]. The copper production expanded. By working new mines and processing the ores on site in Fēnān (Fenan) by means of open mould casting, the southern Levantine towns were now able to produce

15 Necropolises could be simultaneously used by several groups of seminomadic shepherds (Rast 1992, 112*–119*; Harrison 2001, 215–236).

16 On this, cf. Tall al-Fār'a North (Tirza), Tall as-Sulṭān (Jericho), and especially Bāb aḍ-Ḍrā'.

17 Braun 1989, 1–43.

18 Cf. the temples of Har Tūv approx. 500 m² of floor space (Mazar – de Miroschedji 1996, 1–40) and Tall al-Mutasallim (Megiddo) (temples found in strata J-2 and 3; Finkelstein – Ussishkin 2000, 38–55).

19 'Dynasty 0' and beginning of the 1st Dynasty.

20 Bitumen was used for sealing ships and storage jars.

21 Wengrow 2006, 135–150; Yekutieli 2006, 225–242.

22 de Miroschedji 1971, 87–91; Stager 1985, 172–188; Grigson 1995, 245–268.

23 Ovadia 1992, 19–28; Hizmi 2004, 309–324.

24 Rosen 2007, 128–149.

25 Stager 1992, 29 f.; Braun 2009; Bar 2010.

and use copper not only for a small number of prestigious objects but also for objects of everyday use[26].

From Mesopotamia (Al-Warkā' [Uruk]) the usage of seals, probably made from wood, was introduced to the southern Levant via Syria and the Lebanon. They enabled an enormous progress of commercial exchange[27].

The fortifications as well as the hydraulic-engineering constructions in Ǧāwa (Jawa) can only be explained by influences from the north.

1.1.3. The Early Bronze Age II (3000–2700 BC)

The Early Bronze Age II marks the actual leap towards urbanity. While the number of villages dating from the preceding period diminished the population now massed in walled towns of different sizes[28]. Especially in the north, in the coastal region, and in the Schephela, these gradually became densely built-up urban centres with functionally structured building complexes[29]. Initially the towns co-existed in a relationship that was for the most part non-hierarchical[30]. However, west to the river Jordan also town states, i.e. transregional urban centres, developed. Here the newly formed 'palace economy'[31] resulted in a significant increase in prosperity; this, however, was less pronounced in the southern region, in the highlands, and in Transjordan[32]. This development promoted the hierarchical structuring of society.

The walled towns were often located in places that were both advantageous for agriculture and strategically favourable. They were mostly founded on natural hills. During the following eras re-use made them grow into huge tells. Most probably, local rivalries about regional superiority or available arable land lay at the bottom of the enormous exertions that were undertaken to erect fortifications during the Early Bronze Ages II and III. Buildings with such a complex structure could only be mastered by social communities that were not only well organized during the construction period but also in their long-term management and when they were under attack. The fertile areas around the towns were reserved for agricultural purposes. The arable land and the roads were controlled by the adjacent settlements. This was mandatory in order to ensure an agricultural surplus production. Given the strong Egyptian influence, the emulation of Egyptian government and bureaucracy might have been expected in the Southern Levant; in fact, however, more parallels to the contemporaneous Mesopotamian town culture can be observed[33]. Possibly the decrease of Egyptian influence at the beginning of the Early Bronze Age II—during or shortly after Narmer's reign—brought about a power vacuum that was soon filled by local elites. Henceforth, they also controlled the trade routes[34].

The fortified town compounds could be constructed in quite different manners and layouts, depending on their respective geographical and topographical location[35]. In Tall al-Fār'a North (Tirza), a huge stone town wall was erected that was eventually 9 m wide at its base and had a fortified town gate. Later it was even supplemented by a glacis. The streets subdivided the town area into insulae; the rather small and probably two-storied houses had a rectangular floor plan (broad-room houses). Urban facilities, gates, and large-scale buildings (temples, palaces, ossuaries) were planned in advance—as were the vitally important water facilities.

In contrast, Tall 'Arād (Arad) was situated on the desert fringe. Its large area was fortified and accessible by two gates and two posterns. Agglomerates of buildings structured the town, which will be described below as an example of this type of urban layout, around a water reservoir.

Temples were now becoming important urban edifices. They were often located in the centre of settlements, usually on elevated grounds or even surrounded by a temenos (Tall al-Mutasallim [Megiddo], At-Tall [Ai], Yarmut (Tēl Yarmūt). That way, the Gods lived right among the humans—in houses that were similar to those of their worshippers, though significantly larger and more solidly built. In Tall al-Fār'a North (Tirza) a granary was erected in close proximity to the temple. Apparently the offices of storing and distributing foods were close to those of the priests. In later eras, the treasury was often kept in the temple precincts.

Temples of the Early Bronze Ages II/III frequently combined (as in Tall 'Arād [Arad]) broad-room houses as main buildings with annexes at the front. This was in accordance with the Early Bronze Age I's tradition. Now, corresponding to Syrian tradition[36], also antae temples

26 Hauptmann 2003.

27 Ben-Tor 1987; de Miroschedji 1997.

28 de Miroschedji 2014, 307–329 talks of an average settlement expanse of 5–12 ha; e.g. Tall as-Sulṭān (Jericho) measured only 2–3 ha at that time, Yarmut (Tēl Yarmūt) 15 ha, and Ḫirbat al-Karak (Bēt-Yeraḥ) 25 ha.

29 Getzov et al. 2001.
Richard 2003, 286–302.

30 A more or less centrally controlled type of economy; cf. de Miroschedji 2006, 55–78.

31 Chesson – Philip 2003, 3–16; Savage et al. 2007, 285–297; Joffe 1993, 58.

32 Greenberg 2002.

33 The city walls usually consisted of a stone foundation topped by a clay constructed wall. In addition, they were protected by towers.

34 In some cases, the fortifications were strengthened e.g. by a glacis. Finkelstein – Ussishkin 2000, 68–71; Sala 2007, 219–240.

35 Sala 2007, 214–219.

Fig. 1.4 Early Bronze Age II and III Megaron-shaped temple. Tall al-Mutasallim (Meggido) (Source: BAI/GPIA).

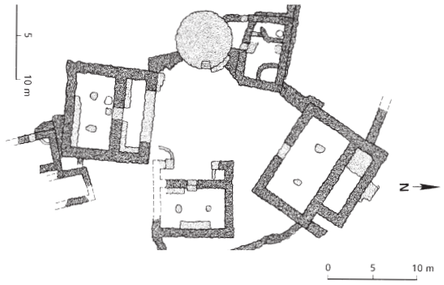


Fig. 1.5 Early Bronze Age sanctuary in Ḫirbat az-Zeraqōn. Megaron-shaped temples (Courtesy of S. Mittmann, Tübingen).

(*cella* with antechamber) were built. Stone pedestals with a round section and altars that could be mounted by means of steps were found in Tall al-Mutasallim (Megiddo)[37] and in Ḫirbat az-Zeraqōn[38]. In Tall al-Mutasallim (Megiddo) (Stratum J-4)[39], also a monumental temple was erected at an early date, whereas this type of building became customary elsewhere only during the Early Bronze Age III.

The cemeteries developed as facilities of their own outside the town limits. During the Early Bronze Ages II and III, burials were usually carried out in collective tombs (some of which emulated broad-room houses), i.e. the burial grounds served families or clans as access gates to the netherworld. In the funerary cult, the burial practice did not reflect any serious social differences[40]. Still, some graves contained prestigious objects such as ostrich eggs or objects made of faience, lapislazuli, or alabaster. In the seminomadic region and in the pastoral areas of the Golan[41] some persons (of importance?) were buried in megalith graves. These also served to mark the property of the seminomadic groups.

Figurines shaped like humans or animals such as decorated bones (bone handles) were frequently used in the southern Levant[42]. The iconography (mostly incised images or stamp seal prints) shows human beings (gods, priests, or cult participants) and often horned animals[43].

Agriculture during the Early Bronze Age II evolved intensively. Oil and wine increasingly became objects of supra-regional trade in the southern Levant—in the south they were mostly exported to Egypt[44]. Animal husbandry focussed on cattle, sheep, and goats. Pigs became somewhat less important[45]. The higher demand of milk was met by a percental increase of older female sheep and goats in the herds. The rising textile industry also needed large numbers of sheep. In this field, (semi)nomadic groups living in the environs of towns became very important for the textile production—and likewise for meeting the urban population's need for meat.

During the Early Bronze Age, the donkey became very important as a beast of burden, but also for threshing and other agricultural tasks. As an animal used for riding, it only gained importance in the southern Levant during the Early Bronze Age III[46].

Agricultural production was especially promoted by the increased use of cattle. As a farm animal it was able to plough large expanses surrounding the towns and their appertaining villages and thus raise the agricultural output enormously.

In order to meet the needs of the urban population, the skilled crafts and trades evolved towards 'serial production'. Clay bricks were now formed in wooden moulds. In potteries (cf. Tall al-Fār'a North [Tirza] and Tall ad-Duwēr [Lachish]) revolvable wicker mats became customary. Circular stone slabs were also found (pottery wheels?). The remarkably evenly formed ceramic material seems to have been manufactured in larger centres of production (see the pottery in Tall al-Fār'a North [Tirza])[47]. Still, the differences between the northern and the southern traditions remained.

The much-cited Abydos Ware[48] (named after its original place of discovery) was also manufactured in the southern Levant. This ceramic with a narrow base and a high, slender neck was exported to Egypt as a container for consignments of goods. Apart from Abydos, it was

37 Genz 2010, 46–52.
38 Groundplan 50 m x 30 m; cf. Finkelstein et al. 2006, 36–50.
39 Chesson 1999, 137–164.
40 Vinitzky 1992, 100–112; Greenberg 2002, 79.
41 de Miroschedji 1993, 29*–40*; Genz 2003.
42 Weippert 1988, 165 f. with n. 11–15.
43 Hennessy 1967, 49–60. 71–73; Sowada 2009.
44 Horwitz – Tchernov 1989, 279–296; Hesse – Wapnish 2002, 457–491.
45 Schroer – Keel 2005, 162. In Mesopotamia, onagers (*Equus hemionus onager*) were used as draught animals for chariots.
46 de Vaux 1955, 540–589; on EBA II–III Northern Metallic Ware, the production centre of which was presumably located in the Ḥule valley (Greenberg – Porat 1996, 5–24). On this, cf. also the Abydos Ware (Amiran 1974).
47 Amiran 1969, 35. 59 f.
48 Schroer – Keel 2005, 178 f.

Fig. 1.6 Offering scene from Ḫirbat az-Zeraqōn (Courtesy of S. Mittmann, Tübingen).

Fig. 1.7 'Ḫirbat Karak Ware', unknown provenience (Source: BAI/GPIA).

also verified in Ṣaqqāra and Abuṣīr (among other places) in the time of the First Dynasty.

The topics of the pictorial art are reminiscent of Egypt or of Mesopotamia with respect to their origin, style, and meaning[49].

During the Early Bronze Age II, Egypt established close trade contacts with the Levantine city states[50]. Their increased trade and economic activities are evidenced by the fact that stamp seals and cylinder seals were widely in use and ceramic jugs were commonly marked ('potmarks') in northern and central Palestine during the Early Bronze Ages II and III[51].

Apart from wine and oil, the most important export goods to Egypt were wood and dried fruits. The mining activities in Fēnān (Fenan) and Timna and the southern Sinai continued to expand[52]. Weapons and tools were manufactured in large quantities and an equally impressive diversity.

In the northern part of the southern Levant, the transition from the Early Bronze Age II to the Early Bronze Age III is marked by the emergence of the 'Ḫirbat Karak Ware' (*Fig. 1.7*)[53]. Production technique (coarse, irregular tempering), typology, and the 'top-heavy' proportions[54] of the shiny black (and red) bowls and kraters speak against their local provenance but rather suggest that they were manufactured by immigrants from the north (East Anatolia, Armenia, Transcaucasia)[55] who had apparently reached the southern Levant by sea[56]. This ceramic was spread as far as deep into Syria (e.g. Tall Mardīḫ [Ebla]). Trade contacts have been proven even with Anatolia[57].

49 de Miroschedji 2002, 39–57.
50 Ben-Tor 1987.
51 Hauptmann 2003.
52 Named after a settlement on the southwestern shore of the Sea of
53 Galilee, Ḫirbat al-Karak (Bēt Yeraḥ).
54 Weippert 1988, 153.
55 Philip 1999; de Miroschedji 2000; Greenberg 2007.
56 Philip 1999, 26–57.
57 Hennessy 1967, 79–83.

1.1.4. The Early Bronze Age III (2700–2400 BC)

In the course of the Early Bronze Age II, an economic market had developed in southern Palestine, the Negev, and the Sinai. It supplied the raw materials needed in the upcoming town states of the Levant[58]. This changed at the dawn of the Old Kingdom in Egypt—i.e. with the beginning of the Early Bronze Age III—when the Egyptians gained control of the Sinai. These upheavals eventually also led to the abandonment of Tall ʿArād (Arad)[59].

The trade with Egypt dropped significantly during the Early Bronze Age III—even though prestigious objects made of gold, jewellery, or make-up palettes from Egypt were always very much in demand in the Levant[60]. The copper production in Fēnān (Fenan)[61] reached its peak[62]. After the loss of Tall ʿArād (Arad), apparently Tall an-Numēra and Bāb aḍ-Ḍrāʿ took over the control of the metal trade.

At the end of the Early Bronze Age II, the Egyptians preferably landed their ships on the shores of present-day Lebanon and Syria. Due to sophisticated navigation techniques[63], the sea route along the eastern Mediterranean coast had become easily navigable. While up to then, the main imports from the southern Levant had been those of oil and wine, these products were now increasingly superseded by Egypt's enormous demand of wood (e.g. cedar), resins, and perfume[64] (which they imported from Syria). From the beginning of the Early Bronze Age III, Egypt established privileged relationships particularly with Byblos[65]. Mutual trade contacts had already existed

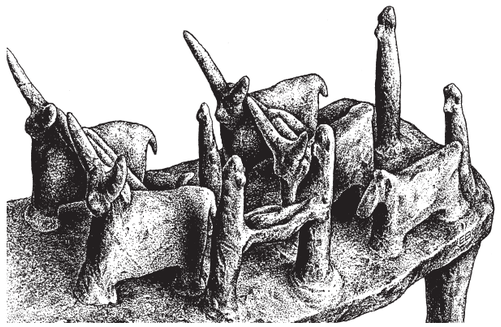


Fig. 1.8 Cattle farming. Early Bronze Age terracotta group from Vounos-Bellapais (Cyprus) (Vieweger 2012, 223 Fig. 185).

Fig. 1.9 Tall Ḥuǧērāt al-Ġuzlān (Source: BAI/GPIA).

since the Early Bronze Age I but these significantly increased during the fourth to sixth Egyptian Dynasty.

In the large towns that were enclosed by up to 10 m thick walls, the elites wanted to demonstrate their status and affluence. As a consequence, now representative palaces were built[66]. The palace buildings of Yarmut (Tall Yarmūt) were as large as 1,750 m² (older Palace B1) and 6,000 m² (younger Palace B2)[67], respectively. In Tall al-Mutasallim (Megiddo), the palace complex (Building 3177), which to date has only been explored in part, had approx. 20 rooms[68]. A monumental storehouse could be excavated in Ḫirbat al-Karak (Bēt-Yeraḥ)[69]. The elites' need for representation is also evidenced by finds of elaborate ceramic (e.g. for feasts).

The spatial proximity of the palaces, that had been constructed since the middle of the third millennium BC, to the temples gives evidence of the close relationships of the elites operating there. Single temple buildings now evolved into larger temple complexes. These were found especially in Tall al-Mutasallim (Megiddo) and Ḫirbat az-Zeraqōn. Undoubtedly, some cult sites were of supra-regional importance. Bāb aḍ-Ḍrāʿ presumably had a similar function in southern Transjordan.

Mazzebes, most of which can be dated back to the Early Bronze Ages III and IV (e.g. in Bāb aḍ-Ḍrāʿ or in Al-Leǧǧūn), formed part of the common equipment of

58 Amiran et al. 1973; Finkelstein 1995, 67–86; Beit-Arieh 2003.

59 In the Negev, there were no urban settlements during the Early Bronze Age III.

60 de Miroschedji 2002, 45–47.

61 On the role of Ḫirbat Ḥamrā al-Ifdān as an ore-processing centre in the widest sense of the word, see Adams 2002, 21–32.

62 Adams 2002, 25.

63 Marcus 2002, 403–417; Sowada 2009, 248–255.

64 Sowada 2009, 245–248.

65 Now the Egyptian tradesmen often bypassed the southern Levant on their route along the Mediterranean coast. Yet the relations with Egypt remained important. Egypt conducted military expeditions in the southern Levant's coastal plain (de Miroschedji 2012).

66 In an archaeological context, housing complexes exhibiting a particular level of comfort, in a prime location, and with above-average surface area are termed 'palaces'. Sometimes they are separated from the surrounding neighbourhoods by walls.

67 de Miroschedji 2003, 153*–170*.

68 de Miroschedji 2008, 1792–1797; Nigro 1995, 16–23.

69 Mazar 2001, 447–463.

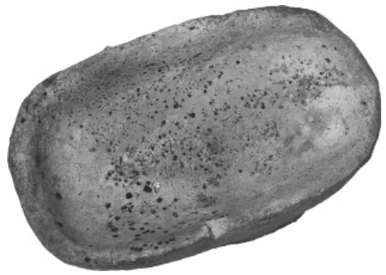


Fig. 1.10 Casting mould from Tall Ḥuǧērāt al-Ġuzlān (Courtesy of A. Hauptmann, Bochum).

Fig. 1.11 Casting mould from Tall Ḥuǧērāt al-Ġuzlān (Courtesy of A. Hauptmann, Bochum).

cult complexes in this era.

Some cultic objects (such as the incisions in cylinder seals) give us a fairly good insight into the religious conceptions of the times. Apparently the fertility goddess(es) was/were of particular importance. The frequent twin temples could have been built for the worship of a pair of gods. In this regard, Pierre de Miroschedji also suggests the concept (known from later times) of the 'Sacred Wedding' that was performed to ensure the cultic support of earthly fertility[70].

Possibly the awe-inspiring megalithic complex Ruǧm al-Ḥirī in the central Golan was erected during the Early Bronze Age II–III[71].

In the course of the Early Bronze Age III, the urban culture of the Southern Levant reached its highest level of development. And yet, the constant growth of its urban settlements and the architectural extravagance of its elites finally culminated in a spectacular, unexpected collapse.

70 de Miroschedji 2001, 74*–103*.

71 Mizrachi 1992, 47–57; Aveni – Mizrachi 1998, 475–496. Different opinions in: Freikman 2012, 146, who prefers his oldest analysis of 5580 BC ± 280 years (Chalcolithic period). The more recent datings point at the Bronze Age.

1.2. The Early Bronze Age II–III on Tall Zirā‘a

1.2.1. Early Bronze Age Settlement Strata (Strata 25–22)

1.2.1.1. Stratum 25: Early Bronze Age City Wall and Glacis

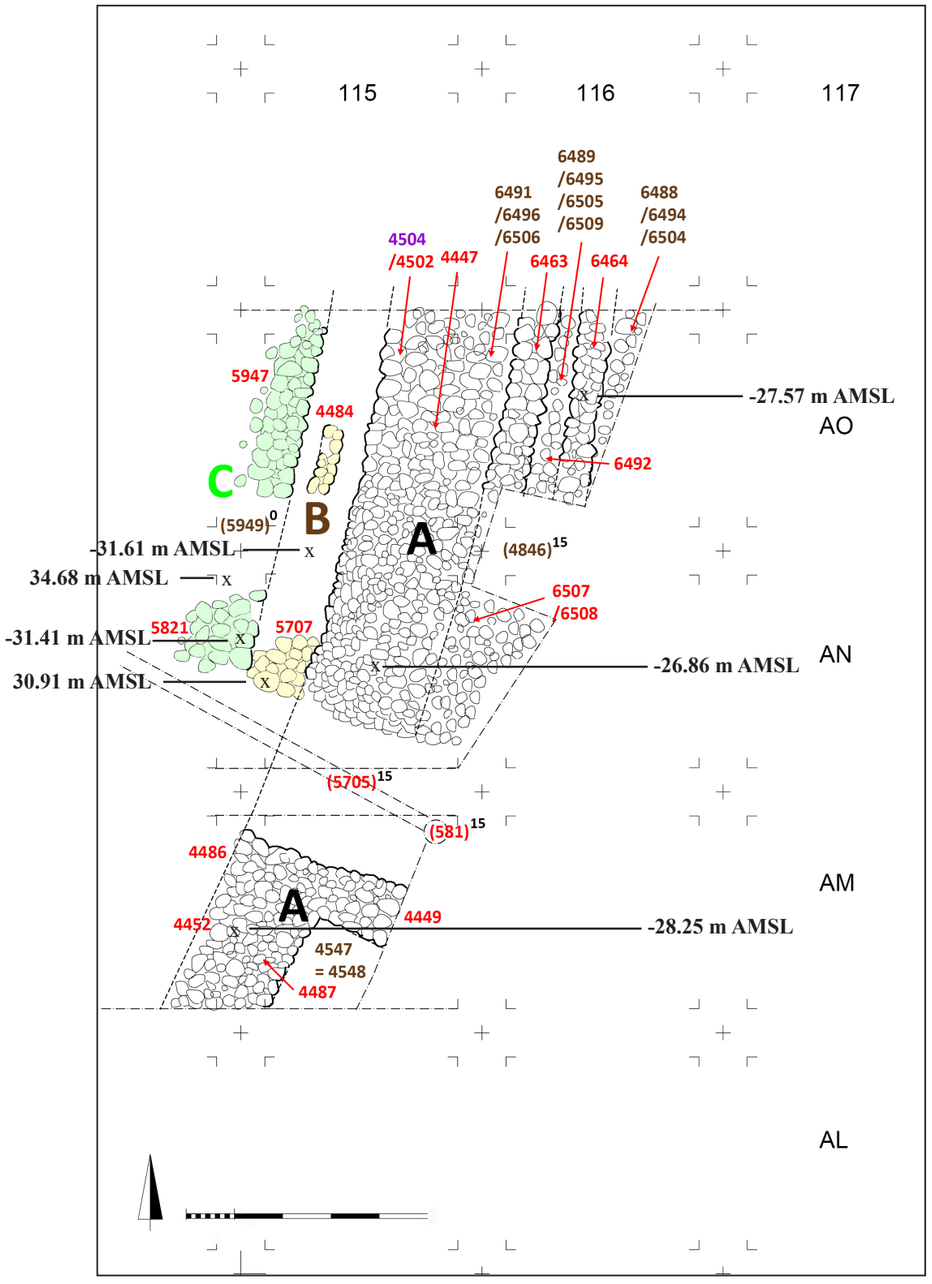


Fig. 1.12 Architectural plan, Stratum 25, Area I, Squares AM–AO 115–117, Complexes A (black), city wall B (brown), C (green), glacis, walls (red), fill layers (brown), pisé floor (violet) (Source: BAI/GPIA).

Fig. 1.13 Early Bronze Age city wall (green), Stratum 25, Area I (Source: BAI/GPIA).

Only a small section of the Early Bronze Age city wall could be excavated on the western slope of Tall Zirā‘a. But around the settlement hill the same wall is visible in other parts of the tall in the same height. The remains of the impressive city wall, still rising up to a height of 4.85 m, dominate the lower part of the western slope. Today, they protect the more recent strata situated above the wall from sliding downwards *(Fig. 1.14)*.

The section of the city wall under inspection stretches across the excavation Squares AM–AO 115–116 *(Figs. 1.12 and 1.13)*. The wall itself—at least in some sections—could also be described with respect to its construction: it was built from several parallel walls running alongside the slope, the interstitials being densely packed with rocks and earth (best observable in Square AO 116) *(Figs. 1.16 and 1.17)*.

For security reasons, most of the contexts could not be excavated anyway near the bottom of the wall. Consequently, in these cases the customary measurements of the contexts' bottom edges are lacking. In order not to destabilize the entire tall on its west side, the filling layers of Stratum 15 east of the discovered city wall could not be completely removed. In the event of a torrential winter rain this could cause the entire excavation area to collapse. Accordingly, it was not possible to establish a direct stratigraphical connection between the excavated Early Bronze Age Strata (24) 23–22 and the city wall complex.

In order to rebuild the Late Bronze Age city of Stratum 14, a sewer duct (Stratum 15, Area I, Squares AM–AN 114–115, Contexts 581 and 5705) was hewn right through the former city wall complex, thus completely

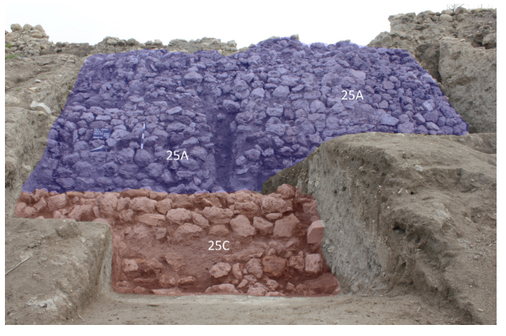


Fig. 1.14 Early Bronze Age city wall and glacis, Stratum 25, Area I, Square AO 115, Complexes A–C, Contexts 4452, 4447, and 5947 (Source: BAI/GPIA).

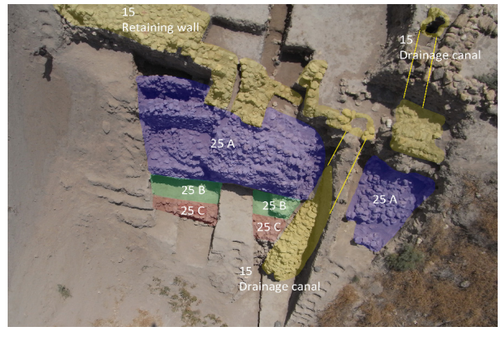


Fig. 1.15 Early Bronze Age city wall and glacis, Stratum 25, Area I, Squares AM–AO 115–117, Complexes A–C (Source: BAI/GPIA).

Fig. 1.16 The Early Bronze Age city wall's construction, Stratum 25, Area I, Square AO 115, Complex A, Contexts (from left to right) 6463, 6509, and 6464 (Source: BAI/GPIA).

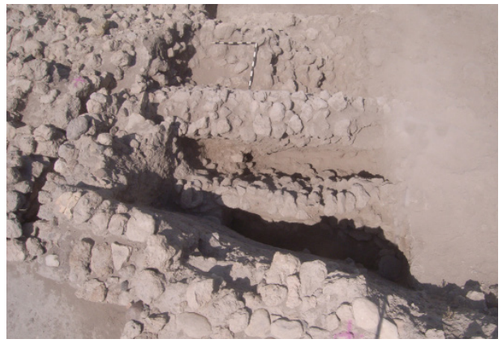


Fig. 1.17 The city wall's construction, view from the west, Stratum 25, Area I, Square AO 116 (Source: BAI/GPIA).

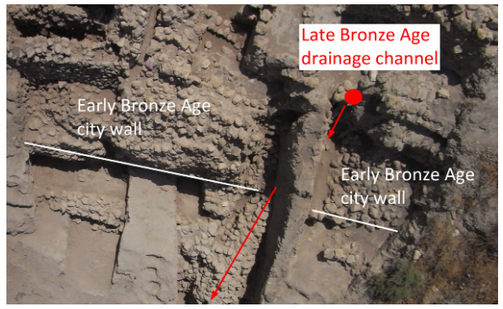


Fig. 1.18 City wall (Stratum 25) with Late Bronze Age drainage channel (Stratum 15), Area I (Source: BAI/GPIA).

destroying the Early Bronze Age fortification in this area (Squares AM–AO 114–116) *(Fig. 1.15)*.

Among the single finds, a miniature stone axe made of steatite is remarkable (TZ 019299-001; *Figs. 1.49 and 1.50*). The fully preserved miniature hatchet (L 3.5; W 1.7; H 0.8) has a little depression on its reverse, signifying that it was possibly intended to be drilled.

The following reference finds were listed in Tall al-Ḥiṣn (Beth Shean) and are easily comparable with respect to size and quality[72]:

- Reg. No. 105359/14 from Locus 10572, Level 88,1, Stratum R-5-7
- Reg. No. 105323/14 from Locus 10535, Level 88,0, Stratum R-5c

Those are only similar and do have a rectangular shape:

- Tall al-Ḥiṣn (Beth Shean) Early Bronze Age III—scraper? Dimensions: L 5.7; W 2.3; Th 2. scoria[73]
- Tall al-Ḥiṣn (Beth Shean) Early Bronze Age III–MB II. Dimension: L 2.7; W 1.2; H 0.8/L 1.5; W 3.3; H 1.1[74].

> „Complete, highly refined, miniature stone chisels, identified as igneous plutonic rock of greenish color belonging to the family of ultra-mafic rocks. According to Itai Haviv, such rocks are known in Turkey/and the Hatay region in northwest Syria), Cyprus, the Cycladic Islands and in the eastern desert of Egypt ... A similar object of green stone, defined as an ‚amulet or celt', was recovered at Gezer (Gezer IV: Pl. 49:13, from Stratum 11 in Field IV [MB IIB])"[75].

The latter remark about the find at Tall Ǧezar (Geser) suggests that originally the perforation from the reverse, flat side of the carefully smoothened object had been attempted in order to allow the 'miniature hatchet' to be worn as a pendant and thus could be considered as an ornamental stone/amulet.

In several locations, grinding stones or millstones were built into the city wall; also a hinge stone in Context 6508 and a pumice stone in Context 6506 (TZ 019293-001; *Fig. 1.50*).

72 Yahalom-Mack 2007, 639–660 Fig. 11. 10, 1, Photo 11. 12a; Fig. 11. 10, 2, Photo 11. 12b.

73 Mazar 2012, 364 Fig. 9. 7, 2.

74 Mazar 2007, 655 f. Photo 11. 12 and Fig. 11. 10, 1 and 2.

75 Mazar 2007, 655.

	Stone Artefacts		Bones		Ceramics (Early Bronze Age)					
	Flint tools	Household/Food Production	Sheep/Goat	Cattle	Cooking Pot, CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters
4447	7					1				
4547	1					1				
6488	3		1			1	1		1	
6489	2				1	3				1
6491	2				1	2			2	1
6494			2	1		11	4			2
6495			1	1		2				
6496	14					2	1	1		
6504	6		3		3	18	13			5
6505		1			1	15	3		1	3
6506	9	2								
6507	3					2				
6508	11									

Tab. 1.2 Selected finds: Complex A, walls (red), fill layers (brown) (Source: BAI/GPIA).

	Stone Artefacts		Bones		Ceramics (Early Bronze Age)					
	Flint tools	Household/Food Production	Sheep/Goat	Cattle	Cooking Pot, CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters
5947	1						4			

Tab. 1.3 Selected finds: Complex C, wall (red) (Source: BAI/GPIA).

As usual in continuous walls, there were only few artefacts to be found in the wall itself. However, the layers of rubble as well as the stone and soil contexts or the backfillings yielded an inventory of ceramics typical of the Early Bronze Age (cf. also Strata 24–22): cooking pots of the Type CP 6, moreover predominantly pitchers/jugs and bowls—and a significantly smaller number of platters, holemouth vessels and a krater fragment were found.

Apart from those, the pottery finds include the following, chronologically completely misplaced objects:

- the sherd of a Roman – Byzantine pitcher in Context 4447, TZ 006327-001 city wall)
- the remains of a polished Middle Bronze Age bowl in Context 5947 (city wall), TZ 021269-003, *Fig. XX*)
- a presumably Middle Bronze Age pithos and a cooking pot of the Type CP 1 (Iron Age) in Context 6508 (city wall), TZ 021815-001

This unusual repertoire of finds can be explained by the contexts' (city walls) location on a steep slope where, in some places, they had not been covered by other contexts for centuries. Moreover, during the eras following the Early Bronze Age, especially in the Byzantine period, the slope above the wall was covered with buildings. Their foundations were dug deep into the earlier strata, often reaching down to the Early Bronze Age wall. In the course of these activities, chronologically more recent sherds were transported onto the Early Bronze Age wall and could be now found on its surface.

On the one hand, the Middle Bronze Age finds were excavated in Context 6508, in the destroyed sections of the city wall where, around 1500 BC, the city wall had been cut through in the process of constructing a sewer duct (Squares AN–AM 115).

On the other hand, Context 5947 is located at the steep slope of the hill where, for centuries, it had not been protected by any solid layer of earth (with closed contexts).

Fig. 1.19 Early Bronze Age city wall glacis, Stratum 25, Area I, Square AO 115, Complex A, Context 4452 (Source: BAI/GPIA).

Fig. 1.20 Early Bronze Age city wall, Stratum 25, Area I, Square AM 115, Complex A, Contexts 4452, 4486, and 4487 (Source: BAI/GPIA).

1.2.1.2. Stratum 24: Early Bronze Age II/III (unfinished excavated stratum)

Fig. 1.21 Strata 24–23, 15–14, Area I, Squares AM–AO 114–119 (Source: BAI/GPIA).

Like the Strata 22 and 23, Stratum 24 represents the Early Bronze Age. Especially the ceramic finds and the radiocarbon dating (see Contexts 6424 and 6497) are indicative of the Early Bronze Age II. The excavation area was confined to Squares AM–AO 118–119. Architectural remains could not yet be discovered during the last excavation campaign of 2011 *(Fig. 1.21)*.

The pottery found in the sediments depicted provides a good overview of the vessels that were customary during the Early Bronze Age II. The Type CP 6 cooking pots are comprehensively predominant in all find repertoires, just as the jugs/jars and bowls that are characteristic of these times. Moreover, several holemouth vessels and some platters were discovered all over the site; two contexts yielded a krater each, and Context 6423 also contained a painted mug (TZ 021756-001).

There are a lot of flint tools in contexts 6424, 6497, and 6503, and a stone ring (weight stone) in Context 6422 (TZ 019027-001, *Fig. 1.52*).

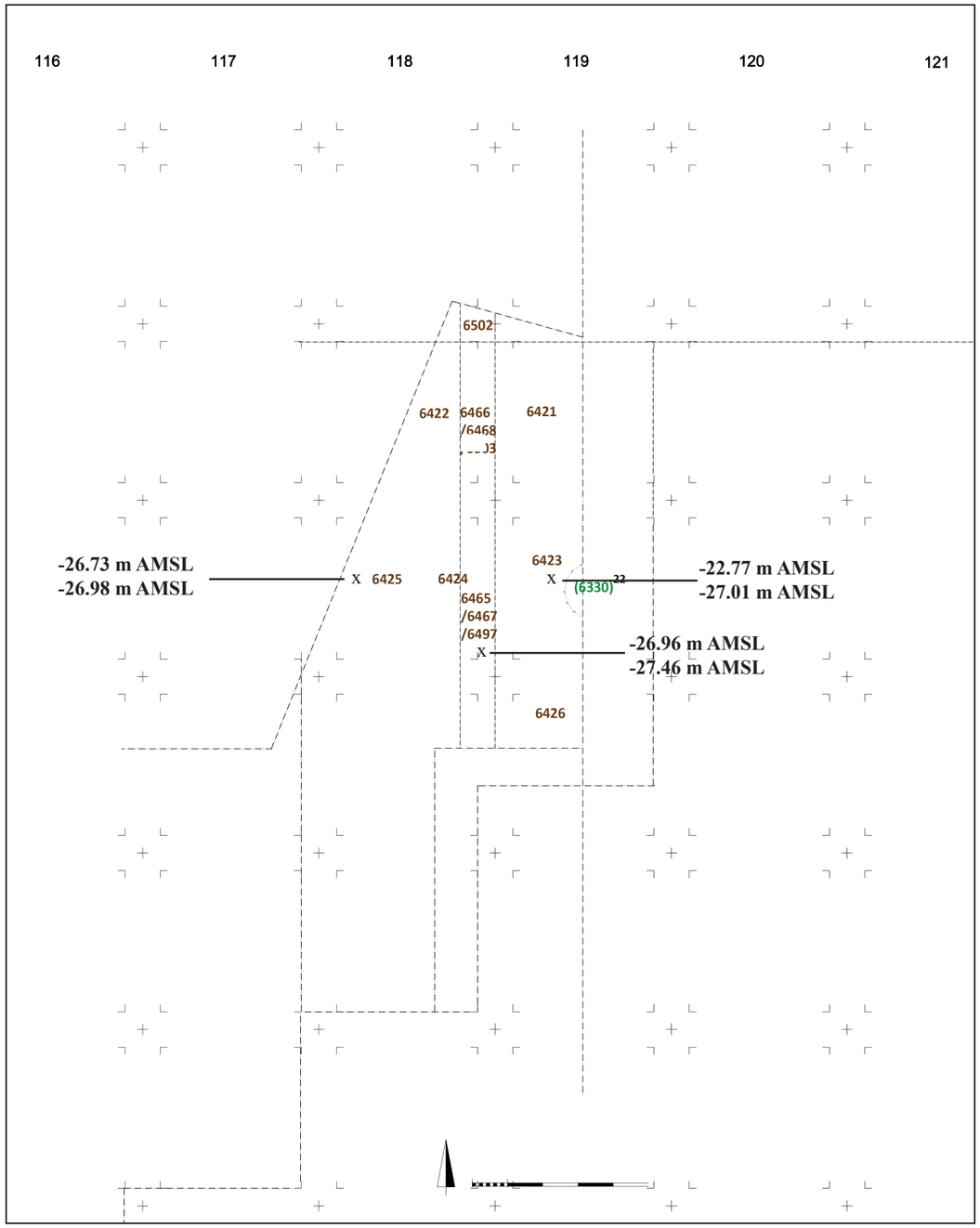


Fig. 1.22 Architectural plan, Area I, Stratum 24, Squares AL–AO 118–119, unfinished excavated Stratum, fill layers (brown), pit (green) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)					
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Oil Lamps
6421	5			1	2	3		2	1	
6422		1		2	2	1		1		1
6423	5		2	1	7	4		1		
6424	14	2		3	3	4		1	3	
6425	9	1		3	1	4		1	2	
6426				1	2	4	1			
6465					3	2		1		
6466	2	1			10	9		1	1	
6497	13	3		1	13	6		4		
6502	3									
6503	10			5	15	10	1	1		2

Tab. 1.4 Selected finds: Stone artefacts and pottery finds from Stratum 24, fill layers (brown) (Source: BAI/GPIA).

The bone finds reflect the distribution that is characteristic of the Early Bronze Age on the Tall Zirā'a: sheep/goat (20 verifications) predominate, followed by cattle (11) and domestic pig (3). Game animals such as fallow deer (Squares AO and AN 118, Contexts 6422 and 6497) and gazelle (2 bones in Square AN 118, Context 6425) give evidence of the quite substantial share of game in the population's consumption of meat during this era. In Context 6425, a donkey/horse/mule bone could also be verified.

Further evidence with respect to Stratum 24 can only be given after the excavations have been resumed.

The analyses of charcoal samples yielded the following results (see also *Vol. 1, Chap. 4.4.*)[76].

	Bones					
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed	
6421	1		1			
6422	5				1	
6423		5				
6424	13	3	3	1		
6425	5	7	3	1	3	
6426		1	1			
6466			2	1		
6497	4	3	1		1	
6503		1	1			

Tab. 1.5 Selected finds: Bones from Stratum 24, fill layers (brown) (Source: BAI/GPIA).

Sample TZ 019162-001
Context 6424 from Square AN 118
The sample dates to 4130 ± 40 BP:

- 2862–2808 BC (20.5 %); 2757–2719 BC (15.3 %); 2706–2625 BC (32.4 %) (= 1 Sigma: 68.2 %)
- 2872–2617 BC (88.9 %); 2611–2581 BC (6.5 %) (= 2 Sigma: 95.4 %)
- 2889–2566 BC (98.9 %); 2524–2497 BC (0.8 %) (= 3 Sigma: 99.7 %)

Sample TZ 019160-001
Context 6497 from Square AN 118
The sample dates to 4330 ± 35 BP:

- 3011–2978 BC (22.9 %); 2960–2952 BC (4.3 %); 2942–2898 BC (41.1 %) (= 1 Sigma: 68.2 %)
- 3078–3074 BC (0.6 %); 3024–2890 BC (94.8 %) (= 2 Sigma: 95.4 %)
- 3091–2881 BC (= 3 Sigma: 99.7 %)

76 Vieweger – Häser 2017, 260 f.

1.2.1.3. Stratum 23: Early Bronze Age II/III

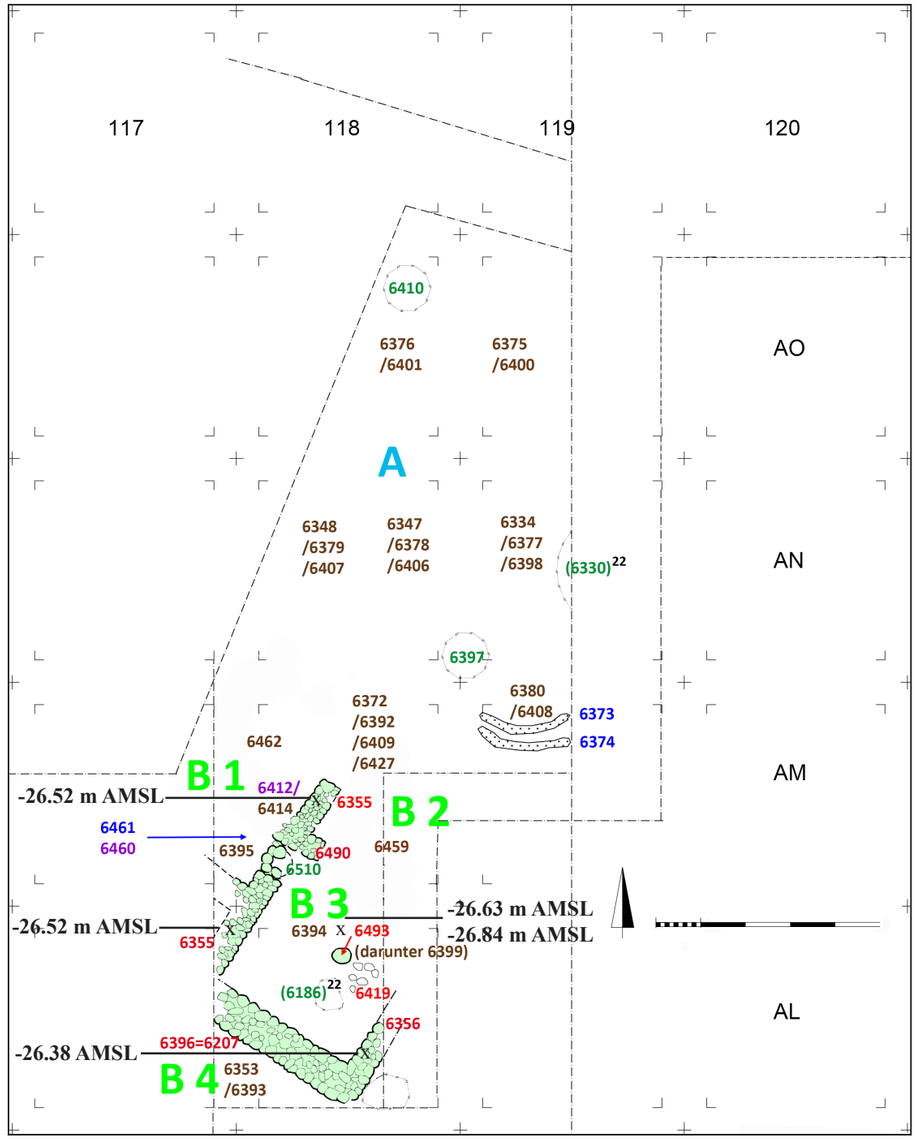


Fig. 1.23 Architectural plan, Area I, Stratum 23, Squares AL–AO 118–119, Complexes A (blue) and B (green), walls (red), fill layers (brown), ash layers (blue), pits (green), pisé floors (violet) (Source: BAI/GPIA).

Complex A

Stratum 23 represents the Early Bronze Age. Especially the ceramic finds and the radiocarbon dating (see Square AM 118, Context 6462) point at the transitional period from the Early Bronze Age II to the Early Bronze Age III. The excavation site was confined to the Squares AL–AO 118–119 since south, west, and north of the area explored, the constructional stratum (Stratum 15) counterbalances the landslide that took place in the western part of the Tall Zirā'a around 1500 BC. For this reason, no stratigraphical sequence can be expected there.

The subdivision into two separate complexes resulted from the excavated remains: a largely empty, extensive area in the north without any traces of architectural activity (Complex A); and a fragmentary building complex in the south (Complex B 1–4).

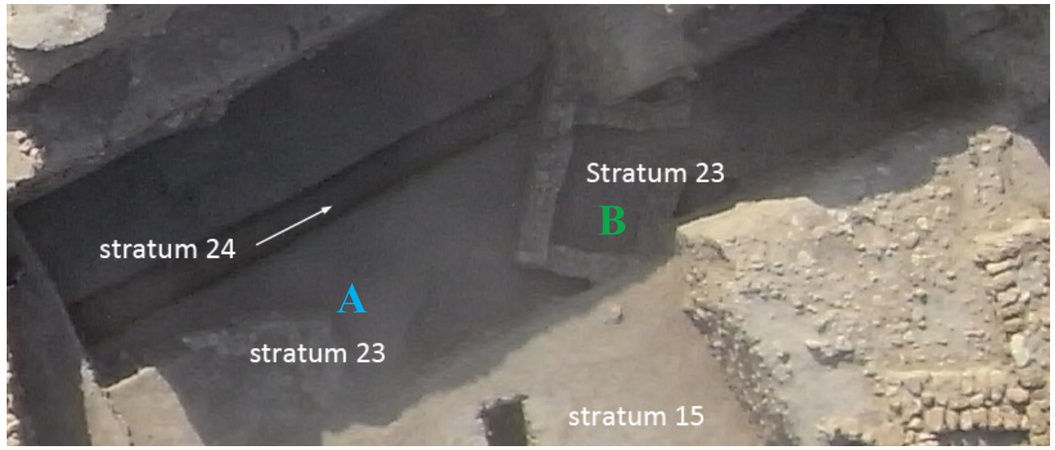


Fig. 1.24 Strata 24–23 and 15, Area I, Squares AM–AO 118–119 (Source: BAI/GPIA).

Complex A—which mainly covers the northern part of the Squares AM–AO 118–119—only comprises a presumably undeveloped area consisting of a few pits (Contexts 6397 and 6410) and two clay bands (Contexts 6373 und 6374). Whether it used to be a courtyard or the forecourt north of the house (B 1–4) remains unclear.

The numerous sediments as well as pit 6410 offer a rather uniform picture. Apart from few exceptions, Complex A yielded the characteristic repertoire of Early Bronze Age II/III handmade ceramic vessels: mostly closed vessels (jars and jugs) as well as bowls; moreover, a small number of kraters, holemouth vessels, and platters. Almost all cooking pots can be classified as CP 6. An Early Bronze Age mug (TZ 021758-001) was found in Context 6427, and a bottle (TZ 021713-010) in Context 6378. Context 6392 also yielded a ceramic support for placing jugs/pitchers on a flat surface.

The pit 6410 only contained two Early Bronze Age ceramic sherds (jar and bowl).

Flints, flakes and tools are present almost across the entire area; however, not in large numbers. A mortar bowl (originating from a foot of a large vessel) was found in Context 6334 (TZ 019069-001; *Fig. 1.25 a and 1.25 b*). With the exception of one amorphous fragment found in Context 6406 (TZ 019121-001) there were no metal finds in the entire stratum.

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)					
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks
6307	7			4	3		1		3	
6334		2		1	1	2				
6347	4			3	1	6			1	
6348	3				1			1		
6372	2				4	1				
6375	2			2	2	1	1			
6376				1	2	2	1			
6377				3	2	1				
6378	9			4	6	5			2	1
6379	4	1			2	3				
6380	2				2	2				
6392						1				
6398				3	2	2				
6400	3					2	2			
6401	11					5	1			
6406	6			1	4	3	3	3		
6407	3		1	1		2				
6409	2					2				
6410					1	1				
6427		1			4	1			2	

Tab. 1.6 Selected finds: Stone artefacts and pottery finds from Complex A, fill layers (brown), pit (green), wall (red) (Source: BAI/GPIA).

As usual in Early Bronze Age strata, sheep/goat (49 verifications) are predominant among the bone finds. Cattle (18) and, to a lesser extent, domestic pig (7) will have formed part of the general diet. In Context 6379, a molar superior of a sheep/goat (no artifact) was among the three registered finds. However, hunting also played an important role, as evidenced by bones of fallow deer (Contexts 6347, 6378, and 6401) and wild boar (Context 6392). The cattle listed in Context 6401 could moreover also have belonged to a wild species.

The donkeys (or horses, or mules) found in Context 6347 and Context 6378 and the dog in the same context will have counted among the working or domestic animals.

	Bones					
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed	
6307	8	2	1	1		
6347	11	4			3	
6348				1		
6372		1				
6377	3					
6378	12	1	1	2	2	
6379		3	2			
6392	8	27	7		1	
6400		3	1			
6401	8	1	1	1(?)	1	
6406	7		3			
6407	9	4	1	2		
6409	2					
6410			1			
6427		3		1		

Tab. 1.7 Selected finds: Bones from Complex A, fill layers (brown), pit (green), wall (red) (Source: BAI/GPIA).

Fig. 1.25 a Stone bowl, TZ 019069-001, Context 6334 (Source: BAI/GPIA).

Fig. 1.25 b Stone bowl, TZ 019069-001, Context 6334 (Source: BAI/GPIA).

Complex B

The Complex B (B 1–4) may have been a broad-room house (see also the column base in Context 6493) with an annexe to the west and an inside partitioning (Context 6490). Pit 6510 was possibly dug later into the entrance area. Complex B comprises the excavation Square AL 118 and the southern part of Square AM 118.

Complex B 1

The repertoire of finds from the western plot in front of the presumed house area (B 2 and B 3) is very similar to the one that has already been described for Complex A.

	Bones					
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed	
6461		3				

Tab. 1.8 Selected finds: Bones from Complex B 1, ash layer (blue) (Source: BAI/GPIA).

In Context 6462, a charcoal sample (TZ 019158-001) was taken for the radiocarbon dating. The analysis yielded the following results[77]:
The sample dates to 4140 ± 35 BP:

- 2864–2833 BC (13.6 %); 2819–2806 BC (5.5 %); 2760–2659 BC (42.7 %); 2651–2634 BC (6.4 %) (= 1 Sigma: 68.2 %)
- 2875–2619 BC (94.7 %); 2605–2601 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2886–2573 BC (= 3 Sigma: 99.7 %)

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)					
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks
6412					2					
6461				3	2	1			1	
6462	10				6	1				

Tab. 1.9 Selected finds: Stone artefacts and pottery from Complex B 1, wall (red), fill layer (brown), ash layer (blue) (Source: BAI/GPIA).

Complexes B 2 and B 3

These complexes have been the interior room (or even interior rooms?) of the presumed broad-room house. The repertoire of finds is not different from the one in B 1, although, relative to the size of the excavation site, it is slightly larger in quantity. Context 6493 can best be interpreted as a column base. There are hardly any clues that point to the actual function of this house. The abundance of cooking pot sherds and of stone flakes, the grinding stone from Context 6459 (TZ 019034-001), and the remarkably large amount of bone finds (esp. Context 6459) suggest the context of a residential house with the everyday activities concomitant with food preparation.

	Bones				
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed
6394	8	4			
6396	4	5			
6399		1			
6459	5	47	6	1	

Tab. 1.10 Selected finds: Bones[78] from Complexes B 2 and B 3, wall (red), fill layers (brown) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots	Ceramics (Early Bronze Age)					
	Flint tools	Household/Food Production	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks
6394	31		3	7	7				
6396	5		3	1		1			
6459	8	1	2	2	4				

Tab. 1.11 Selected finds: Stone artefacts and pottery from Complexes B 2 and B 3, wall (red), fill layers (brown) (Source: BAI/GPIA).

77 Vieweger – Häser 2017, 260.

78 Further bone finds, the species of which cannot be determined, come from Context 6462.

Complex B 4

Presumably, this area was located outside, right next to the house complex. There are no sure signs or clues that suggest the existence of another, adjoining room. There is an impressively large quantity of finds among which, again, the cooking pots and closed vessels predominate.

Given the limited space of the excavation site it is impossible to make any statement regarding the architecture on the Tall Zirā'a during the Early Bronze Age II/III. With all due caution it can be assumed that a quite normal residential building covering a surface area of some more than 25 m² was constructed on the excavation site, the roof of which was supported by at least one column construction. Comparisons to the ground plans of contemporary temples in Tall al-Mutasallim (Megiddo) or Ḫirbat az-Zeraqōn come to mind; however, due to the lack of any further building activities in the house's immediate vicinity and, particularly, because of the nature of the finds themselves these presumed analogies cannot be confirmed. The large northern courtyard (Complex A) is remarkable.

	Bones				
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed
6353	8	9	5	1	1[79]
6393		1	3		
6396	4	5			

Tab. 1.12 Selected finds: Bones from Complex B 4, wall (red), fill layers (brown) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)					
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks
6353	33			1	2	3	1	1		
6393	24			1	20					
6396	5		1	3	1		1			

Tab. 1.13 Selected finds: Stone artefacts and pottery from Complex B 4, wall (red), fill layers (brown) (Source: BAI/GPIA).

79 In Context 6353 a donkey/horse/mule bone was found.

1.2.1.4. Stratum 22: Early Bronze Age III

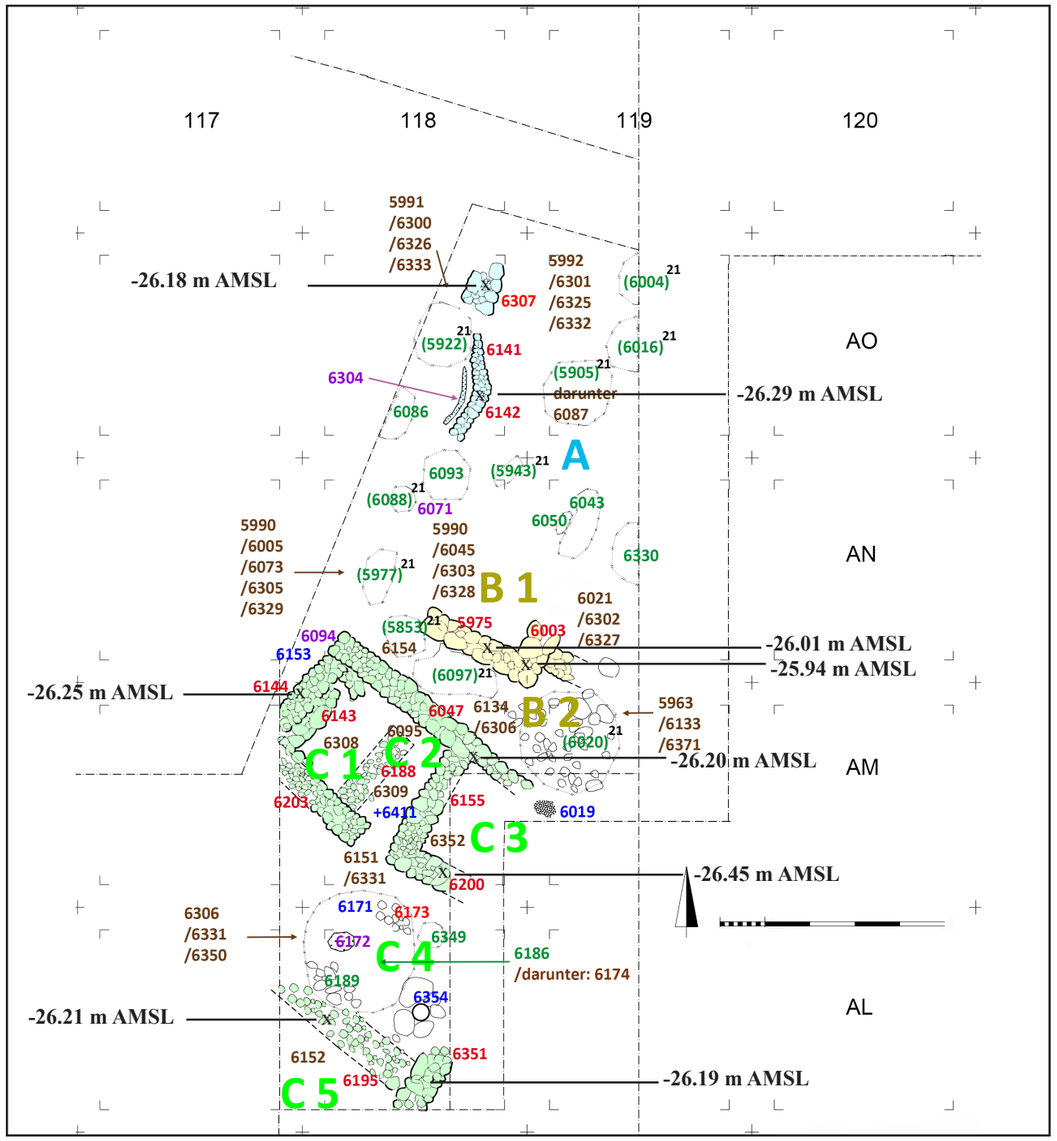


Fig. 1.26 Architectural plan, Area I, Stratum 22, Squares AL–AO 118–119, Complexes A (blue), B (yellow) and C (green), walls (red), fill layers (brown), pits (green), ashes/tabuns (blue), pisé floors (violet) (Source: BAI/GPIA).

Stratum 22 represents the Early Bronze Age phase III. The excavation area was confined to the Squares AL–AO 118–119. Its partition into the following complexes suggested itself:

- Complex A: a complex not positively identifiable with regard to its function, with numerous pits (that were dug in Stratum 21 in the course of house construction works), and unidentifiable construction remains (AN/AO 118/119)
- Complex B: remains of an architectural structure which—judging from its orientation—could not only be connected with Complex C but also with the northerly wall remnant in Complex A
- Complex C: a building complex consisting of several rooms and courtyards.

Fig. 1.27 Stratum 22, Area I, Squares AL–AO 118–119, Complexes A (blue), B (yellow) and C (green). Architectural remains of dwellings and working areas (Source: BAI/GPIA).

Complex A

In this area—that can essentially be defined as the Squares AO–AN 118–119—numerous pits could be found. The numerous pits that were dug in more recent times (Stratum 21) suggest that a large number of building constructions have been destroyed in the course of later settlement activities. A few wall remnants (Context 6307 as well as Contexts 6141 and 6142) testify that in Stratum 22 at least construction works took place at this location (*Fig. 1.26 and 1.29*).

The sediments Contexts 5991, 5992, 6087, 6300, 6301, 6325, 6326, 6332 and 6333 contain ceramics of Early Bronze Age tradition: predominantly jars and jugs, but also a solid number of bowls, holemouth vessels, kraters, and platters. Cooking pots from CP 6 dominate. There are already single finds of cooking pots from CP 5 (in this respect, however, cf. the pits 6043 and 6050). There are an impressive number of flint tools (especially in 5991, 5992, 6087).

With respect to their pottery repertoire, the numerous pits (6043, 6050, 6093, and 6330) differ as little from the sediments as from the clayey layer 6071.

The remarkable finds in Complex A are a balance weight in Context 6071 (TZ 018969-001; *Fig. 1.32 left*)[80] and 6330, the fragment of a copper awl or needle in Con-

Fig. 1.28 Wall fragments 6141, 6142, and 6307 in Complex A of Stratum 22, photograph (Source: BAI/GPIA).

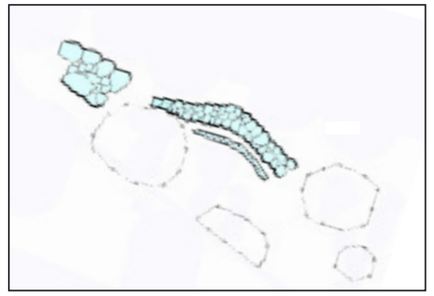


Fig. 1.29 Wall fragments 6141, 6142, and 6307 in Complex A of Stratum 22, plan (Source: BAI/GPIA).

80 Cf. finds from Tall al-Ḥiṣn (Beth Shean): Mazar 2007, 676 f. Fig. 13. 3, 5 and Photo 13, 5a: dome-shaped limestone object with a flat base, highly smoothened and refined (H 1.5; D 2.2; Wt 11.75 g), MB II.—Finds from Tall al-Mutasallim (Megiddo) unstratified: Finkelstein et al. 2000, 371 Fig. 12. 14, 9: dome-shaped weight of brown stone, Wt 46.66 g.—Finds from Tall Qēmūn (Tēl Yoqnəʿām): Ben-Tor et al. 2005, W 111 Fig. II, 24. 29: identical shape; MB IIB.

Bones					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5991	52	14	12	5	13
5992	18	12	6	2	3
6043	5	2	1		
6050		6	1	5	
6071	15	13	5	2	3
6086			1		
6087	3	2	2		
6093	4	1			2
6141		1	1		
6300	15	4	3		
6301	8	3	1		
6307	8	2	1	1	
6325	6		2		1
6326	4	2	4	3	
6330	13	3	3	3	
6332	3			1	
6333	4	3		2	3

Tab. 1.14 Selected finds: Bones from Complex A, walls (red), fill layers (brown), pits (green), pisé floor (violet) (Source: BAI/GPIA).

Fig. 1.30 Shell pendant, TZ 018612-001 (Source: BAI/GPIA).

Fig. 1.31 Bone scraper or cosmetic spatula, TZ 019544-001 (Source: BAI/GPIA).

text 6325 (TZ 018682-001; *Fig. 1.33*[81], the shell pendant in Context 6091 (TZ 018612-001; *Fig. 1.30*), and the door hinge stone secondarily installed in wall 6142. Iron nodules were found in Contexts 5992, 6300, and 6325.

Among the bone finds, the large contingent of wild animals in Complex A and in Stratum 22 as a whole is conspicuous. In this area, fallow deer (nine bones in Context 5991; three in Contexts 5992 and 6333; two in Contexts 6071 and 6093, and one in Context 6325) is predominant. In Context 5991, gazelle could also be detected. Moreover, donkey (or horse/mule) could be found in Context 5991 (three occurrences) and Context 6071.

Overall, among the bone finds those of sheep and goat are predominant, as usual. There is also an impressive share of cattle bones whereas the domestic pig—other than in the younger strata—occurs to a lesser extent than usual. Standing out is a find in Context 6330 (cattle; scapula distal; TZ 019544-001): the object has been formed from a clavicle bone and was probably used as a scraping tool or a cosmetic spatula. Reference finds come from Tall Qēmūn (Tēl Yoqnəʿām) and Tall Abū al-Ḫaraz[82]. The bone was "cut in half" at one of its ends, then hollowed out, flattened, and rounded at the front so that it could be used for looping up, stirring, and spackling soft matter.

Fig. 1.32 Left: Balance weight, TZ 018969-001; right: Balance weight, Tall al-Ḥiṣn (Beth Shean) (Source: BAI/GPIA/Mazar – Mullins 2007, 677 Photo 13, 5).

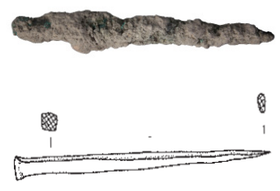


Fig. 1.33 Upper: awl or needle, TZ 018682-001; lower: needle, Tall al-Ḥiṣn (Beth Shean) (Source: BAI/GPIA/Mazar 2012, 677 Fig. 9, 3. 4).

81 Cf. finds from Tall al-Ḥiṣn (Beth Shean): Mazar 2012, 361 f. Fig. 9, 4. 3 and Photo 9. 11: chisel, intermediate Bronze Age.—Finds from Tall Abū al-Ḫaraz: Fischer 2008, 346 Fig. 311, 5 and 6 Tab. 76.

82 Cf. finds from Tall Qēmūn (Tēl Yoqnəʿām): Ben-Tor et al. 2005, 381 Fig. V, 11–13: cosmetic spatula; Late MB IIB.—Finds from Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 379 Fig. 12. 20, 1, spatula, EB IA.—Finds from Tall Abū al-Ḫaraz: Fischer 2008, 119 Fig. 119, 4, EB Phase IB. Fischer 2008, 156 Fig. 148, 7; 203 Fig. 203, 9, later context, shuttle, Phase IIIA. Fischer 2008, 355 Fig. 317, 4, weaving tool, Phase IIIA.

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
5991	46	1		8	11	9		4	3				
5992	23	1	3	6	13	8	2	4	5				
6043		3	5		3	1		1					
6050	2		3				1	1					
6071	11			8	6	8		2	3				
6087	10	1		9	2	3	3		1				
6093	2				3	1			1				
6141	1				3								
6300	3			4	3	6	1		2				
6301	5				1	2		2	2				
6307	0			4	3		1		3				
6325	2				2	4		1					
6326	7				4	3		2	1				
6330		1	1	2	4	4	1						
6332	1		1	2	1	2							
6333	3				1	1	2	1					

Tab. 1.15 Selected finds: Stone artefacts and ceramic finds from Complex A, walls (red), fill layers (brown), pits (green), pisé floor (violet) (Source: BAI/GPIA).

Complex B

The Complex B can be localized mainly in the southern area of the Squares AN 118/119 and in AM 119. It is constituted by the remains of a building consisting of possibly two rooms that obviously extended to the north of the wall 5975. For this reason, Complex B 1 can be regarded as the former interior space, and Complex B 2 as a connecting zone/courtyard/alley between the Complexes B and C.

Fig. 1.34 Walls of two rooms, Stratum 22, Area I, Complex B, Context 5975, 6003, 6134, and 6306 (Source: BAI/GPIA).

Complex B 1

The former interior space B 1 does not exhibit a significantly larger number of ceramic finds although the respective shares of cooking utensils, jars/jugs, kraters, bowls etc. correspond to those described above with regard to Complex A. The number of flint tools is remarkable high, especially in Contexts 6005 and 6045 as well as in Context 6073. One jug from Context 6045 could be restored (TZ 021366-009). The fragment TZ 021610-006 belongs to a double vessel which could distribute liquids into two adjoining containers via one opening. This type of double vessels was frequently used for libation rituals, both in the public and the domestic spheres. A stone bowl is reported in Context 6073; moreover a gaming piece and a loom weight in Context 6303 (TZ 019082-001; *Fig. 1.61*). Metal finds were discovered in Contexts 6021 (awl?; three fragments) and 6305 (a commonly shaped earring, TZ 019126-001; *Fig. 1.40)*[83].

83 Cf. similar finds from Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 389 Fig. 12. 27, 2: ring, here silver, D 1.7; Wilson – Allen 1948, Pl. 225, 1: earrings/silver, Tall al-Mutasallim (Megiddo) Stratum 13.

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
5990	8				1	1							
6005	70			3	4	8	2	1	3				
6021	29		5	6	14	12	1	1			58	1[85]	
6045	51	2	4	6	10	15		1	3				
6073	65	3	1	10	7	13		3	4				
6153	1				2		1						
6302	4	1		3	5	6		1	2				
6303	4	2		4	3	1			2	1			
6305	4			1	3	1		1					
6327	1	1			4	5		1					
6328	15			10	3	2	3	2		3			1
6329	6			3	4		1		3				

Tab. 1.16 Selected finds: Stone artefacts and ceramic finds from Complex B, fill layers (brown), ash layer (blue) (Source: BAI/GPIA).

Two radiocarbon samples taken from Context 6045 yield the following data[84]:

Sample TZ 018655-001

Context 6045 from Square AN 118.
The sample dates to 3780 ± 35 BP:

- 2281–2249 BC (19.8 %); 2232–2190 BC (22.5 %); 2181–2142 BC (25.8 %) (= 1 Sigma: 68.2 %)
- 2336–2324 BC (1 %); 2308–2128 BC (89.1 %); 2089–2047 BC (5.3 %) (= 2 Sigma: 95.4 %)
- 2456–2418 BC (0.4 %); 2406–2376 BC (0.6 %); 2351–2032 BC (98.8 %) (= 3 Sigma: 99.7 %)

Sample TZ 018654-001

Context 6045 from Square AN 118.
The sample dates to 3880 ± 35 BP:

- 2456–2417 BC (20.7 %); 2410–2335 BC (38.7 %); 2324–2307 BC (8.8 %) (= 1 Sigma: 68.2 %)
- 2469–2279 BC (91 %); 2250–2230 BC (3.4 %); 2220–2212 BC (1 %) (= 2 Sigma: 95.4 %)
- 2486–2199 BC (= 3 Sigma: 99.7 %)

	Bones[86]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5990	4	2			
6005	31	24	6	7	
6021	15	8	1	4	4
6045	27	21	6	6	4
6073	19	12	3	7	5
6153		1	1		
6303	1	2	2	1	1
6305	5		1		
6328	11	4	6	2	
6329	8	4	2		1

Tab. 1.17 Selected finds: Bones from Complex B, fill layers (brown), ash layer (blue) (Source: BAI/GPIA).

Among the bone finds, those of sheep and goat are predominant whereas cattle and domestic pig occur in approximately equal numbers. Wild animals are—as everywhere else in Stratum 22—surprisingly numerous: fallow deer (three bones in Context 6021; one bone in Context 6045; four bones in Context 6073; one bone in Context 6303), wild boar in Context 6073, and a bone of a fox in Context 6021. There is additionally reported one bone of a donkey (or horse/mule) in Context 6329 and a dog (three bones in Context 6045).

84 Vieweger – Häser 2017, 260.

85 Middle Bronze Age.

86 Additional bone finds that cannot be identified with respect to their species were discovered in Contexts 6302 and 6327.

Complex B 2

Complex B 2—that is, the area between the two buildings B and C—hardly differs from Complex B 1 with respect to distribution and density of finds. Among the wild animals that are again well documented, gazelle is predominant (four bones in Context 6134), while the fallow deer is also testified (in Context 6154).

The large number of small stone beads found in Context 6154 (TZ 018996-001 [17 beads]; *Fig. 1.70 a and 1.70 b*[87] and 018998-001 [10 beads]; *Fig. 1.71 and 1.72*[88]) and of disc-shaped faience beads (TZ 018999-001 [62 beads]; *Fig. 1.42*[89]) is remarkable. In Context 6154, moreover a hammer stone (TZ 018989-001) was discovered.

	Bones					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed	
5963	10	4	2			
6133	2	2		1		
6134	12	2	2	2	4	
6154	4	12	3		2[90]	

Tab. 1.18 Selected finds: Bones from Complex B 2, fill layers (brown) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
5963	10			2	8	10	2	1	1				
6133	11	1		2	5	1			2				
6134	38			8	6	15		1	10				
6154	9	1			1	3	4	1	1				
6371	4			1	2	3			3				

Tab. 1.19 Selected finds: Stone artefacts and ceramic finds from Complex B 2, fill layers (brown) (Source: BAI/GPIA).

Complex C

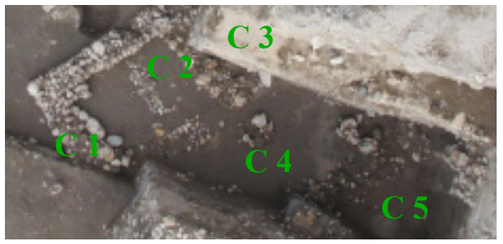


Fig. 1.35 Dwelling structures, Stratum 22, Area I, Complex C (Source: BAI/GPIA).

The Building Complex C can be subdivided into five areas. C 1–3 are interior rooms of possibly two neighbouring broad-room houses (C 1– 2, C 3). One room had been internally divided by wall 6188. The Complexes C 4 and/or C 5 could also constitute courtyards. The Rooms C 1–3 mainly form part of Square AM 118, while the two remaining Complexes C 4 and C 5 are mostly located in AL 118, a lesser part of C 4 also in AM 118.

87 Cf. finds from Tall Abū al-Ḥaraz: Fischer 2008, 120 Fig. 120, 2; 358–359. 364 Fig. 326; 387–388: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?), EB Phase IB. Most of the beads consist of quartz; most of them are thicker than the beads from Tall Zirāʿa, only the bead from Fig. 364, 11 looks identical.

88 Cf. footnote 87.

89 Cf. finds in Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 389 Fig. 12, 3. 64. 4–6, 1; 391 Fig. 12. 29, 19: faience beads and more than 10 fragments: mostly flat cylindrical; faience blue, EB I–III.

90 One bone from a dog.

Complex C 1

Room C 1 is located in the north-westerly part of the building. The bench 6143 in front of wall 6144 distinguishes it from the other rooms *(Fig. 1.26)*. Its pottery repertoire and the origins of its bone finds correspond to those described for the Complexes A and B.

The large number of excavated flint tools should be noted *(Tab. 1.21)*.

Context 6308 yielded two finds of fallow deer bones and one of donkey (or horse/mule) bones.

	Bones				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
6095	2	5		1	
6308	5		1	1	2

Tab. 1.20 Selected finds: Bones from Complex C 1, fill layers (brown) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
6095	26	6	1	4	4	20			3				
6203		1											
6308	17			2		4	5	2	1				

Tab. 1.21 Selected finds: Stone artefacts and ceramic finds from Complex C 1, wall (red), fill layers (brown) (Source: BAI/GPIA).

Complex C 2

Complex C 2 marks the building's entrance area. The character of the distribution of finds is still the same as in C 1: wild animals are present in Context 6309 (gazelle and wild boar).

	Bones				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
6095	2	5		1	
6309	9	7	1	1	3

Tab. 1.22 Selected finds: Bones from Complex C 2, fill layers (brown) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Prodution	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
6095	26	6	1	4	4	20			3				
6309	64			3	3	13	2	1					

Tab. 1.23 Selected finds: Stone artefacts and ceramic finds from Complex C 2, fill layers (brown) (Source: BAI/GPIA).

Complex C 3

Complex C 3 comprises the south-easterly building (section). The repertoire of finds shows no peculiarities and is rather small in terms of numbers.

	Bones				
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed
6019	1	1			

Tab. 1.24 Selected finds: Bones from Complex C 3, ash layer (blue) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
6019	1		1		1								
6352	6			1	1	1							

Tab. 1.25 Selected finds: Stone artefacts and ceramic finds from Complex C 3, fill layer (brown), ash layer (blue) (Source: BAI/GPIA).

Complexes C 4 and C 5

Complexes C 4 and C 5 could constitute either courtyards or rooms. There are no significant peculiarities with respect to the distribution of finds.

Complex C 4 is characterized by a large pit (Context 6189). Possibly this section was used for baking (Context 6354), working (work space, Context 6172), storage, or rather garbage disposal (pits).

The sediment in Context 6331 yielded a faience (?) fragment (TZ 019536-001; *Fig. 1.41*). Faience beads were first reported in EB I/II in Tall al-Mutasallim (Megiddo)[91]. Faience for small objects was used in Tall al-Ḥiṣn (Beth Shean) since MB.

The finds of fallow deer (Context 6349) and of a stone bowl and a stone spindle whorl in Context 6151 are notable[92].

	Bones[93]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
6151	1	6	1		
6171	2	2	3	1	
6186	2	4	4	1	
6189	5	1	1		
6195	3	17	1		
6331	5		2		
6349	19	10	6		1
6350	2	4	1	1	
6351		1			
6354		1			

Tab. 1.26 Selected finds: Bones from Complex C 4, walls (red), fill layers (brown), ash layers (blue), pits (green) (Source: BAI/GPIA).

91 Finkelstein et al. 2000, 389 Fig. 12. 27, 4–6 and Wilson – Allen 1948, Pl. 207.

92 Finds from Tall al-Ḥiṣn (Beth Shean) LB I: Mazar 2007, 655, Fig. 11. 9, 1 and 2: here basalt, used for grinding (?), supposed cultic context, and Tall al-Qassis (Tēl Qāšiš) MB II: Ben-Tor et al. 2003, 222 Fig. 89, 2: worked stone, limestone, holes drilled from both sides.

93 Additional bone finds that cannot be identified with respect to their species were discovered in Context 6172.

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
6151	12	3	1	2	7	4	1	2	1				
6171				1	1	2							
6172	3				1	1							
6173	17				2	1							
6174	1												
6186	7			1		5	1		1				
6189	6			1		3	2	1					
6195	10				4	1	1					1	
6203		1											
6331	58				2	2			1				
6349	16			7	7	6	1	2	2				
6350	24			4	1	1			1		1		
6351	6			1	2	3			1				
6354					1	1							

Tab. 1.27 Selected finds: Stone artefacts and ceramic finds from Complex C 4, walls (red), fill layers (brown), ash layers (blue), pits (green), pisé floor (violet) (Source: BAI/GPIA).

Complex C 5 yielded the remarkable find of a casting residue/melting drop in Context 6152 (TZ 018684-001, *Fig. 1.36*). The distribution of pottery finds corresponds to the one common in the entire stratum.

Fig. 1.36 Casting residue/melting drop, TZ 018684-001 (Source: BAI/GPIA).

	Bones				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
6152	5	8	6		
6195	3	17	1		
6351		1			

Tab. 1.28 Selected finds: Bones from Complex C 5, walls (red), fill layer (brown) (Source: BAI/GPIA).

	Stone Artefacts		Cooking Pots		Ceramics (Early Bronze Age)								
	Flint tools	Household/Food Production	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi	Oil Lamps	Spindle Whorls
6152	14			5	3	8	8		1				
6195	10				4	1	1					1	
6351	12			1	2	3			1				

Tab. 1.29 Selected finds: Stone artefacts and ceramic finds from Complex C 5, walls (red), fill layer (brown) (Source: BAI/GPIA).

Altogether, Stratum 22 presents a more or less uniform picture. Specific domestic activities cannot be inferred from the find context. In this stratum, the edificial and local characteristics are more significant. A remarkable feature is the extraordinarily large number of wild animals that is present in all complexes. Possibly the ecological environment in the region of the northern Transjordan was still intact at that time. There are testimonies that the sod and the extensive forest vegetation of the tall's surrounding countryside were not destroyed until the end of the Early Bronze Age III, which in turn led to a significant decline in population. This becomes apparent—as in the Strata 21 and 22—during the transitional period between the Early and the Middle Bronze Ages.

1.2.2. Catalogue of Finds – Early Bronze Age I–III (Strata 25–22)

1.2.2.1. Catalogue of Metal Finds: Strata 23–22

In the strata of the Early Bronze Ages II and III on Tall Zirā'a, altogether five metal finds were documented. These consisted of four copper objects. One object has not been positively allocated as the necessary analyses could not be conducted due to preservation.

With respect to the metal classification, the following should be noted:

- Cu_2Sn bronze is being defined from an Sn content of 1.0 % as the metal's malleability decreases with a Sn content of 1.3 % or higher. Thus, the production of bronzes with an intentionally low Sn content seems reasonable.
- Regarding the metal classification of the metal objects from Tall Zirā'a on the basis of data relevant for XRF-spectroscopy: All specifications are given in ppm (10.000 ppm = 1.0 %). Cu contents exceeding 100 % are not realistic and must be due to the calibration of the instrument being used and to object-related measuring errors. All data cited in this chapter taken from Schulze 2014.
- Values <10 ppm are defined as being below the limit of detection (<LOD).

Among the identifiable finds there are two fragments of an awl or a needle, an earring, and also a piece of casting or melting residue. One metal find could not be traced back to its original shape or its usage, due to weathering and its resulting amorphous shape.

In order to ascertain the metals' provenance, numerous archaeometrical examinations were performed and published in Schulze 2014, esp. 121–123.

The archaeometric examinations illustrate that nearly all analyses can be linked to material from the Wādī Fēnān (Fenan) or Ḫirbat Manā'iya (Timna). Respectively, while similarities to material from Cyprus can only be observed once during the advanced Middle Bronze Age. Same analyses could not be attributed to any specific copper mining area.

The overall outcome that the Early Bronze Age origins of the copper/bronze employed can be traced back to the Southern Levant's south is not surprising, and neither are the imports from Cyprus, which only started to gain importance towards the end of the Middle and the beginning of the Late Bronze Age.

Metal finds						
Stratum	**Cu**	**Copper/Bronze**	**Cu_2Sn-Bronze**	**Lead**	**Iron (Ecofacts)**	**Total**
23		1				1
22	4					4
21	2					2
20	2		2			4
19	4	1	1	2	3	11
18	4	2	2		2	10
17	6		3			9
Total	22	4	8	2	5	41

Tab. 1.30 Selected finds: Number of metal finds from Strata 23–17 (Source: BAI/GPIA).

Metal finds				
Stratum	**Context**	**Complex**	**Object**	**Total No.**
23	6406	A	fragment	1
22	6021	B 1	needle/awl	4
	6305	B 1	earring	
	6325	A	needle/awl	
	6152	C 5	casting residues	
21	5901	B	amorphous fragment	2
	5944	C	fine needle	
20	5708	A	rectangular fragment	4
	5709	A	needle (?)	
	5742	A	platelet	
	5881	B 1	lumps	
19	5534	C 1	amorphous fragment	11
	5641	C 1	amorphous fragment	
	5641	C 1	amorphous fragment	
	5646	C 1	needle/awl	
	5657	C 1	needle/awl	
	5659	B	wire	
	5659	B	wire	
	5671	C 4	needle/awl	
	5683	C 3	needle	
	5686	C 4	needle	
	5694	C 4	needle/awl	
18	4299	B 2	needle/awl	10
	4542	B 1	sheet metal	
	4953	B 3	wire	
	5136	B 3	globelet	
	5137	B 6	hook	
	5247	B 3	needle/awl (?)	
	5247	B 3	needle/hair pin (?)	
	5329	B 1	flat sheet of metal	
	5532	B 6/B 10	irregulary formend ferrous stone	
	5607	B 9	slag	
	5610	B 1	amorphous fragment	
17	4524	A 4	brooche	9
	4524	A 4	platelet	
	4653	A 3	needle/awl (?)	
	4695	A 3	amorphous fragment	
	4718	A 3/A 4	earring	
	4727	A 3	amorphous vessel fragment	
	4728	A 3	amorphous fragment	
	4729	A 3	wire (?)	
	4890	A 3/A 4	4 ring fragments	

Tab. 1.31 Selected finds: Description of metal finds from Strata 23–17 (Source: BAI/GPIA).

Stratum 23

TZ 019121-001
Area I; Square AN 118; Complex A; Context 6406
Description: Oval fragment, convex at the upper side and flat at the bottom
Figure Reference: Fig. 1.37
Date of Context: **EB II/III**
Dimensions: L 1.8; W 1.3; H 1
Weight: 2.2 g
Material: copper/bronze
Reference: —

Fig. 1.37 Oval fragment, TZ 019121-001 (Source: BAI/GPIA).

Stratum 22

TZ 018682-001
Area I; Square AO 119; Complex A; Context 6325
Description: Fragment of an awl or a needle
Figure Reference: Fig. 1.38
Date of Context: **EB III**
Dimensions: L 7.6; D (max.) 0.9
Weight: 7.4 g
Material: Copper. Analysis: Cu1080434, Sn 21, Pb 2340, As 6134, Zn <NWG, Fe 32415, Ag 162
Provenance: According to lead isotope analyses Fēnān or Timna
Parallel: Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9, 3. 4 and Photo 9, 11: chisel.—Tall Abū al-Ḫaraz Phases IB and IIA–B: Fischer 2008, 346 Fig. 311, 5 (L c. 14) and 6 (L c. 7.5) and Tab. 76.

Fig. 1.38 Fragment of awl/needle, TZ 018682-001 (Source: BAI/GPIA).

TZ 018684-001
Area I; Square AL 118; Complex C 5; Context 6152
Description: Amorphous casting residue or a drop from the melt
Figure Reference: Fig. 1.36; Fig. 1.39
Date of Context: **EB III**
Dimension: D (max.) 1
Weight: 1.8 g
Material: Copper. Analysis: Cu 1422264, Sn 1693, Pb <NWG, As 8488, Zn <NWG, Fe 55459, Ag 80.
Provenance: uncertain
Reference: —

Fig. 1.39 Casting residue, TZ 018684-001 (Source: BAI/GPIA).

TZ 018708-001
Area I; Square AN 119; Complex B 1; Context 6021
Description: Three fragments of an awl or a needle. Elongated, fine pin, bending at right angles at 5.2 cm; length of the bended part 2.1 cm; two further pieces, each c. 2 cm in length; matching
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 5.1; Th (wall) 0.2
Weight: 1.8 g
Material: Copper. Analysis: Cu 716048, Sn 282, Pb 283, As 1003, Zn <NWG, Fe 8255, Ag 25.
Reference: —

TZ 019126-001
Area I; Square AN 118; Complex B 1; Context 6305
Description: Fragment of an earring; preserved up to a half
Figure Reference: Fig. 1.40
Date of Context: **EB III**
Dimensions: D (max.) 2; D (opening) 1.3
Weight: 1 g
Material: Copper. Analysis: Cu 322751, Sn 59, Pb 44, As 75, Zn <NWG, Fe 13171, Ag 22
Provenance: According to lead isotope analyses Fēnān or Timna
Parallel: Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 389 Fig. 12. 27, 2: ring, here silver, D c. 1.7.— Tall al-Mutasallim (Megiddo) Stratum 13: Wilson – Allen 1948, Pl. 225, 1: earrings/silver.

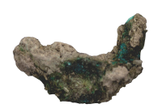


Fig. 1.40 Fragment of earring, TZ 019126-001 (Source: BAI/GPIA).

1.2.2.2. Catalogue of Faience Finds: Stratum 22

In Strata 25–17, a total of 72 glass/faience finds have been listed; among these, there were as many as 64 faience finds in Stratum 22. These were 62 disc-shaped small beads from Context 6154 and two amorphous fragments from Context 6331.

Faience			
Stratum	**Inv. No.**	**Object**	**Material**
22	TZ 019536-001	2 amorphous fragments	faience (?)
	TZ 018999-001	62 beads	faience
20	TZ 017666-001	1 bead	faience/glass (?)
19	TZ 015496-001	1 bead	faience (?)
18	TZ 017370-001	1 bead	faience/glass (?)
17	TZ 014646-001	1 bead	faience/glass (?)
	TZ 014647-001	1 bead	glass (?)
	TZ 014692-001	1 bead	faience (?)
	TZ 014693-001	1 fragment	glass (?)
	TZ 016641-001	1 fragmented bead	glass (?)

Tab. 1.32 Selected finds: Faience/glass finds from Strata 22–17 (Source: BAI/GPIA).

TZ 019536-001
Area I; Square AM 118; Complex C 4; Context 6331
Description: Two amorphous fragments
Figure Reference: Fig. 1.41
Date of Context: **EB III**
Dimensions: Fragment 1: L 1.2; W 1; H 0.6 /Fragment 2: L 1.1; W 1; H 0.6
Weight: Fragment 1: < 1 g/Fragment 2: < 1 g
Material: Faience
Reference: Faience beads have been described during Early Bronze Age I/II in Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 389 Fig. 12. 27, 4–6, and Loud 1948, Pl. 207.—Faience was used for small objects in Tall al-Ḥiṣn (Beth Shean) since Middle Bronze Age. Glass beads appear first at Tall al-Ḥiṣn (Beth Shean) in the Late Bronze Age Strata (Mazar – Mullins 2007, 684).

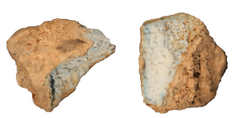


Fig. 1.41 Amorphous faience fragment, TZ 019536-001 (Source: BAI/GPIA).

TZ 018999-001
Area I; Square AN 118; Complex B 2, Context 6154
Description: 62 disc-shaped small beads, white, some of them with a greenish tinge. 53 beads completely preserved.
Type: Type 7 (Schröder 2015)
Figure Reference: Fig. 1.42
Date of Context: **EB III**
Dimensions: D (max.) 0.4
Weight: Altogether 0.7 g
Material: Faience
Reference: Tall al-Mutasallim (Megiddo) EB I–III: Finkelstein et al. 2000, 389 Fig. 12, 3: 64 faience beads and more than 10 fragments (mostly flat cylindrical) and 1, 4–6; 391 Fig. 12. 29, 19 (faience blue).

Fig. 1.42 Small beads, TZ 018999-001 (Source: BAI/GPIA).

1.2.2.3. Catalogue of Bone Finds: Strata 25–22

The bone finds on the Tall Zirā'a were evaluated by N. Benecke (DAI Berlin). The data from the Strata 25 to 17, which are represented here, cannot be regarded as being equivalent. In Stratum 25, only an Early Bronze Age defensive fortification (city wall, glacis, intermediate area) was excavated. Therefore, the results depicted in the table below do not represent the immediate residential and living quarters of the former tall inhabitants, like those of the other strata do. As a consequence, Stratum 25 is not included in the short overviews, while Stratum 24 (Early Bronze Age II), of which as yet only a small part has been examined, has been conditionally listed.

On the whole, it can be observed that the majority of bone finds always came from sheep or goats. On the Tall Zirā'a (Strata 23–17), the percentage of sheep/goat always lay between half and three quarters of all bone artefacts (minimum of 48.0 % in Stratum 19, Middle Bronze Age IIA; maximum of 76.0 % in Stratum 17, Middle Bronze Age IIB).

This suggests that the sheep and goat farming did not only account for a high percentage of meat-related nutrition but also for the production of milk, wool, and leather. Moreover, the animals will also have played a vital part for the fertilization of fields and meadows.

Overall, the trend of keeping cows and bulls declined from the Early to the Middle Bronze Age. This can be explained by the fact that the climate became more and more arid and thus the living conditions necessary to keep cattle were increasingly hard to realize. Possibly the 31.0 % found in Stratum 24 are not really statistically significant, due to the small area excavated. In Strata 18 (Middle Bronze Age IIA) and 17 (Middle Bronze Age IIB), this number has dwindled to 11.5 % and 8.0 %, respectively. Apart from their meat, cows/bulls will have been important because of their milk, their leather, and, above all, their employability as ploughing and draught animals.

In contrast to cattle, the number of domesticated pigs increased significantly in the course of time from the Early to the Middle Bronze Age. In the Strata 19 and 18 (both Middle Bronze Age IIA), almost a third of the excavated bones were those of pigs, who were farmed for reasons of meat production and disposal of organic leftovers. In the Strata 24 and 23 (Early Bronze Age II and II/III) they only accounted for 8.0 % and 6.0 %, respectively.

Donkey, horse, and mule, on the other hand, could be almost universally excavated; however, they usually make up less than one percent of the evaluated finds. Only some dog bones are proven.

Among the game animals, wild boar and fox were verified. It becomes apparent that during the Early Bronze Age, the ecosystem (incl. turf and wood) around Tall Zirā'a was still intact while the consumption of these animals drops significantly after that period.

Apart from these main groups, ecofacts both of further domestic animals and of hunted down game animals can be verified, albeit in a much lower quantities.

Bones										
	Domesticated Animals					Wild Animals				
Stratum	Sheep/ Goat	Cattle	Domestic Pig	Donkey/ Horse[94]	Dog	Feral Pig	Gazelle	Fallow Deer	Fox	Total No.
25	7 **78 %**	2 **22 %**								9
24	20 **51 %**	12 **31 %**	3 **8 %**				2 **5 %**	2 **5 %**		39
23	119 **70 %**	32 **19 %**	10 **6 %**	1 **0.5 %**	3 **1.5 %**	1 **0.5 %**		3 **1.5 %**		169
22	219 **50 %**	105 **24 %**	60 **14 %**	4 **1 %**	6 **1,5 %**	2 **0,5 %**	6 **1,5 %**	33 **7 %**	1 **0.5 %**	436
21	175 **66 %**	42 **16 %**	40 **15 %**		3 **1 %**		2 **1 %**	3 **1 %**		265
20	195 **68.5 %**	36 **13 %**	49 **17 %**		1 **0.3 %**		1 **0.3 %**	2 **0.6 %**	1 **0.3 %**	285
19	187 **48 %**	86 **22 %**	114 **29 %**	1 **0.3 %**	2 **0.6 %**					390
18	373 **60 %**	73 **11.5 %**	173 **27.5 %**				5 **1 %**			624
17	391 **76 %**	43 **8 %**	77 **15 %**			1 **0.1 %**	4 **0.8 %**	1 **0.1 %**		517

Tab. 1.33 Selected finds: Bone finds from Strata 25–17 (Source: BAI/GPIA).

Among the single bone finds two objects from the Early Bronze Age strata are particularly noteworthy:

TZ 019315-001
Stratum 23; Area I; Square AN 118; Complex A; Context 6379
Description[94]: Molar superior of sheep/goat
Figure Reference: —
Date of Context: **EB II/III**
Dimensions: —
Weight: —
Interpretation: —
Reference: —

Fig. 1.43 Bone scraper or cosmetic spatula, TZ 019544-001 (Source: BAI/GPIA).

TZ 019544-001
Stratum 22; Area I; Square AN 119; Complex A; Context 6330
Description: Artefact. Bovine, Scapula distal. An object sculpted from a collarbone, which may have been used as a scraper. Cosmetic (?) spatula. A bone that has been 'cut in halves' at one end, then hollowed out, flattened, and rounded at its front, thus making it possible to scoop up soft substances and stir or spackle them.
Figure Reference: Fig. 1.43
Date of Context: **EB III**
Dimensions: L 15.2; W 3.6 x 1.1
Weight: 29.3 g
Reference: Tall Qēmūn (Tēl Yoqnəʿām) IIB late: Ben-Tor et al. 2003, 381 Fig. V, 12, 11 and 13*:* cosmetic spatula. —Tall al-Mutasallim (Megiddo) EB IA: Finkelstein et al. 2000, 379 Fig. 12. 20, 1, spatula.—Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 119 Fig. 119, 4; and Phase IIIA: Fischer 2008, 156 Fig. 148, 7; 203 Fig. 203, 9 (later context, shuttle); Tall Abū al-Ḫaraz EB: Fischer 2008, 355 Fig. 317, 4: weaving tool.

94 Mules are not included.

1.2.2.4. Catalogue of Stone Finds: Strata 25–22

Terms and Types

In the following documentation, the more than 12,000 stone artefacts found on the Tall Zirāʿa between 2001 and 2011 are categorized according to their respective fields of application:

architecture
household/craft
food production
personal items
warfare
cultic items
flint flakes/tools

Furthermore, there will be the category of ecofacts, which show no visible trace of workmanship.

Classifications have been prepared for the following types: hinge stones, weight stones/loom weights, hammer stones, spindle whorls, rubbing stones, balance weights, hygiene cultery, beads, game pieces, and sling stones. They will be listed in a separate, enclosed catalogue.

Detailed typologies exist for the bowls, plates, mortar bowls, mortars, beakers/cups, and basins and also for the querns and lower grinding stones[95].

A particular group of Early Roman limestone vessels was typologized according to the classification by J. Cahill[96] and will not be included in the following compilation. It will be presented in a separate catalogue in Volume 6 of the final publication.

The flint objects will be presented by Benjamin Schröder[97].

Every allocation was based on purely morphological criteria and mainly serves to describe an object on the macroscopic level. Unless specifically defined otherwise, an object's raw material was of no importance here.

In the following, the terms applied to the different groups of objects will be defined.

Category Architecture

Architectural element
Hinge stone
Hinge stones are basalt stones or limestones that have been worked either rather crudely or hardly at all. Their sizes varied substantially. The majority of hinge stones are spherical to ovoid or cuboid; quite often there are hybrid forms with both straight and rounded opposite sides. Less frequently, they are ring-shaped, and the pin had pierced at least part of the stone. Undressed stones that could only be identified as hinge stones by their pertinent depression, or those which did not conform to any regular shape in spite of having been superficially worked are correspondingly termed irregular.

Type 1	*cuboid*
Type 1.1	*with straight angles*
Type 1.2	*with rounded angles*
Type 1.3	*with rounded and straight angles*
Type 2	*cubic*
Type 3	*spherical section*
Type 4	*ovoid*
Type 5	*ring*
Type 6	*irregular*

Lime Plaster
Mosaic
Tessera
Tile

Category Household/Craft

Axe
Basin
Only a few specimens of basins are among the finds on the Tall Zirāʿa. A rough classification based on a basin's contact area (flat base, flattened of slightly convex base, irregular base) and its plan view (rectangular, oval, circular) is possible.

Type 1	*basin with flat base*
Type 1A	*rectangular in plan view*
Type 1B	*oval in plan view*
Type 2	*basin with flattened or slightly convex base*
Type 2A	*rectangular in plan view*
Type 2B	*oval in plan view*
Type 3	*basin with irregular base*
Type 3A	*oval in plan view*
Type 3B	*circular in plan view*

Beaker
The beakers/cups are being subsumed in one separate group of vessels. In the broadest sense, they can be described as steep, deep bowls with a solid base.

Beaker/Cup
Bowl
Bowls are defined as vessels with an open top and generally regular walls that slope down towards the vessel's centre. A bowl's wall thickness is almost or completely uniform down to the vessel's base and often even to its centre.

95 Jakubik 2013; Jakubik 2016.
96 Cahill 1992.
97 Schröder forthcoming.

Type 1	*everted bowl with standing base*
Type 1A	*circular or oval in plan view*
Type 1A1	*flattened or slightly convex base*
Type 1A2	*disc base*
Type 1A3	*flat base*
Type 1A4	*ring base*
Type 1B	*rectangular in plan view*
Type 2	*pedestal bowl*
Type 2A	*goblet*
Type 2B	*chalice*
Type 2C	*block bowl*
Type 3	*tripod bowl*
Type 3A	*freestanding tripod bowl*
Type 3B	*tripod bowl with cross-bars*
Type 4	*quadruped bowl*
Type 5	*carinated bowl*

Casting mould
Cup
Hammer stone
The initial material from which hammer stones are made are small flint nodules that, due to their size, sit comfortably in the workman's hand and thus constitute a simple tool for, e.g., chopping or hewing organic matter. The abrasions caused by these activities gradually change the nodules' spherical shape on several sides. This process takes place in progressing, specific stages of wear. Moreover, different flake scars can be observed, at least some of which can be interpreted as intentional. On the basis of these characteristics and starting with their initial shape, the hammer stones are first characterized as "spherical" with or without flake scars. Discernible flat signs of wear or fragmentations modify the initial shape into, e.g. spherical sections, ovoid variants or even ashlar-shaped or cuboid forms. In cases where the nodules have been chipped into a wedge-like shape these modifications can be interpreted as functional areas. Sometimes there is also the possibility that the chipping was carried out in order to improve the tool's handling.

Type 1	*spherical*
Type 1.1	*regular*
Type 1.2	*with reduction*
Type 1.3	*sharpened*
Type 1.3.1	*sharpened with ridge*
Type 1.3.2	*sharpened without ridge*
Type 2	*spherical section*
Type 2.1	*hemisphere*
Type 2.2	*double section*
Type 3	*ovoid*
Type 3.1	*regular*
Type 3.2	*with reduction*
Type 4	*cubic*
Type 5	*cuboid*
Type 6	*trapezoid*
Type 7	*pestle*
Type 8	*irregular*

Inlay
Knob
Lid
Lock/Wedge
Miniature vessel
Mug with handle
Plate
Plates have a significantly less pronounced depression than bowls. Their most obvious difference, however, is that the diameter of plates in proportion to their rim height is considerably larger. The relation of rim height to diameter is often about 1 : 6.

Type 1	*plate with flattened or slightly convex base*
Type 1A	*circular or oval in plan view*
Type 1B	*rectangular in plan view*
Type 2	*plate with ring base*
Type 3	*with legs*

Potters wheel (Lower/Upper part)
Roof roller
Scraper
Spindle whorl
Due to the comparative evenness attendant to the axially symmetrical shape of a spindle whorl, these vessels can be typologized on the basis of their respective profile. Simple forms with a unilateral outward bulge opposite a flat surface range from conical to convex, while those that are regularly shaped both-way along the centre perforation range from discoidal and lenticular to biconvex and biconical. The type of perforation (cylindrical, conical, or biconical) is no distinguishing criterion. The stone spindle whorls were made of limestone or alabaster, some of them also of basalt, soapstone, or some rock containing chloride.

Type 1	*conical*
Type 2	*discoidal*
Type 3	*convex*
Type 4	*lenticular*
Type 5	*cylindrical*
Type 6	*spherical*
Type 7	*flat at the upper outer rim and elevation in the middle*
Type 8	*biconical*

Stand
Stopper
Table
Vessel
Weight stone/ Loom weight
Weight stones can be distinguished from balance weights by their larger weight and size. They are primarily used for weighing down objects, for instance at a loom. As stone objects they must moreover be distinguished from the loom weights made of clay as these two groups may differ both with respect to the material they consist of and to their shape. Morphologically, the ring-shaped weight stones/loom weights are predominant; they, in turn, have to be subdivided into several subcategories of perforated objects. Unperforated objects exhibit a circumferential necking instead and can either be spool-shaped, cylindrical, discoidal, or pyramidal. At least some of the spool-shaped and the cylindrical objects may also have served as a hammer- or axe-like tool. In the same manner, functional overlappings between the smaller ring-shaped weight stones and spindle whorls cannot be ruled out.

Type 1	*ring-shaped*
Type 1.1	*large dm > 15 cm*
Type 1.1.1	*outline round*
Type 1.1.2	*outline oval*
Type 1.1.3	*outline triangular*
Type 1.1.4	*outline rectangular*
Type 1.1.5	*outline irregular*
Type 1.2	*small dm < 15 cm*
Type 1.2.1	*outline round*
Type 1.2.2	*outline oval*
Type 1.2.3	*outline triangular*
Type 1.2.4	*outline rectangular*
Type 1.2.5	*outline irregular*
Type 2	*spool-shaped*
Type 3	*cylindrical*
Type 4	*discoidal with necking*
Type 5	*pyramidal with necking*

Whetstone

Category Food Production

Lower grinding stone

Type 1	*lower grinding stone with flat contact area*
Type 1a	*lower grinding stone, oval base with evenly worked curves, no lips.*
Type 1b	*lower grinding stone, flat contact area for secure support, varying base shapes, cross-sections, and curvatures*
Type 1c	*lower grinding stone, flat contact area for secure support, flat grinding surface, strong curvature and high outside pitch*
Type 1d	*lower grinding stone, box-like shape, excellent static stability*
Type 1e	*lower grinding stone, flat and angular shape, varying base shapes, optimal static stability*
Type 1f	*lower grinding stone, box-like shape; similar to Type 1d, but shaped like a saddle grinding stone*
Type 2	*lower grinding stone with curved bottom*
Type 2a	*lower grinding stone, convex bottom, was lowered into the ground for adequate stability*
Type 2b	*lower grinding stone, only roughly worked bottom curvature, grinding surface mainly flat, similar to Type 2a, but stronger curvature, was lowered into the ground for adequate stability*
Type 3	*lower grinding stone with unilateral rim bulge*
Type 3a	*lower grinding stone, distinctive rim section (saddle grinding stones), bottom with strong curvature, was lowered into the ground for adequate stability*
Type 3b	*lower grinding stone, distinctive rim section on at least one side of the grind ing surface*
Type 4	*lower grinding stone with circumferential rim ridge*
Type 4a	*lower grinding stone, grinding surface with small rim; unlike Type 1d, chunky shape and stronger curvature of the side areas*
Type 4b	*lower grinding stone, round shape grinding surface with circumferen tial, elevated rim*

Mortar
In the broadest sense, mortars are vessels that have been only roughly hewn on the outside while the working surface on the inside is worked more carefully, independent of the vessel's outer contours.

Type 1	*mortar in upright size*
Type 2	*mortar in flat size*
Type 3	*block mortar*

Mortar bowl
The category of mortar bowls comprises an intermediate form between a bowl, whose regular walls have been carefully wrought both inside and outside, and a mortar, whose inside is usually the only part that is more or less elaborately formed. In contrast to a bowl, however, a mortar bowl's walls are usually thicker and less even, they grow even thicker towards the vessel's base, and thus its inner profile is not consistent with its outer contour.

Type 1	*everted mortar bowl with standing-base*
Type 1A	*circular or oval in plan view*
Type 1A1	*flattened or slightly convex base*
Type 1A2	*flat base*
Type 1A3	*ring base*
Type 1A4	*disc base*
Type 1A5	*concave disc base*
Type 1B	*rectangular in plan view*
Type 1B1	*flattened or slightly convex base*
Type 1B2	*flat base*
Type 1B3	*ring base*
Type 2	*upright mortar bowl with standing-base*
Type 2A	*circular or oval in plan view*
Type 2A1	*straight walls*
Type 2A1a	*flat base*

Type 2A1b	*flattened or slightly convex base*
Type 2A1c	*ring base*
Type 2A2	*convex walls*
Type 2A2a	*flat base*
Type 2A2b	*flat base with concave underside*
Type 2A2c	*flattened or slightly convex base*
Type 2A2d	*ring base*
Type 2B	*rectangular in plan view*
Type 2B1	*flat base*
Type 2B2	*flattened or slightly convex base*
Type 3	*pedestal mortar bowl*
Type 4	*tripod mortar bowl*
Type 5	*quadruped mortar bowl*

Oil press
Olynthus mill
Pompeian mill
Quern

Type 1	*quern, loaf-shaped, various shapes*
Type 1a	*quern, loaf-shaped, front and rear side curvatures identical, frequently abrasions on front and rear edge*
Type 1b	*quern, loaf-shaped, front and rear areas elliptical, sometimes also tapered, compact appearance*
Type 1c	*quern, loaf-shaped (similar to Type 1a), front and rear side curvatures identical, section almost semicircular*
Type 1d	*quern, less pronounced loaf shape, almost triangular section, steep pitch of front and rear sides, almost symmetrical*
Type 1e	*quern, loaf-shaped with broad base, shape of section is between Type 1a and Type 1c*
Type 1f	*quern, loaf-shaped, elongated, tapered end sections with flat closing-off*
Type 1g	*quern, less pronounced loaf shape, similar to Type 1a but significantly less pronounced bulge*
Type 1h	*quern, less pronounced loaf shape, front and rear side curvatures almost identical, similar to Type 1a and Type 1g but less pronounced bulge with horizontal parts on its upper side*
Type 2	*quern with different front and rear side curvatures*
Type 2a	*quern, distinctively different front and rear side curvatures (high pitch/almost acute-angled), very different from loaf shape, elongated and flat design*
Type 2b	*quern, different front and rear side curvatures, similar to Type 2a, acute-angled section but significantly less pronounced*
Type 3	*quern, flat and broad shape*
Type 3a	*quern, flat and broad shape, frequently stress marks on both longitudinal edges*
Type 3b	*quern, very flat and broad shape, similar to Type 3a but upper surface more level both lengthwise and crosswise*
Type 3c	*quern, flat and broad shape, similar to Type 3b but higher arch and lower breadth*
Type 4	*quern with oval or circular base*
Type 4a	*quern, oval to circular base, very high arch and chunky design*
Type 4b	*quern, almost circular base, similar to Type 4a but significantly flatter arch*
Special type quern with gripping ridge	

Rotating quern
Rubbing stone
In accordance with the relatively broad definition of this type of objects, there is a wide variety of shapes. Most of the rubbing stones are made of basalt and the eponymous rubbing surfaces are usually clearly recognizable. Apart from these, limestones and pebbles also belong to this category while it must be kept in mind that the latter cannot always be clearly distinguished from ecofacts. In some cases they were nevertheless included as smooth and regularly shaped pebbles can be used for polishing ceramics without showing any obvious signs of wear.
Against this backdrop, the typification purely on the basis of visual criteria includes both natural forms and those that have been artificially shaped, either on purpose or by abrasion. Simple and frequently occurring basic forms are either spherical/ovoid or edged and cuboid; moreover, they comprise the conical or truncated basalt tools which most likely served as pestles for mortar bowls. In addition, prism-shaped, shoe-shaped, or loaf-shaped specimens were also formed either in the course of frequent application or specifically for easy handling. The same applies to discoidal or barrel-shaped objects. The separate category "pestles" comprises a smaller number of oblong to conical stones that rest comfortably in the hand and show traces of wear so that it can be assumed that they served as pestles. A few larger (ovoid to loaf-shaped) objects that, due to their size, can hardly be used one-handed, were also categorized as rubbing stones provided that they were not classified as querns and yet possessed a rubbing surface.

Type 1	*spherical*
Type 2	*spheric section*
Type 2.1	*hemispherical*
Type 2.2	*double section*
Type 3	*ovoid*
Type 4	*pyramidal*
Type 5	*conical*
Type 5.1	*conical outline is more or less round*
Type 5.2	*conical section outline is more or less round*
Type 6	*cuboid*
Type 7	*cubic*
Type 8	*cylindrical*
Type 8.1	*roller-shaped*
Type 8.2	*barrel*
Type 9	*trapezoid*
Type 10	*prism-shaped*
Type 10.1	*rectangular prism*
Type 10.2	*oblique prism*
Type 11	*spool-shaped*
Type 12	*discoidal*
Type 12.1	*outline round*
Type 12.2	*outline oval*
Type 13	*pestle*
Type 14	*shoe-shaped*
Type 14.1	*wedgewise*
Type 14.2	*bevelled cone*
Type 15	*loaf-shaped*
Type 16	*triangular*

Category Personal Items

Balance weight
Balance weights are distinguished from the larger weight stones in that they are more delicate stone artifacts measuring less than 10 cm in diameter. They were used for weighing objects on a pair of scales. According to their shape, they were classified into six different types.

Type 1	*cubic*
Type 2	*conical*
Type 3	*spheric section*
Type 4	*biconical*
Type 5	*lenticular*
Type 6	*pyramidal*

Bead
The beads were classified according to their shape. All of these objects have been pierced for being threaded on a string. Some of them consist of a more precious material such as carnelian, agate, or chloride-containing rock while others are made of limestone or, in isolated cases, sandstone, basalt, and serpentinite. Apart from spherical, discoidal, and ring-shaped beads there are those that are drop-shaped, poppy seed-shaped, biconical, cylindrical, or barrel-shaped. They are complemented by a few isolated shapes.

Type 1	*spherical*
Type 2	*drop-shaped*
Type 3	*poppy seed shaped*
Type 4	*biconical*
Type 5	*cylindrical*
Type 6	*discoidal*
Type 7	*ring-shaped*
Type 8	*barrel-shaped*

Button
Cosmetic bowl
Cosmetic palette
Cylinder seal
Game board
Game piece
The game pieces constitute a smaller group of more delicate stone objects that have been hewn with varying degrees of meticulousness. They comprise spherical, hemispherical, ovoid, or discoidal specimens with a maximum diameter of 3 cm.

Type 1	*spherical D 2–3 cm*
Type 2	*hemispherical*
Type 3	*ovoid*
Type 4	*discoidal*
Type 4.1	*round outline*
Type 4.2	*oval outline*

Handle
Hygiene cutlery
All objects belonging to this category were made of coarse-pored pumice stone. This material is highly malleable and traces of wear or abrasion are particularly visible. As a result, these tools are very often fragmented. Their classification is similar to that of the rubbing stones although with a more limited variance of types. In some cases, the tools have been pierced for being hung on a piece of string. One pyramidal type also has a gripping lug at its top end.

Type 1	*ovoid*
Type 2	*cuboid*
Type 3	*discoidal*
Type 3.1	*round*
Type 3.2	*ovoid*
Type 4	*pyramidal*
Type 5	*conical*
Type 6	*shoe-shaped*

Miniature axe
Miniature vessel
Pendant
Signet ring
Small stone ring

Category Warfare

Ballistic stone
Knob (war chariot)
Macehead
Sling stone
Sling stones are stones that have been hewn, with a diameter ranging from approximately 3 to 6 cm. Their weight ranges from about 50 to 200 grams. The objects are usually spherical or ovoid. There are also a few irregular or fragmented objects that have been included in the category of sling stones because of their external treatment, even though their rather coarse workmanship as well as their proportions make them quite distinct from the carefully worked spherical and ovoid game pieces.

Type 1	*spherical*
Type 2	*ovoid*
Type 3	*irregular*

Category Cultic Items

Altar
Cultic stone (Mazzebe)
Figurine - anthropomorph
Figurine - theriomorph
Incense burner
Kernos stone

Category Ecofacts

Ecofact
Iron nodule
Raw material

Category Flint: Flakes and Tools

Ad-hoc-tool

Blade
Bladelet
Borer
Burin
Chip
Chopper (flint)
Core
Cutting tool
Drill
Harvesting knife
Knife
Large blade
Multifunctional tool
Projectile
Retouched or non-retouched flake
Scraper (flint)
Sickle blade
Tabular scraper (flint)

Catalogue of Stone Finds: Strata 25–22

In Strata 25–22 in total 90 finds of stone/mineral and 991 flints were found. The most common raw materials were basalt and limestone. Furthermore, there were objects made of silicate rock, of pebble stone or alabaster. In a small number of cases, haematite/magnetite, steatite (soapstone), serpentinite, or pumice stone were used. Among the listed ecofacts, iron nodules are predominant, i.e. naturally occurring haematite (Fe_2O_3), which was also frequently found in a powdered state as it could thus be used as a colourant (ruddle).

Although, compared with limestone, basalt is much harder to work on, its hardness and its durability in particular made it eligible for the production of tools and prestigious objects alike. The porosity of its surface made it suitable for grinding and grating. In contrast, limestone was easier to handle and thus popular for pierced objects (such as weight stones) and also for the fabrication of hinge stones in order to prevent the wood revolving inside it from wearing away.

According to their individual purposes, specific forms also required certain materials:

- If a weight was made of hard haematite/magnetite it was forgery-proof.
- If a pendant was made of serpentinite it could be easily worked and end up as a highly filigree, prestigious work of art.
- Serpentinite or steatite (soapstone) were fitting materials for axes as they demonstrated the tool's high value and ensured a precise workmanship.
- Signet rings were usually made of steatite (soapstone) as this material could be engraved in a precise-manner.

The 90 objects listed, definable single finds made of stone/mineral can be separated into the following groups according to their application:

- 36.7 % food preparation (e.g. quern, lower grinding stone, mortar bowl, rubbing stone).
- 35.6 % personal items (e.g. pendant, balance weight, bead, ring, signet ring, gaming piece, gaming board, hygiene cutlery, axe).
- 12.2 % household (e.g. lid, weight stone, hammer stone, bowl, spindle whorl, potters wheel, loom weight, whetstone).
- 3.3 % architecture (e.g. hinge stone, plaster).

No military equipment (e.g. sling stone) and cultic items (e.g. cultic stone, incense burner) were found. 5.5 % of the objects could not be allocated with certainty. Moreover, 6 ecofacts are listed, as well as 991 flints.

Stone										
Stratum	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**Total.**
Architecture	2	2	1	5		2			1	**13**
Lime plaster						1				
Hinge stone	2	2	1	5		1			1	
Household/Craft	11	5	1	5	5	6	1	3	1	**38**
Lid	1							1		
Weight stone	4	2			2	1	1	1	1	
Hammer stone		2		2	2	1		1		
Bowl	1			1		2				
Spindle whorl	4		1	1		1				
Potters wheel	1									
Loom weight/Abrader		1				1				
Whetstone				1	1					
Food Production	29	29	18	27	14	22	4	5	2	**150**
Quern	7	9	4	7	4	6			1	
Lower grinding stone	4	5	2	5	4	4	1	1	1	
Mortar bowl	3	2	3	1		3	1			
Rubbing stone	15	13	9	14	6	9	2	4		
Personal Items	3	7	2	3	4	30			2	**51**
Pendant			1		1					
Balance weight/Scale beam					1	1				
Bead	1	1	1	2	2	27				
Ring		1								
Signet ring	1									
Gaming piece/Game board	1	3		1		2				
Hygiene cutlery		1							1	
Miniature axe		1							1	
Warfare		1								**1**
Sling stone		1								
Cultic Items		1	1		1					**3**
Incense burner		1	1							
Flints: Flakes and Tools	125	313	227	175	294	699	173	61	58	**2125**
Ecofacts	5	20	5	7	2	5	1			**45**
Iron nodule	5	12	4	5		5	1			
Raw materials		8	1	2	2					
Uncertain	2	9	1			5				**17**

Tab. 1.34 Selected finds: Stone finds from Strata 25–17 (Source: BAI/GPIA).

Stratum 25

Architecture

TZ 019327-001
Area I; Square AO 115; Complex A; Context 6508
Description: Hinge stone. Fragmented; exterior side irregularly shaped
Type: Hinge stone type 6
Figure Reference: 1.44
Date of Context: Stratum 25a; **EB**
Dimensions: H 8; D (max.) 23; D (depression) c. 10; Th 5.7
Weight: 1400 g
Material: Limestone
Reference: —

Fig. 1.44 Hinge stone, TZ 019327-001 (Source: BAI/GPIA).

Food production

TZ 019297-001
Area I; Square AO 116; Complex A; Context 6506
Description: Lower grinding stone. Fragmented; upper side abraded; bottom side roughly made
Type: —
Figure Reference: 1.46
Date of Context: Stratum 25a; **EB**
Dimensions: L 9.6; W 5.8; H 3.2
Weight: 210 g
Material: Basalt
Reference: —

Fig. 1.46 Lower grinding stone, TZ 019297-001 (Source: BAI/GPIA).

Household/Craft

TZ 019294-001
Area I; Square AO 116; Complex A; Context 6506
Description: Weight stone. Fragmented; formerly round or oval in its cross section; upper side convex; flattened bottom
Type: —
Figure Reference: Fig. 1.45
Date of Context: Stratum 25a; **EB**
Dimensions: L 7.8; W 5; H 3.7
Weight: 224 g
Material: Basalt
Reference: —

Fig. 1.45 Weight stone, TZ 019294-001 (Source: BAI/GPIA).

TZ 019326-001
Area I; Square AO 116; Complex A; Context 6505
Description: Quern. Fragmented; bottom slightly convex; upper side convex; burn marks
Type: Quern type 3c
Figure Reference: Fig. 1.47
Date of Context: Stratum 25a; **EB**
Dimensions: L 17; W 12.5; H 7
Weight: 1941 g
Material: Basalt
Reference: —

Fig. 1.47 Quern, TZ 019326-001 (Source: BAI/GPIA).

Personal Items

TZ 019293-001
Area I; Square AO 116; Complex A; Context 6506
Description: Hygiene cutlery. Fragmented; disc-shaped; formerly round or oval in its cross section
Type: Hygiene cutlery type 3.2
Figure Reference: Fig. 1.48
Date of Context: Stratum 25a; **EB**
Dimensions: L 11; W 8.1; H 3.2
Weight: 95 g
Material: Pumice stone
Reference: Tall al-Mutasallim (Megiddo) MB IIA (?): Wilson – Allen 1948, Pl. 264, 3: coarse vulcanic stone, rubber.

Fig. 1.48 Hygiene cutlery, TZ 019293-001 (Source: BAI/GPIA).

TZ 019299-001
Area I; Square AO 116; Complex A; Context 6505
Description: Miniature stone axe. Complete; on its reverse is a small depression indicating that it was to be drilled
Type: —
Figure Reference: Fig. 1.49a and 1.49b
Date of Context: Stratum 25a; **EB**
Dimensions: L 3.5; W 1.7; H 0.8
Weight: 8.5 g
Material: Steatite (soapstone)
Reference: Tall al-Ḥiṣn (Beth Shean) EB III: Mazar 2012, 364 Fig. 9. 7, 2: scraper (?), L 5.7; W 2.3; Th 2; scoria, only similar; rectangular form; Tall al-Ḥiṣn (Beth Shean) EB III–MB II: Mazar 2007, 655 f. Photo 11. 12 and Fig. 11. 10, 1 and 2: H 0.8; L 2.7; W 1.2/H 1.1; L 1.5; W 3.3.

Fig. 1.49 a + b Miniature axe, TZ 019299-001 (Source: BAI/GPIA).

Flints: Flakes and Tools

TZ 002151-001; 1 sickle blade, 1 blade; Area I; Square AO 116; Context 4447

TZ 002152-001; 2 blades; Area I; Square AO 116; Context 4447

TZ 002231-001; 1 blade; Area I; Square AM 115; Context 4547

TZ 002243-001; 1 blade; Area I; Square AO 116; Context 4447

TZ 002283-001; 1 sickle blade, 1 blade; Area I; Square AO 116; Context 4447

TZ 002372-001; 1 tabular scraper; Area I; Square AO 115; Context 5947

TZ 019273-001; 1 blade, 1 flake, 1 uncertain; Area I; Square AO 116; Context 6488

TZ 019274-001; 1 chip, 1 flake; Area I; Square AO 116; Context 6489

TZ 019275-001; 1 blade, 1 flake; Area I; Square AO 116; Context 6491

TZ 019276-001; 3 blades, 3 bladelets, 7 flakes, 1 uncertain; Area I; Square AO 116; Context 6496

TZ 019280-001; 6 flakes; Area I; Square AO 116; Context 6504

TZ 019283-001; 1 blade, 1 tabular scraper, 1 projectile, 1 core, 5 flakes; Area I; Square AO 116; Context 6506

TZ 019284-001; 3 flakes; Area I; Square AO 115; Context 6507

TZ 019325-001; 1 blade, 1 bladelet, 9 flakes; Area I; Square AO 115; Context 6508

Stratum 24

Household/Craft

TZ 019027-001
Area I; Square AO 118; Context 6422
Description: Weight stone. Fragmented, oval in its cross section; upper side slightly convex; bottom flat; conically drilled from both sides
Type: Weight stone type 1.2.2
Figure Reference: Fig. 1.50
Date of Context: **EB II**
Dimensions: H 5.5; D (max.) 9.5; D (opening) 2.4
Weight: 587 g
Material: Basalt
Reference: —

Fig. 1.50 Weight stone, TZ 019027-001 (Source: BAI/GPIA).

TZ 019095-001
Area I; Square AN 118; Context 6424
Description: Lid (?). Complete; untreated; traces of usage; oval in its cross section; upper side and bottom flat; bevelled edges
Type: —
Figure Reference: Fig. 1.51
Date of Context: **EB II**
Dimensions: L 4.8; W 3.6; H 0.9
Weight: 185 g
Material: Limestone
Reference: —

TZ 019290-001
Area I; Square AN 118; Context 6497
Description: Hammer stone. Complete; ecofact with traces of use; oblong; triangular in its cross section; one narrow side is tapered; there, presence of impact marks
Type: –
Figure Reference: —
Date of Context: **EB II**
Dimensions: H 5.8; D (max.) 12.4

Fig. 1.51 Limestone, TZ 019095-001 (Source: BAI/GPIA).

Weight: —
Material: Pebble
Reference: —

Food Production

TZ 019028-001
Area I; Square AO 118; Context 6466
Description: Rubbing stone. Fragmented; oval in its cross section; upper side broken off; bottom slightly convex
Type: —
Figure Reference: Fig. 1.52
Date of Context: **EB II**
Dimensions: L 7; W 6.4; H 4
Weight: 275 g
Material: Basalt
Reference: —

Fig. 1.52 Rubbing stone, TZ 019028-001 (Source: BAI/GPIA).

TZ 019041-001
Area I; Square AN 118; Context 6425
Description: Lower grinding stone. Oval in its cross section; upper side and bottom flat; bottom irregularly shaped; medium-sized to large pores
Type: Lower grinding stone type 1e
Figure Reference: Fig. 1.53
Date of Context: **EB II**
Dimensions: L 16; W 16; H 4
Weight: 1540 g
Material: Basalt
Reference: —

Fig. 1.53 Lower grinding stone; TZ 019041-001 (Source: BAI/GPIA).

TZ 019054-001
Area I; Square AN 118; Context 6424
Description: Rubbing stone. Complete; ecofact with traces of use; oval in its cross section; upper side convex; flattened bottom
Type: Rubbing stone type 3
Figure Reference: —

Date of Context: **EB II**
Dimensions: L 8.1; W 4.1; H 2.9
Weight: 127 g
Material: Limestone
Reference: —

TZ 019295-001
Area I; Square AN 118; Context 6497
Description: Rubbing stone. Complete; ecofact with traces of use; oval in its cross section; triangular in its longitudinal section
Type: —
Figure Reference: —
Date of Context: **EB II**
Dimensions: L 6.9; W. 2.6; H 3.1
Weight: 68 g
Material: Silicate rock
Reference: —

TZ 019296-001
Area I; Square AN 118; Context 6497
Description: Rubbing stone. Complete; ecofact with traces of use; oval in its cross section; upper side convex; flattened bottom
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **EB II**
Dimensions: L 6.7; W 3.4; H 2.5
Weight: 82 g
Material: River pebble
Reference: —

Flints: Flakes and Tools

TZ 019256-001; 1 blade, 4 flakes; Area I; Square AO 119; Context 6421

TZ 019257-001; 1 sickle blade, 1 chip, 3 flakes; Area I; Square AN 119; Context 6423

TZ 019258-001; 1 blade, 1 projectile, 12 flakes; Area I; Square AN 118; Context 6424

TZ 019259-001; 2 tabular scrapers, 3 chips, 4 flakes; Area I; Square AN 118; Context 6425

TZ 019269-001; 1 blade, 1 bladelet; Area I; Square AO 118; Context 6466

TZ 019277-001; 1 tabular scraper, 11 flakes, 1 uncertain; Area I; Square AN 118; Context 6497

TZ 019281-001; 3 flakes; Area I; Square AO 118; Context 6502

TZ 019282-001; 1 blade, 9 flakes; Area I; Square AO 118; Context 6503

Stratum 23

Household/Craft

TZ 019084-001
Area I; Square AN 119; Complex A; Context 6334
Description: Weight stone (?). Both ends are broken off; triangular in its cross section
Type: —
Figure Reference: Fig. 1.54
Date of Context: **EB II/III**
Weight: 210 g
Dimensions: L 10.9; W 4; H 3.2
Material: Limestone
Reference: —

Fig. 1.54 Weight stone (?), TZ 019084-001 (Source: BAI/GPIA).

Food Production

TZ 019029-001
Area I; Square AM 118; Complex A; Context 6427
Description: Lower grinding stone. Oval in its cross section; upper side flat; bottom concave and irregularly shaped
Type: Lower grinding stone type 2b
Figure Reference: —
Date of Context: **EB II/III**
Dimensions: L 13; W 19; H 8.4
Weight: 1929 g
Material: Basalt
Reference: —

TZ 019034-001
Area I; Square AM 118; Complex B 2; Context 6459
Description: Rubbing stone. Complete; oval in its cross section; upper side bevelled; bottom slightly convex
Type: Rubbing stone type 3
Figure Reference: Fig. 1.55
Date of Context: **EB II/III**
Dimensions: L 5.8; W 4.5; H 2.9
Weight: 111 g
Material: Basalt
Reference: —

Fig. 1.55 Rubbing stone, TZ 019034-001 (Source: BAI/GPIA).

TZ 019065-001
Area I; Square AN 118; Complex A; Context 6379
Description: Rubbing stone. Complete; oval in its cross section; bevelled upper side; flattened bottom, bevelled at the backside
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **EB II/III**
Dimensions: L 5.5; W 2.7; H 3.7
Weight: 80 g
Material: Basalt
Reference: —

TZ 019069-001
Area I; Square AN 119; Complex A; Context 6334
Description: Mortar bowl (secondary use). Steep curvature of the wall inside; straight wall outside; circular basis. Judging from its cross section, the mortar bowl was originally an oval foot of a large stone vessel.
Type: Mortar bowl type 2A1c
Figure Reference: Fig. 1.56
Date of Context: **EB II/III**
Dimensions: H 4.2; D (foot) 8.6
Weight: 458 g
Material: Basalt
Reference: ——

Fig. 1.56 Mortar bowl, TZ 019069-001 (Source: BAI/GPIA).

Ecofacts

TZ 019143-001
Area I; Square AM 118; Complex B 1; Context 6461
Description: Iron nodule. Fragmented; egg-shaped
Type: —
Figure Reference: —
Date of Context: **EB II/III**
Weight: —
Dimensions: L 3; W 1.4; H 2.4
Material: Red hematite (Fe_2O_3)
Reference: —

Flints: Flakes and Tools

TZ 019206-001; 1 sickle blade, 6 flakes; Area I; Square AO 118; Context 6307

TZ 019228-001; 1 chip, 3 flakes; Area I; Square AN 118; Context 6347

TZ 019229-001; 1 blade, 2 flakes; Area I; Square AN 118; Context 6348

TZ 19234-001; 3 blades, 1 bladelet, 7 chips, 22 flakes; Area I; Square AL 118; Context 6353

TZ 19238-001; 2 flakes; Area I; Square AM 118; Context 6372

TZ 019239-001; 1 blade, 1 flake; Area I; Square AO 119; Context 6375

TZ 019240-001; 2 sickle blades, 2 blades, 2 tabular sr-capers; 1 core, 2 flakes; Area I; Square AN 118; Context 6378

TZ 019241-001; 2 blades, 2 flakes; Area I; Square AN 118; Context 6379

TZ 19242-001; 2 flakes; Area I; Square AM 119; Context 6380

TZ 019244-001; 4 blades, 1 knife, 7 chip, 12 flakes; Area I; Square AL 118; Context 6393

TZ 019245-001; 1 blade, 2 sickle blades, 1 bladelet, 1 knife, 1 core, 1 chip, 24 flakes; Area I; Square AL 118; Context 6394

TZ 019246-001; 5 flakes; Area I; Square AL 118; Context 6396

TZ 019247-001; 3 flakes; Area I; Square AO 119; Context 6400

TZ 019248-001; 2 chips, 9 flakes; Area I; Square AO 118; Context 6401

TZ 019250-001; 3 chips, 3 flakes; Area I; Square AN 118; Context 6406

TZ 019251-001; 1 core, 1 flake; Area I; Square AM 118; Context 6409

TZ 019252-001; 3 flakes; Area I; Square AN 118; Context 6407

TZ 019267-001; 1 chip, 7 flakes; Area I; Square AM 118; Context 6459

TZ 019268-001; 1 blade, 1 chip, 8 flakes; Area I; Square AM 118; Context 6462

Stratum 22

Architecture

TZ 018942-001
Area I; Square AO 118; Complex A; Context 6142
Description: Hinge stone. Complete; outside irregularly chopped off; an approx. 2.5 cm deep hollow on its upper side
Type: Hinge stone type 1.3
Figure Reference: Fig. 1.57
Date of Context: **EB III**
Dimensions: L 11.6; W 10; H 6.2; D (opening) 6.5
Weight: 949 g
Material: Limestone
Reference: —

Fig. 1.57 Small hinge stone, TZ 018942-001 (Source: BAI/GPIA).

TZ 019530-001
Area I; Square AM 118; Complexes C 1 and C 2; Context 6047
Description: Lime plaster from a corner of a wall 6047; surface almost smooth
Type: —
Figure Reference: Fig. 1.58
Date of Context: **EB III**
Dimension: L 7.2; W 6.5; H 3.1
Weight: —
Material: Lime plaster
Reference: —

Fig. 1.58 Lime plaster, TZ 019530-001 (Source: BAI/GPIA).

Household/Craft

TZ 018852-001
Area I; Square AN 118; Complex A; Context 6073
Description: Bowl. Bottom of a bowl or a foot with wall chopped off
Type: Bowl type 1A2
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 6.9; W 2.6; H 2.4; D (foot) 15; Th 2.4
Weight: —
Material: Basalt
Reference: —

TZ 018919-001
Area I; Square AM 118; Complex C 2; Context 6095
Description: Bowl. Pedestal of a bowl; round in its cross section; burn marks
Type: Bowl type 1A2
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (foot) 15.5; L 15.2; W 11; H 5.5
Weight: 1284 g
Material: Basalt
Reference: —

TZ 018967-001
Area I; Square AM 118; Complex C 4; Context 6151
Description: Spindle whorl (?). Fragmented; lenticular; unsuccessful attempt at an off-centre biconical drilling
Type: Loom weight type 1
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max.) 5.7; H 2.6
Weight: 46 g
Material: Limestone
Reference: Tall al-Ḥiṣn (Beth Shean) LB I: Maeir 2007 655 Fig. 11. 9, 1 and 2: here basalt, used for grinding (?), supposed cultic context.—Tall al-Qassis (Tēl Qāšīš) MB II: Ben-Tor et al. 2003, 222 Fig. 89, 2: worked stone, limestone, holes drilled from both sides.

TZ 018989-001
Area I; Square AN 118; Complex B 2; Context 6154
Description: Hammer stone. Complete; cylindrical in shape
Type: Hammer stone type 2.2
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max.) 8.4; H 7
Weight: 748 g
Material: Flint/Silex
Reference: —

TZ 019031-001
Area I; Square AN 119; Complex A; Context 6330
Description: Weight stone. Fragmented; oval in its cross section; upper side convex, bottom slightly convex
Type: Weight type 1.1.2

Figure Reference: —
Date of Context: **EB III**
Dimensions: L 18; W 14; H 6.7
Weight: 2400 g
Material: Basalt
Reference: —

TZ 019082-001
Area I; Square AN 118; Complex B 1; Context 6303
Description: Sharpening stone (abrader) with u-shaped groove. Complete; ashlar-formed with rounded edges; on one side, it has a centrical notch approx. 0.5 cm deep
Type: Loom weight type 4
Figure Reference: Fig. 1.59
Date of Context: **EB III**
Dimensions: D (max.) 6.4; H 9.9
Weight: 643 g
Material: Basalt
Reference: —

Fig. 1.59 Loom weight, TZ 019082-001 (Source: BAI/GPIA).

Food Production

TZ 018018-001
Area I; Square AN 119; Complex A; Context 6043
Description: Rubbing stone. Fragmented; irregular shape; flattened bottom
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 8.2; W 10.8; H 7.1
Weight: 1022 g
Material: Basalt
Reference: —

TZ 018151-001
Area I; Square AN 118; Complex B; Context 6045
Description: Mortar bowl. Rim of the mortar bowl with a thin sloping wall; exterior and interior only roughly shaped
Type: Mortar bowl type 1A
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max.) 12; L 8.2; W 7.5; H 4
Weight: 164 g
Material: Basalt
Reference: —

TZ 018159-001
Area I; Square AN 119; Complex A; Context 6043
Description: Quern. Fragmented
Type:
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 9.4; W 12.9; H 6.4
Weight: 1186 g
Material: Basalt
Reference: —

TZ 018161-001
Area I; Square AN 119; Complex A; Context 6043
Description: Lower grinding stone. Fragmented; only roughly shaped; burn marks on smooth grinding surface
Type: Lower grinding stone type 1g
Figure Reference: Fig. 1.60
Date of Context: **EB III**
Dimensions: L 14; W 18; H 8
Weight: —
Material: Basalt
Reference: —

Fig. 1.60 Lower grinding stone, TZ 018161-001 (Source: BAI/GPIA).

TZ 018165-001
Area I; Square AO 118; Complex A; Context 5991
Description: Quern. Fragmented
Type: Quern type 3 c
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 11; W 11; H 5.8
Weight: 701 g
Material: Basalt
Reference: —

TZ 018170-001
Area I; Square AO 119; Complex A; Context 6087
Description: Lower grinding stone. Fragmented; round in its cross section; bottom flat and only roughly shaped; one side vertical; bevelled to the inside
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: H 11.5; D (max.) 25
Weight: —
Material: Basalt
Reference: —

TZ 018374-001
Area I; Square AN 118; Complex B; Context 6073
Description: Large rubbing stone. Fragmented; oval in its cross section; upperside convex; bottom slightly convex
Type: —
Date of Context: **EB III**
Figure Reference: —
Dimensions: L 27; W 23; H 11
Weight: —
Material: Basalt
Reference: —

TZ 018855-001
Area I; Square AO 119; Complex A; Context 5992
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; flattened bottom
Type: Rubbing stone type 3
Figure Reference: Fig 1.61
Date of Context: **EB III**
Dimensions: L 5.4; W 3.5; H 3
Weight: 87 g
Material: Basalt
Reference: —

Fig. 1.61 Rubbing stone, TZ 018855-001 (Source: BAI/GPIA).

TZ 018920-001
Area I; Square AN 118; Complex B; Context 6073
Description: Quern. Fragmented
Type: Quern type 1 c
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 7; W 9.1; H 6.2
Weight: 424 g
Material: Basalt
Reference: —

TZ 018924-001
Area I; Square AM 118; Complexes C 1 and C 2; Context 6095
Description: Rubbing stone. Fragmented; oval in its cross section
Type: Rubbing stone type 13
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 13.5; W 6.8; H 5.6
Weight: 883 g
Material: Basalt
Reference: —

TZ 018926-001
Area I; Square AM 118; Complexes C 1 and C 2; Context 6095
Description: Quern. Fragmented; finely pored
Type: Quern type 3 a
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 10.7; W 4.7; H 9.5
Weight: —
Material: Basalt
Reference: —

TZ 018927-001
Area I; Square AM 118; Complexes C 1 and C 2; Context 6095
Description: Rubbing stone. Complete; almost round in its cross section; upper side convex; bottom slightly convex
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 7.7; W 6.9; H 4.9
Weight: 364 g
Material: Flint/Silex
Reference: —

TZ 018931-001
Area I; Square AM 118; Complexes C 1 and C 2; Context 6095
Description: Rubbing stone. Complete; flat shaped; oval in its cross section; upper side slightly convex; flattened bottom; hollow of approx. 2.5 cm diameter with slight impact marks
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 15; W 11.9; H 4.7
Weight: 1250 g
Material: Basalt
Reference: —

TZ 018932-001
Area I; Square AM 118; Complexes C 1 and C 2; Context 6095
Description: Lower grinding stone. Fragmented; surface flat and smooth; bottom roughly worked; finely pored
Type: Lower grinding stone type 1e
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 7.6; W 7.5 ; H 5
Weight: 334 g
Material: Basalt
Reference: —

TZ 018936-001
Area I; Square AM 118; Complex C 4; Context 6151
Description: Mortar bowl; Complete; sloping wall; round in its cross section; rounded rim; flattened basis; slightly convex

Type: Mortar bowl type 1A1
Figure Reference: Fig. 1.62
Date of Context: **EB III**
Dimensions: D (max.) 6.9; D (opening) 8.7; H 6.9
Weight: 1270 g
Material: Basalt
Reference: —

Fig. 1.62 Mortar bowl, TZ 018936-001 (Source: BAI/GPIA).

TZ 018946-001
Area I; Square AM 119; Complex B 2; Context 6133
Description: Mortar (bowl). Formerly a foot of a large vessel (?); oval in its cross section
Type: Mortar (bowl) type 3
Figure Reference: —
Date of Context: **EB III**
Dimensions: D 8.5; D (hollow) 4.5; D (inside) 7; H 5.6
Weight: 672 g
Material: Basalt
Reference: —

TZ 018951-001
Area I; Square AM 118; Complex C 4; Context 6151
Description: Lower grinding stone. Fragmented; finely pored
Type: Lower grinding stone type 3c
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 9; W 13.5; H 4.9
Weight: 584 g
Material: Basalt
Reference: —

TZ 018963-001
Area I; Square AN 118; Complex B; Context 6045
Description: Rubbing stone. Complete; round in its cross section; one side chopped off; upper side and bottom slightly convex with smooth grinding surface
Type: Rubbing stone type 12.1
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max.) 6.7; H 5.6
Weight: 407 g
Material: Basalt
Reference: —

TZ 019061-001
Area I; Square AN 119; Complex B; Context 6302
Description: Quern. Complete; oval in its cross section; upper side slightly convex; smoothed grinding surface
Type: —
Figure Reference: Fig. 1.63
Date of Context: **EB III**
Dimensions: L 23.5; W 19; H 7.2
Weight: 5023 g
Material: Basalt
Reference: —

Fig. 1.63 Quern, TZ 019061-001 (Source: BAI/GPIA).

TZ 019076-001
Area I; Square AN 119; Complex B; Context 6327
Description: Rubbing stone. Fragmented; ashlar-shaped; rounded corners; flattened upper side and bottom flat; burn marks
Type: Rubbing stone type 6
Figure Reference: Fig. 1.64
Date of Context: **EB III**
Dimensions: L 14.9; W 12; H 4
Weight: 1158 g
Material: Limestone
Reference: —

Fig. 1.64 Rubbing stone, TZ 019076-001 (Source: BAI/GPIA).

TZ 019089-001
Area I; Square AN 118; Complex B 1; Context 6303
Description: Rubbing stone. Complete; oval in its cross section; upper side convex and bevelled at one side; flattened bottom
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 6.3; W 4.2; H 3
Weight: 115 g
Material: Basalt
Reference: —

TZ 019288-001
Area I; Square AM 118; Complex C 1; Context 6203
Description: Quern
Type: Quern type 3a
Figure Reference: Fig. 1.65
Date of Context: **EB III**
Dimensions: L 13; W 15.7; H 7.3
Weight: 1417 g
Material: Basalt
Reference: —

Fig. 1.65 Quern, TZ 019288-001 (Source: BAI/GPIA).

Personal Items

TZ 018969-001
Area I; Square AN 118; Complex A; Context 6071
Description: Balance weight. Complete; globular with a flattened base; meticulously and evenly crafted
Type: Balance weight type 3
Figure Reference: Fig. 1.66
Date of Context: **EB III**
Dimensions: H 1.75; D (max.) 2
Weight: 15 g
Material: Hematite/igneous plutonic rock (?)
Reference: Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 676 f. Fig. 13, 3. 5 and Photo 13, 5a: H 1.5; D 2.2; W 11.75 g, dome-shaped limestone object with a flat base, highly smooth and refined.—Tall al-Mutasallim (Megiddo) unstratified: Finkelstein et al. 2000, 371 Fig. 12. 14, 9: dome-shaped weight of brown stone, iron nodule (?), flint (?), 46.66 g.—Tall Qēmūn (Tēl Yoqnəʿām) MB IIB: Ben-Tor et al. 2005, 111 Fig. II 24. 29: identical shape.

Fig. 1.66 Balance weight, TZ 018969-001 (Source: BAI/GPIA).

TZ 018975-001
Area I; Square AN 118; Complex A; Context 6071
Description: Gaming piece. Complete; oval in its cross section; upper side and bottom slightly convex
Type: Gaming piece type 4.2
Figure Reference: Fig. 1.67
Date of Context: **EB III**
Dimensions: L 2.4; W 2.1; H 1
Weight: 8 g
Material: Pebble
Reference: —

Fig. 1.67 Gaming piece, TZ 018975-001 (Source: BAI/GPIA).

TZ 018996-001
Area I; Square AN 118; Complex B 2; Context 6154
Description: 17 beads of a necklace, annular. Complete
Type: Bead type 7
Figure Reference: Fig. 1.68
Date of Context: **EB III**
Dimensions: D (max.) 0.6; Th 0.15; D (opening) 0.14
Weight: Altogether 1.1 g
Material: Alabaster
Reference: Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 120 Fig. 120, 2; 358–359. 364 Fig. 326; 387–388: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?). Most of the beads consist of quartz; most of them are larger than those from the Tall Zirāʾa, only the bead in Fig. 364, 11 seems to be identical.

Fig. 1.68 Beads, TZ 018996-001 (Source: BAI/GPIA).

TZ 018998-001
Area I; Square AN 118; Complex B 2; Context 6154
Description: 10 beads of a necklace, annular. Complete
Type: Bead type 7
Figure Reference: Fig. 1.69a and 1.69b
Date of Context: **EB III**
Dimensions: D (mx.) 0.6; Th 0.15; D (opening) 0.14
Weight: Altogether 0.5 g
Material: Alabaster
Reference: Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008,

120 Fig. 120, 2; 358–359. 364 Fig. 326; 387–388: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?). Most of the beads consist of quartz; most of them are larger than those from the TZ, only the bead in Fig. 364, 11 seems to be identical.

Fig. 1.69 a Beads, TZ 018998-001 (Source: BAI/GPIA).

Fig. 1.69 b Beads, TZ 018998-001 (Source: BAI/GPIA).

TZ 019101-001
Area I; Square AN 118; Complex B 1; Context 6303
Description: Gaming piece. Sphere; complete
Type: —
Figure Reference: Fig. 1.70
Date of Context: **EB III**
Dimensions: D (max.) 0.53
Weight: < 1 g
Material: Basalt
Reference: —

Fig. 1.70 Gaming piece, TZ 019101-001 (Source: BAI/GPIA).

Flints: Flakes and Tools

TZ 018287-001; 4 flakes; Area I; Square AM 118; Context 6095

TZ 018289-001; 2 flakes; Area I; Square AN 118; Context 6093

TZ 018295-001; 1 blade, 7 flakes; Area I; Square AN 118; Context 6073

TZ 018296-001; 2 chips, 1 flakes; Area I; Square AN 118; Context 6045

TZ 018300-001; 4 flakes; Area I; Square AO 118; Context 5991

TZ 018301-001; 1 blade, 2 chips, 2 flakes; Area I; Square AN 118; Context 6073

TZ 018302-001; 2 flakes; Area I; Square AN 118; Context 6045

TZ 018307-001; 2 flakes; Area I; Square AM 118; Context 6095

TZ 018314-001; 2 flakes; Area I; Square AN 118; Context 6050

TZ 018331-001; 1 large blade, 1 blade, 9 flakes; Area I; Square AO 119; Context 5992

TZ 018332-001; 2 blades, 8 flakes; Area I; Square AO 119; Context 6087

TZ 018344-001; 1 blade, 13 flakes; Area I; Square AN 118; Context 6045

TZ 018351-001; 1 borer, 2 blades, 7 flakes; Area I; Square AO 119; Context 5992

TZ 018363-001; 3 blades, 4 borers, 1 core, 46 flakes; Area I; Square AN 118; Context 6005

TZ 018365-001; 1 blade, 32 flakes; Area I; Square AN 118; Context 6073

TZ 018366-001; 2 bladelets, 17 flakes; Area I; Square AN 118; Context 6073

TZ 018371-001; 2 blades, 1 tabular scraper, 1 knife, 7 flakes; Area I; Square AM 119; Context 6133

TZ 018386-001; 1 sickle blade, 1 flake; Area I; Square AO 119; Context 5992

TZ 018392-001; 3 blades, 1 bladelet, 7 flakes; Area I; Square AN 118; Context 6071

TZ 018393-001; 1 blade, 8 flakes; Area I; Square AN 118; Context 6154

TZ 018397-001; 1 blade; Area I; Square AM 118; Context 6174

TZ 018399-001; 2 blades, 1 bladelet, 2 flakes, 2 uncertain; Area I; Square AM 118; Context 6151

TZ 018400-001; 1 blade, 5 flakes; Area I; Square AL 118; Context 6189

TZ 018415-001; 9 flakes, 3 uncertain; Area I; Square AN 118; Context 6045

TZ 018416-001; 6 blades, 3 chips, 1 sickle blade, 1 ecofact, 9 flakes; Area I; Square AN 118; Context 6045

TZ 018417-001; 1 projectile, 11 flakes, 1 uncertain; Area I; Square AO 118; Context 5991

TZ 018418-001; 2 blades, 2 chips, 16 flakes; Area I; Square AN 119; Context 6021

TZ 018419-001; 4 blades, 4 chips, 8 flakes; Area I; Square AN 118; Context 6005

TZ 018425-001; 3 blades, 1 bladelet, 1 sickle blade, 4 flakes; Area I; Square AN 119; Context 6021

TZ 018433-001; 1 flake; Area I; Square AM 118; Context 6019

TZ 018436-001; 1 blade, 5 flakes; Area I; Square AL 118; Context 6152

TZ 018437-001; 1 flake; Area I; Square AM 118; Context 6173

TZ 018438-001; 1 blade, 1 chip, 5 flakes; Area I; Square AL 118; Context 6186

TZ 018441-001; 1 knife, 2 flakes; Area I; Square AM 118; Context 6172

TZ 018443-001; 3 blades, 3 chips, 1 flake; Area I; Square AL 118; Context 6152

TZ 018445-001; 2 blades, 1 sickle blade, 1 flake; Area I; Square AM 118; Context 6095

TZ 018469-001; 3 chips, 5 flakes; Area I; Square AM 119; Context 5963

TZ 018498-001; 8 flakes; Area I; Square AN 118; Context 5990

TZ 018503-001; 1 flake; Area I; Square AL 118; Context 6152

TZ 018505-001; 2 flakes; Area I; Square AM 119; Context 5963

TZ 018520-001; 1 blade, 4 flakes; Area I; Square AM 118; Context 6151

TZ 018526-001; 1 flake; Area I; Square AN 118; Context 6153

TZ 018531-001; 1 blade, 1 chip, 5 flakes; Area I; Square AM 118; Context 6134

TZ 018543-001; 4 blades, 5 cores, 4 chips, 18 flakes; Area I; Square AM 118; Context 6134

TZ 018546-001; 7 blades, 1 sickle blade, 1 knife, 1 *ad-hoc* tool, 2 chips, 3 flakes, 1 uncertain; Area I; Square AM 118 Context 6095

TZ 018548-001; 1 blade, 8 chips, 20 flakes; Area I; Square AO 118; Context 5991

TZ 019199-001; 1 blade; Area I; Square AO 118; Context 6141

TZ 019200-001; 2 sickle blades, 2 chips, 4 flakes, 1 uncertain; Area I; Square AL 118; Context 6195

TZ 019201-001; 2 blades, 3 flakes; Area I; Square AO 118; Context 6300

TZ 019202-001; 1 knife, 1 chip, 2 flakes, 1 uncertain; Area I; Square AO 119; Context 6301

TZ 019203-001; 4 flakes; Area I; Square AN 119; Context 6302

TZ 019204-001; 1 blade, 1 tabular scraper, 2 flakes; Area I; Square AN 118; Context 6303

TZ 019205-001; 4 flakes; Area I; Square AN 118; Context 6305

TZ 019207-001; 1 blade, 4 sickle blades, 11 flakes, 1 uncertain; Area I; Square AM 118; Context 6308

TZ 019208-001; 2 blades, 3 cores, 2 ad-hoc tools, 8 chips, 47 flakes, 2 uncertain; Area I; Square AM 118; Context 6309

TZ 019213-001; 1 flake; Area I; Square AL 118; Context 6195

TZ 019215-001; 1 blade, 1 flake; Area I; Square AO 119; Context 6325

TZ 019216-001; 1 tabular scraper, 6 flakes; Area I; Square AO 118; Context 6326

TZ 019217-001; 1 flake; Area I; Square AN 119; Context 6327

TZ 019218-001; 2 blades, 3 sickle blades, 1 tabular scraper, 1 projectile, 1 chip, 7 flakes; Area I; Square AN 118; Context 6328

TZ 019219-001; 6 flakes; Area I; Square AN 118; Context 6329

TZ 019220-001; 3 flakes; Area I; Square AN 119; Context 6330

TZ 019221-001; 2 blades, 2 sickle blades, 1 core, 1 harvesting knife, 1 bladelet, 18 chips, 33 flakes; Area I; Square AM 118; Context 6331

TZ 019222-001; 1 flake; Area I; Square AO 119; Context 6332

TZ 019223-001; 1 tabular scraper, 1 flake, 1 uncertain; Area I; Square AO 118; Context 6333

TZ 019230-001; 3 blades, 12 flakes, 1 uncertain; Area I; Square AL 118; Context 6349

TZ 019231-001; 2 blades, 3 bladelets, 6 chips, 13 flakes; Area I; Square AL 118; Context 6350

TZ 019232-001; 1 blade, 5 flakes; Area I; Square AL 118; Context 6351

TZ 019233-001; 2 blades, 4 flakes; Area I; Square AM 118; Context 6352

TZ 019237-001; 1 scraper, 3 flakes; Area I; Square AM 119; Context 6371

Ecofacts

TZ 018723-001
Area I; Square AN 118; Complex B; Context 6073
Description: Iron nodule. Fragmented; egg-shaped
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max.) 5.4
Weight: —
Material: Red hematite (Fe_2O_3)
Reference: —

TZ 018724-001
Area I; Square AO 119; Complex A; Context 5992
Description: Iron nodule. Fragmented
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max. preserved) 2.1
Weight: —
Material: Red hematite (Fe_2O_3)
Reference: —

TZ 018731-001
Area I; Square AO 119; Complex A; Context 5992
Description: Iron nodule. Fragmented; irregularly shaped
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max.) 5
Weight: —
Material: Red hematite (Fe_2O_3)
Reference: —

TZ 018734-001
Area I; Square AO 118; Complex A; Context 6300
Description: Iron nodule. Fragmented; irregularly shaped
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max. preserved) 3.7
Weight: —
Material: Red hematite (Fe_2O_3)
Reference: —

TZ 019138-001
Area I; Square AO 119; Complex A; Context 6325
Description: Iron nodule. Fragmented; hemispherical
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: D (max. preserved) 4.6
Weight: —
Material: Red hematite (Fe_2O_3)
Reference: —

Uncertain

TZ 018156-001
Area I; Square AM 118; Complexes C 1 and C 2; Context 6095
Description: Fragment. Irregularly shaped; flattened and abraded bottom
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 8; W 6.7; H 5.5
Weight: 212 g
Material: Basalt
Reference: —

TZ 019111-001
Area I; Square AN 119; Complex B; Context 6302
Description: Mortar bowl (?)
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 38; H 23; W 31; Hollow 22 x 19 x 12
Weight: —
Material: Basalt
Reference: —

TZ 019519-001
Area I; Square AN 119; Complex B; Context 6021
Description: Fragment. Smooth surfaces
Type: —
Reference: —
Date of Context: **EB III**
Dimensions: L 0.9; W 0.9; H 0.4
Weight: < 1 g
Material: Basalt
Figure Reference: —

TZ 019524-001
Area I; Square AM 118; Complex C 4; Context 6151
Description: Fragment. Amorphous; smooth surface
Type: —
Figure Reference: —
Date of Context: **EB III**
Dimensions: L 5.1; W 2.6; H 1.2
Weight: 14 g
Material: Limestone
Reference: —

TZ 019535-001
Area I; Square AO 119; Complex A; Context 5992
Description: Intarsia (?)
Type: —
Date of Context: **EB III**
Figure Reference: —
Dimensions: L 1.7; W 1.5; H 0.4
Weight: 1.2 g
Material: Flint, white
Reference: —

1.2.2.5. Catalogue of Ceramic Finds: Strata 25–22

by Andrea Schwermer

Introduction

The ceramics described in this chapter were found in the Strata 25–22. When comparing the number of pieces with those from the Strata 16–1 it must be kept in mind that the expanse that has been excavated here to date—particularly in the Strata 25 and 24—covers only a very small part of the entire excavation site. Moreover, especially the peripheral Early Bronze Age layers of the Strata 25 a–c were massively disturbed in later years, e.g. when the western slope of the tall which had been destroyed by a dramatic landslide was filled with material from the Early and the Middle Bronze Ages around 1500 BC. Thus, large quantities of Early and Middle Bronze Age ceramics were torn from their original contexts and could only be recovered in the course of excavating much younger strata.

The following account is based on the ceramic finds from Strata 25–22 that can be positively identified as Early Bronze Age. Neither the Early Bronze Age sherds that were at some point moved to other contexts (particularly those from the construction stratum, Stratum 15) nor the remains of vessels from younger epochs that had been moved to the Early Bronze Age strata in the course of the serious interventions during the Classical periods were included in the subsequent considerations.

Solely diagnostic sherds, i.e. about 22.0 % of the entire ceramic finds, will be analysed below; in this case, these almost exclusively comprise rim fragments. This is the only way to ensure that the conclusions and statistical specifications concerning the types of vessels are tolerably valid. Ordinary wall sherds, bottoms, and handles may have formed part of various types of vessels and are thus not diagnostically conclusive. If they are very small or if the break line lies just beneath the lip, even rim fragments may not be positively identifiable with respect to the vessel type they once belonged to. In these cases, the sherds were individually attributed to a specific vessel type according to the respective percentage of likelihood. Completely intact vessels hardly ever occur, especially in the older strata of the tall, and if so, we are only dealing with smaller jugs and bowls. A sherd that stretches from the rim to the bottom is a rare stroke of luck because it allows the effortless reconstruction of the original vessel's outer shape. This has actually been done a few times.

To date, a detailed typology has only been available for cooking pots[98]. Because of their small, not always representative numbers the remaining types of vessel were classified with the aid of the descriptions and images of Early Bronze Age ceramics in the publications of nearby excavations such as Ḫirbat az-Zeraqōn[99], Tall Abū al-Ḫaraz[100], Tall al-Ḥiṣn (Beth Shean)[101], and Tall al-Qassis (Tēl Qāšīṣ)[102].

The Vessel Types

Distribution

With the aid of the descriptions entered into the data base during the excavation campaigns, the 757 rim sherds from the Strata 25–22 can be attributed to the following types of vessel:

- Holemouth vessels
- Cooking pots
- Kraters
- Jugs/jars[103]
- Pithoi
- Bowls/platters
- Oil lamps.

98 Schwermer 2014. Cf. *Chap. 4* in this volume.

99 Genz 2002.

100 Fischer 2008.

101 Mazar 2012.

102 Ben-Tor et al. 2003.

103 Due to the small size of most of the sherds, a further differentiation of the handled vessels into jugs and jars was not possible and therefore neglected.

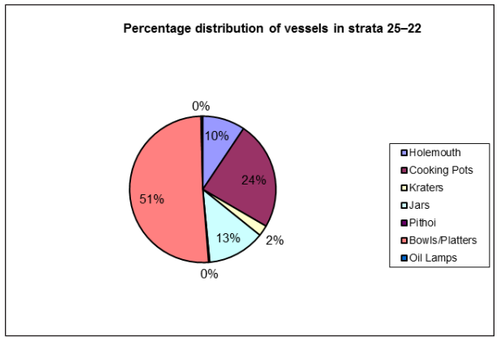
It should be kept in mind that the identification of a specific vessel type is not always unambiguous.

The rim fragments found in the Strata 25–22 can be allocated as follows to the vessel types listed above:

Stratum	Holemouth	Cooking Pots	Kraters	Jars	Pithoi	Bowls/ Platters	Oil Lamps	Σ
25	15	6	3	13	0	37	0	**74**
24	13	16	2	6	0	40	2	**79**
23	4	32	2	14	0	48	0	**100**
22	39	127	11	63	2	259	1	**502**
Σ	**71**	**181**	**18**	**96**	**2**	**384**	**3**	**755**

Tab. 1.35 Numeral distribution of the rim sherds to the different vessel types in the Strata 25–22 (Source: Schwermer).

The share of bowls/platters, i.e. the ceramic vessels that were used on a daily basis and often individually, and on which food was deposited for only a short time in order to be either further distributed or consumed, was comparatively uniform across all strata and, at more than 50.0 %, very high. In contrast, those vessels that were used for storing or preparing food for a larger number of people, particularly the holemouth jars and the cooking pots, occurred in surprisingly divergent numbers. At an average of 24.0 %, the cooking pots constituted the second most common vessel type, closely followed by the holemouth vessels and jars used for storing food[104].



Graph 1.1 Percentage distribution of rim fragments among the different vessel types in the Strata 25–22 (Source: Schwermer).

Dimensions

With the help of the rim sherds certain conclusions can be drawn about the dimensions of the original vessels, especially with respect to the wall thickness and the diameter of the opening. The larger the rim fragment is, the more accurate the results of a manual measurement can be. The following tables present the overall scopes of the wall thicknesses and of the opening diameters of the different vessel types. In order to make up for possible errors of measurement we also included the range within which 80.0 %, and thus the large majority, of the vessels can be found.

104 For comparison: In Early Bronze Age Ḫirbat az-Zeraqōn the cooking pots (between 30.0 and 38.0 %) and storage vessels (between 33.0 and 52.0 %) make up the largest share of the ceramic assemblage in the living quarters. In contrast, the percentage of cooking vessels found in public buildings (palace district and temple complex) is, as expected, much lower (13.0 and 14.0 %, resp.), whereas storage vessels account for an even slightly larger share (Genz 2002, 94–104). When considering these numerical proportions, however, it should be kept in mind that the still verifiable equipment of these buildings is a conveyance assemblage. Smaller vessel types are almost completely absent since the inhabitants obviously took them along when they left the city at the end of the Early Bronze Age III (Genz 2002, 101 f.). Altogether, the share of (cooking) pots within the total quantity of processed ceramics in Zeraqōn amounts to 40.0 % (Genz 2002, 28 with Tab. 4).

Vessel Type	Wall Thickness (in cm)		
	Extreme Values	80 % of the Vessels	Average[105]
Holemouth	0.6–2.4	0.8–1.5	1.1
Cooking Pots	0.5–1.8	0.8–1.5	1.1
Kraters	0.8–1.8	1.1–1.6	1.3
Jars	0.4–1.9	0.6–1.3	0.9
Pithoi	1.1–1.3	1.1–1.3	1.3
Bowls/Platters	0.4–2.5	0.7–1.4	1.1

Tab. 1.36 Wall thickness of the different vessel types in the Strata 25–22 (Source: Schwermer).

In comparison with the ceramic remains of later eras, the wall thickness of Early Bronze Age vessels is relatively high and, even in the lower range, significantly exceeds 0.5 cm. This is particularly evident when looking at the average value of all the sherds. The overall strong wall thickness is due to the available knowledge and technological possibilities regarding the production of ceramics in those times. This particularly applies to the composition of the clay, its manual shaping by means of the coiling technique[106], and the firing temperatures that could be attained. Moreover, a certain correlation seems to exist between the wall thickness of a vessel and its size: the larger the vessel is, the thicker the wall has to be in order to prevent its bursting during the firing process and also to provide the necessary level of stability. In later periods, it was also possible to produce larger vessels with a comparatively thin wall.

Vessel Type	Opening (in cm)		
	Extreme Values	80 % of the Vessels	Average[107]
Holemouth	8–32	10–22	15.4
Cooking Pots	8–35	12–18	14.3
Kraters	18–50	20–48	34.5
Jars	2–26	8–22	11.8
Pithoi	24	24	24
Bowls/Platters	6–60	14–38	25.9

Tab. 1.37 Opening diameters of the different vessel types in the Strata 25–22 (Source: Schwermer).

105 Rounded mean value of all sherds.

106 In this region, the fast-spinning potter's wheel did not come into general use before the transitional period between the Early and the Middle Bronze Age.

107 Rounded mean value of all sherds.

The open vessel types (bowls/platters and kraters) have by far the widest openings, with the exception of the excavated pithos. They also have a larger range of types than the closed vessels; after all, the bowls and platters offered a much wider variety of fields of application—from small bowls that only held one portion to very large ones from which several persons could eat, from plates for serving single portions to large platters on which food was not only served but also processed, and so on. The fact that the cooking pots and the holemouth jars have very similar diameters is due to their identical shapes. The slightly larger average rim diameter of the holemouth jars can be explained by the circumstance that among them, also larger vessels for storage purposes were produced. The relatively small diameter of the other jars could indicate that they were primarily used for transporting fluids and storing them on a short- to mid-term basis[108].

Ware Categories

The Early Bronze Age vessels, which are usually handbuilt, do not show any throwing marks that would have been caused by a potter's wheel. The walls of an individual vessel sometimes exhibit varying thickness levels, there are fingerprints left by the potter, and also marks caused by turning the mat on which the vessel was placed. These characteristics make it easy to positively identify Early Bronze Age vessels and their remains just from the material they are made of. For the subsequent periods, however, an exact knowledge of forms and shapes is necessary to date a vessel correctly.

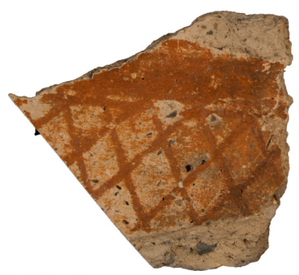
Essentially, the following Early Bronze Age clay compounds can be identified from the sherd material[109]. For pragmatic reasons, they are primarily differentiated according to the following criteria[110]: colour, temper particles visible in the breakage, and, if applicable, slip. The materials of which the cooking pots were made form a category of their own, and they are mainly characterized by clearly visible crystalline embeddings. The vessels' manufacturing methods—in these cases, hand-built as opposed to formed on the fast-spinning potter's wheel during later periods—will also be mentioned.

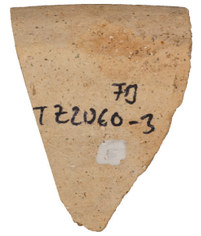
Ceramic Category Groups of Early Bronze Age Sherds		
Designation	Description	Example (Section/Top View)
HM Buff (Handmade Buff)	Hand-built beige-coloured to light brown ware, at its core light grey to dark grey clay with medium-fine to coarse temper, sometimes glimmer particles. Moderately hard to hard firing.	 TZ 000198-005  TK 25

108 Cf. Genz 2002, 92 f.

109 A further differentiation within the individual ware categories, e.g. into pieces with fine, medium, or coarse temper, does not seem very expedient in an overview, even more so as the transitions are fluent. It must also be taken into account that the definition and categorization of altogether such a large number of sherds took more than ten years to accomplish and that several persons were involved. Thus, an all too detailed differentiation would have increased the danger of conflicting subjective evaluations.

110 Genz (2002, 29 f.) primarily destinguishes the Early Bronze Age ware categories according to clay quality and temper, and secondarily to colour and firing hardness. He, too, admits that this differentiation is only provisionary since a "reliable and significant classification" could "only be achieved by the means of scientific techniques".

Ceramic Category Groups of Early Bronze Age Sherds		
Designation	**Description**	**Example (Section/Top View)**
HM R2B **(Handmade Red to Brown)**	Hand-built red to russet ware, at its core light grey to dark grey clay with medium-fine to coarse temper, sometimes glimmer particles. Moderately hard to hard firing.	 TZ 002015-008  TZ 000067-014
HM GW **(Handmade Grain Washed)**	Hand-built beige-coloured to light reddish ware, at its core usually grey clay with a large share of medium to coarse mineral temper. Red to brown slip with visible drawing marks. Hard firing.	 TZ 002064-002  TZ 001187-003
HM P **(Handmade Polished)**	Hand-built reddish brown ware with polished russet slip, at its core sometimes beige-grey, slightly poriferous clay with a large share of fine to medium-fine temper. Moderately hard to hard firing.	  TZ 001127-006
HM NP **(Handmade Net Pattern)**	Hand-built light brown to light red ware, at its core sometimes grey clay with a large share of fine to medium fine mineral temper. On its surface, a dull, in some places polished, slip with a painted net pattern.	 TZ 002079-001

Ceramic Category Groups of Early Bronze Age Sherds		
Designation	**Description**	**Example (Section/Top View)**
HM S **(Handmade Smooth)**	Hand-built fine, light ware, at its core beige-coloured clay with very fine mineral temper. Velvety-smooth surface, occasional slip, visible drawing marks. Moderately hard firing.	 TZ 000375-001  TZ 002060-003
HM Combed **(Handmade Combed)**	Hand-built beige-coloured, brownish, or red ware, at its core light grey to dark grey clay with medium-fine to coarse temper. On its surface, parallel incisions as if drawn with a comb, often set at right angles with each other so as to form squares. Moderately hard to hard firing.	 TZ 002064-004 
HM Kh Kerak **(Handmade Khirbet Kerak)**	Hand-built ceramic with a black slip on one side and a red, very shiny one on the other. At its core reddish to dark grey clay with coarse temper and easily visible mineral particles. Moderately hard firing.	 TZ 002015-048
HM Metallic **(Handmade Metallic)**	Hand-built fine beige-coloured to light brown or russet ware; grey clay with fine mineral temper and clearly visible lime particles at the core of thicker sherds.	  TZ 002015-015

Ceramic Category Groups of Early Bronze Age Sherds		
Designation	**Description**	**Example (Section/Top View)**
HM Coarse **(Handmade Coarse)**	Hand-built ochre to light brown or reddish ware, at its core light grey to dark grey clay with a lot of medium-sized to coarse temper particles which are clearly visible at the surface. Hard firing.	 TZ 002015-033
CP 6 **(Cooking Pot Ware 6)**[111]	Hand-built beige-brown to reddish ware, at its core beige-coloured/puce to grey/black clay with a large share of fine to coarse mineral temper which particularly contain angular crystalline embeddings, some of which are larger than 1 mm. Moderately hard to hard firing.	 TZ 003798-009

Tab. 1.38 Ceramic category groups of Early Bronze Age sherds from Tall Zirā'a (Source: BAI/GPIA).

Strictly speaking, only HM Buff, HM R2B, HM Khirbet Kerak, and HM Metallic are distinguished from each other solely on the basis of their respective ware category or the clay they consist of. All further categories listed define the surface treatment and/or the respective quality of the clays; from their colouring, however, they could also be attributed HM Buff or HM R2B.

Holemouth Vessels

Throughout all strata, the by far largest share of the holemouth vessels are made of the two main categories HM Buff and HM R2B; moreover, the two oldest strata also yielded a few specimens of HM GW and HM Coarse[112]. These clays are characteristic of the sometimes large and massive vessels that mainly served as containers for liquids and probably also grain. The storage of liquids necessitated a certain porosity of the clay that would ensure a cooling effect. This circumstance accounts for the fact that among the holemouth vessels, there are no specimens with a glossy and thus to some extent sealing coating[113].

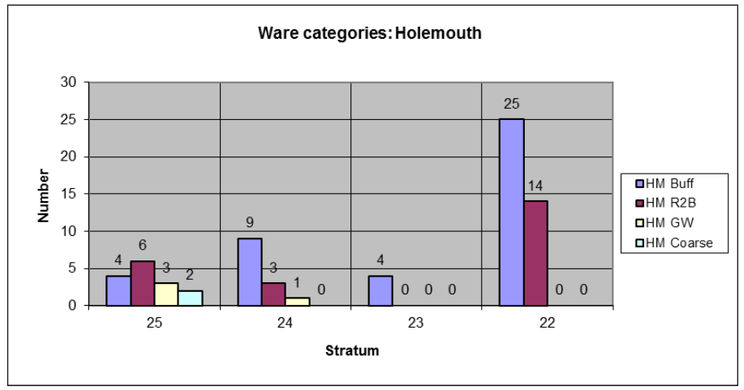
Holemouth vessels did not have to satisfy any high aesthetic demands because they were generally stored at some specific location and did not have to look representative. For this reason they characteristically have a very plain appearance, are rarely ornamented, and are usually made of not very exquisite clays[114].

111 Labelling and numbering correspond to the ones used in Schwermer 2014, 245–247.

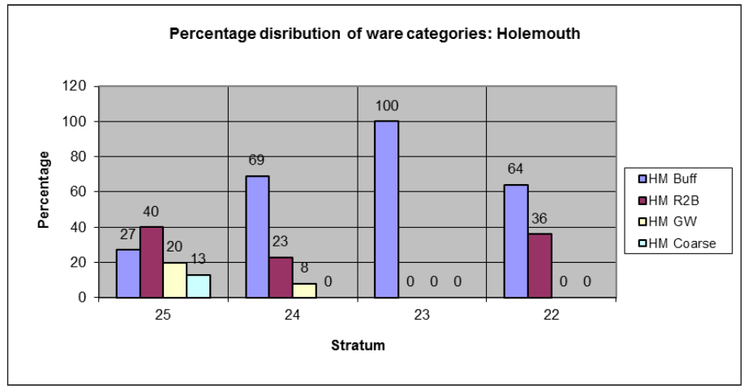
112 The fact that the holemouth vessels found in the two younger strata only possess the ware categories HM Buff and HM R2B might—with all due caution—indicate that these clay types had proven to be particularly suited for this vessel type.

113 On this, also cf. Genz 2002, 89.

114 On this, also cf. Genz 2002, 30 f.



Graph 1.2 Numeral distribution of the sherds of holemouth vessels among the different ware categories (Source: Schwermer).



Graph 1.3 Percentage distribution of the sherds of holemouth vessels among the different ware categories (Source: Schwermer).

Cooking Pots[115]

On the outside, the cooking pots that are shaped just like the holemouth vessels can only be distinguished from these by their scorch marks, which indicate that they had contact with fire[116]. However, the breakage of these sherds generally exhibit significantly more temper particles and, in particular, crystalline embeddings, which, again, correlates with the specific function of vessels of this type: cooking pots are subject to heavy duty, they are exposed to very high temperatures, and they have to be both heat conductive and leak-tight. This places high demands on, among other things, their material properties[117]. The resulting very specific composition of their clays justifies the definition of separate ware groups for the Early Bronze Age cooking pots (and, of course, those of later epochs) and to label these as cooking pot ware. A further differentiation, e.g. for different outside colouring, has not been made since the primary and important characteristic is the specific temper of the various clays. Consequently, all Early Bronze Age cooking pots have to be classed with the cooking pot ware 6. As a result, a graphic representation that is necessary for the other vessel types, which may differ with respect to their individual clays, is superfluous[118].

115 On the typology of Early Bronze Age cooking pots, cf. *chap. 4*.

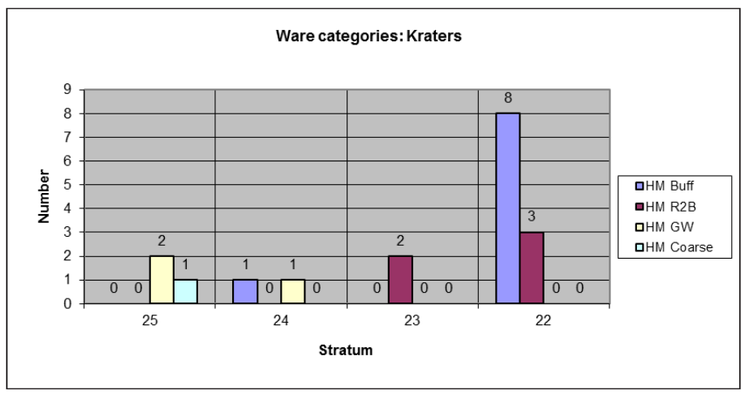
116 Also cf. Genz 2002, 89.

117 On this, more detailed information in Schwermer 2014, 7 f. and 241 f.

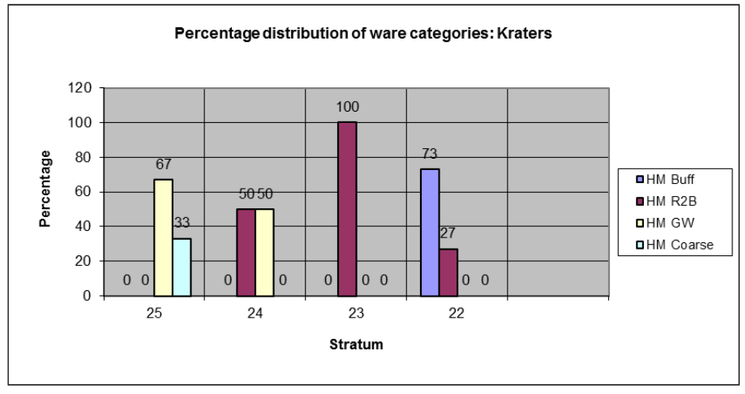
118 Further information regarding the compounds of Early Bronze Age cooking pots, including a comparison with other sites in the area can be found in Schwermer 2014, 255–257. On the typology of the Early Bronze Age cooking pots from the Tall Zirā´a, see Schwermer 2014, 75–96; on their production and utilization 257–260.

Kraters

Like those of the holemouth vessels, the krater sherds can be assigned to the ware categories HM Buff, HM R2B, HM GW, and HM Coarse. Their distribution, though, is different. Due to the small number of sherds that can be identified as those belonging to kraters, it is hardly possible to make any generalized statements and draw any conclusions.



Graph 1.4 Numeral distribution of krater sherds among the different ware categories (Source: Schwermer).



Graph 1.5 Percentage distribution of krater sherds among the different ware categories (Source: Schwermer).

Jars

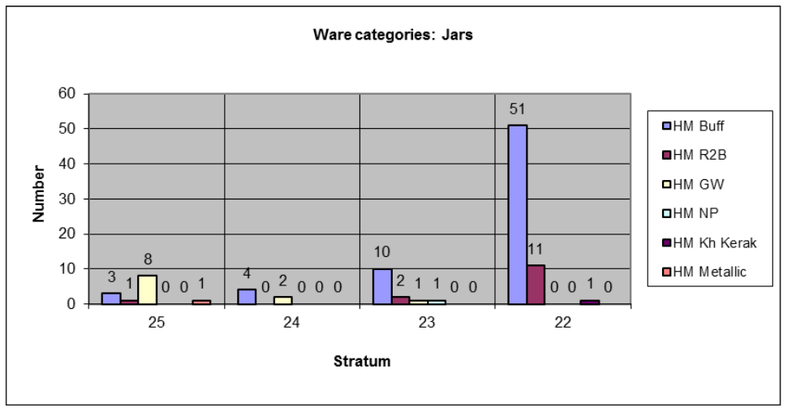
The range of ware categories among the jar fragments is altogether a little broader than among the vessel types described so far. However, it should be noted that the total number of sherds found in the Strata 25–23 is not very prominent. Among the jars, too, the vessels belonging to the ware categories HM Buff and HM R2B[119] revail, and, as is the case with the holemouth vessels, these seem to have become established particularly in the younger strata. The majority of jars will presumably have served for storing and transporting mainly liquid but also semi-solid goods. Today it is close to impossible to find out which vessels were used for short-, middle-, or long-term storage. Jars that were applied for transporting goods could be neither be too large nor too heavy; otherwise they could not have been moved around easily[120].

119 Cf. the summarizing graphics in Graph 1.15.

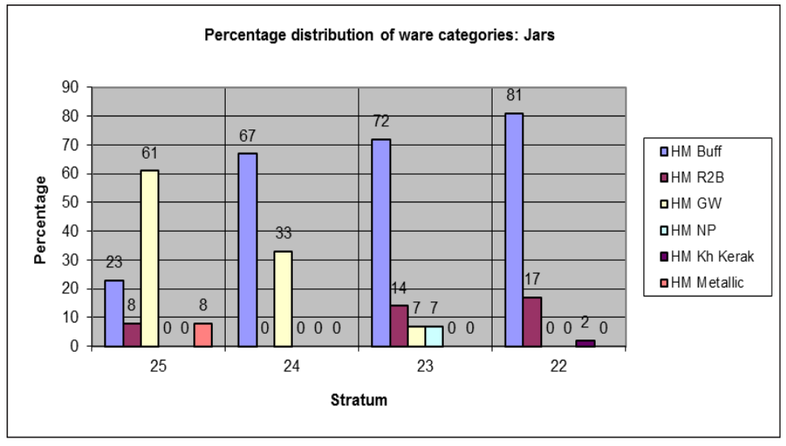
120 According to Genz 2002, 92, a jar that held 28 litres could still be easily carried.

Two of the jar fragments have a polished or a polished and ornamented surface design (HM Kh Kerak and HM NP). This surface treatment suggests that these jars were probably used as serving dishes. Not only did the slip diminish the vessels' porosity and thus make them unsuitable for storing liquids for a lengthier period of time, but also do such elaborately designed vessels suggest that their owners wanted to demonstrate a certain level of affluence.

Still, to what extent the surface treatment of jars also allows us to draw conclusions about their original contents is difficult to determine given the few verifiable material remains. It can merely be assumed that fine clays and an elaborate surface design go hand in hand with precious and expensive contents[121].



Graph 1.6 Numeral distribution of jar sherds among the different ware categories (Source: Schwermer).



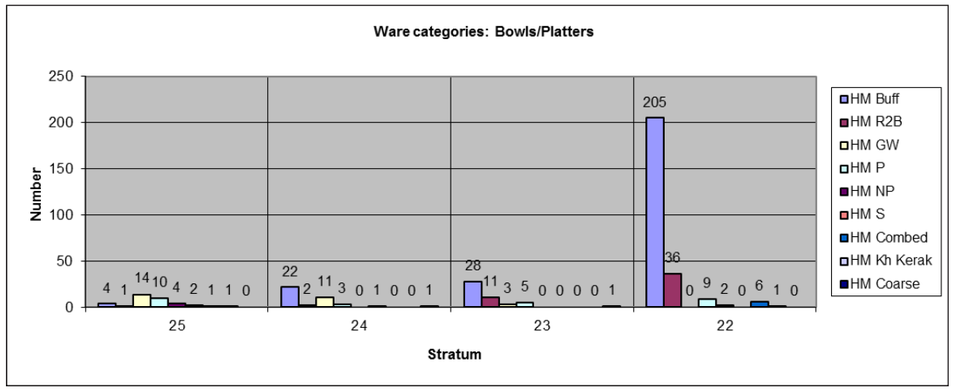
Graph 1.7 Percentage distribution of jar sherds among the different ware categories (Source: Schwermer).

121 Also cf. Genz 2002, 89.

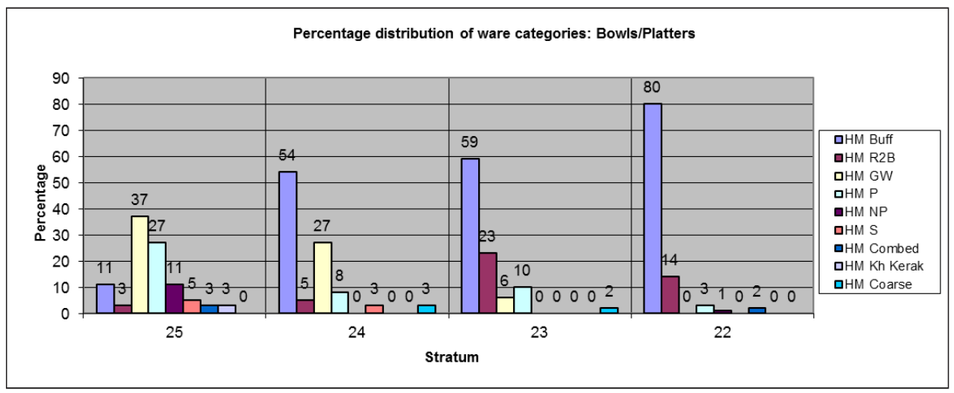
Bowls/Platters

The bowls and platters, which constitute the largest part among the different vessel types, also have the widest variance regarding their respective production ingredients. Nevertheless, here, too, the percentage of HM Buff and HM R2B increases continuously and finally reaches an impressive share of 94.0 % in Stratum 22. The overall range of ware categories represented is not surprising given the variety of shapes and the resulting diversity of possible applications of this vessel type. Bowls could serve as drinking vessels, dinner ware, or serving dishes, and were possibly also used in the process of food preparation. Moreover, they could also take on a cultic character as sacrificial bowls. All this applies to platters, too, with the exception of their being used as drinking vessels[122].

In contrast to the closed vessels, the inner surface of bowls and platters constitutes the part that is visible from the outside. Thus, prestigious pieces such as sacrificial bowls and serving dishes were given an elaborate surface treatment and sometimes also ornamental embellishments. The share of these elaborately worked fragments is much higher among the bowls and platters than among the other vessel types. This is evidenced particularly by the percentages of ware categories such as HM P, HM NP, and HM S in Stratum 25.



Graph 1.8 Numeral distribution of the sherds of bowls/platters among the different ware categories (Source: Schwermer).

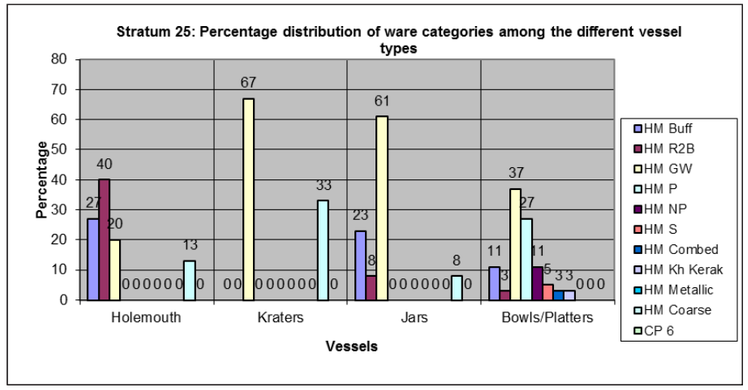


Graph 1.9 Percentage distribution of the sherds of bowls/platters among the different ware categories (Source: Schwermer).

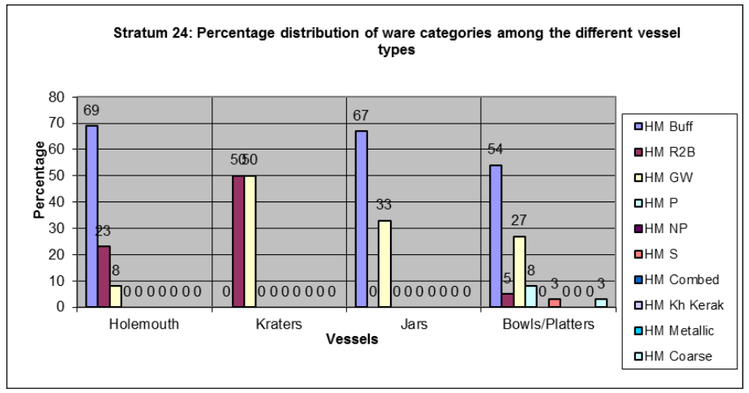
122 Cf. Genz 2002, 91.

Summary: Vessel Types and Ware Categories

The following charts give a survey or the percentage distribution of the ware categories among the different vessel types, first per stratum and then for the entity of all four strata[123]. Here, the sherd material at hand suggests that the variance of clays and their composition continuously decreases from the older towards the younger strata and at last narrows down mainly to HM Buff and HM R2B—discounting the cooking pot ware. Should this observation be confirmed, several conclusions would be feasible: Possibly the two ware categories in question had proven to be particularly well suited for everyday use, or the potters had confined themselves to them for reasons of (work) economy. It is also conceivable that in the course of time, the expertise about the manufacturing of sophisticated ceramics had got lost. Moreover, some sort of decisive turning point or event may have led to a situation in which the tall's inhabitants could no longer afford elaborately produced and thus expensive vessels. Finally, foreign sources of supply may have dried up due to the termination of trade relations.

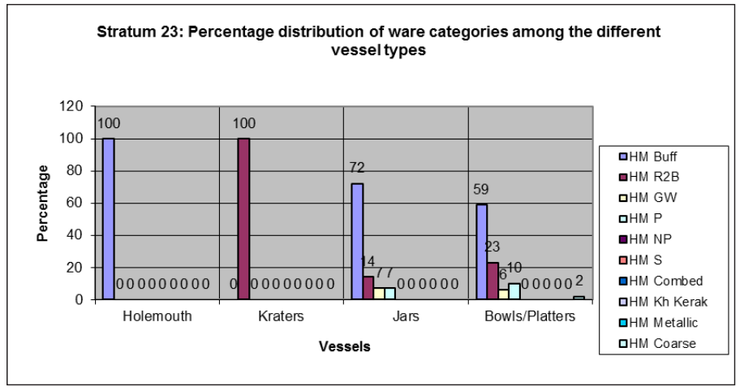


Graph 1.10 Percentage distribution of the ware categories among the different vessel types in Stratum 25 (Source: Schwermer).

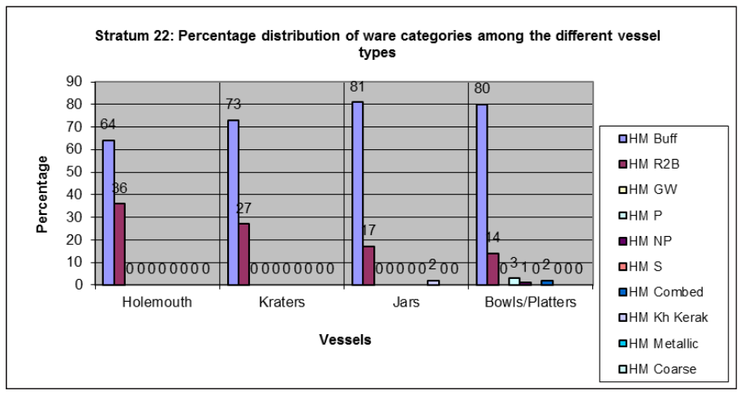


Graph 1.11 Percentage distribution of the ware categories among the different vessel types in Stratum 24 (Source: Schwermer).

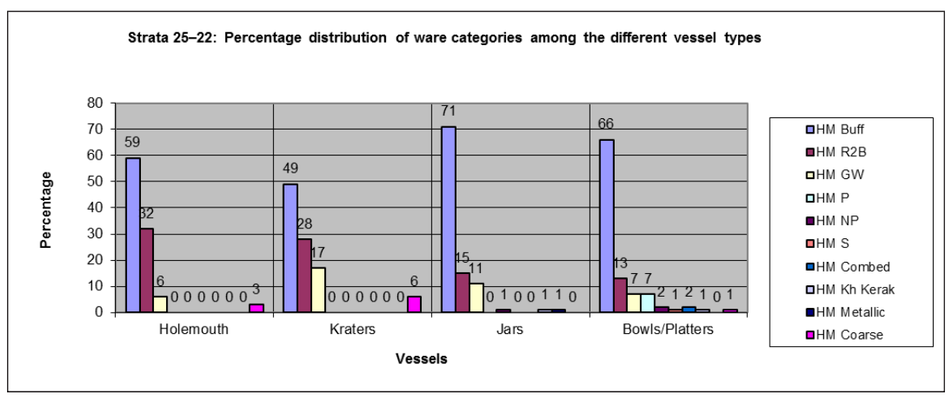
123 Here, too, the cooking pots are not mentioned as all of them are made of the ware type CP 6. Thus, their diagnostic value is completely irrelevant in this context.



Graph 1.12 Percentage distribution of the ware categories among the different vessel types in Stratum 23 (Source: Schwermer).

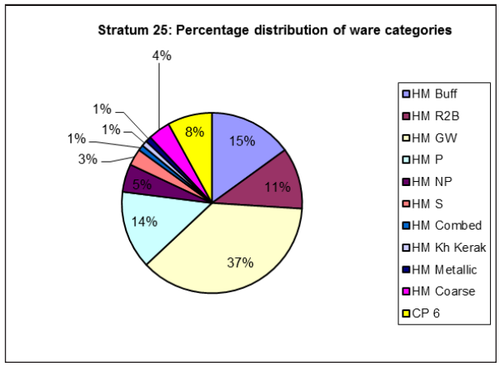


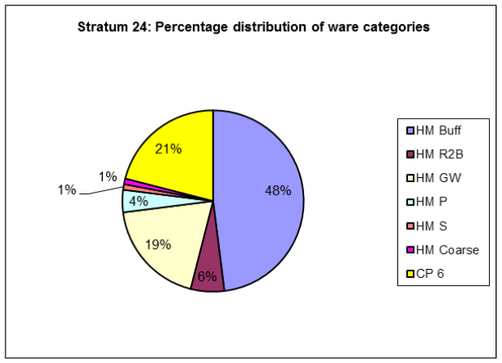
Graph 1.13 Percentage distribution of the ware categories among the different vessel types in Stratum 22 (Source: Schwermer).

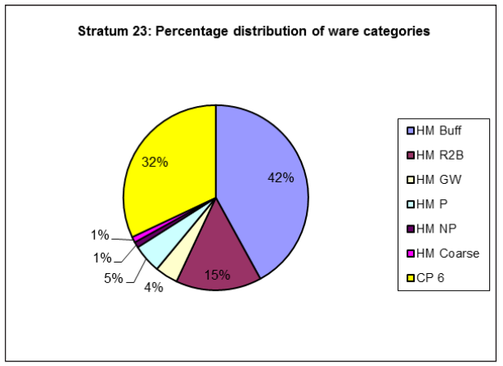


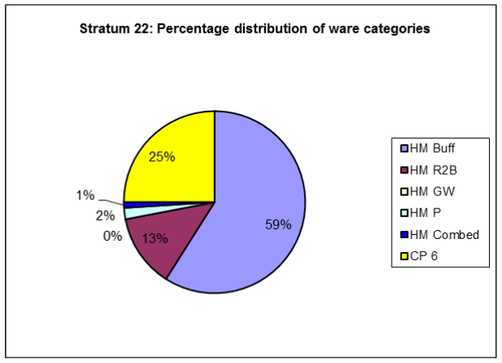
Graph 1.14 Percentage distribution of the ware categories among the different vessel types in the Strata 25–22 (Source: Schwermer).

When looking at the percentage distribution of the different ware categories occurring in the separate strata, irrespective of their assignment to the individual vessel types, their increasingly low diversity leaps to the eye.









Graph 1.15 Percentage distribution of the ware categories among the Strata 25–22 (Source: Schwermer).

Embellishments and Special Design

Apart from ware categories that are defined by a particular surface treatment, such as Grain Washed, Combed, or Net Pattern, Bronze Age vessels also exhibit embellishments in the form of incisions or reliefs. However, these are not very numerous among the vessels found in the Strata 25–22. Including handles, bottom sherds, and wall fragments, 11 vessels possess an incised decoration and 60 a relief[124], alone 40 of which were found in Stratum 22. The incisions mainly consist in slanting small indentations on holemouth vessels and jugs. A relief decoration is almost exclusively constituted by an appliqued clay bulge with slanting, in some cases also crossbred scratchings, or with finger indentations, in two other cases they are shaped like a braid. Most of these relief braids are applied to jugs and located at the transition between the vessel's neck and its body; sometimes, however, they also decorate large bowls and kraters.

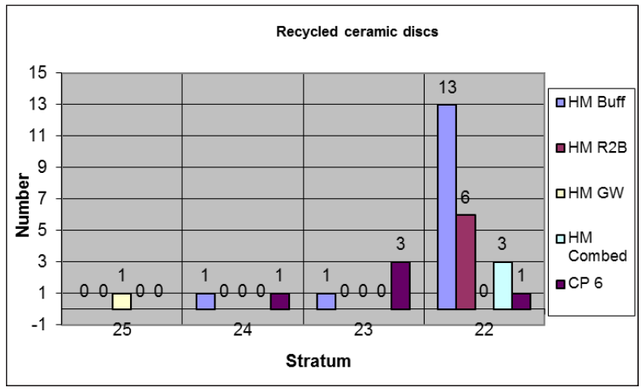
124 Here, cooking pots are not included; on the ornamentation of Early Bronze Age cooking pots, see Schwermer 2014, 80–82, and Chap. 4.

Other Ceramic Vessels and Objects of Utility

In addition to the usual vessels that have been described above, there are several other clay objects which do not qualify for a systematized characterization, e.g. because they occurred only in small numbers or they are only 'waste products'. Some of these forms are represented in the following tables.

First of all, there are oil lamps, only three of which, however, could be identified as such in the Strata 25–22. Usually, oil lamps look like bowls formed from a coarse material. They are indented at one spot of the rim in order to provide a seating for the wick. Consequently, scorch marks and traces of soot are identifying features of oil lamp fragments. The small number of finds[125], however, suggests that also other objects were used as lamps. For instance, there are some finds of jug bases—which had presumably shattered before—that were hewn into some sort of bowl and which exhibit scorch marks on the inside[126].

Actually, recycling parts of broken vessels seems to have been quite common, judging from the large number of obviously hewn circular ceramic discs of various diameters whose function cannot always be clearly established. In the Strata 25–22, a total of 30 of these discs occur. Their diameters range from 3 cm to 11.5 cm, with an average of 5.8 cm. They all consist of rather coarse clays and thus their thickness averages about 1 cm (between 0.6 cm and 1.4 cm).



Graph 1.16 Number of ceramic discs and their distribution among the different ware categories (Source: Schwermer).

In contrast to the comparable finds from younger periods, none of the ceramic discs found in the Early Bronze Age strata is pierced at its centre. Only one disc has drillings on both sides[127]. As to the application of the ceramic discs, there are several possibilities: The larger ones may have served as lids or caps for jars and could, for instance, have been firmly lodged in their openings with the aid of a piece of cloth or wax when goods had to be transported. The ceramic discs with smaller diameters are more likely to have been used as gaming pieces or, even more likely, as counting stones. Due to the concomitant inaccuracies, they would probably not have been eligible as balance weights[128].

125 Genz 2002, 106 even asserts that "no specially manufactured Early Bronze Age oil lamps" are representetd in Ḫirbat az-Zeraqōn.

126 Also cf. Genz 2002, 106 f.

127 Genz 2002, 108 assesses ceramic discs that were only bored either as unfinished spindle-whorls or as bearings for drills.

128 On the possible function of recycled ceramic discs, cf. Genz 2002, 107 f., and Schwermer 2014, 281 f.

Plate 1.1: Early Bronze Age bowls and kraters from Tall Zirā'a Stratum 25—Excavations 2001–2011.

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021801-002	AN–AO 115–116	6496	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 3.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 1, 1.
2	bowl	TZ 021799-002	AO 116	6494	HM Buff (brown slip)	EB II/III	Tall Abū al-Ḥaraz Phase IB: Fischer 2008, 252 Fig. 258, 6.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 5.
3	bowl	TZ 002060-006	AN 115	598	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 6.
4	bowl	TZ 021810-004	AO 116	6504	HM Buff (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 3.	Tall Abū al-Ḥaraz Phase IB: Fischer 2008, 252 Fig. 258, 18.
5	bowl	TZ 021269-003	AO 114–115	5947	HM Buff (brown slip)	EB II/III	Tall Abū al-Ḥaraz Phase IB: Fischer 2008, 252 Fig. 258, 19.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 4.
6	bowl/krater	TZ 021799-016	AO 116	6494	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.
7	bowl/krater	TZ 021807-001	AO 116	6504	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.
8	bowl/krater	TZ 021810-002	AO 116	6504	HM GW combed	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.

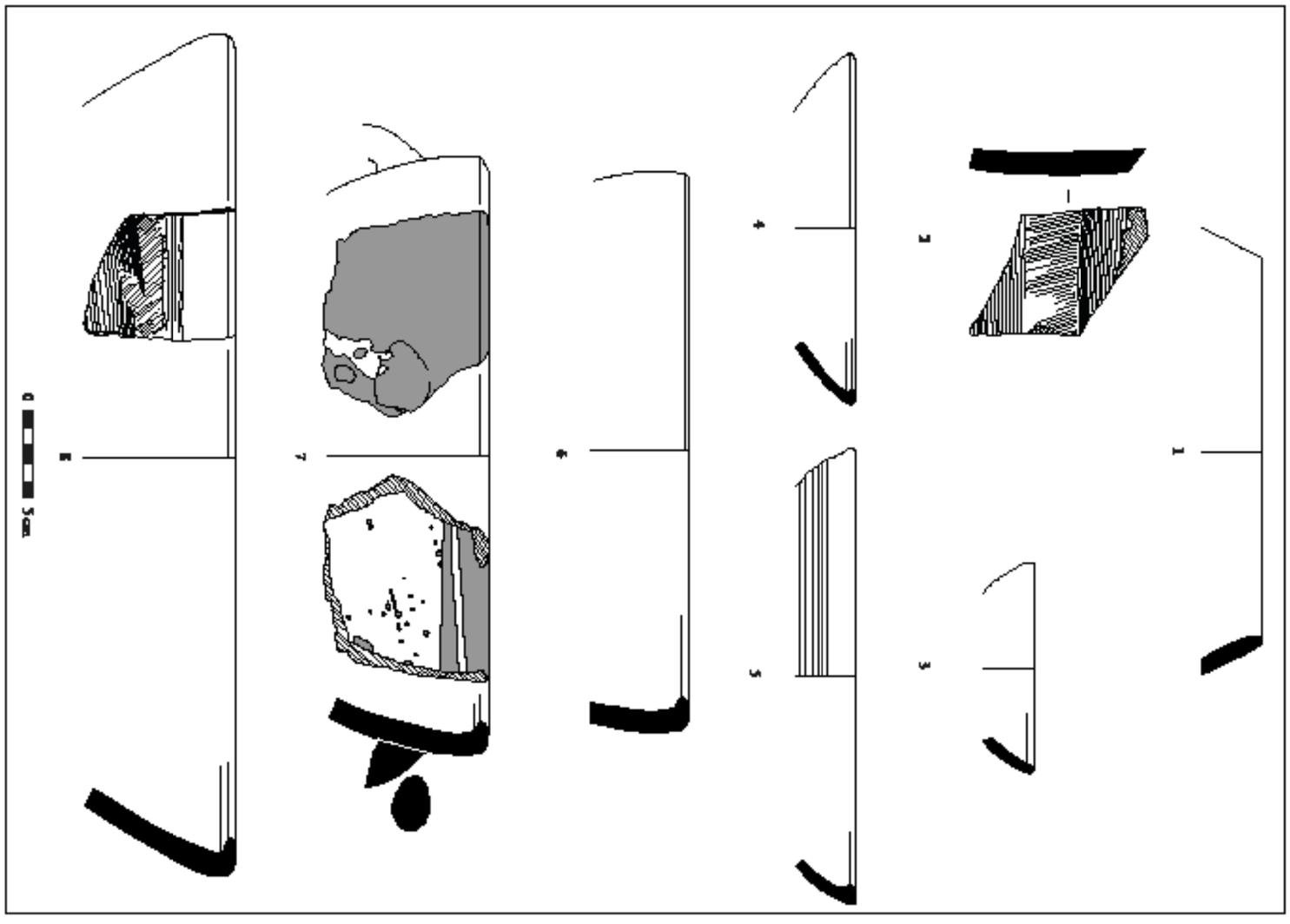


Plate 1.1: Early Bronze Age bowls and kraters from Tall Zirā'a, Stratum 25—Excavations 2001–2011

Plate 1.2: Early Bronze Age platters from Tall Zirāʿa Stratum 25—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	platter	TZ 021799-014	AO 116	6494	HM Buff (brown painted)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 3.
2	platter	TZ 021814-004	AO 116	6505	HM NP	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 19.	Tall Abū al-Ḫaraz Phase IIA: Fischer 2008, 257 Fig. 262, 7.
3	platter	TZ 021807-004	AO 116	6504	HM NP	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 19.	
4	platter	TZ 021793-005	AO 116	6489	HM Buff (red painted)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 1.	Tall al-Mutasallim Megiddo) EBII: Amiran 1969, 61 Pl. 15, 8.
5	platter	TZ 021807-005	AO 116	6504	HM Buff (brown painted)	EB II/III	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 61 Pl. 15, 6.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 256 Fig. 261, 7.

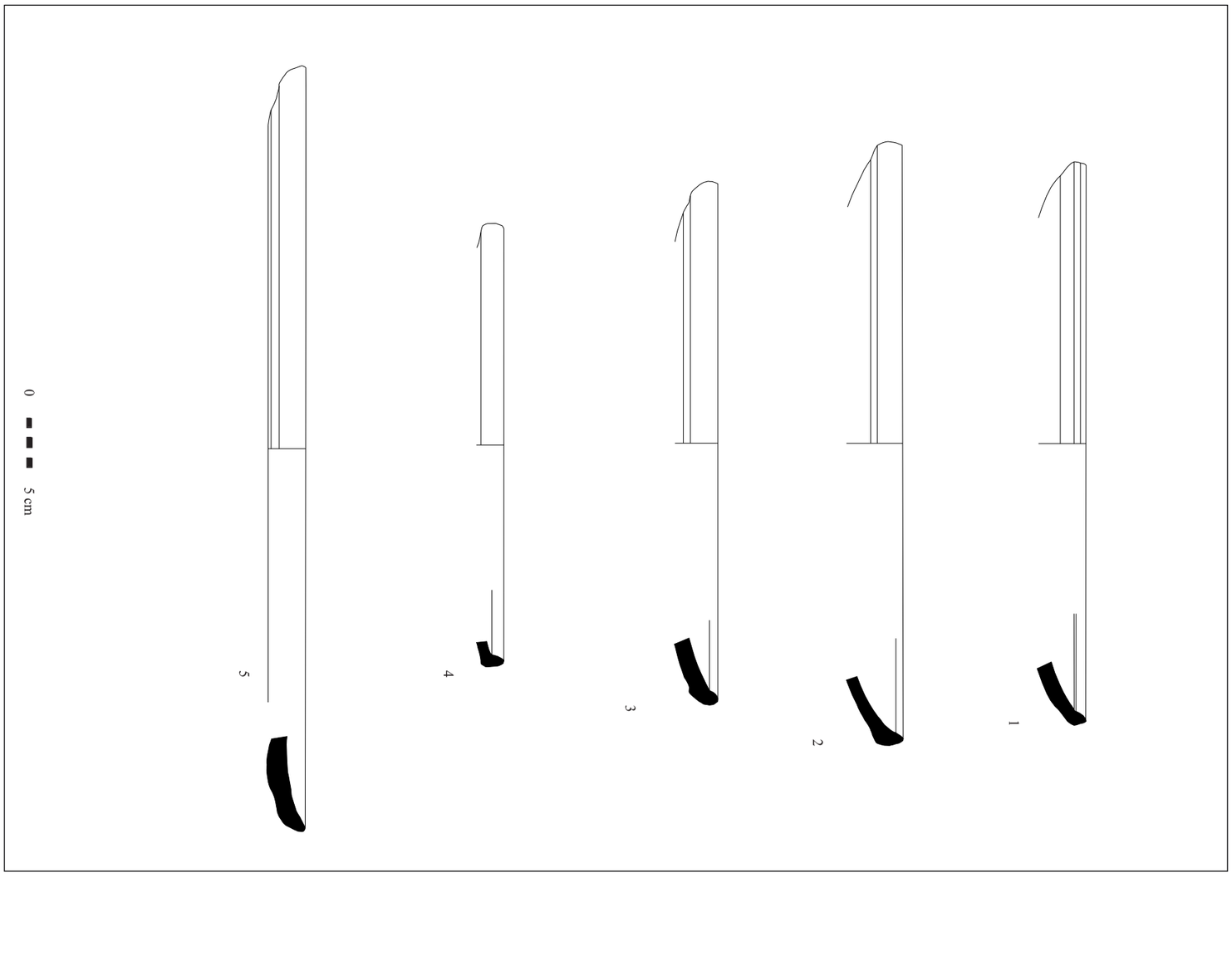


Plate 1.3: Early Bronze Age holemouth jars from Tall Zirāʿa Stratum 25—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	holemouth	TZ 002015-034	AO 116	582	HM R2B	EB II/III	Tall Abū al-Ḫaraz Phase IIIA and B: Fischer 2008, 284 Fig. 283, 4.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 169 Fig. 8, 4. 1.
2	holemouth	TZ 021811-001	AO 116	6505	HM R2B	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 E 1, 1.	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 283 Fig. 282, 4.
3	holemouth	TZ 021794-002	AN–AO 115–116	6491	HM Buff	EB II/III	Tall Abū al-Ḫaraz Phase IIIA and B: Fischer 2008, 284 Fig. 283, 5.	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 16.
4	holemouth	TZ 021792-001	AO 116	6488	HM Buff	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 282 Fig. 281, 6.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 4.
5	holemouth	TZ 002060-008	AN 115	598	HM Buff (pink slip)	EB II/III	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 283 Fig. 282, 5.	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 19.

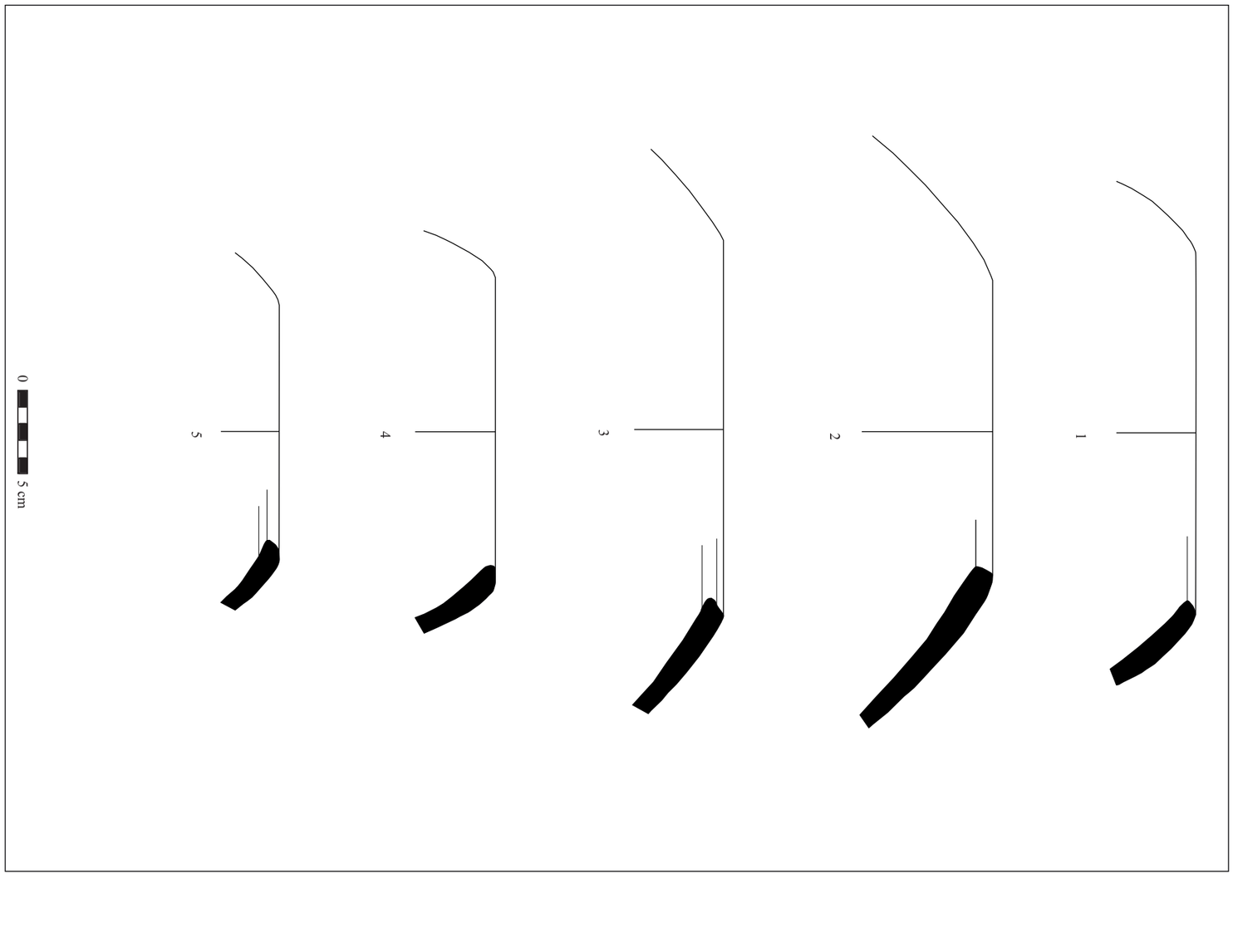


Plate 1.4: Early Bronze Age jugs and jars from Tall Zirāʿa Stratum 25—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 002072-002	AN 116	536	Metallic	EB II/III	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 277 Fig. 277, 9.	
2	jug/jar	TZ 021810-001	AO 116	6504	Metallic	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 4, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 5.
3	jug/jar	TZ 021810-012	AO 116	6504	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 3.
4	jug/jar	TZ 021814-002	AO 116	6505	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 5.	Tall Abū al-Ḫaraz Phase II: Fischer 2008, 287 Fig. 286, 3.
5	jug/jar	TZ 021814-005	AO 116	6505	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 3.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8.11, 7.
6	jug/jar	TZ 002406-031	AN 115	632	HM Buff (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 4, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 5.
7	jug/jar	TZ 021814-007	AO 116	6505	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 4, 2.	
8	jug/jar	TZ 021801-001	AN–AO 115–116	6496	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 35, 3.	

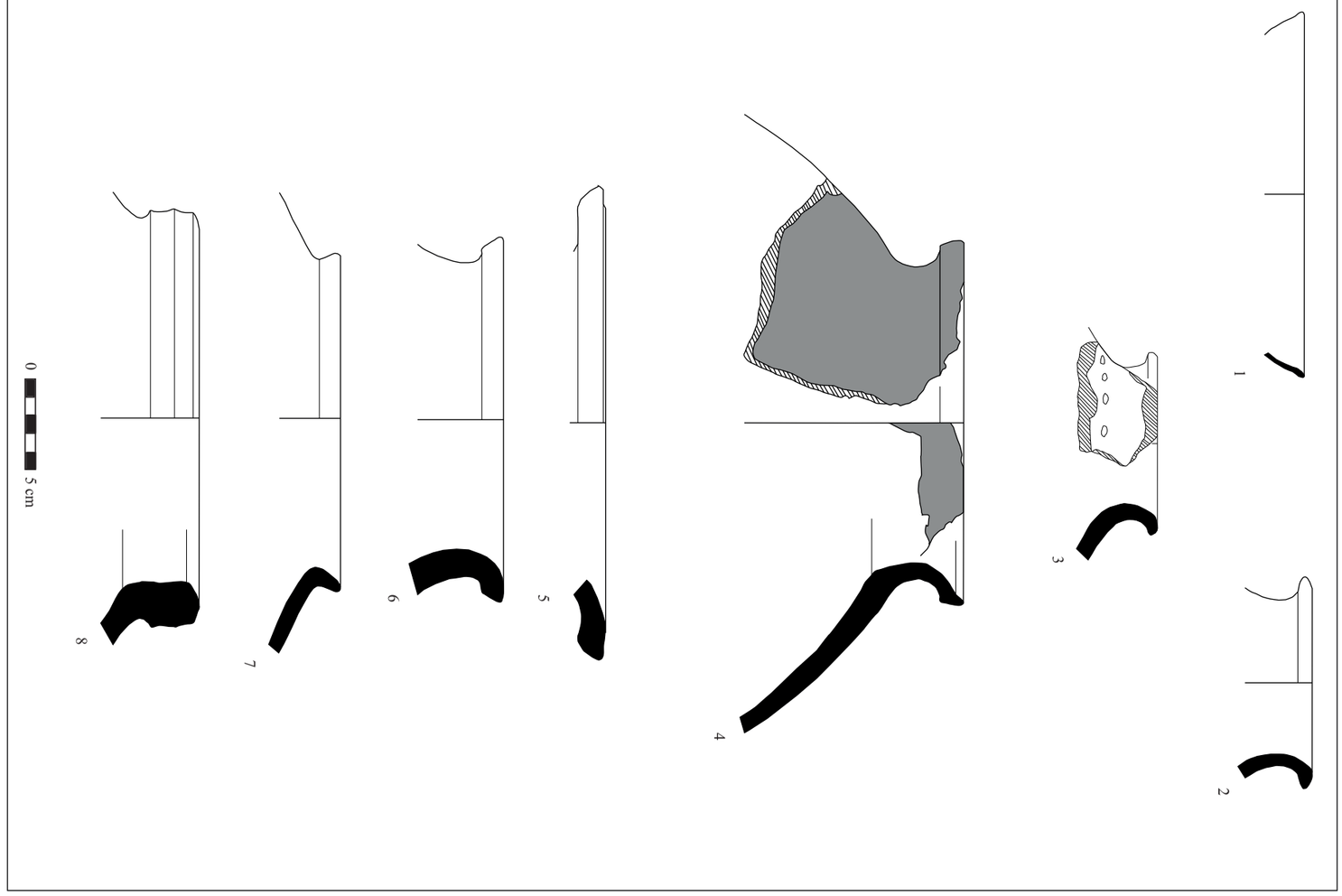


Plate 1.5: Early Bronze Age jugs and jars from Tall Zirā'a Stratum 25—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (body sherd)	TZ 002060-004	AN 115	598	HM GW	EB II/III		
2	jug/jar (body sherd)	TZ 021810-013	AO 116	6504	HM GW	EB II/III		
3	jug/jar (body sherd)	TZ 021814-001	AO 116	6505	HM GW	EB II/III		
4	jug/jar (body sherd)	TZ 021799-002	AO 116	6488	HM GW combed	EB II/III		
5	jug/jar (body sherd)	TZ 002406-017	AN 115	632	HM GW combed	EB II/III		
6	jug/jar (base)	TZ 021799-012	AO 116	6494	HM GW combed	EB II/III		
7	jug/jar (base)	TZ 021799-015	AO 116	6494	HM GW combed	EB II/III		

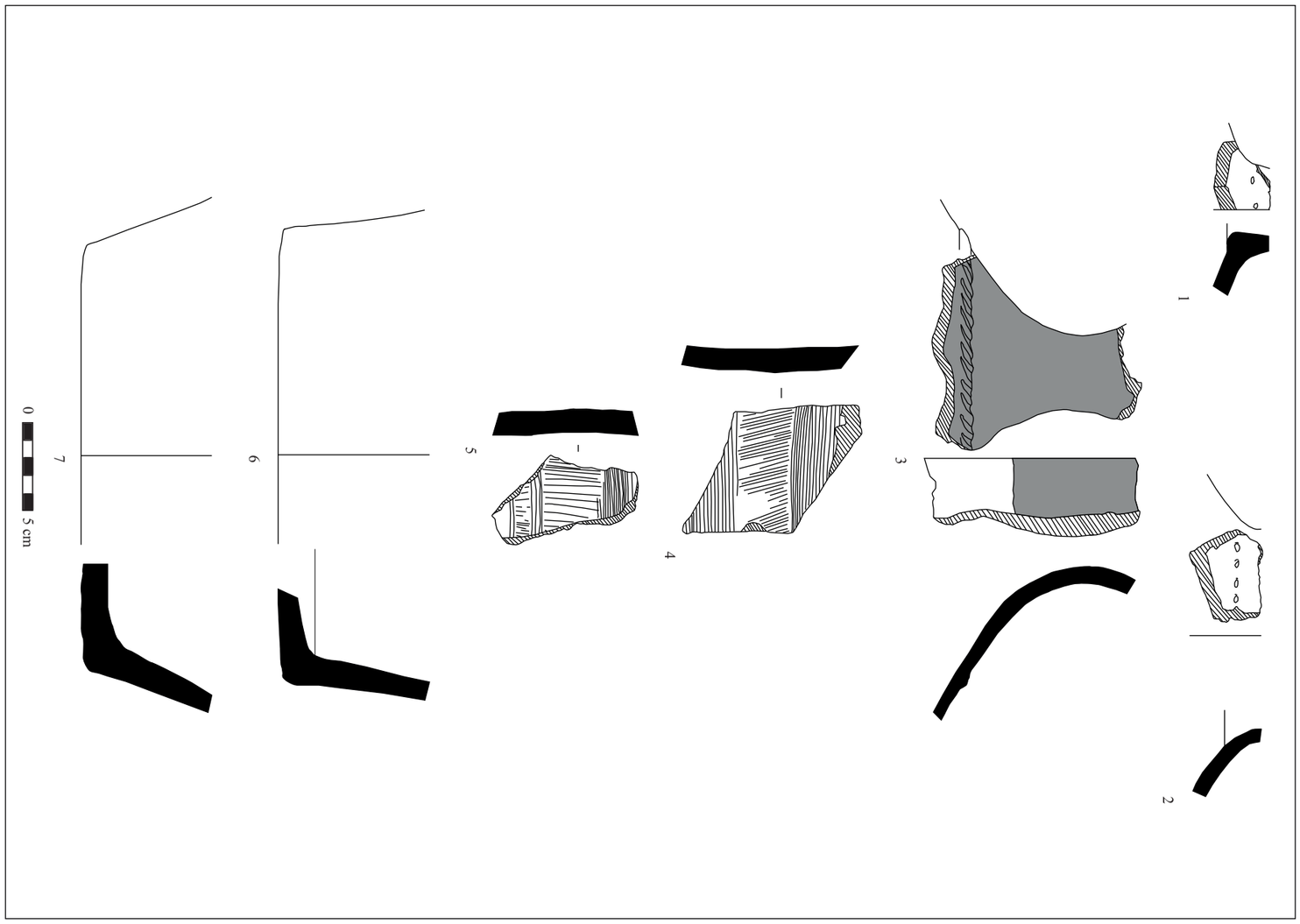


Plate 1.6: Early Bronze Age jugs and other pottery from Tall Zirāʿa Stratum 25—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (handle)	TZ 021807-002	AO 116	6504	HM GW	EB II/III		
2	jug/jar (handle)	TZ 021799-005	AO 116	6494	HM GW	EB II/III		
3	jug/jar (handle)	TZ 021814-010	AO 116	6505	HM GW	EB II/III		
4	lid	TZ 002406-004	AN 115	632	HM Buff	EB II/III		
5	spindle whorl	TZ 006309-002	AP 122	4471	HM Buff	EB II/III		

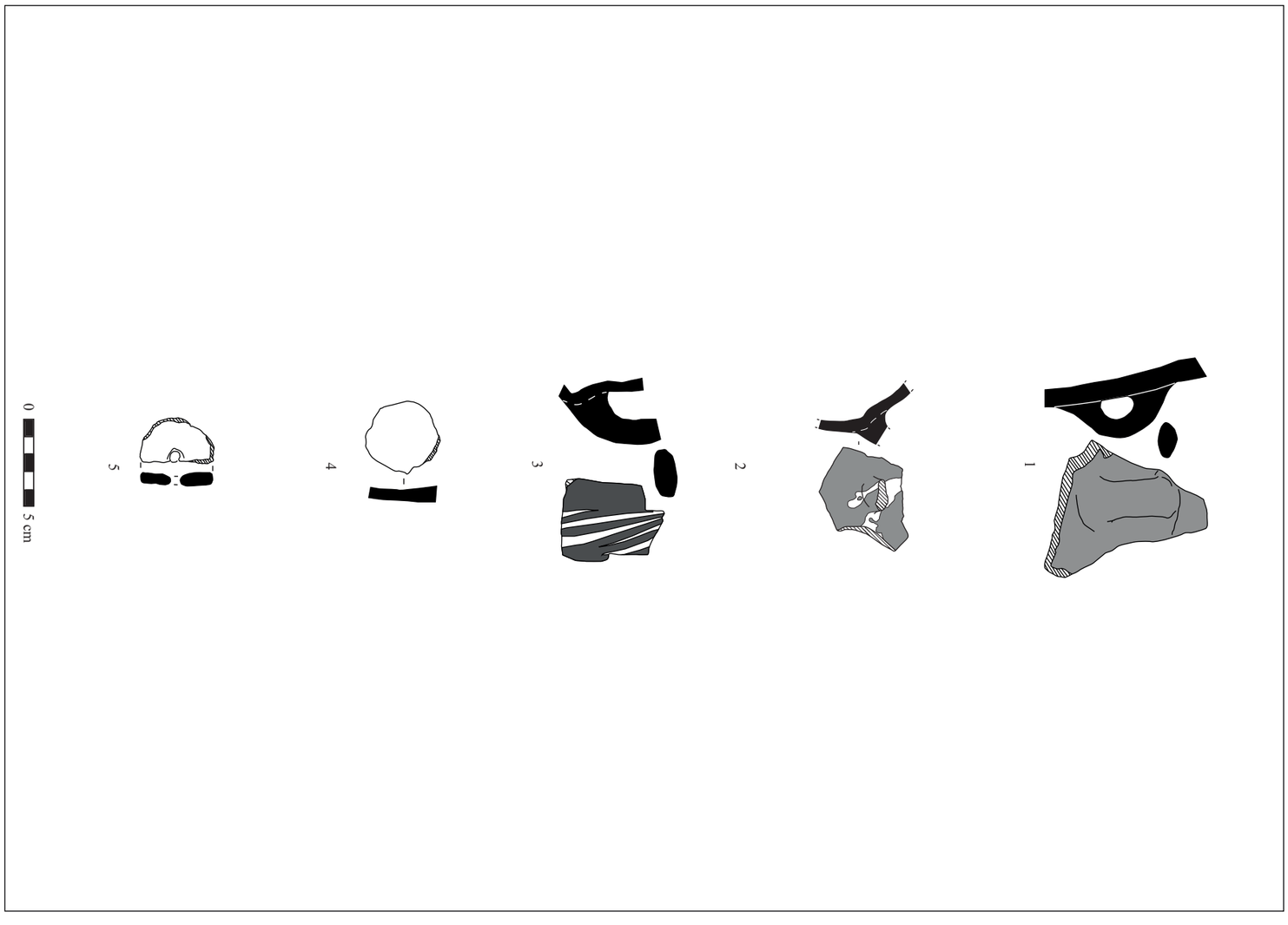


Plate 1.7: Early Bronze Age bowls from Tall Zirāʿa Stratum 24—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021756-017	AN 119	6466	HM GW	EB II/III	Tall Abū al-Ḥaraz Phase IB: Fischer 2008, 100 Fig. 104, 9.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 3.
2	bowl	TZ 021771-004 TZ 021771-005	AO 118	6422	HM Buff	EB II/III	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 4.	Tall Abū al-Ḥaraz Phase IB: Fischer 2008, 252 Fig. 158, 9.
3	bowl	TZ 021806-004	AO 118	6503	HM Buff (fine)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 1, 1.	
4	bowl	TZ 021739-005	AN 118	6425	HM polished	EB II/III	Tall al-Ḥiṣn (Beth Shean) EB III: Amiran 1969, 73 Pl. 19, 1.	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 24.
5	bowl	TZ 021806-010	AO 118	6503	HM Buff (fine)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 1, 1.	
6	bowl	TZ 021808-007	AN 118	6497	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 2.	
7	bowl	TZ 021757-008	AM 119	6426	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 6.	
8	bowl	TZ 021747-006	AN 118	6424	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 3.	
9	bowl (base)	TZ 021755-006	AO 119	6421	HM Buff	EB II/III		

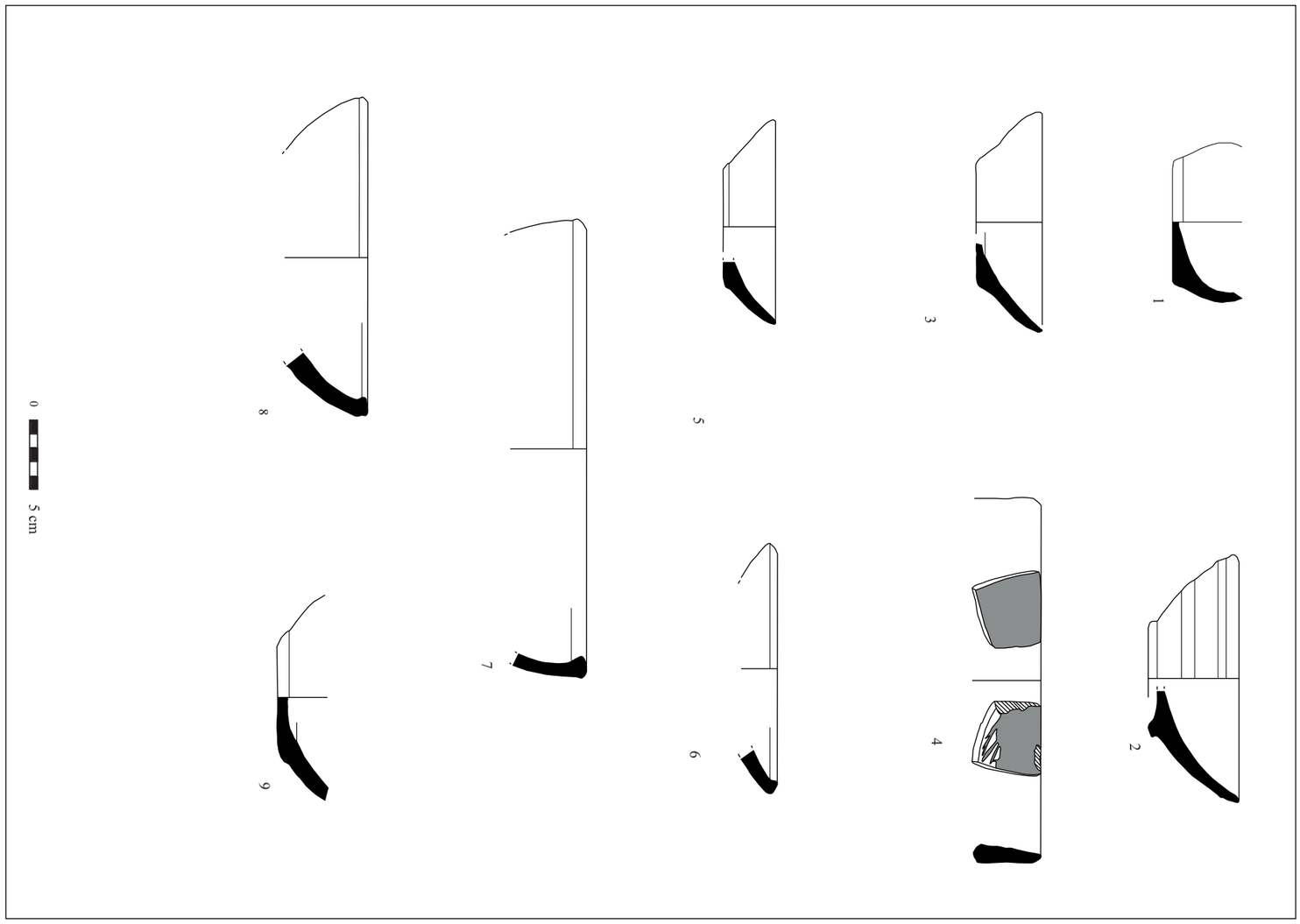


Plate 1.8: Early Bronze Age bowls from Tall Zirāʿa Stratum 24—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021748-002	AN 118	6425	HM GW	EB II/III	Ṭabqāt Faḥl (Pella) EB II/III: Bourke et al. 1994, Fig. 87, 7.	
2	platter	TZ 021806-007	AO 118	6503	HM Buff	EB II/III	Tall Abū al-Ḫaraz EB II: Fischer 1994, Fig. 138, 4.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 170 Fig. 8, 5. 3.
3	bowl	TZ 021776-014	AO 118	6466	HM Buff	EB II/III	At-Tall (Ai) EB III: Amiran 1969, 71 Pl. 18, 6.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 170 Fig. 8, 5. 1.
4	bowl	TZ 021776-016	AO 118	6466	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3.	Tall Abū al-Ḫaraz Phase IIB: Fischer 2008, 258 Fig. 263, 7.
5	platter	TZ 021755-005	AO 119	6421	HM R2B	EB II/III	Ḫirbat al-Kerak (Tēl Bēt Yeraḥ) EB II: Amiran 1969, 60 Pl. 15, 4.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 2.
6	bowl	TZ 021776-013	AO 118	6466	HM Buff (brown slip)	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 256 Fig. 261, 4.	
7	bowl	TZ 021776-012 TZ 021776-008	AO 118	6466	HM R2B	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 256 Fig. 261, 19.	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 6.
8	bowl	TZ 021787-002	AO 118	6466	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 3.	At-Tall (Ai) EB III: Amiran 1969, 7 Pl. 18, 6.
9	bowl	TZ 021809-001	AO 118	6503	HM GW	EB II/III	At-Tall (Ai) EB III: Amiran 1969, 71 Pl. 18, 6.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 8.

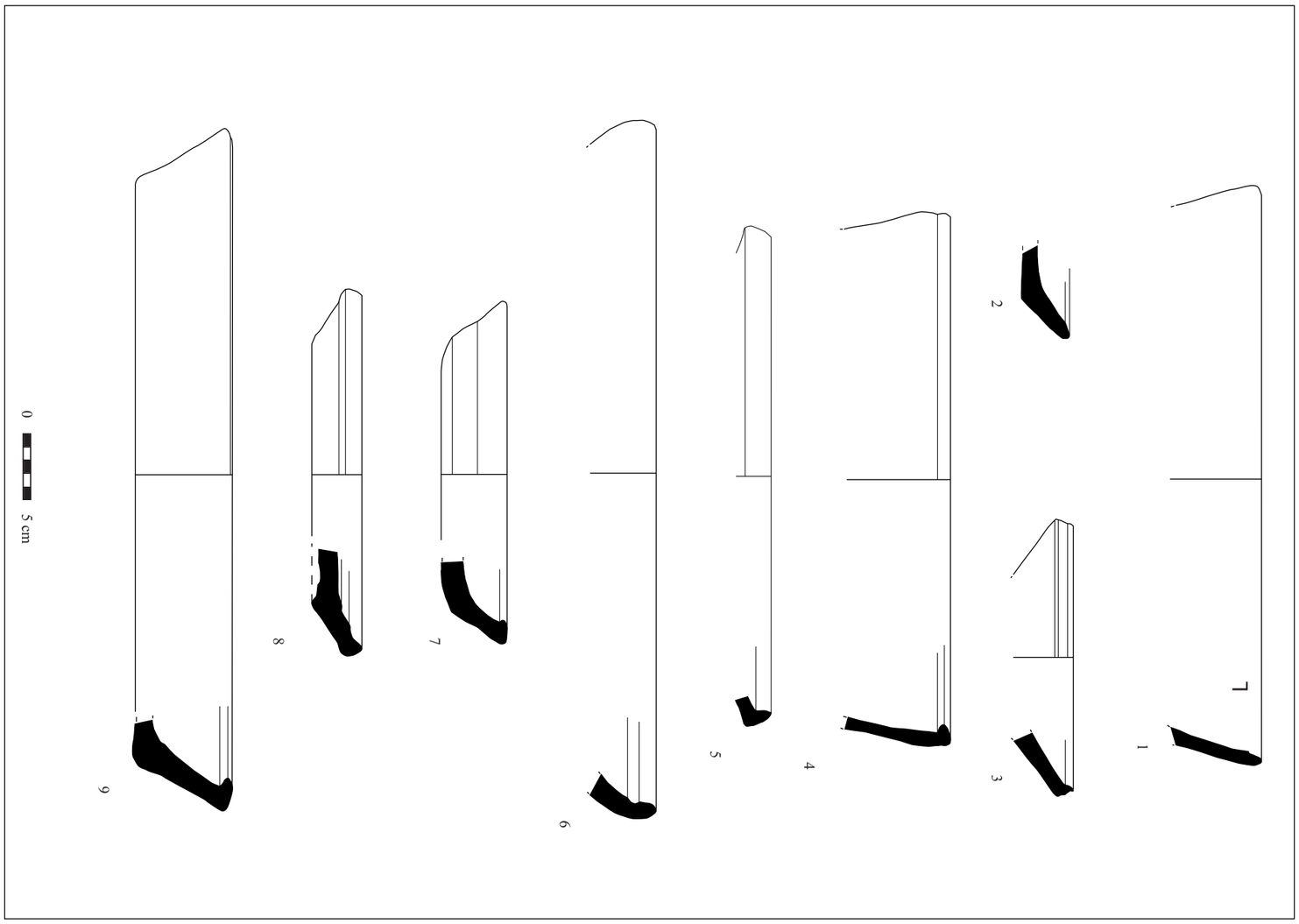


Plate 1.9: Early Bronze Age bowls and kraters from Tall Zirāʿa Stratum 24—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021755-001	AO 119	6421	HM Buff	EB II/III	At-Tall (Ai) EB III: Amiran 1969, 71 Pl. 18, 6.	
2	bowl	TZ 021748-005	AN 118	6425	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	
3	bowl	TZ 021808-001	AN 118	6497	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.
4	krater	TZ 021806-001	AO 118	6503	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7: without ornamental strip.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 3: without ornamental strip.
5	krater	TZ 021747-004	AN 118	6424	HM GW	EB II/III	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 10.	Tall Abū al-Ḫaraz: Fischer 1994, Fig. 142, 3.
6	krater	TZ 021757-001	AM 119	6426	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 135, 3: similar.	Ḫirbat al-Kerak: Tēl Bēt Yeraḥ) EB II: Amiran 1969, 60 Pl. 15, 4: rim similar.
7	bowl (base)	TZ 021809-015	AO 118	6503	HM GW	EB II/III		

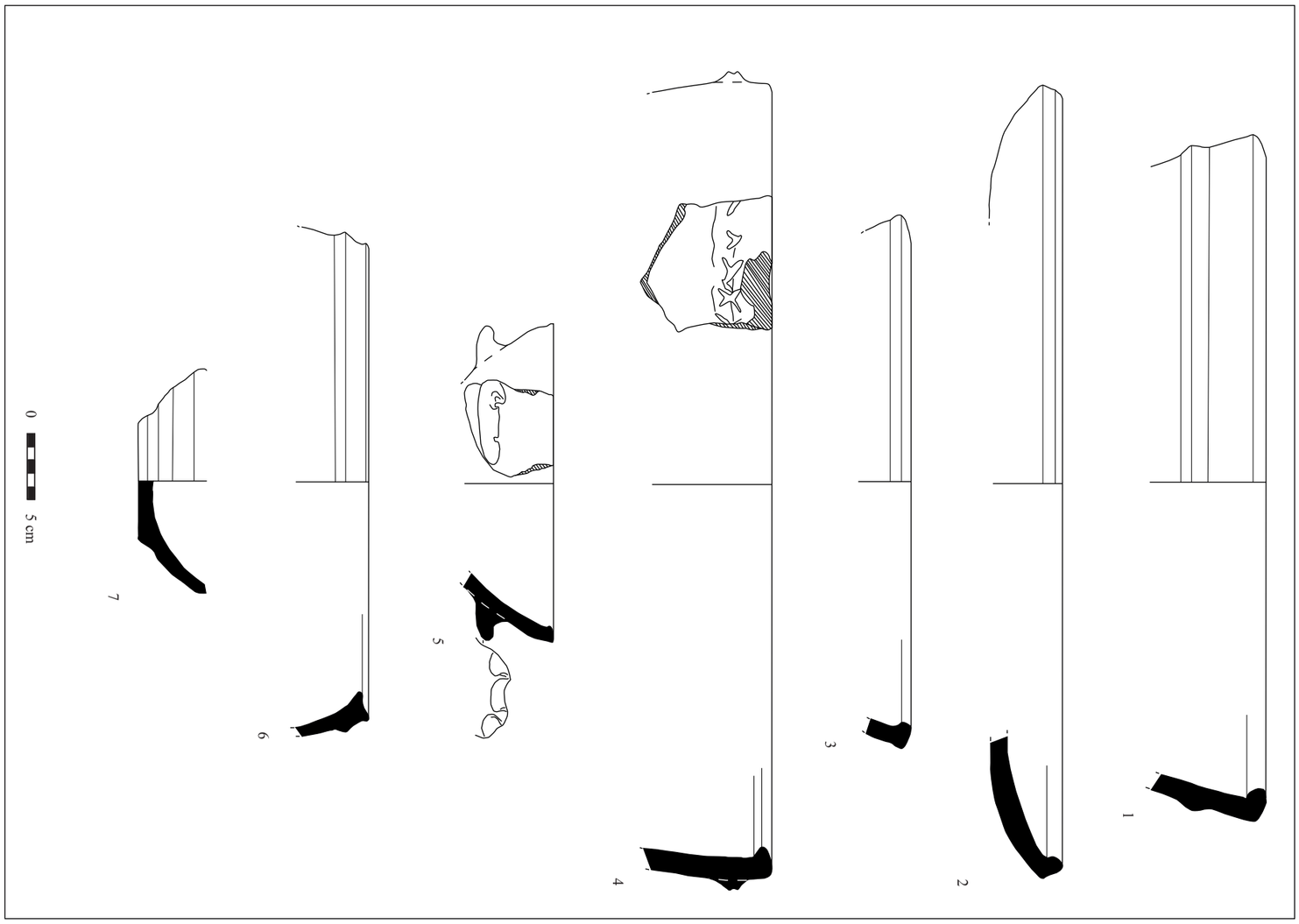


Plate 1.10: Early Bronze Age holemouth jars from Tall Zirāʿa Stratum 24—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	holemouth	TZ 021809-005	AO 118	6503	HM R2B	EB II/III	Tall aš-Šunā EB I: MacDonald 2001, Fig. 203, 3.	Ḫirbet er-Raḥūb middle—late EB: Kamlah 2000, Pl. 39, 6.
2	holemouth	TZ 021808-002	AN 118	6497	HM Buff	EB II/III	Ḫirbat er-Raḥūb middle EB: Kamlah 2000, Pl. 39, 11.	Ṭabqāt Faḥl (Pella) FB II—III: Bourke et al. 1994, Fig. 87, 1.
3	holemouth	TZ 021757-004	AM 119	6426	HM R2B	EB II/III	Eš-Šallāf (Süd) EB: Kamlah 2000, Pl. 32, 7.	
4	holemouth	TZ 021774-006	AO 118	6422	HM Buff	EB II/III	Eḍ-Ḍanaba (Ruǧm Sa ʾab) middle—late EB: Kamlah 2000, Pl. 104, 9.	Ṭabqāt Faḥl (Pella) late EB: Bourke et al. 1998, Fig. 184, 19.
5	holemouth	TZ 021755-008	AO 119	6421	HM Buff	EB II/III	Ḫirbat er-Raḥūb middle EB: Kamlah 2000, Pl. 39, 11.	Ṭabqāt Faḥl (Pella) FB II—III: Bourke et al. 1994, Fig. 87, 1.
6	holemouth	TZ 021755-011	AO 119	6421	HM Buff	EB II/III	Ṭabqāt Faḥl (Pella) EB I/II: Bourke et al. 1994, 100 and Fig. 1.	Ḫirbat er-Raḥūb middle—late EB: Kamlah 2000, Pl. 39, 7.
7	holemouth	TZ 021802-004	AN 118	6497	HM Buff	EB II/III	Eš-Šallāf (South) early EB: Kamlah 2000, Pl. 32, 8.	

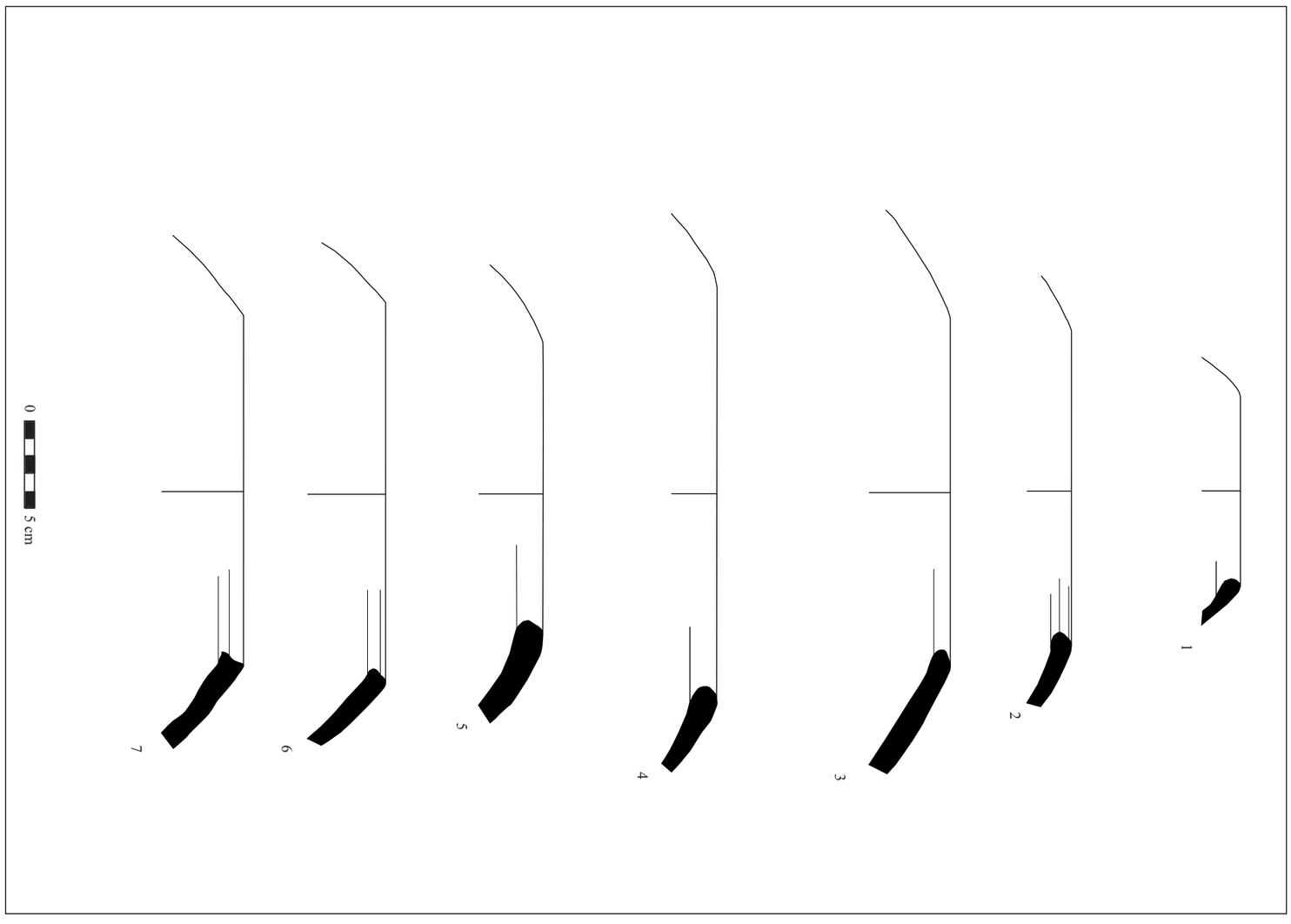


Plate 1.11: Early Bronze Age jugs from Tall Zirāʿa Stratum 24—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	juglet	TZ 021757-003	AM 119	6426	HM GW	EB II/III	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 19.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 148 Fig. 67, 1–3.
2	jug/jar	TZ 021771-002	AO 118	6422	HM R2B	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 3.	Ṭabqāt Faḥl (Pella) EB: Bourke et al. 2003, Fig. 347, 10.
3	jug/jar	TZ 021747-007	AN 118	6424	HM GW	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 3.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 1.
4	jug/jar	TZ 021776-010	AO 118	6466	HM GW	EB II/III	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 277 Fig. 277, 10.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 3.
5	jug/jar	TZ 021747-008	AN 118	6424	HM GW	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8, 7. 11.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 3.
6	jug/jar	TZ 021748-001	AN 118	6425	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 6. 7.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L, 3.
7	jug/jar	TZ 021755-004	AO 119	6421	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 6. 7.	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 277 Fig. 277. 9.
8	jug/jar	TZ 021776-001	AO 118	6466	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11, K 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8, 7. 11.
9	jar	TZ 021747-014	AN 118	6424	HM GW	EB II/III	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 277 Fig. 277, 10.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 3.
10	jar	TZ 021808-010	AN 118	6497	HM GW	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 9: similar decoration.	

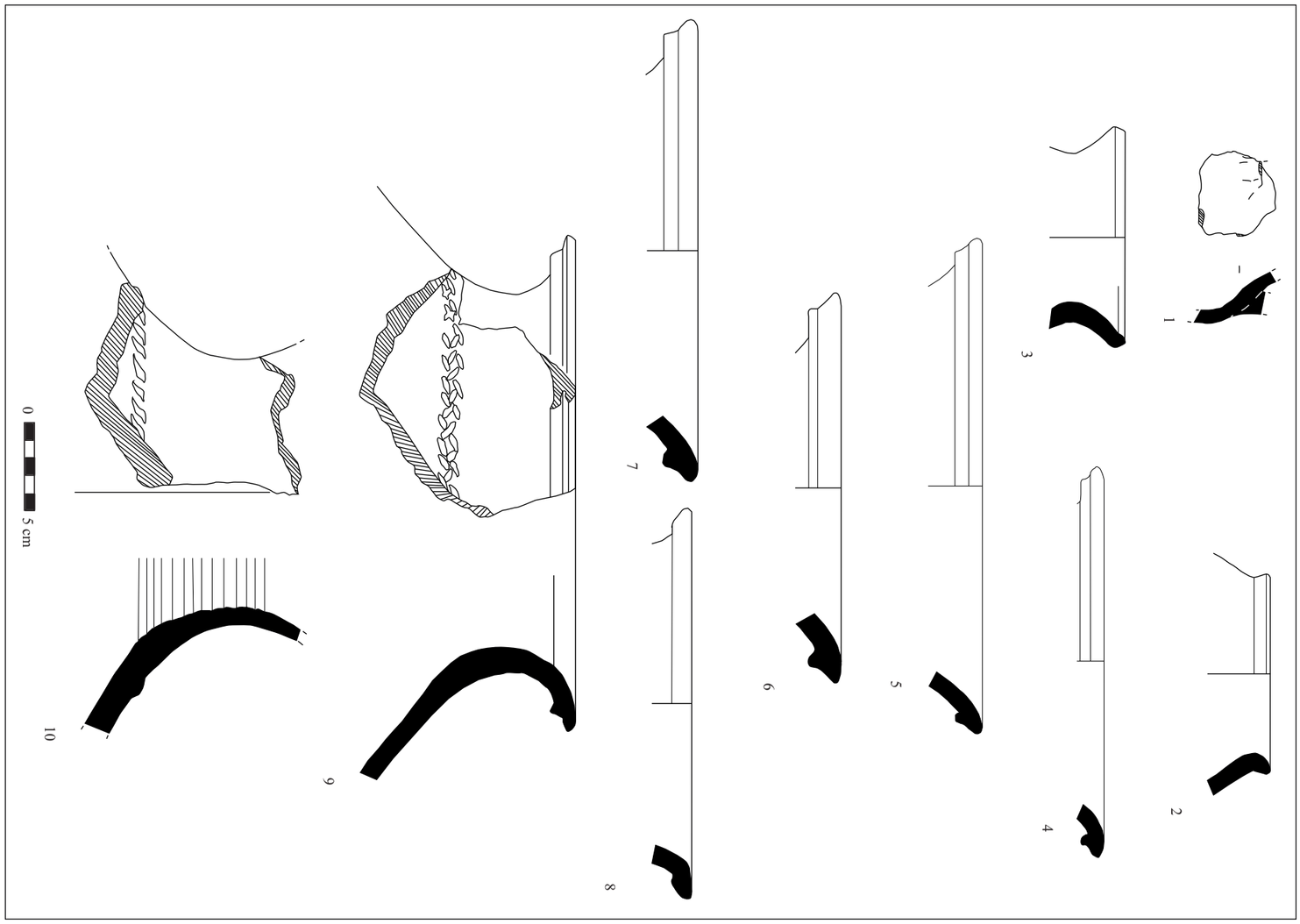


Plate 1.12: Early Bronze Age jugs and other pottery from Tall Zirā'a Stratum 24—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (body sherd)	TZ 021809-008	AO 118	6503	HM red polished	EB II/III		
2	bowl (body sherd)	TZ 021808-009	AN 118	6497	HM Net Pattern	EB II/III		
3	jug/jar (body sherd)	TZ 021802-002	AN 118	6497	HM GW	EB II/III		
4	krater (body sherd)	TZ 021756-008	AN 119	6432	HM red polished	EB II/III		
5	jug/jar (body sherd)	TZ 021771-003	AO 118	6422	HM combed	EB II/III		
6	jug/jar (body sherd)	TZ 021806-015	AO 118	6503	HM GW	EB II/III		
7	ledge handle	TZ 021756-007	AN 119	6432	HM GW	EB II/III		
8	ledge handle	TZ 021776-003	AO 118	6466	HM GW	EB II/III		
9	jug/jar (base)	TZ 021808-012	AN 118	6497	HM GW	EB II/III		
10	jug/jar (base)	TZ 021808-011	AN 118	6497	HM GW	EB II/III		
11	jug/jar (base)	TZ 021806-012	AO 118	6503	HM Buff	EB II/III		

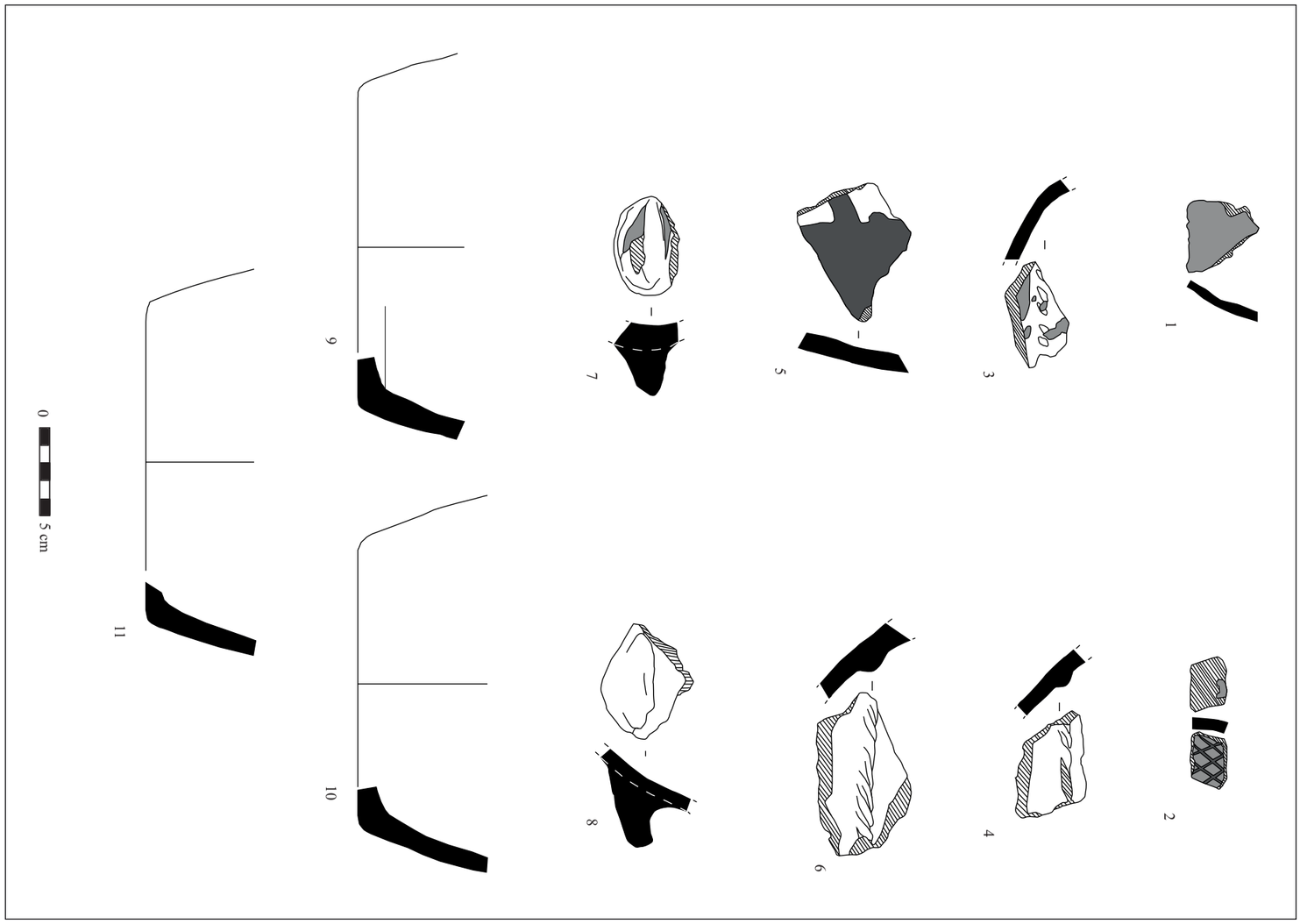


Plate 1.13a: Early Bronze Age bowls from Tall Zirāʿa Stratum 23—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021763-003	AM 118	6459	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 3.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 12.
2	bowl	TZ 021682-001	AN 118	6347	HM Buff	EB II/III	Tall Abū al-Ḫaraz Phase IIA: Fischer 2008, 253 Fig. 259, 5.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 4, 1.
3	bowl	TZ 021763-005	AM 118	6459	HM Buff (polished)	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 7. 9: here Ḫirbet Ḫerak.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 3.
4	bowl	TZ 021713-012	AN 118	6378	HM R2B (buff slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 7.	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 60 Pl. 15, 9.
5	bowl	TZ 021682-006	AN 118	6347	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 3.
6	bowl	TZ 021713-005	AN 118	6378	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 1.	
7	bowl	TZ 021758-008	AM 118	6427	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8, A 6.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 18. 19.
8	bowl	TZ 021764-005	AM 118	6461	HM Buff (brown slip)	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 12.
9	bowl	TZ 021769-002	AL 118	6394	HM Buff (brown slip)	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 25.	
10	bowl	TZ 021701-001	AO 118	6376	HM GW	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 19.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 16.

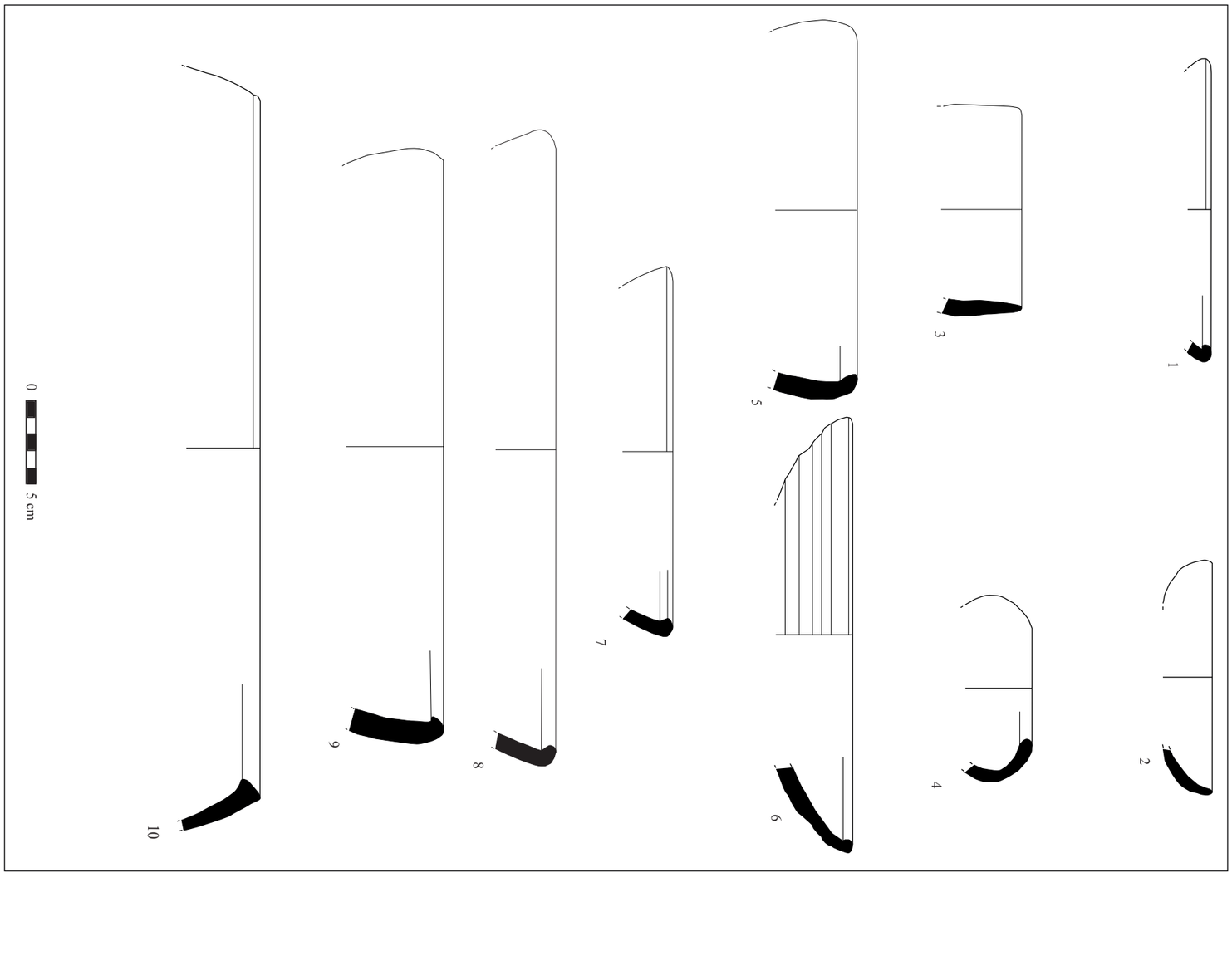


Plate 1.13b: Early Bronze Age bowls from Tall Zirāʿa Stratum 23—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
11	bowl	TZ 021735-002	AN 118	6407	HM Buff (pink slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 3.	Tall Abū al-Ḥaraz EB IIA: Fischer 1994, Fig. 142, 2.
12	bowl	TZ 021734-008	AN 118	6406	HM Buff (pink slip)	EB II/III	Tall Abū al-Ḥaraz Phase IB: Fischer 2008, 252 Fig. 258, 20.	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 6.
13	bowl	TZ 021701-005	AO 118	6376	HM Buff (brown slip)	EB II/III	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 6.	Tall Abū al-Ḥaraz Phase IB: Fischer 2008, 252 Fig. 258, 20.
14	bowl	TZ 021734-006	AN 118	6406	HM Buff (brown slip)	EB II/III	Tall Abū al-Ḥaraz Phase IIIA: Fischer 2008, 259 Fig. 264, 7.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 1.

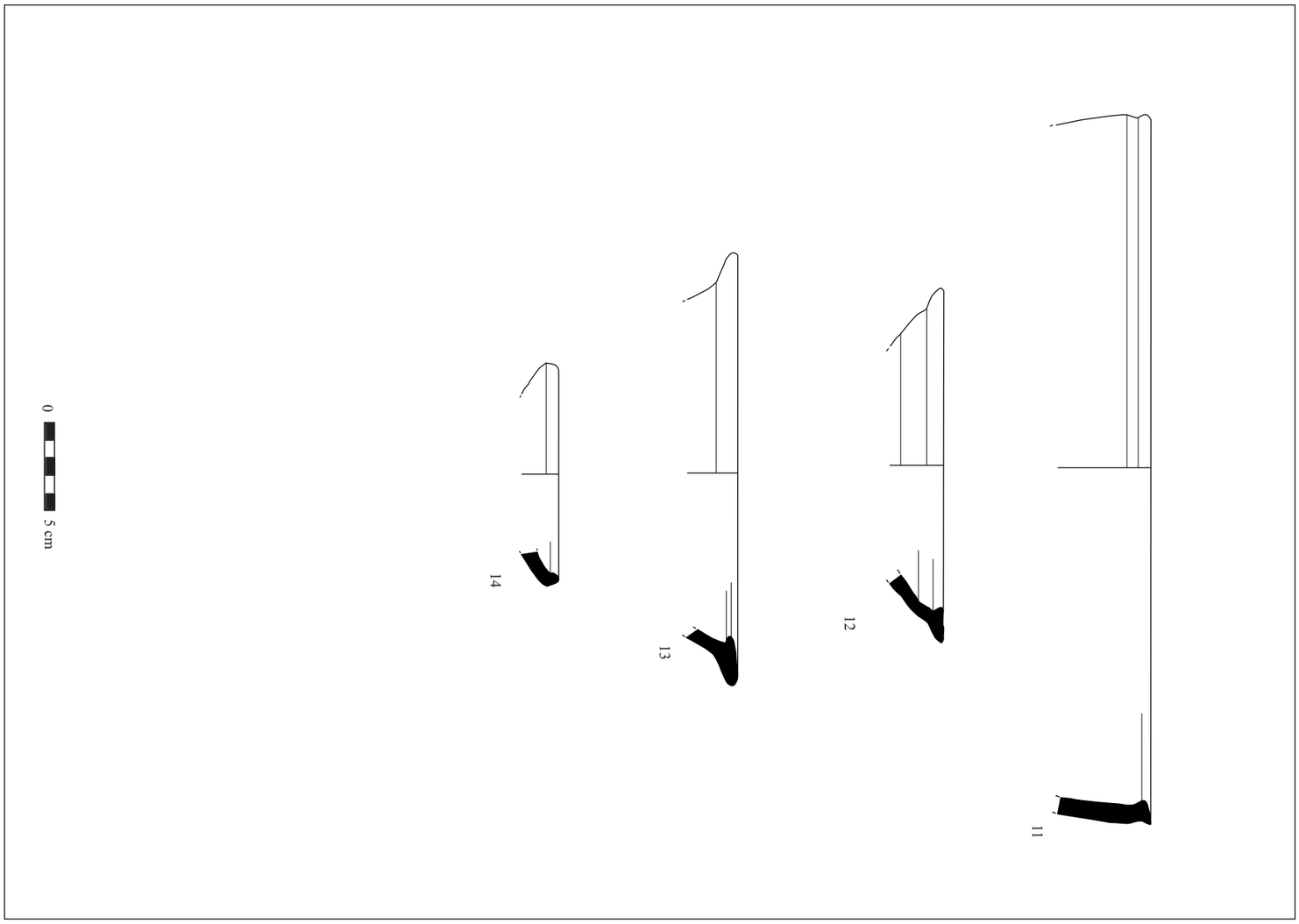


Plate 1.14: Early Bronze Age bowls/kraters and platters from Tall Zirā'a Stratum 23—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl/krater	TZ 021690-002	AO 119	6375	HM GW	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 10 D 1, 2.
2	bowl/krater	TZ 021731-005	AO 118	6401	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1.	
3	bowl/krater	TZ 021702-009	AN 119	6377	HM Buff (brown slip)	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64. 10.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 19.
4	bowl/krater	TZ 021682-003	AN 118	6347	HM Buff (pink slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	
5	platter	TZ 021758-001	AM 118	6427	HM Buff (brown slip)	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 14.	
6	platter	TZ 021758-006	AM 118	6427	HM Buff (red and brown slip)	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 18.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 12.
7	platter	TZ 021736-001	AM 118	6409	HM Buff (brown slip)	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 18.	Tall Abū al-Ḫaraz Phase IIIA: Fischer 2008, 259 Fig. 264, 3.

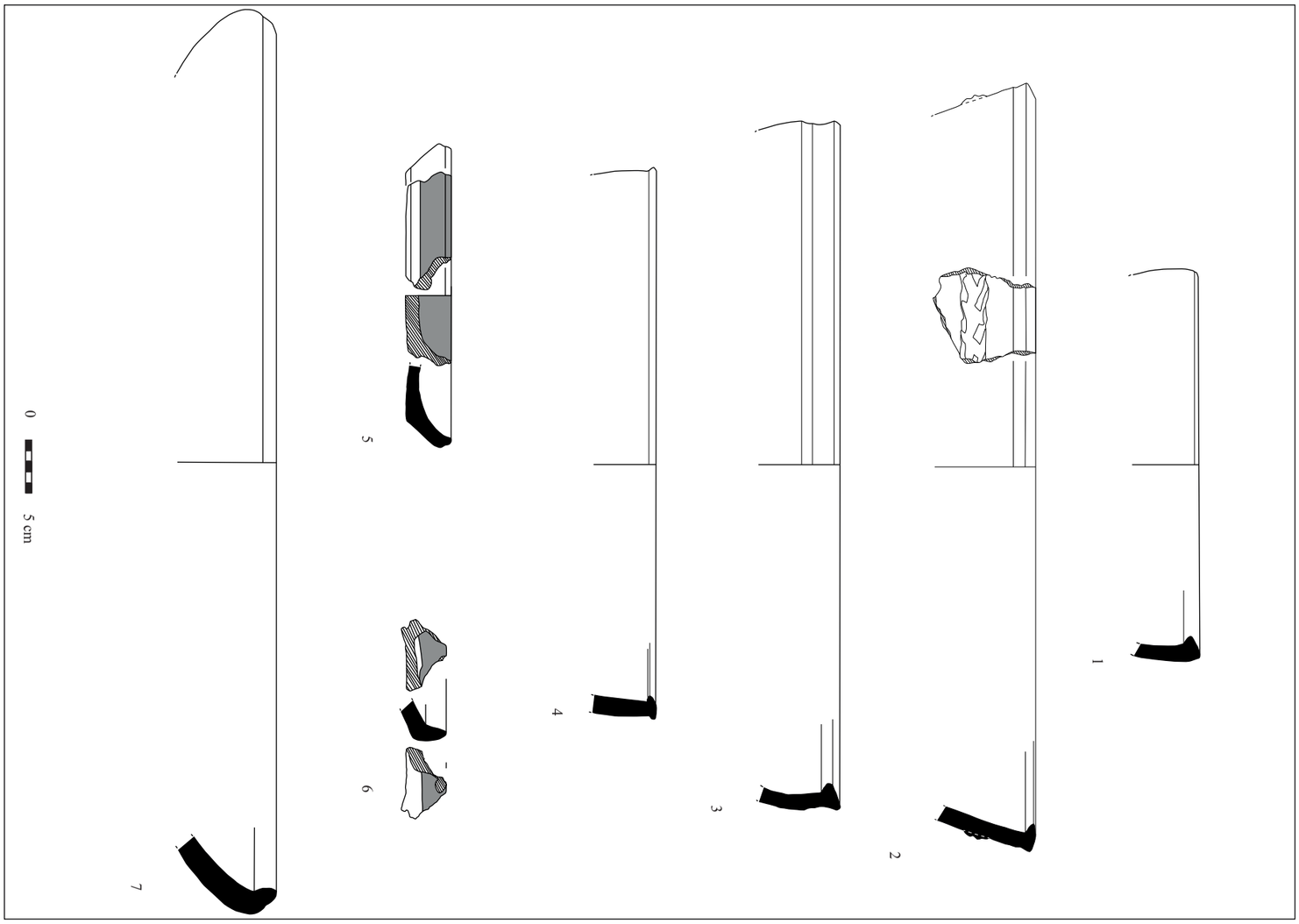


Plate 1.15: Early Bronze Age holemouth jars from Tall Zirāʿa Stratum 23—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	holemouth	TZ 021682-004	AN 118	6347	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 3.	Tall Abū al-Ḫaraz Phase IIIA and B: Fischer 2008, 279 Fig. 279, 4.
2	holemouth	TZ 021764-004	AM 118	6461	HM R2B	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 2.	Tall Abū al-Ḫaraz Phase IIA und B: Fischer 2008, 282 Fig. 283, 3.
3	holemouth	TZ 021730-009	AN 119	6398	HM R2B	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 4.	Tall Abū al-Ḫaraz Phase IIIA und B: Fischer 2008, 284 Fig. 283, 4.
4	holemouth	TZ 021702-006	AN 119	6377	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 3.	Tall Abū al-Ḫaraz Phase IIIA und B: Fischer 2008, 284 Fig. 283, 4.
5	holemouth	TZ 021734-004	AN 118	6406	HM R2B	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 4.	Tall Abū al-Ḫaraz Phase IIIA und B: Fischer 2008, 284 Fig. 283, 4.
6	holemouth	TZ 021690-003	AO 119	6375	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 E 1, 2.	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 283 Fig. 282, 3.
7	holemouth	TZ 021703-001	AN 118	6378	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 E 1, 1.	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 283 Fig. 282, 3.
8	jar/holemouth	TZ 021734-002	AN 118	6406	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 F.	Ruǧm el-Qāḍi middle–late EB: Kamlah 2000, Pl. 92, 4.
9	jar/holemouth	TZ 021734-005	AN 118	6406	HM Buff (pink slip)	EB II/III	Tall Abū al-Ḫaraz Phase IA: Fischer 2008, 282 Fig. 281, 1.	

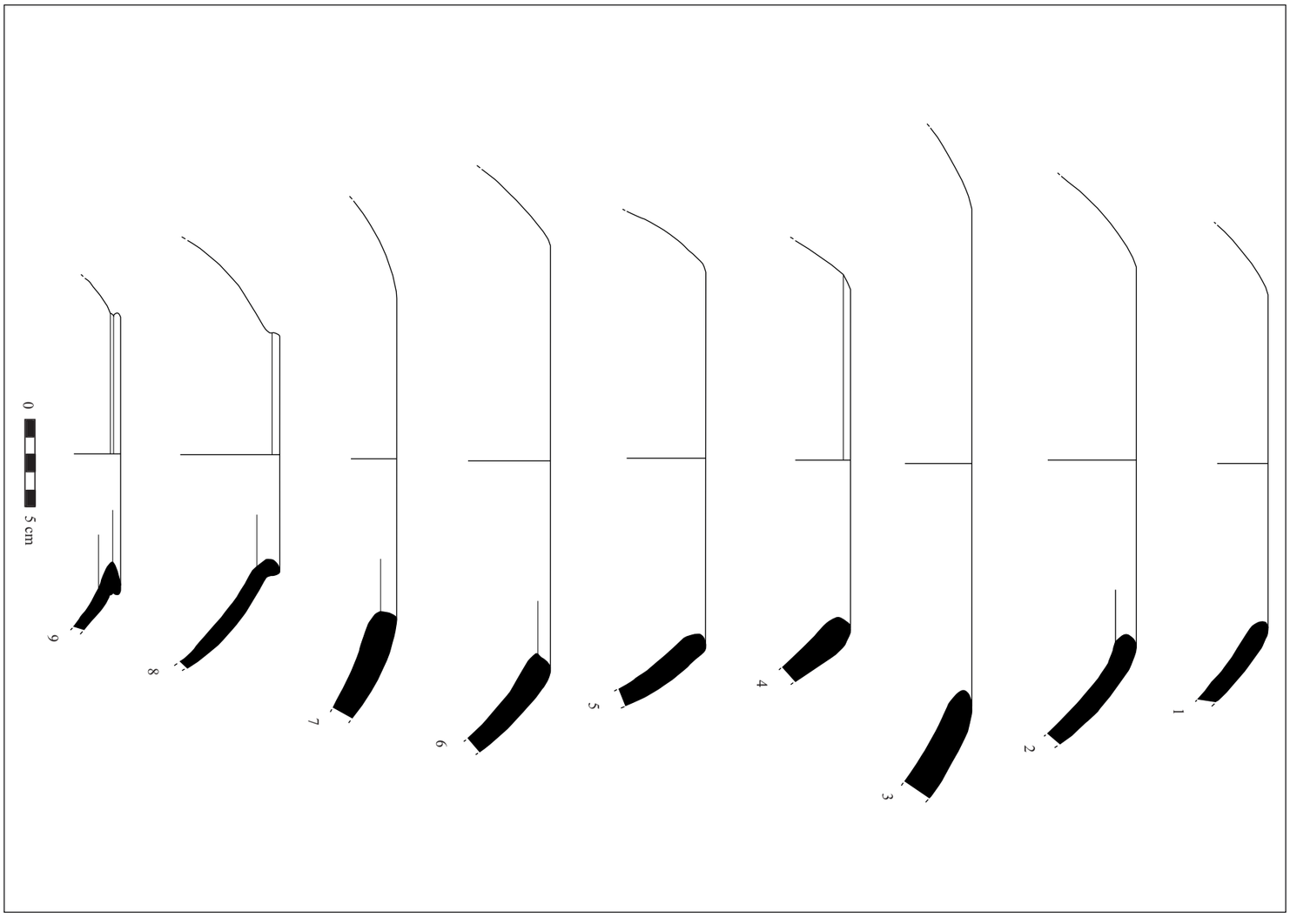


Plate 1.16: Early Bronze Age jugs and jars from Tall Zirāʿa Stratum 23—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bottle/juglet	TZ 021713-010	AN 118	6378	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 G 1).	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 148 Fig. 67, 1.
2	jug/jar	TZ 021713-014	AN 118	6378	HM Buff	EB II/III	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 268 Fig. 270, 7.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 H 3.
3	storage jar	TZ 021678-001	AN 119	6334	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 7.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 11 L 3.
4	jar	TZ 021731-001	AO 118	6401	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III. Genz 2002, 24 Fig. 12 L 3.	Tall Abū al-Ḫaraz Phase IIIA und B: Fischer 2008, 279 Fig. 279, 4.
5	jar	TZ 021682-005	AN 118	6347	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 1: similar.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 284 Fig. 283, 4.
6	jar	TZ 021713-008	AN 118	6378	HM GW	EB II/III		
7	jar	TZ 021611-010	AL 118	6207	HM GW	EB II/III	Ḫirbat Yarīḥā aš-Šamālīyah early MB: Kamlah 2000, Pl. 73, 5.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 3: similar.
8	jar	TZ 021703-004	AN 118	6378	Hm GW	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 272 Fig. 273, 12.	Ḫirbat Yarīḥā aš-Šamālīyah early MB: Kamlah 2000, Pl. 73, 3.
9	jar	TZ 021701-006	AO 118	6376	HM Buff (brown slip)	EB II/III	Tall Abū al-Ḫaraz Phase IIA and B: Fischer 2008, 277 Fig. 277, 9.	Ḫirbat Yarīḥā aš-Šamālīyah early MB: Kamlah 2000, Pl. 73, 5.

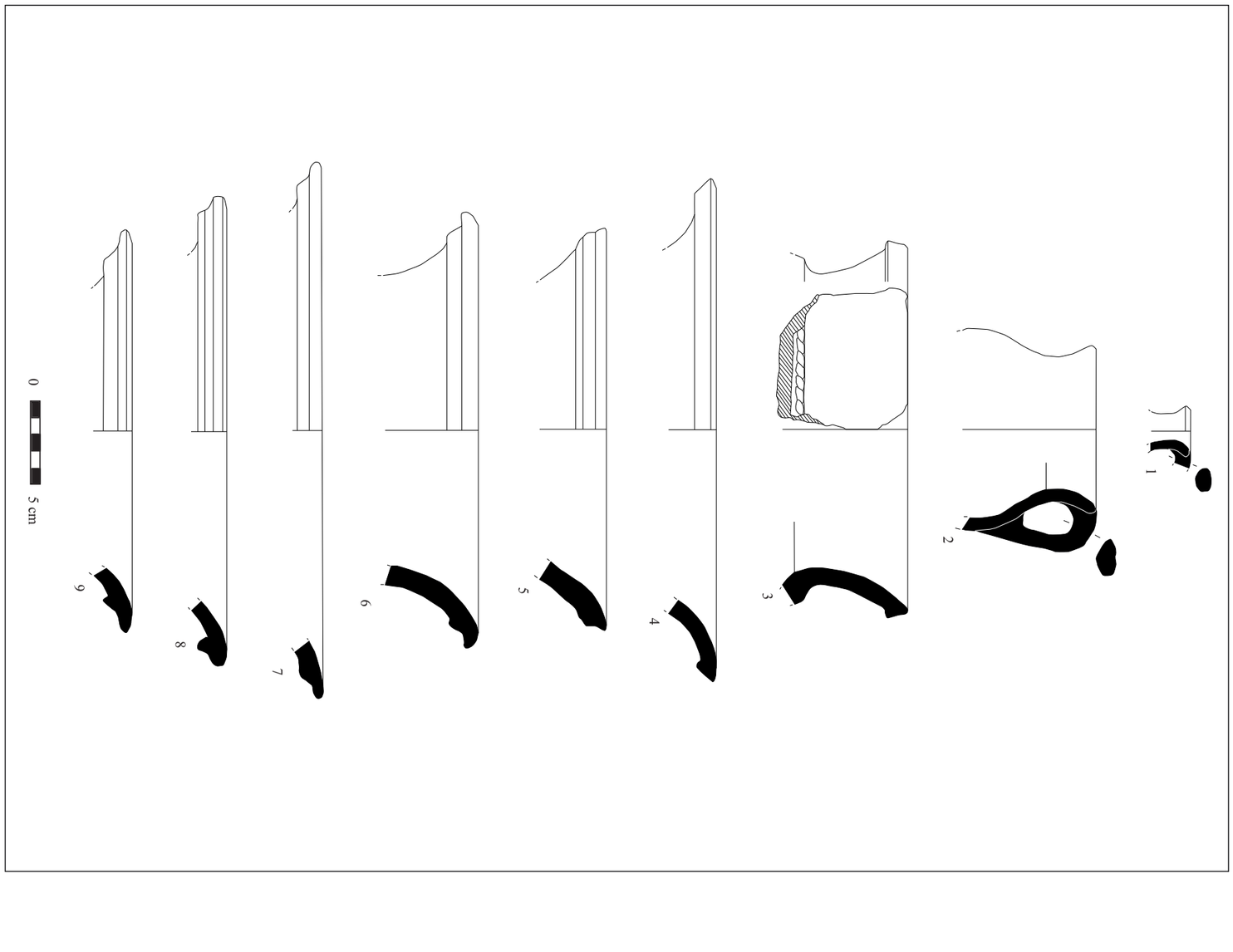


Plate 1.17: Early Bronze Age jars and stands from Tall Zirā'a Stratum 23—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	storage jar (body sherd)	TZ 021763-002	AM 118	6459	HM GW	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 9.	Tall Abū al-Ḫaraz Phase II: Fischer 2008, 287 Fig. 286, 3.
2	jar (body sherd)	TZ 021717-006	AL 118	6396	HM GW	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 9.	Tall Abū al-Ḫaraz Phase II: Fischer 2008, 287 Fig. 286, 3.
3	stand	TZ 021731-004	AO 118	6401	HM Buff	EB II/III	Tall aš-Šūna EB III: MacDonald et al. 2001, Fig. 209, 4: similar.	Tall al-Ḥiṣn (Beth Shean) EB III: Amiran 1969, 73 Pl. 19, 14 and 15: similar.
4	stand	TZ 021706-001	AM 118	6392	HM Buff (pink slip)	EB II/III	Tall aš-Šūna EB III: MacDonald et al. 2001, Fig. 209, 4: similar.	Tall al-Ḥiṣn (Beth Shean) EB III: Amiran 1969, 73 Pl. 19, 14 and 15: similar.

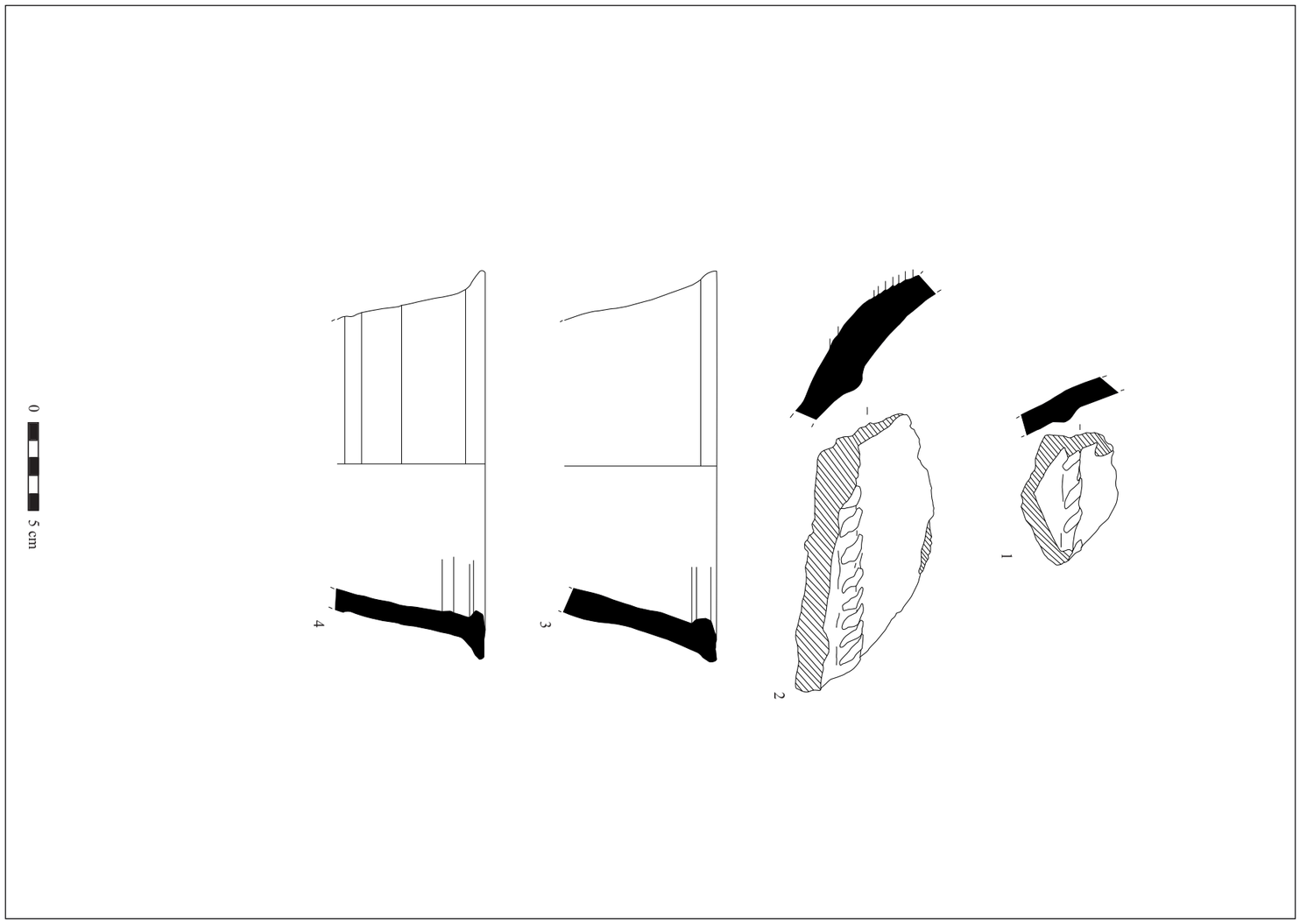


Plate 1.18: Early Bronze Age jugs and jars from Tall Zirāʿa Stratum 23—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (handle)	TZ 021734-010	AN 118	6406	HM Buff (pink slip)	EB II/III		
2	jug/jar (ledge handle)	TZ 021701-003	AO 118	6376	HM GW	EB II/III		
3	jug/jar/krater (ledge handle)	TZ 021734-012	AN 118	6406	HM GW	EB II/III		
4	jug/jar (ledge handle)	TZ 021758-005	AM 118	6427	HM GW	EB II/III		
5	juglet (base)	TZ 021678-006	AN 119	6334	Abydos	EB II/III	Tall al-ʿOrēme (Tēl Kinrōt) EB II: Amiran 1969, 65 Pl. 17, 1.	Tall al-Fārʿa North (Tirza) EB III: Amiran 1969, 65 Pl. 17, 3.
6	jug/jar (base)	TZ 021716-004	AL 118	6394	HM GW	EB II/III		
7	jug/jar (base)	TZ 021758-003	AM 118	6427	HM GW	EB II/III		
8	jug/jar (base)	TZ 021758-004	AM 118	6427	HM GW	EB II/III		

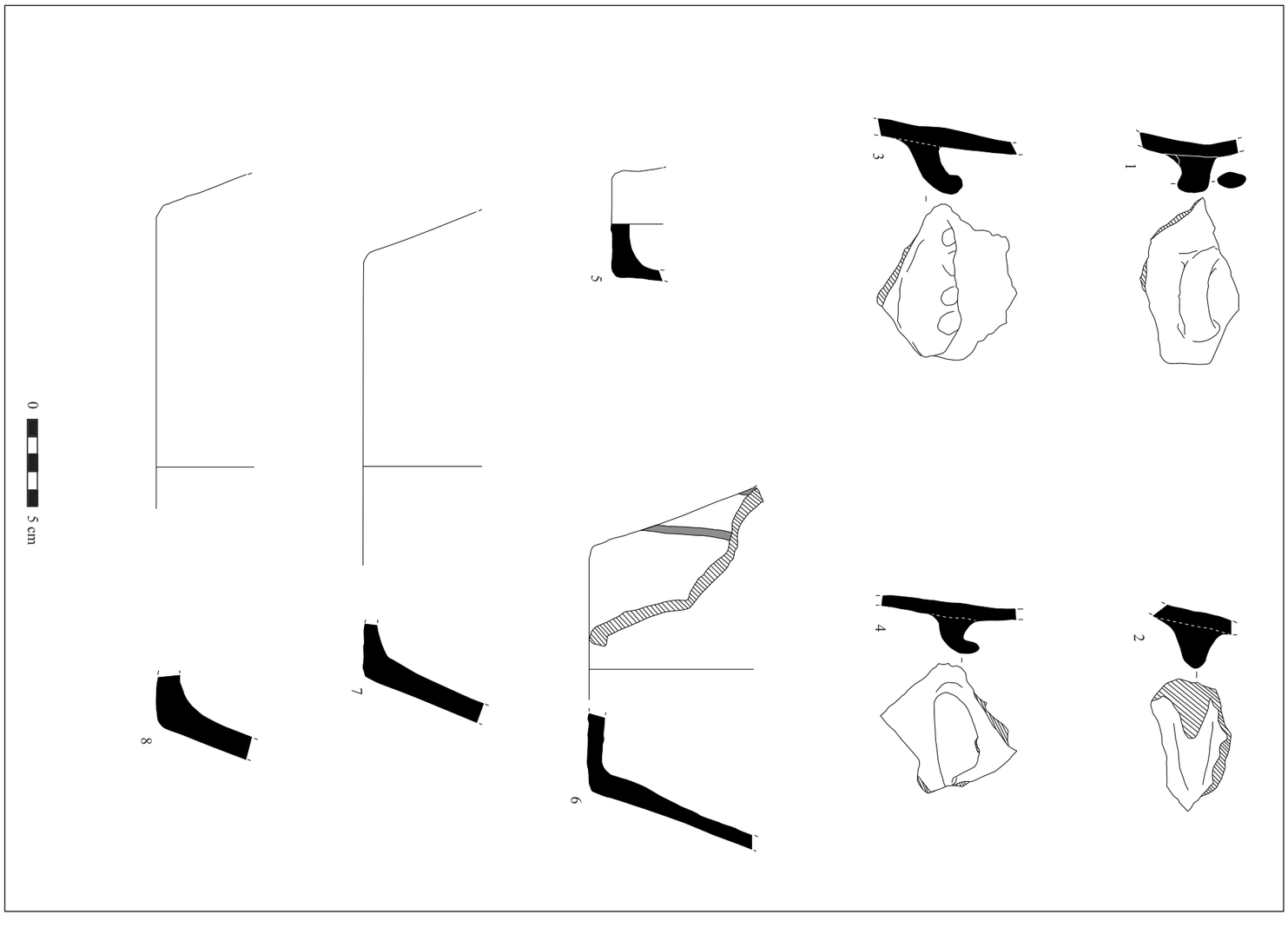


Plate 1.19: Early Bronze Age bowls from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021336-002	AN 118	6005	HM R2B polished	EB III	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 24.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 25.
2	bowl	TZ 021366-008	AN 118	6045	HM GW	EB III	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 24.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 7.
3	bowl	TZ 021336-005	AN 118	6005	HM Buff (red slip)	EB III	Tall Abū al-Ḫaraz Phase IIB: Fischer 2008, 253 Fig. 259, 15.	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 5.
4	bowl	TZ 021600-001	AN 118	6073	HM Buff (brown slip)	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 6.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 6.
5	bowl	TZ 021439-015	AN 118	6073	HM Buff (red slip)	EB III	Tall Abū al-Ḫaraz Phase IIA: Fischer 2008, 253 Fig. 259, 4.	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 2.
6	bowl	TZ 021432-007	AN 119	6043	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 167 Fig. 8, 3. 16.
7	bowl	TZ 021393-001	AO 118	5991	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 3.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 12.
8	bowl	TZ 021439-010	AN 118	6073	HM Buff (red slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 6.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 19.
9	bowl	TZ 021366-002	AN 118	6045	HM Buff (brown slip)	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 8.	
10	bowl	TZ 021589-006	AL 118	6152	HM Buff (red slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 3.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 12.
11	bowl	TZ 021456-001	AN 118	6045	HM Buff (brown slip)	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 8.	

Plate 1.20: Early Bronze Age bowls and oil lamps from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021576-001	AL 118	6172	HM Red polished	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 1, 2.	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 24.
2	bowl	TZ 021602-003	AL 118	6152	HM R2B (brown slip)	EB III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 25.	Tall al-Qassis (Tēl Qāšīṣ)EB II/III: Zuckerman 2003, 144 Fig. 62, 6.
3	bowl	TZ 021600-002	AM 118	6095	HM Red polished	EB III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 19.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 12.
4	bowl	TZ 021662-007	AL 118	6351	HM Red polished	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 6.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 18.
5	bowl	TZ 021460-007	AN 118	6073	HM R2B (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 2.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 253 Fig. 259, 17.
6	bowl	TZ 021648-011	AL 118	6349	HM Buff	EB III	At-Tall (Ai) EB I: Amiran 1969, 50 Pl. 11, 1: similar.	
7	oil lamp	TZ 021648-001	AL 118	6349	HM Buff Coarse (pink slip)	EB III		
8	oil lamp	TZ 021605-001	AO 118	6300	HM Buff Coarse	EB III		
9	oil lamp	TZ 021501-001	AN 118	6071	HM Buff	EB III		

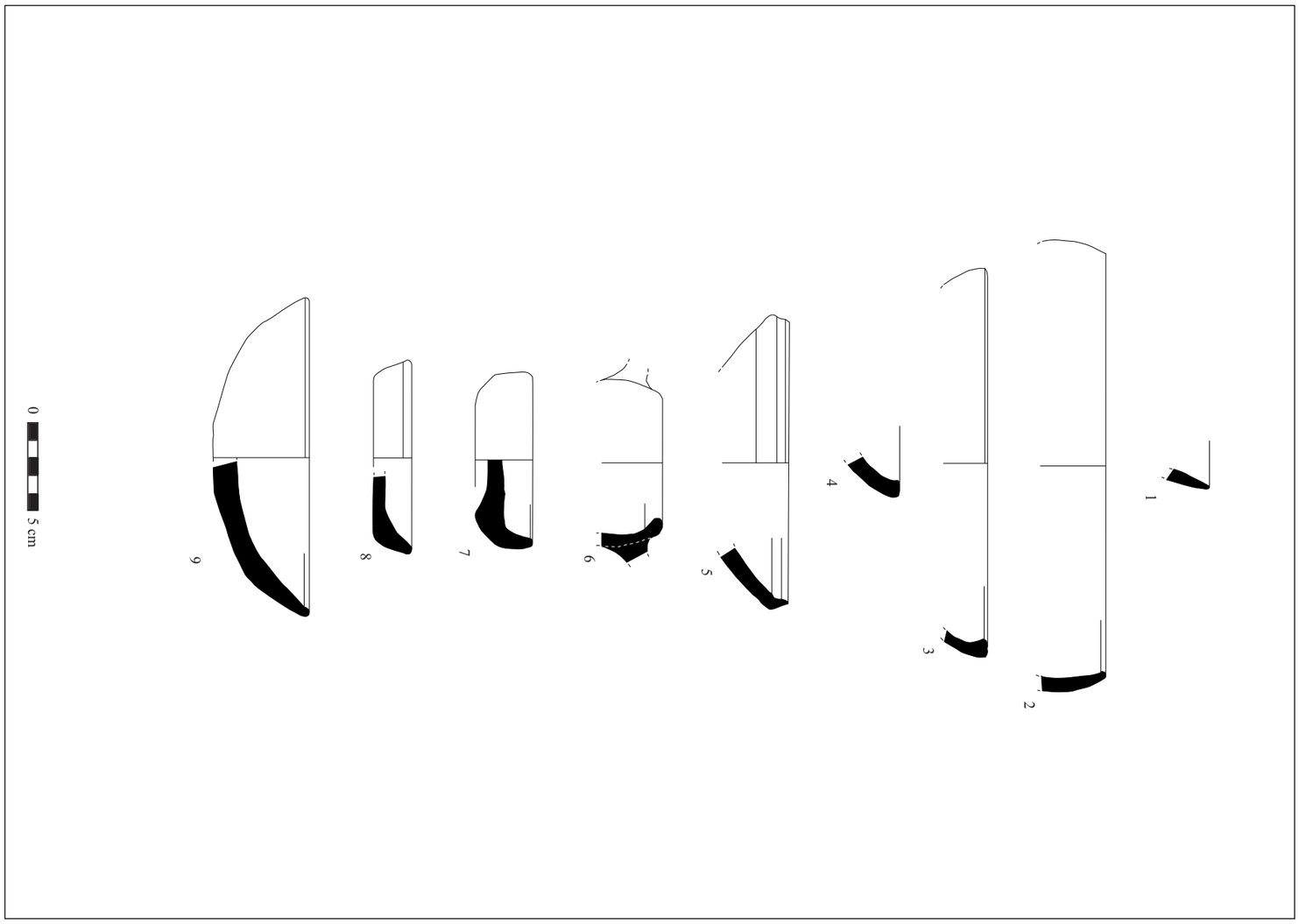


Plate 1.21: Early Bronze Age bowls from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021336-007	AN 118	6005	HM GW combed	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 8.	
2	bowl	TZ 021705-001	AM 119	6380	HM GW	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 1.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 2.
3	bowl	TZ 021589-002	AL 118	6152	HM Buff	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 8.
4	bowl	TZ 021439-014	AN 118	6073	HM Buff (brown slip)	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 8.
5	bowl	TZ 021578-009	AL 118	6186	HM Buff (brown slip)	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 8.	
6	bowl	TZ 021607-009	AN 119	6302	HM Buff (brown slip)	EB III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 12.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 3: similar.
7	bowl	TZ 021605-006	AO 118	6300				
8	bowl	TZ 021506-002	AM 118	6095	HM Buff (pink slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3: similar.	
9	bowl	TZ 021623-002	AO 118	6300	HM Buff	EB III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 18. 19.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3: similar.
10	bowl	TZ 021442-018	AO 119	6087	HM Buff (brown slip)	EB III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 18. 19.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3: similar.

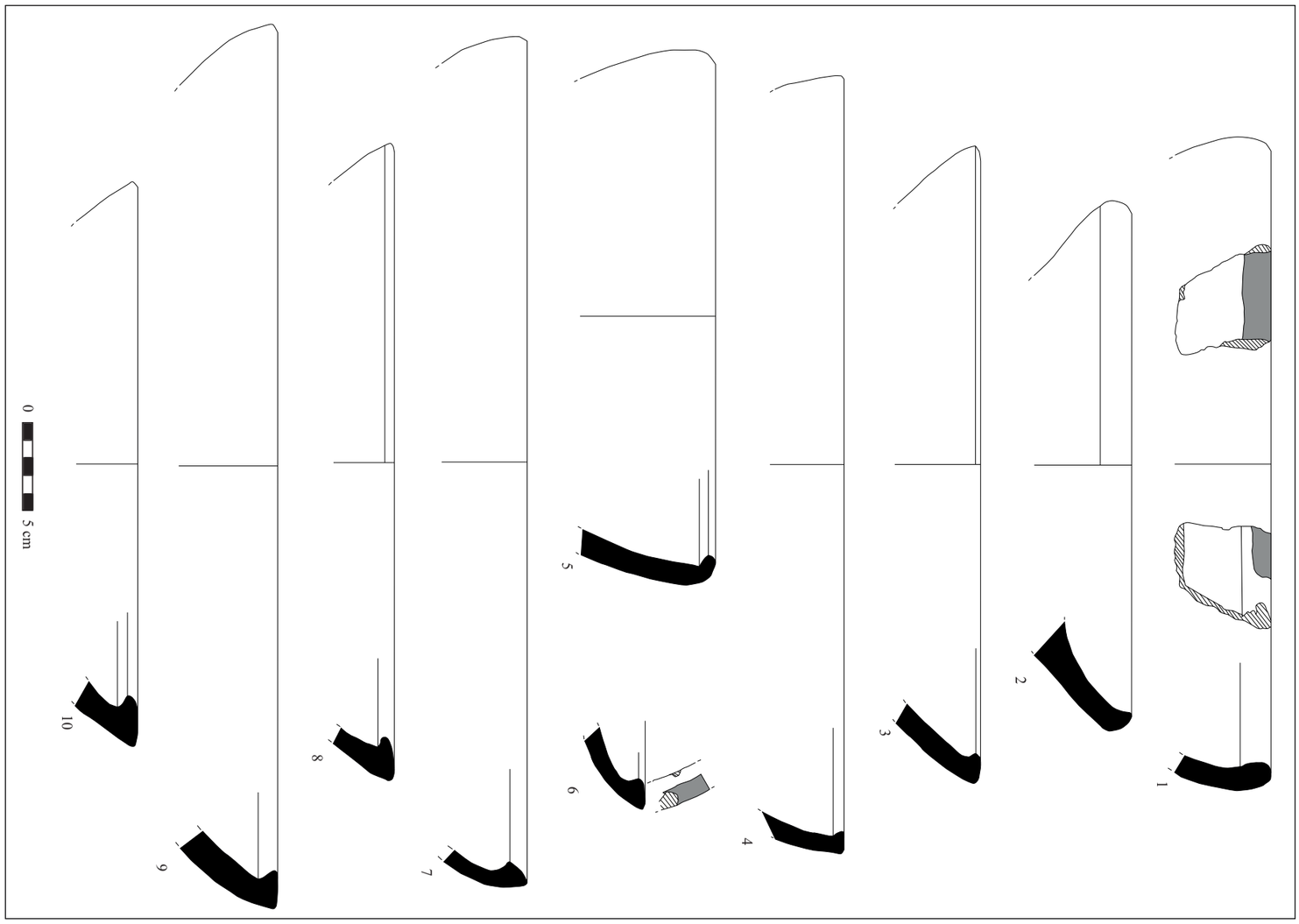


Plate 1.22: Early Bronze Age kraters from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	krater	TZ 021300-003	AM 119	5963	HM Buff (red slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 C: form.	
2	krater	TZ 021578-001 TZ 021579-001	AL 118	6186 6189	HM Buff (red painted)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2: without ornamental strip.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 26: without ornamental strip, with ledge handles.
3	krater	TZ 021578-008	AL 118	6186	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2: without ornamental strip.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1: without ornamental strip, with spout.
4	krater	TZ 021686-001	AL 118	6353	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2: without ornamental strip.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7: rim similar, without ornamental strip.
5	krater	TZ 021631-015	AN 118	6328	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2: without ornamental strip.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1: without ornamental strip, with spout.
6	krater	TZ 021405-028	AN 118	6045	HM Buff	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1: without ornamental strip.	
7	krater	TZ 021589-003	AL 118	6152	HM GW	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 2: without ornamental strip.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1: without ornamental strip, with spout.
8	krater	TZ 021300-011	AM 119	5963	HM GW combed	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2: with handle.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1: with spout.

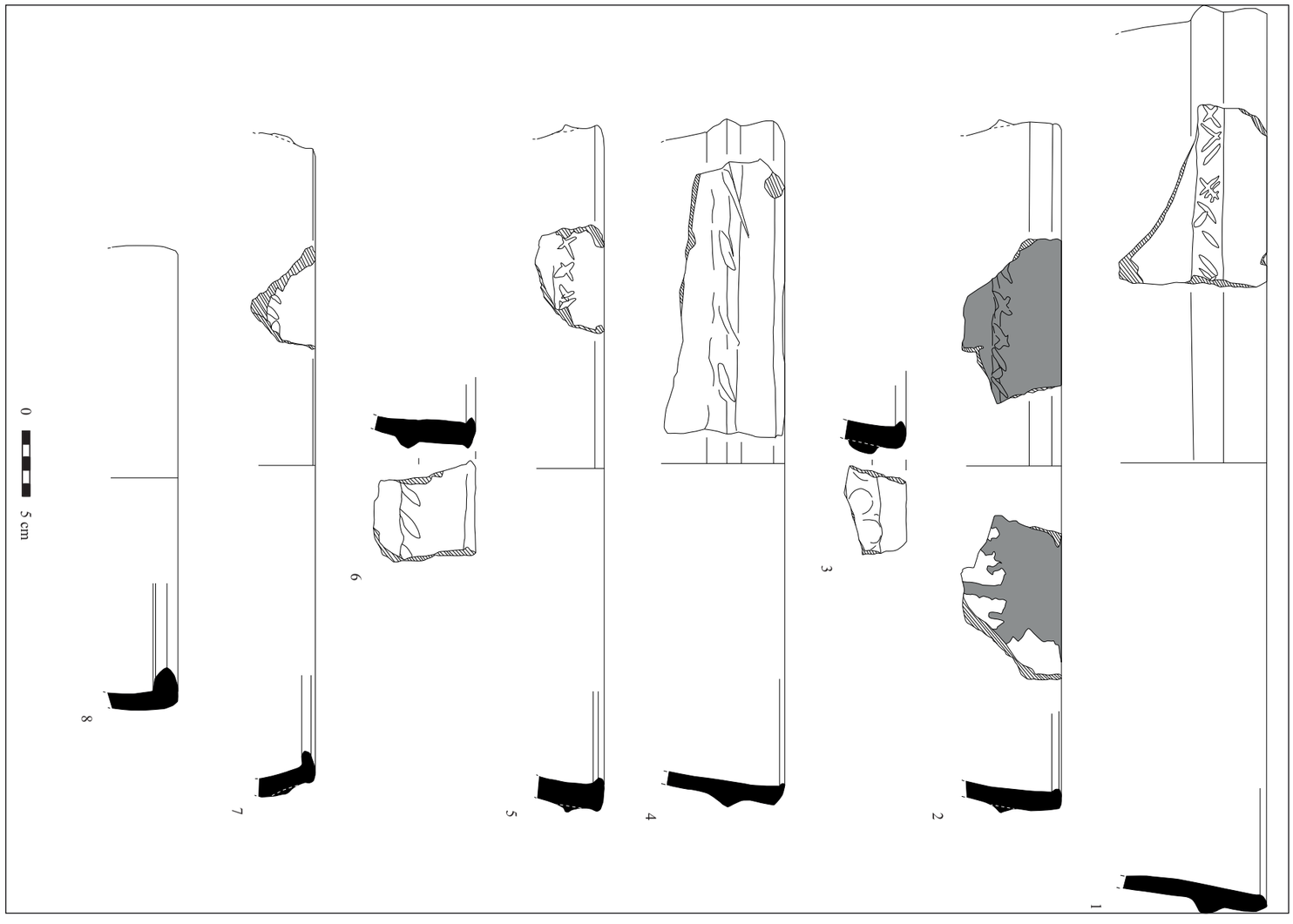


Plate 1.23: Early Bronze Age platters from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	platter	TZ 021630-010	AN 118	6328	HM GW	EB III	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 61 Pl. 15, 7.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 170 Fig. 8, 5. 3.
2	platter	TZ 021624-009	AM 118	6308	HM Buff (red and brown slip)	EB III	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 61 Pl. 15, 8.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 2.
3	platter	TZ 021578-010	AL 118	6186	HM Buff (brown slip)	EB III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 178 Fig. 8. 10, 8.	Ḫirbat al-Kerak (Tēl Bēt Yeraḥ) EB III: Amiran 1969, 71 Pl. 18, 5.
4	platter	TZ 021300-004	AM 119	5963	HM Buff (red slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 3–5.
5	platter	TZ 021724-011	AM 118	6309	HM Buff	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 14.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 170 Fig. 8, 5. 1.
6	platter	TZ 021501-003	AN 118	6071	HM Buff (brown slip)	EB III	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 61 Pl. 15, 8.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 14.
7	platter	TZ 021724-007	AM 118	6309	HM Buff (red slip)	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 5.	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 61 Pl. 15, 6.
8	platter	TZ 021724-003	AM 118	6309	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 1.	Tall Abū al-Ḫaraz Phase IIIB: Fischer 2008, 259 Fig. 264, 9.
9	platter	TZ 021622-003	AO 118	6326	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 2.	Tall Abū al-Ḫaraz Phase IIB: Fischer 2008, 258 Fig. 263, 6.
10	platter	TZ 021501-007	AN 118	6071	HM R2B (red slip)	EB III	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 61 Pl. 15, 6. 8.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 12. 14.
11	platter	TZ 021514-031	AM 118	6134	HM Buff (brown slip)	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 1–5.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 2.

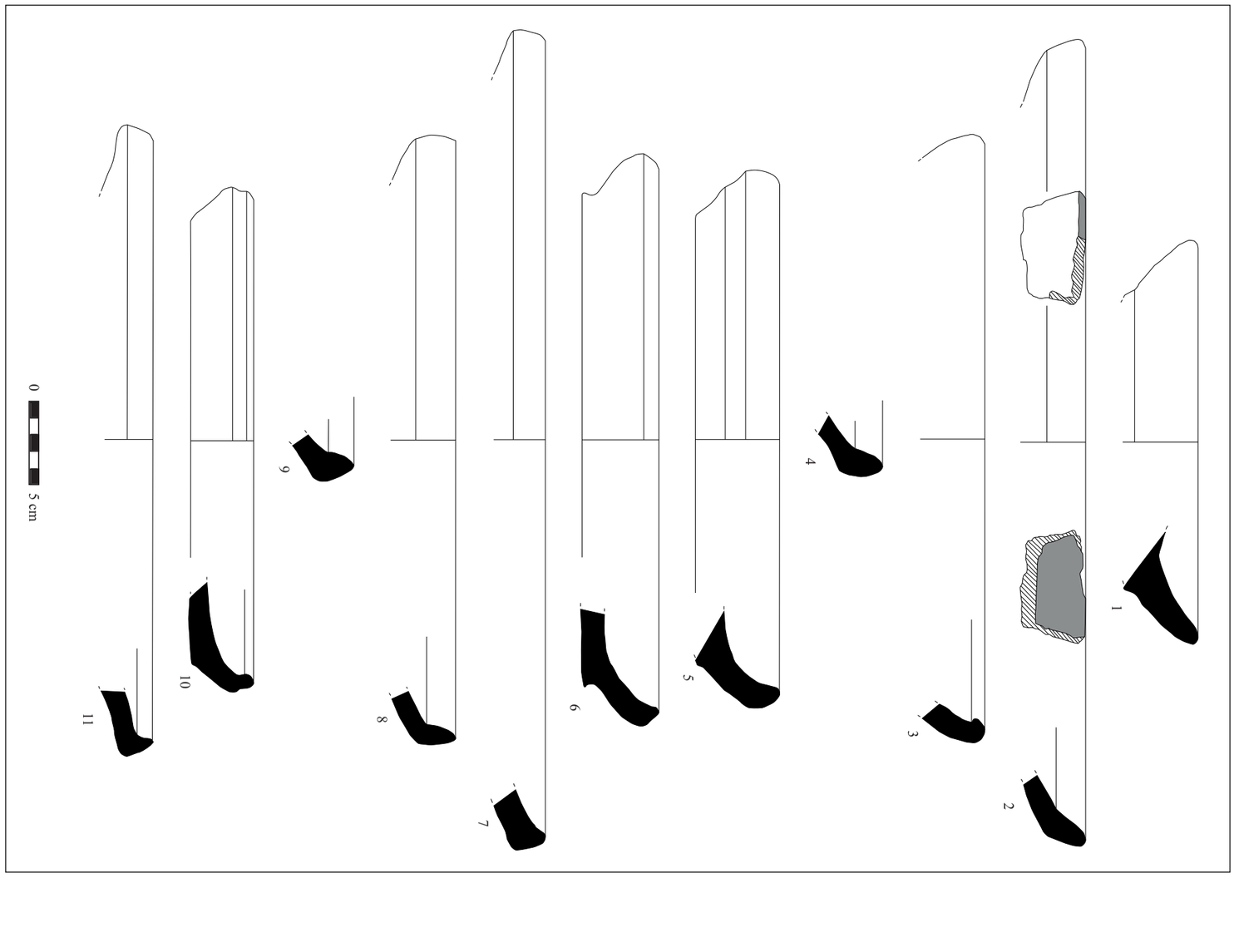


Plate 1.24: Early Bronze Age holemouth jars from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	holemouth	TZ 021366-006	AN 118	6045	HM Buff	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 4.
2	holemouth	TZ 021624-010	AM 118	6308	HM Buff	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 4.	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 15.
3	holemouth	TZ 021501-023	AN 118	6071	HM Buff (pink slip)	EB III	Tall al-Mutasallim (Megiddo) EB: Finkelste3in et al. 2000, 182 Fig. 8, 4.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 3.
4	holemouth	TZ 021308-014	AO 119	5992	HM R2B	EB III	Tall Abū al-Ḫaraz Phases II A and B: Fischer 2008, 283 Fig. 282, 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 2.
5	holemouth	TZ 021622-002	AO 119	6325	HM R2B	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 E 1, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 1.
6	holemouth	TZ 021501-002	AN 118	6071	HM Buff	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 E 1, 2.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 182 Fig. 8, 11. 13.
7	holemouth	TZ 021533-006	AN 118	6154	HM Buff	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 F.	Ḫirbat Yarīḥā aš-Šamālīyah Transit EB–MB: Kamlah 2000, Pl. 70, 4.

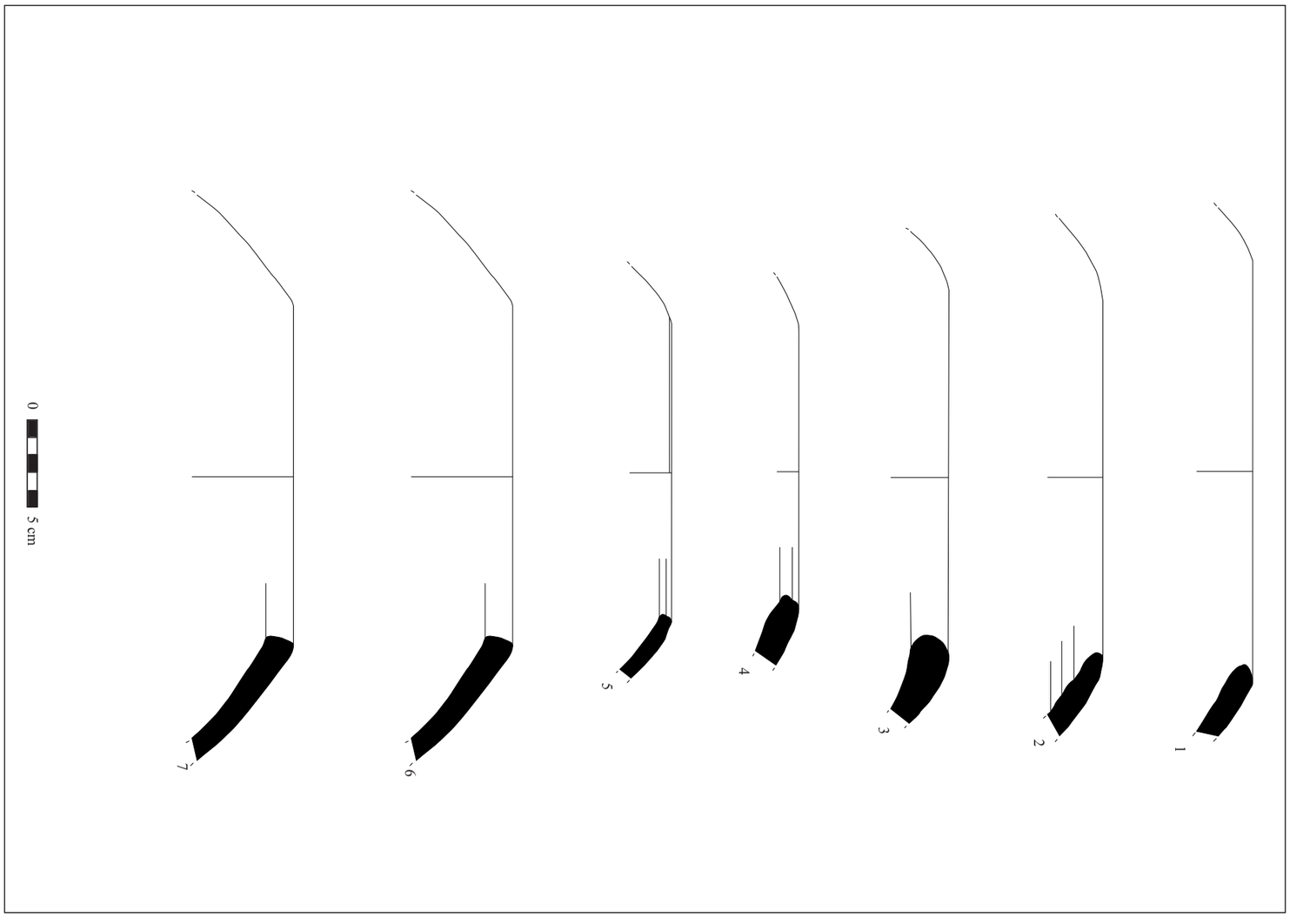


Plate 1.25a: Early Bronze Age jugs from Tall Zirā'a Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	juglet	TZ 021696-009	AN 119	6330	HM Buff	EB III	Tall Abū al-Ḫaraz Phases I(A)B: Fischer 2008, 263 Fig. 266, 2. 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 148 Fig. 67, 10.
2	jug/jar	TZ 021363-020	AN 119	6021	HM Metallic	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 H 1: without ornamental strip.	Tall Abū al-Ḫaraz Phases I(A)B: Fischer 2008, 267 Fig. 269, 2. 3: without ornamental strip.
3	jug/jar	TZ 021300-005	AM 119	5963	HM Khirbet Kherak	EB III	Tall al-Ḥiṣn (Beth Shean) EB III: Amiran 1969, 73 Pl.19, 16.	
4	jug/jar	TZ 021405-001	AN 118	6045	HM red polished	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 1.	
5	jug/jar	TZ 021607-008	AN 119	6302	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 10: identical rim.
6	jug/jar	TZ 021405-018	AN 118	6045	HM Buff (pink slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8. 11, 7.
7	jug/jar	TZ 021405-025	AN 118	6045	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8. 11, 7.
8	jug/jar	TZ 021501-015	AN 118	6071	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 4, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 10.
9	jug/jar	TZ 021632-006	AN 118	6329	HM Buff (pink slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 4, 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8. 11, 11 and 12.
10	jug/jar	TZ 021632-004	AN 118	6329	HM Buff (brown slip)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 1.	Tall Abū al-Ḫaraz Phases IIIA and B: Fischer 2008, 279 Fig. 279, 4.

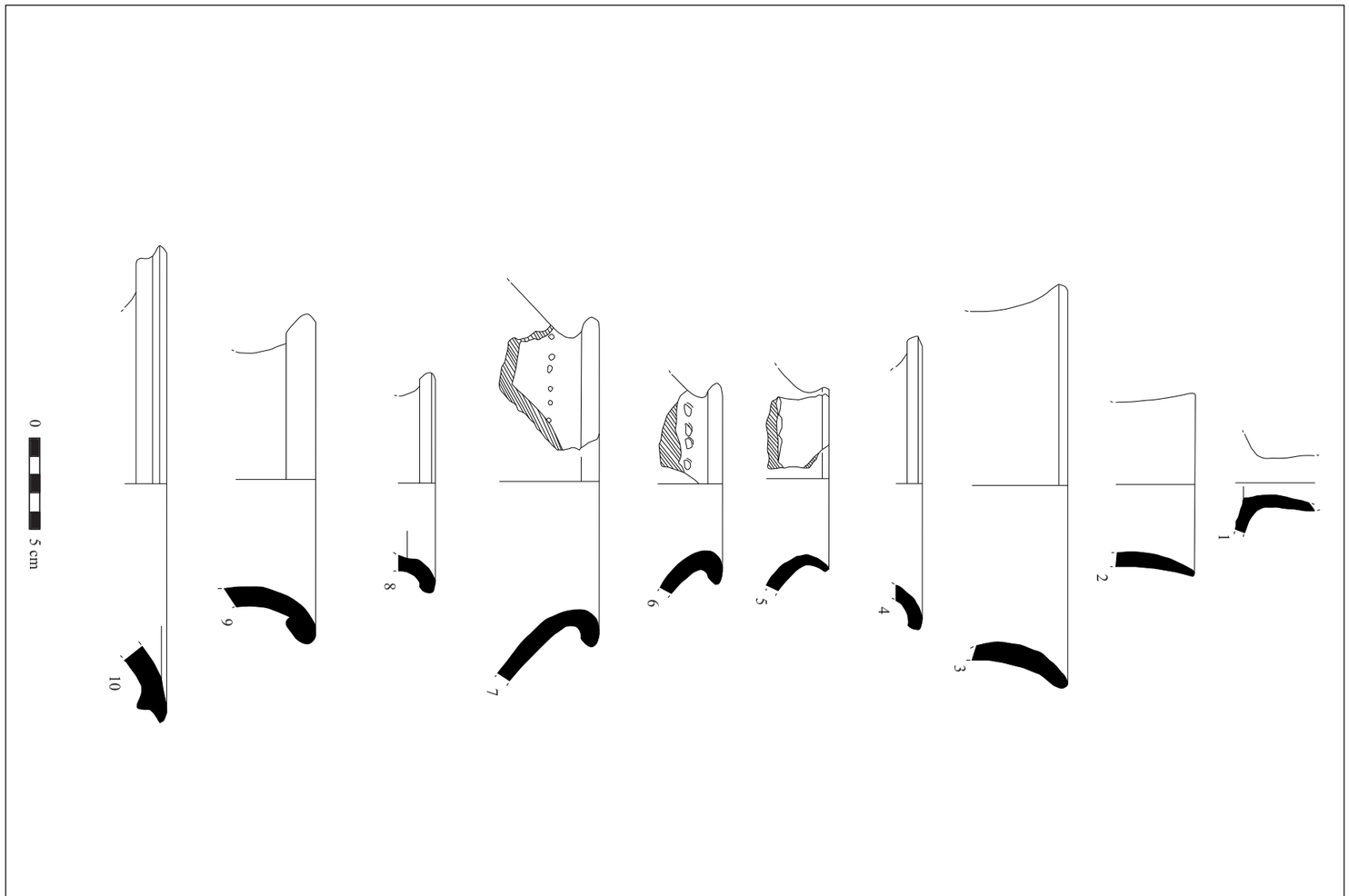


Plate 1.25b: Early Bronze Age jugs from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
11	jug	TZ 021332-006	AO 118	5991	HM Buff (brown painted)	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 1.	Tall Abū al-Ḫaraz Phases IIIA and B: Fischer 2008, 279 Fig. 279, 4.
12	jug	TZ 021621-001	AO 119	6325	HM Buff (brown slip)	EB III	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 9.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8. 11, 12.
13	jug	TZ 021308-003	AO 119	5992	HM Buff (pink slip)	EB III	Tall Abū al-Ḫaraz Phases IIIA and B: Fischer 2008, 279 Fig. 279, 4.	
14	jug	TZ 021672-001	AO 119	5992	HM Buff	EB III	Tall Abū al-Ḫaraz Phases IIIA and B: Fischer 2008, 279 Fig. 279, 4.	
15	jug	TZ 021333-012	AO 119	5992	HM Buff	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 1.	Tall Abū al-Ḫaraz Phases IIIA and B: Fischer 2008, 279 Fig. 279, 4.

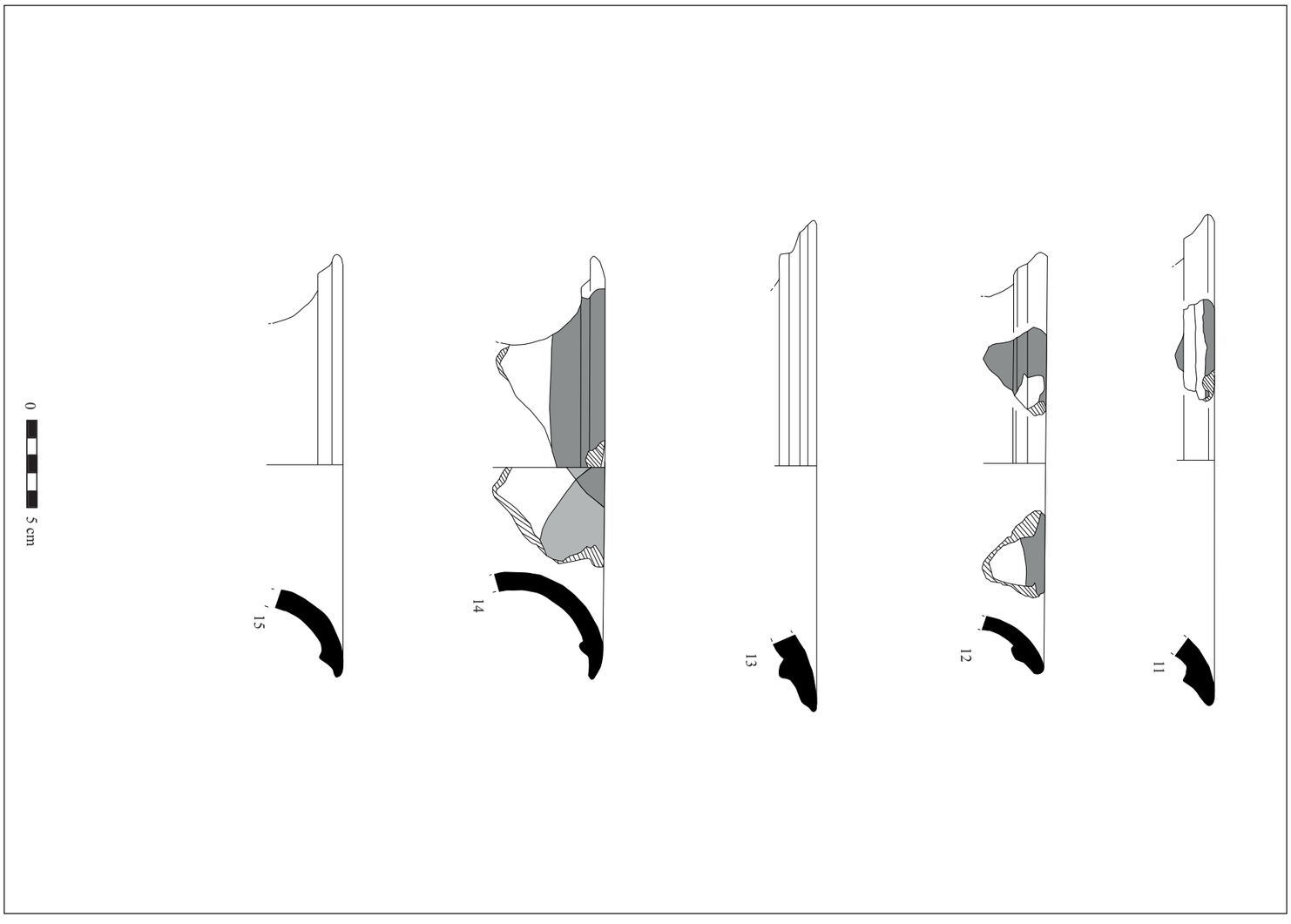


Plate 1.26: Early Bronze Age (storage) jars from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	storage jar	TZ 021662-001	AL 118	6351	HM GW	EB III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 1–3.
2	storage jar	TZ 021514-044	AM 118	6134	HM GW	EB III	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 9.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 5.
3	jug/jar	TZ 021696-010	AN 119	6330	HM Buff (red painted)	EB III	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 9.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 5.
4	jug/jar	TZ 021460-004	AN 118	6073	HM Buff	EB III	Ṭabqāt Faḥl (Pella) EB latest: Bourke et al. 1998, Fig. 184, 20.	
5	storage jar	TZ 021398-001	AN 119	6021	HM GW combed	EB III	Ḫirbat al-Kerak (Tēl Bēt Yeraḥ) EB III: Amiran 1969, 71 Pl. 18, 13.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 116 Fig. 57, 15. 16: ornamental strip.
6	storage jar	TZ 021363-023	AN 119	6021	HM GW combed	EB III	Ḫirbat al-Kerak (Tēl Bēt Yeraḥ) EB III: Amiran 1969, 71 Pl. 18, 13.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 116 Fig. 57, 15. 16: ornamental strip.

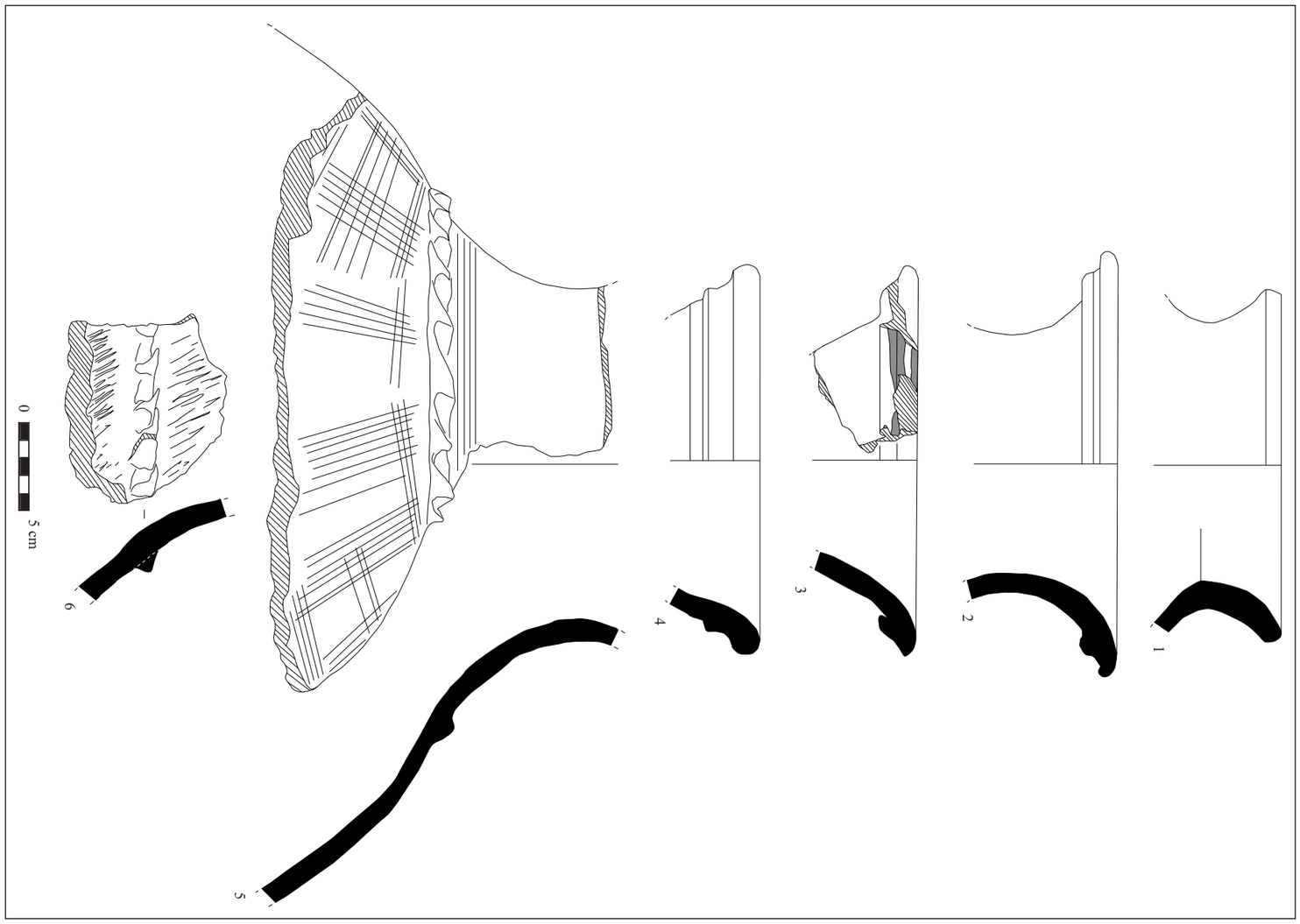


Plate 1.27: Early Bronze Age jugs and jars from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (base)	TZ 021696-005	AN 119	6330	HM Metallic combed	EB III		
2	jug/jar (base)	TZ 021630-001	AN 118	6328	HM/WM R2B (buff slip)	EB III		
3	jug/jar (base)	TZ 021363-019	AN 119	6021	HM GW combed	EB III		

Plate 1.27: Early Bronze Age jugs and jars from Tall Zirāʿa Stratum 22—Excavations 2001–2011

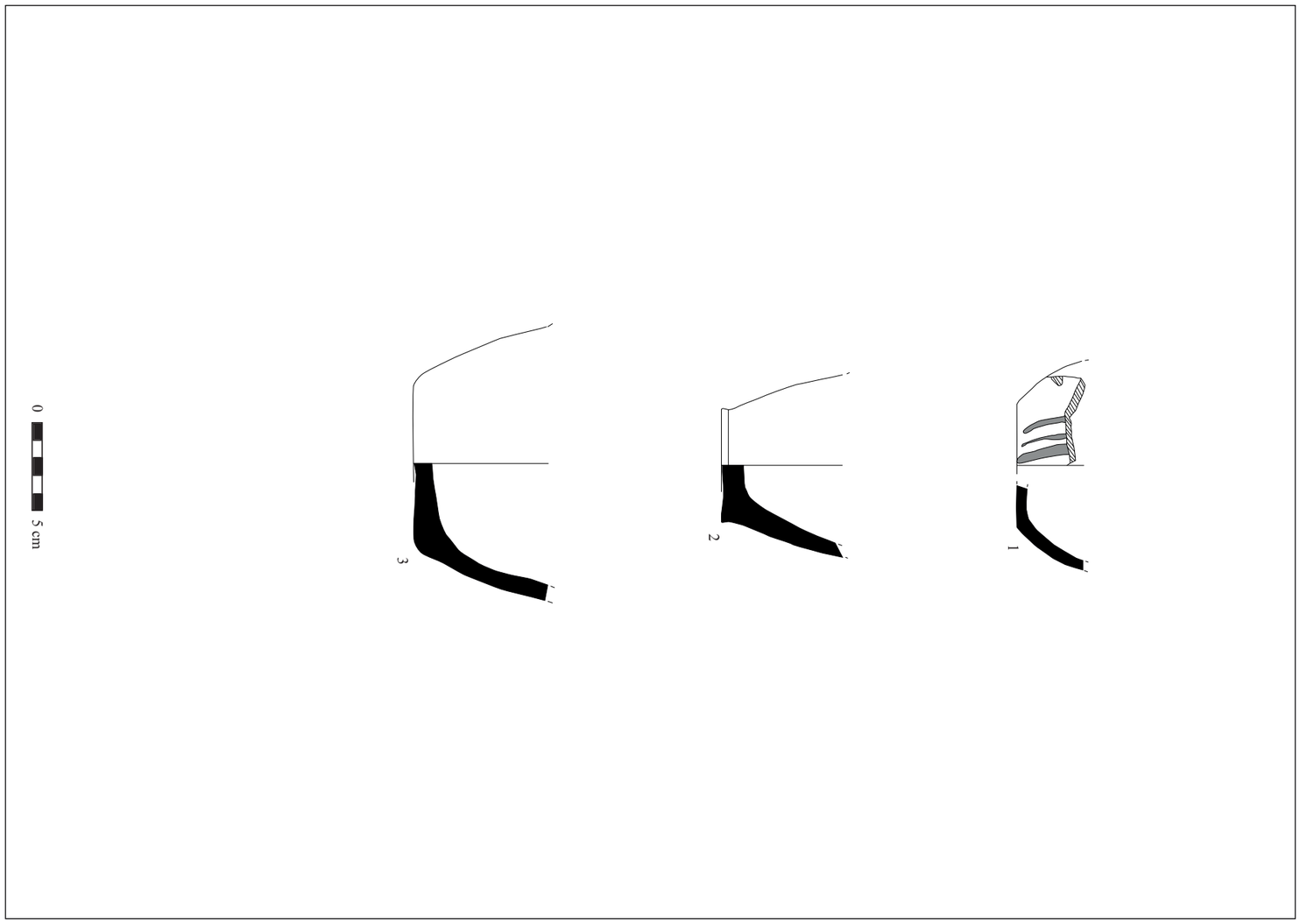
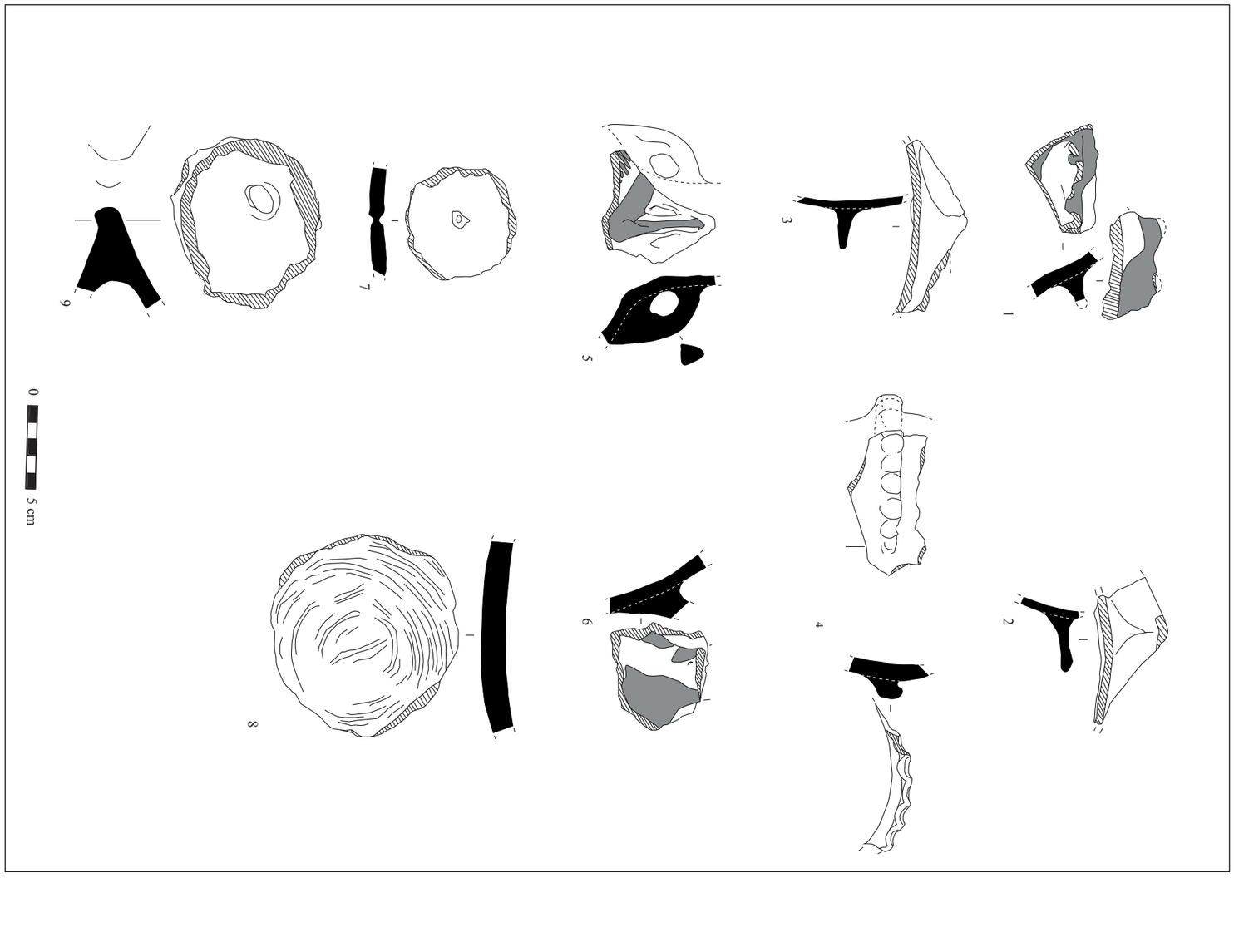


Plate 1.28: Early Bronze Age jars and other pottery from Tall Zirāʿa Stratum 22—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (ledge handle)	TZ 021405-H1	AN 118	6045	HM Buff	EB III		
2	jug/jar (ledge handle)	TZ 021350-H3	AN 119	6050	HM Metallic (buff)	EB III		
3	jug/jar (ledge handle)	TZ 021350-H4	AN 119	6050	HM Metallic (black)	EB III		
4	jug/jar (ledge handle)	TZ 021631-013	AN 118	6328	HM Buff	EB III		
5	jug/jar (lug handle)	TZ 021432-010	AN 119	6043	HM Metallic painted	EB III		
6	jug/jar (handle)	TZ 021505-004	AM 118	6093	HM GW	EB III		
7	spindle whorl (?)	TZ 021631-011	AN 118	6328	HM Buff	EB III		
8	lid	TZ 021405-026	AN 118	6045	HM Buff combed	EB III		
9	twin vessel	TZ 021610-006	AN 118	6305	HM Buff	EB III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 86 Fig. 40, 8.—Ḫirbat az-Zeraqōn: Genz 2002, Pl. 96, 6.	Tall al-Mutasallim (Megiddo) EB II: Amiran 1969, 61 Pl. 15, 11.



1.2.3. Conclusion

The Strata 25 to 22 provide evidence of the continuous settlement on the Tall Zirāʿa during the Early Bronze Ages III and II. The contexts and findings, which have so far been confined to the limits of Area I, will be supplemented by future research carried out in Area II (in the northern section; starting in 2018) and Area IV (artesian spring; starting in 2020). This will allow the researchers to rest the statements that have been made to date on wider and thus more solid evidence.

The preliminary findings suggest a residential area with characteristic broad room houses in the Strata 23 and 22. In the northern part of the excavation area, however, these could only be partly accessed and uncovered. In Stratum 24, artefacts that are characteristic of the Early Bronze Age II were found; however, as yet no architectural remains could be discovered.

The building complex in Stratum 23 (Complex B) may be interpreted as a broad room house with a floor surface of more than 25 m², the roof of which was supported by a column construction (see the column base inside the house). The building had a western annexe and was subdivided on the inside.

The architectural remains in Stratum 22 comprise some remains of not exactly definable buildings in Complex B and a building complex consisting of several rooms and yards (Complex C). The latter is made up by either one partitioned broad room house or two adjacent ones. Its/their yard area was either complemented or confined by a few additional building structures.

It can be assumed that the city compound that was protected by an imposing city wall soaring 4 m high (wall in Stratum 25 a and Glacis in 25 c) was not directly connected to the Strata 22 or 23. The remains of this massive city wall in Area I as well as its vestiges that were found in other areas around the tall suggest its original connection with Stratum 24 that has not been explored yet, or with an even older settlement on the tall. The towering city wall was composed of several continuous walls running parallel to each other that coiled around the slope and whose interspaces were filled with rocks and soil.

As a rule, city walls were erected in the southern Levant from the beginning of the Early Bronze Age II. However, surveys conducted on the tall in the year of 2001 revealed that it had already been settled much earlier, during the Early Bronze Age I. The results of a survey in 1977 even suggested a still older, Chalcolithic settlement[126]. In Area I, however, no earlier strata can be examined without destabilizing the slope and thus endangering the archaeologists at work.

The animal bone finds evidence a rather large percentage of game until the decline of the Early Bronze Age III (Stratum 22), which is indicative of a not yet destroyed natural environment with sites of open forest surrounding the Tall. Wild boar, gazelle, fallow deer, and fox have been verified. The most common domestic animals were sheep and goats, followed by cattle, which accounted for approximately a fifth, and finally domestic pigs, whose percentage, however, increased throughout the Intermediate Period into the Middle Bronze Age. Donkeys were used for riding and for transporting goods.

The ceramics and the tools made of stone, bone, or metal mirror the technological development that was common in those times. The early evidence of cooking pots Type CP 5 is noteworthy. During the Intermediate Period, they become as prevalent as the common Early Bronze Age cooking pots Type CP 6.

Where verifiable, the metal tools are made of came from Fēnān/Timna. Copper objects consisted of 'pure' copper or had 'natural impurities' such as arsenic, tin, iron, or lead. Among the stone vessels, the household articles were predominant, particularly those used for the production of food. In Stratum 22, a large number of stone beads are noteworthy; however, especially the faience finds stand out.

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2. The Intermediate Period: Early Bronze Age IV and Middle Bronze Age I (2300–1950 BC)[1]

by Dieter Vieweger

2.1. The Intermediate Bronze Age in the Southern Levant

Fig. 2.1 Tall Zirā‘a, Area I, 2011 (Source: BAI/GPIA).

The beginning of the non-urban intermediate period is marked by stratigraphical rifts, i.e. by layers of destruction in urban settlements or by their complete abandonment (e.g. Tall al-Ḥiṣn [Beth Shean], Tall Dōṯān, Tall at-Ta‘anek [Taanach], Tall al-Ḥāsī).

Why, around 2300 BC, the rising urban society of the Early Bronze Age III did not progress any further but plunged into a deep recession only to ultimately abandon its fortified urban settlements and reenter into a rural or nomadic culture with a significantly diminished population still is a matter of controversy. During the past decades mostly reasons lying within the Bronze Age culture have been put forth in order to account for these dramatic changes.

In light of the high population density that had accrued during the Early Bronze Age III it is being discussed whether overgrazing with sheep and goats may have caused a permanent damage to the formerly dense turf in many areas. It is also possible that wooded areas were destroyed e.g. by keeping pigs in forest pastures. Large areas, the steep slopes of the Jordan rift valley and on the Dead See among them, were seriously damaged by deforestation, resulting in erosion. In the wake of developments like these even settlements such as Bāb aḏ-Ḏrā‘ had to be abandoned.

Probably the gradual shift towards a significantly drier and warmer climate will also have accelerated the changes[2].

1 See for this chapter esp. Prag 2014, 388–402.—After his works in Tall Bēt Mirsīm, Albright (Albright 1932; Albright 1938) defined this cultural epoch as the last phase of the Early (“a supplementary phase of the preceding”; Albright 1932, 9. 11) and first phase of the Middle Bronze Age (Albright 1960, 80). Iliffe 1937 introduced the term ‘Intermediate period’. Petri (1931, 3 f.; Tall al-ʿAǧǧūl) and Kenyon (Kenyon 1960, 136. 159 f.) emphasized the novel characteristics of the era and saw in them the results of the Amorite invasion, which is why they spoke of the Middle Bronze Age I. Amiran (Amiran 1969, 79) corroborated this theory with the analysis of the later pottery of this era: “In examining the general character of the MB I assemblage, stress must be placed first and foremost on the break between this pottery and that of the Early Bronze Age. There is hardly a doubt that the new MB I civilization was instrumental in destroying the old. Although some reminiscences survive and remain embedded in the MB I repertoire, the new is much stronger than the traditional element.”

2 Cordova 2007: EB I–III very rainy; EB IV changeable: MB I dry.

Fig. 2.2 Modern tents of nomads at Tall Zirāʿa.

Another explanatory approach is that of a rapid dwindling of the Egyptian influence during the fifth and the early sixth Dynasty, which also resulted in Egyptian military actions being conducted in the southern Levant[3]. The weakening of the Egyptian influence in the course of the sixth Dynasty will have significantly reduced the import of wine and oil to Egypt, which in turn will have had a very detrimental impact on the trade volume and thus the wealth of the southern Levantine towns.

As a consequence, these suffered a serious economic decline which in all likelihood was even expedited by internal rivalries[4]. Contentions among towns about land ownership, especially that of arable land and pastures, may have resulted in less stable communities and a lower level of local exchange systems.

The collapse of the big walled cities possibly was a result of a combination of all these factors[5]. The surviving population was forced to return to a largely rural or even nomadic way of life[6]. According to estimates based on surveys, of 150,000 inhabitants of the southern Levant (without the Negev) in the Early Bronze Age III not more than 10,000 to 15,000 will have survived during the Intermediate Period[7].

Yet, the Early Bronze Age IV is being wrongfully called a ‘dark age’[8]. Even though the walled urban settlements had to be abandoned during this period this has to be regarded as the economic and social result of the urban society’s crisis at the end of the Early Bronze Age III.

Therefore, although the transition from the Early Bronze Age III to IV can be viewed as a significant decline it would be wrong to call it a cultural rift. Between these two eras, even continuous settlement could be verified at several places[9] – like on the Tall Zirāʿa[10], in Ḫirbat az-Zeraqōn, Ḫirbat al-Batrawī, Tall al-Ḥammām (all Transjordan) as well as in Tall as-Sulṭān (Jericho), Tall Waqqāṣ (Hazor), Ḫirbat al-Karak (Bet-Yerach), and Rā’s an-Nāqūra (Rōš Ha-Niqrā) (all Cisjordan), and also in the cultic precincts in Tall al-Mutasallim (Megiddo) and Bāb aḏ-Ḏrāʿ. Demographically, the population of the Early Bronze Age IV thus emerged from the Early Bronze Age III. Its culture represents “adaptations of an ongoing, perhaps remnant, population to new economic and social conditions”[11]. On the Tall Zirāʿa—located on the trade route from the Jesreel valley to Damascus—the strata 21 (EB IV) and 20 (MB I) were characterized by work spaces of solidified clay, cooking zones, walking surfaces with coarse paving, and storage facilities (pits). The people lived in modest cottages or tents, as evidenced by simple foundation walls and post-holes.

The transition towards the Middle Bronze Age I was quite a different matter in the southern Levant. For this period, no comparable demographic continuity can be detected. It is therefore necessary to look for external reasons that also might have caused this upheaval[12]. It has been much discussed whether the intrusion of nomadic people or Amorite groups from the north into the southern Levantine cultural environment can have been partly responsible for this cultural rift[13]. There have been sufficient ethnographic parallels illustrating that in times of political weakness and radical social change the living environments of the people concerned were infiltrated by nomadic groups, refugees, or migrations. However, it is difficult to find evidence that this is what occurred in the southern Levant during the time in question.

3 Prag 1974, 103.

4 The rivalling towns will have competed for superiority in the fields of trade and agricultural production (size of arable land and working efficiency).

5 On this discussion, see Long 2003, 308–318.

6 Palumbo 2001, 233–269.

7 According to Gophna 1992, 156. On this, also cf. Tainter 1999, 988–1039, and Faust 2007, 43. 48.

8 Dever 1970, 132; Palumbo 1990.

9 On these processes, see Geraty et al. 1986, 117–119; LaBianca 1990; Richard – Long 1995, 82.

10 cf. Vieweger – Häser 2017, 258–260.

11 Rast – Schaub 2003, 448.

12 Prag 1974.

13 Cf. Palumbo 2001, 233; Prag 1974, 103.

The subsequent Middle Bronze Age I was strongly shaped by influences from the north (house building, town planning and construction, ceramic production). However, whether these indeed resulted from the immigration of large populations or simply from travelling ideas and concepts is difficult to ascertain and remains a matter of interpretation.

> „Directly after the collapse, the presence of so many new influences bearing on the impoverished inhabitants of the southern Levant still requires explanation. Archaeologists in the southern Levant tend to forget there were contemporary crises affecting even the towns and cities of Syria. ... It had been the location of many major defended Early Bronze towns—Pella, Kharaz, Hammam, Jericho, amongst others ... here there was not just fertile land and water, but also a major entry route for people, animals, goods, and ideas. It seems likely that radical changes in the southern Levant in the late third millennium were based on more substantial causes than just diffusion of ideas. Whether this can be attributed, at least in part, to peaceful infiltration following the collapse of urbanism, or whether the infiltration was part of the cause of collapse rather than a result, remains uncertain “[14].

The material culture, e.g. this epoch’s ceramic industry, displayed characteristic regional forms. Within regional bounds, the exchange of pottery was carried on[15].

The stone tools were equivalent to those of the Early Bronze Age III, the multitude of mortars and saddle-querns giving evidence of the importance of farming and gardening. As during the Early Bronze Age, wheat and barley, pulses, wine, and oil were cultivated. Stock farming comprised sheep, goats, cattle, and pigs. However, there was one significant difference from the preceding period: food production now only took place in a considerably smaller, domestic context. Storage vessels are dominant in the private homes. There were no large public silos—and thus no means of trading goods on a supra-regional basis. This also meant that people were much more helpless in the face of natural disasters, violent conquests, and similar blows of fate.

In areas close to the desert the nomadic way of life and thus sheep and goat farming prevailed again. Just as today large stretches of land of the southern Levant are (or can be) only utilized for farming sheep and goats, vast areas seem to have been exclusively put to the same use in those times[16]. In regions with a sufficient supply of water and adequate pasturage, pig and cattle farming are indicators of a sedentary way of life[17]. Cattle was presumably kept both for ploughing the land and as a supplier of milk, meat, and leather.

The urban society’s crisis thus did not bring about a radical decline of the sedentary way of life; rather, it survived in the rural context. The newly founded settlements were usually designed complexes, although there were wide regional differences with regard to their expanse and quality. On the whole, however, the buildings’ solidity was very inferior to that of the previous eras. The layout of houses in agricultural areas was usually rectangular; they had thin stone foundations and clay walls. Cave dwellings could also be found (e.g. at Tall ad-Duwēr [Lachisch] and Ǧabal Qaʿāqīr). By contrast, in the Negev and the desert periphery, agglomerates of houses with rounded structures were common[18].

In Fēnān and Ḫirbat Ḥamrā al-Ifdān, the mining industry, the processing of raw and semi-finished products, and their trading never came to a standstill during the Bronze Age interim period[19]. In this field, the demand from other regions—particularly from Egypt but also from the north—was enormous. Finds of copper bars in the Sinai and the Negev suggest restored trade routes in the direction of Egypt[20]. Bedouins will have transported the metal products to Egypt. From there, the southern Levant was still supplied with beads made of carnelion, shells, and gold, with Egyptian blue, and with textiles[21].

In exchange for copper, the trade connections with the north[22] supplied the southern Levant with tin, as evidenced by occasional finds, and also objects made of magnetite, gold, and silver.

Prestigious goods such as dress pins with twined heads, rings, bracelets, tools (axes, adzes), and weapons (daggers, axes, a.o.)[23] have also been documented in the southern Levant for this period. Imported gold or silver objects, however, were the very rare exception. In this context the figural representations on a silver beaker from ʿĒn Sāmīyā, located in the mountains of Cisjordan are especially noteworthy.

The funerary practices present a wide variety. Large cemetery grounds (‘necropolises’) were the centres of villages and nomadic communities alike[24]. There were all types of burial sites: shaft tombs, pit tombs, cist graves, slab tombs, burial mounds, dolmens, towering barrows, and burial caves. Even the number of interments per

14 Prag 2001, 399 f.

15 Falconer 1987, 251–259.

16 Brawer 1988.

17 Horwitz 1989, 16–25.

18 Presumably, seasonally migrating nomadic groups lived here.

19 Adams 2002, 21–32.

20 Richard 1987, 22–43.

21 On this, see the grave goods in the tombs of Tall al-ʿAǧǧūl (Petrie 1931, 3 f.), Tall ʿAšīr, Jericho (Tall as-Sulṭān) (Prag 1986, 71 f.), and on the Mount of Olives in Jerusalem (Prag 1995a, 239).

22 Braemer et al. 2004, 364.

23 Mostly found in graves; often interpreted as “warrior” tombs.

24 Prag 1995b, 75–84; Gophna 1992, 128.

grave ranges from solitary graves to often used collective graves. Primary burials (crouched or stretched) and frequently secondary burials (mostly disarticulated interments[25]) probably give evidence of the diversity of burial cults, religious beliefs, ways of life (nomads and village population), and geological conditions at the burial site. They also reflect considerable social differences.

The Society during the Intermediate Period will have been organised on a tribal or clan level. Permanent elites are not verifiable; however, prestigious goods prove that single persons held an elevated position within their local (tribal) communities[26].

Of the large temple complexes of the Early Bronze Age III only a weak reverberation of smaller temples in Tall al-Mutasallim (Megiddo) and Bāb aḍ-Ḍrā‘[27] remained. Apart from these, there were open cultic sites. The large number of beakers, cups, and jugs found there suggest the celebration of rituals and feasts. Multiple mazzebes—erect cultic stones—were also discovered[28].

Even in Syria the urban development fell into a phase of decline after its peak in the Early Bronze Age III[29].

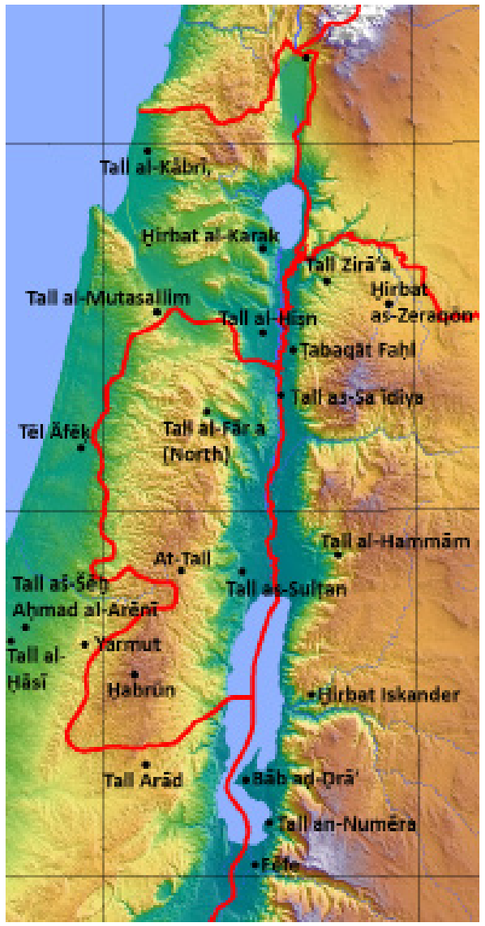


Fig. 2.3 Map of southern Levant in the Early Bronze Age (Source: BAI/GPIA).

25 Probably nomadic groups.
26 Palumbo 1990, 120.
27 Tall al-Mutasallim (Megiddo) (Aharoni 1993, 1008) und Bāb aḍ-Ḍrā‘ (Schaub 1993, 135).
28 Like dolmens and menhirs, they can also have served as markings for non-sedantary groups.
29 Dalfes et al. 1997.

2.2. The Intermediate Bronze Age on Tall Zirā‘a

2.2.1. The Intermediate Bronze Age Settlement Strata (21–20)

2.2.1.1. Stratum 21: Early Bronze Age IV/Middle Bronze Age I (older stratum)

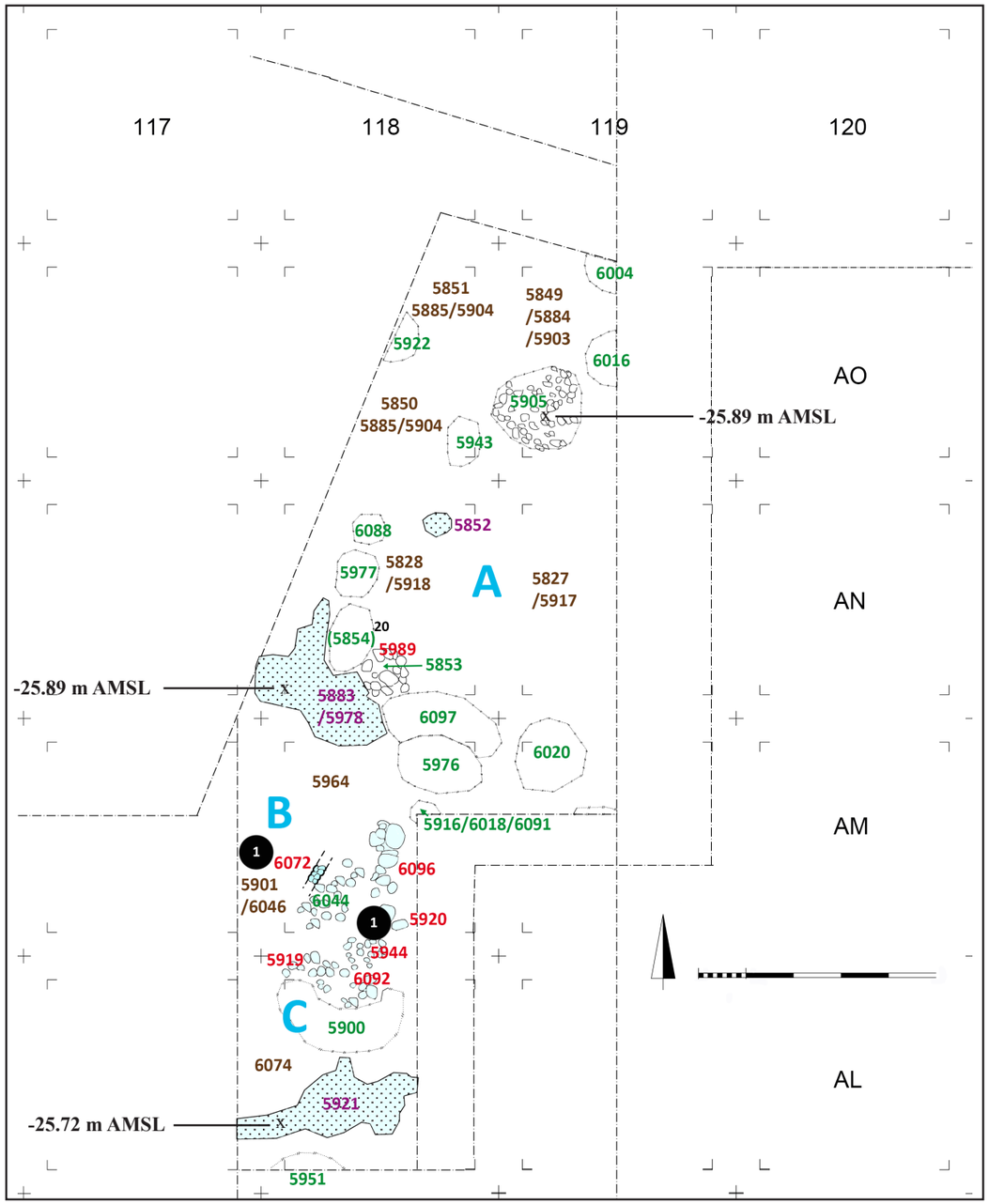


Fig. 2.4 Architectural plan, Area I, Stratum 21, Squares AL–AO 118–119, Complexes A–C, walls (red), fill layers (brown), pits (green), pisé floors (violet) (Source: BAI/GPIA).

Stratum 21, like the chronological preceding Stratum 20, represents the era between the Early and the Middle Bronze Age and thus the Intermediate Period labelled EB IV/MB I. The excavation area was confined to the squares AL–AO 118–119. In view of the actual finds in this area, its partition into different complexes must remain hypothetical; however, three major functional areas seem to evolve:

- A working, cooking, and storage area in the north (Complex A), as evidenced by the clayey work spaces 5883/5978 and 5852 as well as a large number of pits.
- In the central section (B), the small wall 6072 (as in the more unambiguous and possibly comparable Stratum 20) suggests a cottage/tent construction.
- Complex C, located to the east and south of (B), seems, again, to have served as a working area and also for storage-keeping and domestic activities. Here, roughly laid paving (similar also in Stratum 20), the clayey work space 5921, and several pits are characteristic.

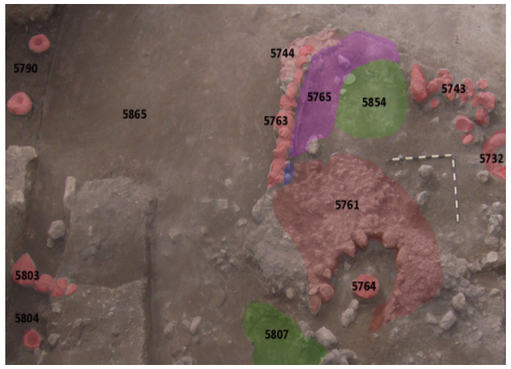


Fig. 2.5 Stratum 21, Area I, Complex A, Context 5989, view from east (Source: BAI/GPIA).

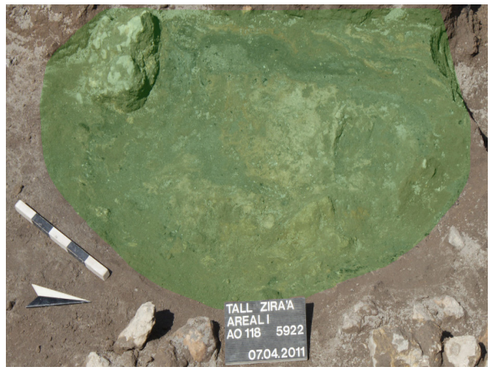


Fig. 2.6 Stratum 21, Area I, Complex A, Context 5922 (pit), view from east (Source: BAI/GPIA).

Complex A

In this section—essentially covering the Squares AN–AO 118–119—the large work space Contexes 5883/5978 with a clayey surface is of particular importance; the smaller area (Context 5852) in the north is comparable. Like in Stratum 20, these areas are more or less devoid of finds. This is obviously due to their hard, clayey surfaces into which only little refuse could penetrate and settle—as opposed to the surrounding areas consisting of softer soil and, even more so, to the large number of pits. In Context 5978 (= 5883), only 7 flint tools, two sherds of Early Bronze Age ceramics, and a few unidentifiable bone relics could be found.

The Sediments in Contexts 5850, 5851, 5885, and 5904 from Square AO 118; in the Contexts 5849, 5884, and 5903 from Square AO 119; and in the Contexts 5828 and 5918 from Square AN 118, as well as the Contexts 5827 and 5917 from Square AN 119 are very similar in appearance. While most of them yielded an impressive number of flint tools, there are only few grating and grinding tools. Their repertoire of finds is dominated by noumerous storage vessels (jars and jugs) in Early Bronze Age tradition and also, though to a quite lesser extent, Middle Bronze Age manufacturing tradition. Significantly fewer bowls, kraters, holemouth vessels and platters in Early Bronze Age tradition than in Strata 23 and 22 could be found. The (quite frequently found) cooking pots in Early Bronze Age tradition (CP 6) are quite as much abundant than those representing the CP 5 ware.

The numerous pits (Contexts 5922 and 5943 in Square AO 118; Contexts 5905, 6004, and 6016 in Square AO 119; Contexts 5853, 5977, 6088, and 6097 in Sqaure AN 118; Context 6020 in Square AN 119; Contexts 5976, 5916, 6018 and 6091 in Square AM 118) exhibit the same distribution of finds as the sediments.

Remarkable finds in Area A are the stone pendant/amulet with bilateral cone-shaped piercings in Context 5916 (TZ 017876-001; *Fig. 2.14*; cf. finds from Tall al-Mutasallim [Megiddo][29]), the stone bead[30] in Context 5917 (disc-shaped alabaster bead [TZ 018603-001; *Fig. 2.22*; cf. a find from Tall Abū al-Ḫaraz[31]]), the bar-shaped scale beam, rounded at the narrow sides, with two perforations, probably alabaster (TZ 018605-001; *Fig. 2.23*), and finally the shells (fragment in Context 5851, one with a piercing for use as a pendant[32] in Context 6097; one with piercings on two sides for use as a chain link in Context 5918[33]).

Fig. 2.7 Wheel of a miniature vehicle, TZ 018772-001 (Source: BAI/GPIA).

	Stone Artefacts		Ceramics (Middle Bronze Age)					Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Household/Food Production	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Oil Lamp	Spindle Whorls
5827	6	1	12	5	2			1	1	16	5	1				
5828	6	4	14		1	2		3	3	29	2	3	2			1
5849	3		1	1	3			1	1	8	1					
5850	11		4	3				1		10	4		1			
5851			1							1						
5852		1														
5853	2															
5884		1	3	1					2	18	7					
5885	19		6	2	1	1		2	3	13						
5904	11	1	5	1					2	11	1					
5905	1	3							2	1	2					
5916	1		2	1				1								
5917	7		7	3	1			4	2	12	2	3	1	2		
5918	23	1	11	1				4	5	7	8			2		
5922	18		15		2			1	1	20						
5943	4		1	1				1		5	1					
5976	10		9	1					2		6	2		1		
5977	4		5					8		1						
5978	7										2					
5989			12	1		1			5	15	2					1
6004	10								2	5	1					
6016	3	1									1					
6020	10			1					4	4	3		2	2		
6091	4			1						1						
6097	10	1	10	5	2			13	2	2	1			1	1	1

Tab. 2.1 Selected finds: Stone artefacts and ceramic finds from Complex A, fill layers (brown), pits (green), pisé floors (violet) (Source: BAI/GPIA).

29 Tall al-Mutasallim (Megiddo) EB–MB II: Wilson – Allen 1948, Pl. 207, 2. 3 and 11: stone; pendants, grey stone and quartz, only one hole, executed more carefully. Tall al-Mutasallim (Megiddo) EB I–II: Finkelstein et al. 2000, 389 Fig. 12. 27, 20: pendant bead amulet, here alabaster.

30 Cf. Context 5964.

31 Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 120 Fig. 120, 2; 358–359, 364 Fig. 326; 387–388: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs, and obsidian (?). Most of the beads consist of quartz; most of them are thicker than the bead from Tall Zirāʿa, only the bead in Fig. 364, 11 seems to be identical.

32 TZ 018615-001.

33 TZ 018630-001.

The wheel (of a miniature chariot) (TZ 018772-001, *Fig. 2.6* and *2.36*) was found in Context 6097. The almost perfectly circular clay disc with very carefully smoothened rims and a diameter of 6.5 cm was probably shaped from the sherd of a larger vessel (since it shows not curvature). Its piercing is almost exactly in the centre of the disc and 1 cm in diameter. It, too, is very carefully executed[34].

The playboard Context 5884 (TZ 021312-001) with a reddish brown coating on the inner surface was originally made from a large bowl or plate. On the inside of its bottom, three parallel rows of cut-out holes that were moreover separated by incised lines, were engraved at a later time.

The materials bitumen (Context 6020), glass (Context 5851), and carnelian (Context 6088) (TZ 019015-001) give evidence of the trading that obviously took place and of a corresponding craftsmanship in existence during this transitional period.

Among the bone finds, sheep and goats are abundant, domestic pig and cattle are significantly fewer in number; in Context 5918, fallow deer and donkey/horse/mule[35] can be detected. Fallow deer is moreover evidenced in pit 5922, gazelle in pit 5916. This indicates that, during the earlier phase of the transition between the Early and the Middle Bronze Age, venison played a relevant part in the residents' diet (cf. gazelle also in Context 5921 and wild (?) cattle in Context 5964).

The ^{14}C data from Context 5978 yielded the following values (Vieweger – Häser 2017, 259):

Sample TZ 01868-001
Context 5978 from Square AN 118
The sample dates to 4135 ± 35 BP / HS (HumicAcid) 4,160 ± 70 BP:

- 2862–2831 BC (13.4 %); 2821–2807 BC (5.7 %); 2758–2718 BC (17.3 %); 2708–2631 BC (31.9 %) (= 1 Sigma: 68.2 %) / HS: 2877–2835 BC (14.3 %); 2817–2665 BC (53.1 %); 2643–2640 BC (0.8 %) (= 1 Sigma: 68.2 %)
- 2873–2619 BC (93 %); 2607–2599 BC (1.5 %); 2593–2588 BC (0.9 %) (= 2 Sigma: 95.4 %) / HS: 2900–2572 BC (94.7 %); 2512–2504 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2885–2572 BC (99.6 %); 2512–2504 BC (0.1 %) (= 3 Sigma: 99.7 %) / HS: 3008–2987 BC (0.1 %); 2934–2469 BC (99.6 %) (= 3 Sigma: 99.7 %)

Bones[36]					
	unidentified	Sheep/Goat	Cattle	Domestic Pig	different breed
5827	x	1	7	2	
5828	19	12	1	11	
5885	15	15	2	4	
5916		4	1	1	1
5917	11	6	1		
5918	4	9	2		2
5922	8	30	3	4	1
6097	11	25	2	3	

Tab. 2.2 Selected finds: Bone finds from Complex A, fill layers (brown), pits (green) (Source: BAI/GPIA).

A stray find on the open excavation area is that of a coin dating from 78 BC (Alexander Jannaeus; 0.94 g, D 1.2 cm; OBV: anchor inside circle, circumferential [ΑΛΕΞΑΝΔΡΟΥ ΒΑΣΙΛΕΟΣ]; REV: eight-pointed star, circumferential dots; Aramaic *"The King Alexander Year 25"*), discovered on the surface of Context 5884. It can be assumed with certainty that the two stepped profiles rising steeply several metres high above the excavation area, with strata i.a. from the Greek-Roman era, are the origin of this stray find. A heavy rainfall during the spring excavation season moved the coin to this location. Pits, hoards, and other hypotheses can be excluded due to the excavation evidence.

Complex B

By analogy with comparable contexts in Stratum 20, the Complex B in Square AM 118 with its wall 6072 and its pit-free area can be regarded as a cottage or tent construction.

The sediments in the Contextes 5901, 5964, and 6046 hold a distribution of finds that is comparable to Complex A. However, the preponderance of ceramics fabricated in the Early Bronze Age tradition is much more pronounced. Still, a pithos manufactured in the Middle Bronze Age tradition was found in Context 6046. In Context 5901, metal (in an amorphous state) was detected.

Sheep and goat bones are also significantly predominant in Complex B, here followed by cattle and domestic pig bones. Fallow deer and donkey/horse/mule were detected in 5901, and wild (?) cattle in 5964. In the same context, the fragmented femoral head of a piece of cattle, pierced in the mid-section, (spindle whorl/button?) was discovered (TZ 019542-001; *Fig. 2.13*; cf. finds from Tall Qēmūn [Tēl Yoqnəʿām] and Tall Abū al-Ḫaraz[37]). There was also a stone bead (barrel-shaped), comparable to that of Complex A (TZ 019014-001; *Fig. 2.24*; cf. a find from Tall al-Mutasallim [Megiddo][38]).

The ^{14}C data from Context 5964 yielded the following values:

Sample TZ 018647-001
Context 5964 from Square AN 118
The sample dates to 3835 ± 35 BP:

- 2344–2206 BC (= 1 Sigma: 68.2 %)
- 2458–2199 BC (94.7 %); 2159–2154 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2466–2141 BC (= 3 Sigma: 99.7 %)

Bones[39]					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5901	x	16	5		2
5964	14	27	4	3	1

Tab. 2.3 Selected finds: Bone finds from Complex B, fill layers (brown) (Source: BAI/GPIA).

	Stone Artefacts		Ceramics (Middle Bronze Age)					Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Household/Food Prodution	Jars/Jugs	Bowls	Kraters	Pithoi	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi
5901	5		1	2					2	10	3	3				
5964	7	1	3	2	1					5	6	3	4	2		
6046	29		2	2	1	1			3	1	2			2		
6072	2									1	2					

Tab. 2.4 Selected finds: Stone artefacts and ceramic finds from Complex B, wall (red), fill layers (brown) (Source: BAI/GPIA).

Complex C

With regard to its repertoire of finds, Complex C is similar to Complex A. The sediment 6074 is similar to all other sediments—they all evidence a remarkably strong Early Bronze Age pottery tradition and yield a significant number of flint tools and bone finds. This also applies to the contexts in pits 5900, 5951, and 6044. The bone finds on the work area in Context 5921, however, are extraordinary since the comparable clayey work spaces in Stratum 20 were mostly devoid of finds.

The single finds also fit in perfectly with the overall finds of Stratum 21: the pierced shell pendant in Context 5900, the shell fragment in Context 5944, the metal find in Context 5944 (fragment of a delicate needle TZ 018703-001; *Fig. 2.10*; cf. finds from Tall al-Ḥiṣn [Beth Shean] and Tall Abū al-Ḫaraz[40]), the pounder in Context 6096, and the bone finds of gazelle in Context 5921 and donkey/horse/mule and fallow deer in 6074.

A remarkable find is that of a miniature vessel in Context 5951 (TZ 021251-001). Whether this should be regarded as a cultic object (given the absence of temples in this stratum probably belonging to a private cult) or as a toy remains a matter of uncertainty.

34 Cf: Tall al-Mutasallim (Megiddo) MB I/II: Finkelstein et al. 2000, 374 Fig. 12, 17. 19: discoid flywheel or chariot part.—Tall al-Ḥiṣn (Beth Shean) EB: Mazar 2012, 354 f. Photo 9, 4 and Fig. 9, 2. 5; and MB II: Mazar – Mullins 2007, 674 Photo 13, 1: wheel model/votive chariot wheel. Tall al-Ḥiṣn (Beth Shean) EB: Mazar 2012, 355 f. Fig. 9, 2. 4 and Photo 9, 6a: perforated clay disc/spindle whorl, very similar.

35 Likewise in Contexts 5901 and 6074.

36 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5849, 5850, 5851, 5853, 5884, 5904, 5905, 5943, 5976, 5977, 5978, 5989, 6004, 6020, and 6091.

37 Tall Qēmūn (Tēl Yoqnəʿām) late MB IIB/early LB: Ben-Tor et al. 2005, 381 Fig. V 12, 1–4: spindle whorls, D 2.2–3, flatter than the specimen from Tall Zirāʿa—Tall Abū al-Ḫaraz Phases V and VII: Fischer 2008, 76 Fig. 64, 2 (D c. 2.5) and 175 Fig. 206, 1 (D c. 1, flatter, button).

38 Reference: Tall al-Mutasallim (Megiddo) EB I/MB II: Wilson – Allen 1948, Pl. 207, 4 and 10: similar form, here carneol.

39 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 6046 and 6072.

40 Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9, 2–4 and Photo 9, 11: chisels. Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle; Strata R-3 and R-4b: Mazar – Mullins 2007, 614 Fig. 9, 5. 1 and 2: pins.—Tall Abū al-Ḫaraz Phases IB and IIA–B: Fischer 2008, 346 Fig. 311, 6 (L c. 7.5) and Tab. 76.

There is a stratigraphic break between the Early Bronze Age III and the Intermediate Period marked by the destruction of or the abandonment of the Early Bronze Age III settlement on Tall Zirāʿa. Stratum 21 bridges the gap between the Early Bronze Age III and the characteristic Intermediate Period pottery assemblages. There is also no sharp cultural break to the beginning of the Middle Bronze Age culture. The ceramic types of the Middle Bronze Age tradition are starting just in Stratum 21 and increase their appearance during Stratum 20.

There is a strong continuity between the early and the late phase of the Intermediate Period.

	Bones[41]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5921	8	11	2	3	1
6074	26	19	10	9	2

Tab. 2.5 Selected finds: Bone finds from Complex B, fill layer (brown), pisé floor (violet) (Source: BAI/GPIA).

	Stone Artefacts		Ceramics (Middle Bronze Age)					Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Household/Food Production	Jars/Jugs	Bowls	Kraters	Flasks	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Pithoi
5900	30	1	3		1	1		8	3	9	1	1			1	
5920	1		1													
5921	2	1	3						1	3	1		1			
5944	4		1					1		2				2		
5951	4									13	2	2	1	1		
6044			1													
6074	37	1						1	11	9	11		2	4		
6092										1	1			1		
6096		1														

Tab. 2.6 Selected finds: Stone artefacts and ceramic finds from Complex C, walls (red), fill layer (brown), pits (green), pisé floor (violet) (Source: BAI/GPIA).

41 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 6046 and 6072.

2.2.1.2. Stratum 20: Early Bronze Age IV/Middle Bronze Age I (younger stratum)

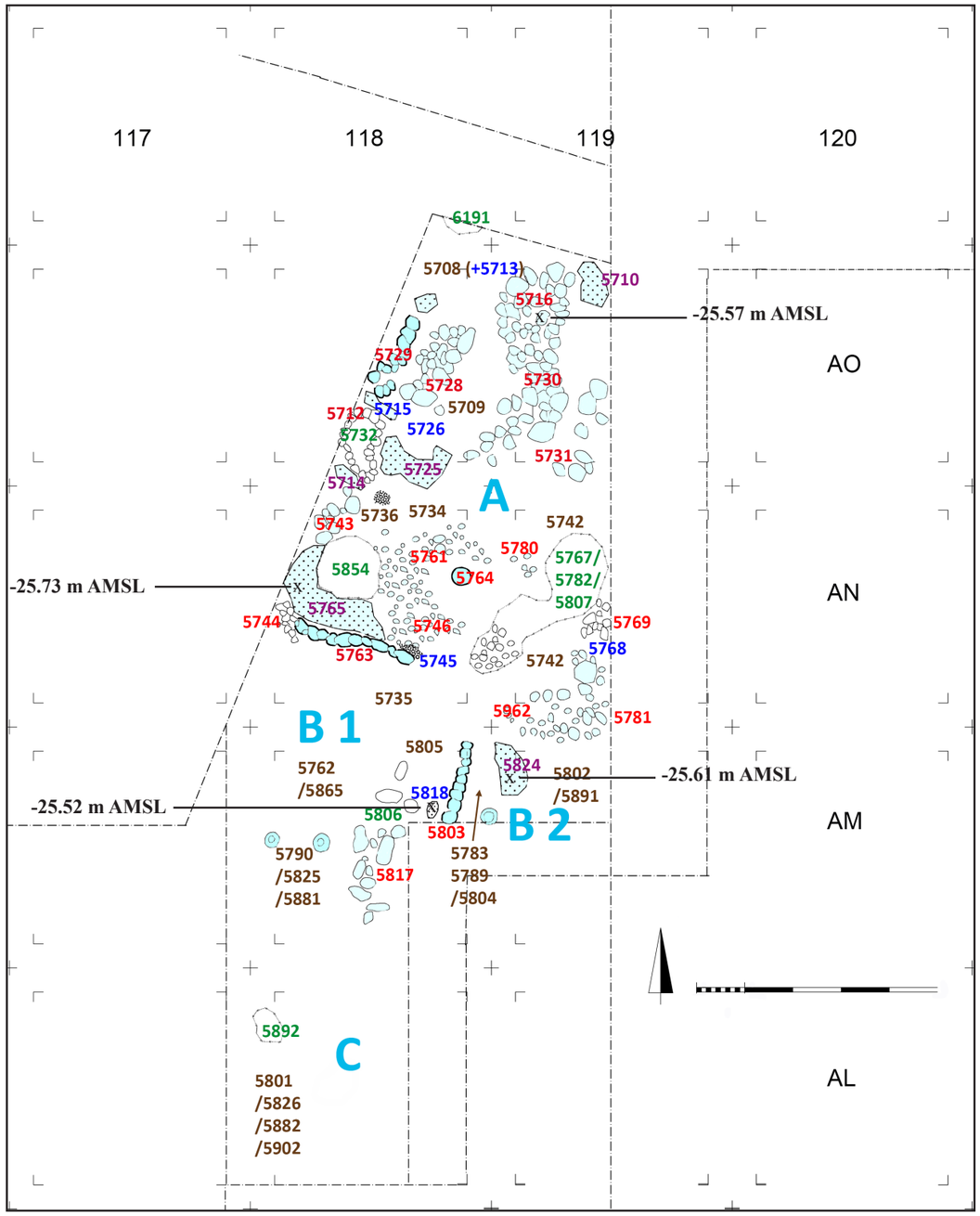


Fig. 2.8 Architectural plan, Area I, Stratum 20, Squares AL–AO 118–119, Complexes A–C, walls (red), fill layers (brown), ash layers (blue), pits (green), pisé floors (violet) (Source: BAI/GPIA).

Stratum 20, like Stratum 21 preceding it, represents the Intermediate Period between the Early and the Middle Bronze Age. The excavation area was confined to the Squares AL–AO 118–119. In view of the finds recovered it can only hypothetically be subdivided into different complexes; however, three major functional areas seem to emerge:

- Especially in the north (Complex A), roughly paved areas, clayey work areas, and pits give evidence of probably occupied areas for cooking, working, and storing and also as public thoroughfares.
- In the central part (Complex B), walls and post holes suggest a cottage/tent construction (B 1), another can be assumed a little farther east (B 2).
- The southern area (Complex C), again, seems to have been used for storage purposes and for domestic activities.

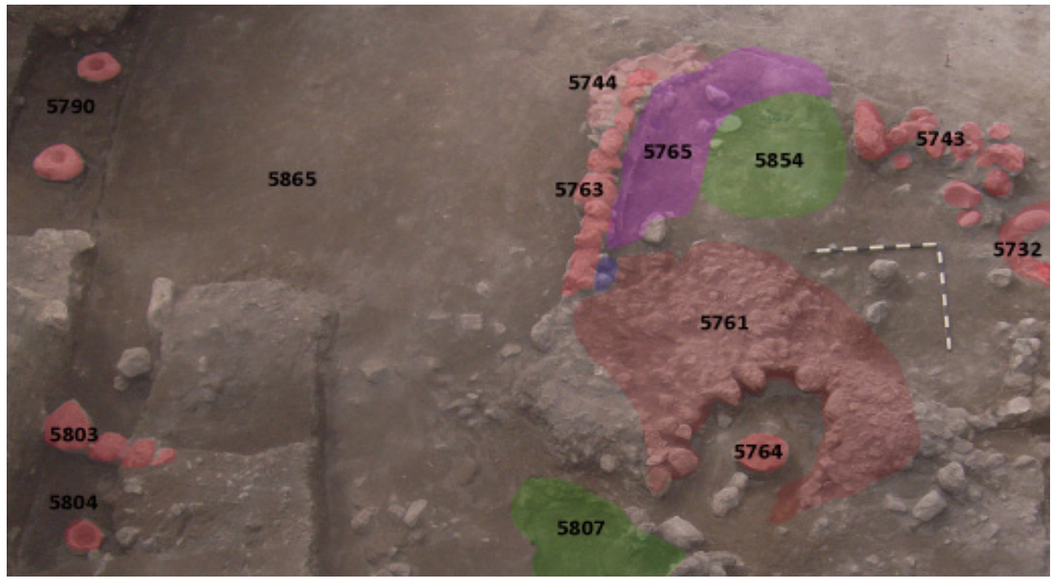


Fig. 2.9 Stratum 22, Area I, part of Complex A (Source: BAI/GPIA).

Complex A

The roughly laid cobblestones form work areas and areas for public thoroughfares (Contexts 5716, 5728; 5730, 5731); the clayey areas (Contexts 5710, 5714, 5725, 5765) were used for food preparation and skilled manual work. Particularly worthy of attention is the almost circular stone with a flattened top (Context 5764), which had possibly had its original application in one of the Early Bronze Age strata. Here, it probably served as the basis for a tent pole or a wooden column—or maybe it was used as a working stone[42]. It is surrounded by an occupational floor of more or less semi-circular shape, which is covered with many small stones (Contexts 5746, 5761, 5780). Additionally, several pits (Contexts 5712, 5732, 6196, and 5767, 5782, 5807 as well as 5854) identify the northern part of the excavation evidence as a storage and work area.

The sediments Contexts 5708, 5709, 5734, 5736, and 5742 offer a comprehensive ceramic repertoire, much of which was still produced in an Early Bronze Age typology and its characteristic shapes. A substantially smaller number of jugs and jars, bowls, or kraters were crafted using the Middle Bronze Age manufacturing technique on the fast wheel. However, almost the entire ceramic repertoire seems to have been produced in a rather average quality; there are only very few prestigious pieces. Jugs and jars are clearly predominant. As far as the cooking pots are concerned, however, the Early Bronze Age specimens (CP 6) were mostly replaced by the CP 5 cookware produced in the Early Middle Bronze Age tradition. This is clear evidence of the fact that CP 5 cooking pots were in common use much earlier than objects such as jugs, jars, bowls, and kraters produced on a fast wheel in the Middle Bronze Age manufacturing technique. There was found also a baking tray (Context 5734).

Prestigious objects are rare. In Context 5709, three beads were discovered (shell, bone, stone; the latter: TZ 017645-001; *Fig. 2.15*; cf. a find in Tall Abū al-Ḫaraz[43]). An almost identical reference find in Tall al-Ḥiṣn (Beth Shean)[44] can be quoted for the bead made of bone (TZ 017505-001; *Fig. 2.12*). Another cylindrical bead was found in Context 5736 (TZ 017651-001; *Fig. 2.34*; cf. a find in Tall Abū al-Ḫaraz[45]), and one more in Context 5767 (both made of stone). Metals were discovered in Context 5708 (small platelet), in 5709 (awl/needle; TZ 017686-001; cf. finds in Tall Abū al-Ḫaraz and Tall al-Ḥiṣn [Beth Shean][46]), in Context 5742 (small plate fragment), and also outside Complex A in Context 5881 (amorphous lump).

Shell pendants were found in Context 5708[47]; moreover, a fragment in Context 5742[48].

Spindle whorls were only found in sediments (Contexts 5708, 5709, 5734, and 5742). Among these, the stone spindle whorl in Context 5734 (TZ 017607-001; cf. finds from Tall al-Mutasallim [Megiddo], Tall Abū al-Ḫaraz, and Tall al-Ḥiṣn [Beth Shean] as well as Eḍ-Ḍanaba)[49] is worth mentioning. Flake tools were quite frequent in all sediments (24 in Context 5709 and 27 in Context 5734)[50]; there were also querns, rubbing stones, and a lower grinding stone; Context 5742 yielded a rubbing stone as well as a completely intact loom weight made of clay. Iron nodules were discovered in Contexts 5709, 5767, and 5782.

Two oil lamps manufactured in the Middle Bronze Age tradition (Context 5734 and Context 5742) were found.

Judging from the retrieved bones, nutrition predominantly comprised sheep and goats but also, to a lesser extent, domestic pig and moreover cattle. Among the game animals, fallow deer (Context 5709 and Context 5742) and fox (Context 5709) occur. In Context 5709, the bone of a donkey/horse/mule was also verified.

The ^{14}C data from Context 5736 gives the following date:

Sample TZ 017693-001
Context 5736 from Square AN 118
The sample dates to 3850 ± 35 BP / HS (Humic Acid) 3835 ± 35 BP:

- 2435–2421 BC (5.3 %); 2404–2379 BC (10 %); 2349–2277 BC (37.8 %); 2252–2228 BC (10.4 %); 2223–2210 BC (4.8 %) (= 1 Sigma: 68.2 %) / HS: 2344–2206 BC (= 1 Sigma: 68.2 %)
- 2459–2206 BC (= 2 Sigma: 95.4 %) / HS: 2458–2199 BC (94.7 %); 2159–2154 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2470–2194 BC (98.6 %); 2175–2145 BC (1.1 %) (= 3 Sigma: 99.7 %) / HS: 2466–2141 BC (= 3 Sigma: 99.7 %)

Due to their clayey texture, the work areas (Contexts 5710, 5714, 5725, 5765) feature a very low density of finds or even their total absence. Apparently they served as a solid surface on which to prepare food and engage in various kinds of skilled manual work. In this solid ground, however, it was difficult for remains of the activities performed in these areas to sink in (in Context 5725: bones of a domestic pig). Likewise, the ash layers yielded no or at best very few finds (Contexts 5713, 5715, 5726, 5745[51], 5768).

The roughly laid paving (Contexts 5716, 5728, 5730, 5731, 5743?, 5769, 5781, 5962) may be compared to that in farmyards. It was not continuously well placed but still it provided a solid surface as domestic thoroughfares and working surfaces, and, above all, it could withstand the violent winter rainfalls. The find repertoire corresponds to that of the surrounding area; however, the overall

42 However, no traces of work and wear are discernible.

43 Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 120 Fig. 120, 2; 358–359. 364 Fig. 326; 387–388: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?). Most of the beads consist of quartz; most of them are thicker than the one from Tall Zirāʿa, only the bead in Fig. 364, 11 seems to be identical.

44 Tall al-Ḥiṣn (Beth Shean) EB III–MB II: Mazar 2012, 388. Fig. 9. 17, 5–9 and Photo 9, 27: bone beads, D 0.6–0.8: identical.

45 Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 120 Fig. 120, 2; 358–359. 364 Fig. 326, 16; 387–388: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?); Material: brown specks (quartz, calcite, aragonite).

46 Tall Abū al-Ḫaraz Phases IB and IIA–B: Fischer 2008, 346 Fig. 311, 6 (L c. 7.5) and Tab. 76.—Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle; Stratum R-3 and R-4b: Mazar – Mullins 2007, 614 Fig. 9, 5. 1 and 2: pins.

47 Also cf. Contexts 5765 and 5730.

48 Also cf. Context 5882.

49 Tall al-Ḥiṣn (Beth Shean) EB IB: Mazar 2012, 368 f., Photo 9, 16 and Fig. 9, 9 (esp. Photo 9, 16 f and Fig. 9, 9. 16): polished limestone, lentil-shaped cross-section; D of this type ranging from 3.3 to 4; D of its hole ranging from 0.5 to 0.9.—Tall Abū al-Ḫaraz MB II Phase IVB: Fischer 2008, 97 Fig. 104, 1: spindle whorl, greyish brown stone; seems to be the identical material, D c. 3.5.—Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 171, 14: similar form, here also grey stone.—Eḍ-Ḍanaba (Ruǧm Saʿab) EB: Kamlah 2000, Tab. 105:10: pierced limestone disc.

50 Moreover 8 in Context 5732 and 20 in Pit 5767. 16 finds were reported in Sediment 5735 of Area B 1.

51 Here, a cooking pot like CP 3 fabric was discovered.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Household/Food Production	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5708	1	1	8	1	1						2	9	2	1				1
5709	24	5	30	4	1	2			1	16	4	101	6	2	4		17	1
5712			1							1		2						
5716	1									27		1	1					
5725																		
5726	1																	
5728		1	2							3	2	1						
5729										1					1			
5732	7											2						
5734	27	1	16		1			1		28	1	21	5	1	1	1		
5736	2	5	9							7		283[52]				1		
5742	4	2	18		2			1		20		17			1			
5745																		
5746	2	1	2							2		7	1					
5761			12									5	1					
5764												2						
5767	18	1	21	1			1			11	3	7	5					
5768			2															
5782	9	1	6	1	2					3		4	1					
5807																		
5854			1							1		1						
5962	1	1										2	2					
6196		1																

Tab. 2.7 Selected finds: Stone artefacts and ceramic finds from Complex A, walls (red), fill layers (brown), ash layers (blue), pits (green) (Source: BAI/GPIA).

density of finds was low—only slightly higher in the semi-circle (Contexts 5746, 5761, and 5780) around the base stone 5764. Only the density of cooking pots (CP 5) in Context 5716 stands out.

In the large pit (Contexts 5767/5782/5807), the findings are similar to those from the sediments, although with a slightly lower density. By contrast, the smaller pits Contexts 5732, 5854, and 6196 are more likely to have been used for organic waste disposal.

	Bones[53]				
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed
5709	22	73	7	12	3
5725				1	
5742	11	12	3	2	1
5767	13	35	5	9	

Tab. 2.8 Selected finds: Bone finds from Complex A, fill layers (brown), pit (green), pisé floor (violet) (Source: BAI/GPIA).

52 277 fragments belong to one vessel.

53 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5708, 5712, 5716, 5726, 5728, 5729, 5732, 5734, 5736, 5746, 5761, 5768, 5782, 5807, and 5854.

Complex B

Complex B 1

The assumption of a cottage/tent construction is founded on the existence of the two orthogonal walls Context 5763 (with collapse debris 5744) and Context 5803. The obviously reused former hinge stones seem to have been employed as post-holes. Moreover, in the area of B 1 in Context 5825 (underneath Context 5790, where the two abovementioned hinge stones were found), two further hinge stones were discovered. Another hinge stone was excavated nearby in Complex B 2 (Context 5804).

The sediments (Contexts 5735, 5762, 5790, 5805, 5825, 5865, 5881) are equivalent to the setting in Complex A. In the ceramic repertoire, the jugs/jars and bowls manufactured in the Early Bronze Age tradition predominate. Among the cooking pots, the vessels Type CP 5 again make up the largest share. Overall, the pottery only consists of unprestigious everyday ware.

There was only one pierced shell (pendant) that was found in Context 5865; an amorphous metal find in Context 5881 and a stone sphere (gaming piece?; TZ 017596-001; *Fig. 2.32;* cf. a find from Tall Qēmūn [Tēl Yoqnəʿām])[54] in Context 5762. The overall density of finds is slightly inferior to that in Complex A. The bone finds more or less correspond to those in Complex A; however, only sheep/goat, cattle, and domestic pig were verified. Cattle is slightly more abundant than domestic pig. Otherwise no characteristic differences could be made out.

The ^{14}C data from Context 5735 yielded the following values:

Sample TZ 017691-001
Context 5735 from Square AN 118
The sample dates to 3800 ± 40 BP:

- 2293–2196 BC (56.9 %); 2171–2146 BC (11.3 %) (= 1 Sigma: 68.2 %)
- 2452–2420 BC(2 %); 2405–2378 BC (2.6 %); 2350–2132 BC (89 %); 2082–2059 BC (1.7 %) (= 2 Sigma: 95.4 %)
- 2463–2118 BC (96.8 %); 2098–2039 BC (2.9 %) (= 3 Sigma: 99.7 %)

	Stone Artefacts		Ceramics (Middle Bronze Age)					Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Household/Food Production	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Oil Lamp	Spindle Whorls
5735	19	1	22	1	1			15	2	40	4		1			
5745																
5762	8	4	16	1	2			2	5	28	3		1	1		
5763										1						
5790			4					1		6						
5805	3		5	1		1		2	1	12	2					
5806			1						1	3						
5817		1														
5818	2							2		2	1					
5865	6		3		1					3		1				
5881			6	2	2								1			

Tab. 2.9 Selected finds: Stone artefacts and ceramic finds from Complex B 1, walls (red), fill layers (brown), ash layers (blue), pit (green) (Source: BAI/GPIA).

54 Tall Qēmūn (Tēl Yoqnəʿām) MB IIA–early LB: Ben-Tor et al. 2005, 369 Fig. V 8, 1–7—identical shape, limestone, weights (?).

The pit 5806, the rough paving 5817, and the ash area 5818 conform perfectly to the overall picture as described above.

	Bones[55]				
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed
5735	42	36	10	9	
5762	7	14	7		
5805	1	8	2	7	
5818		1	2		

Tab. 2.10 Selected finds: Bone finds from Complex B 1, fill layers (brown), ash layer (blue) (Source: BAI/GPIA).

Fig. 2.10 Stratum 20, Area I, Complex B 1 (Source: BAI/GPIA).

Complex B 2

Because of the post-hole to the east of the wall 5803, Complex B 2 could also be regarded as a cottage/tent construction. Context 5824 marks another working area. Neither of the sediments 5783, 5789, 5802, 5804, and 5891 offers any spectacular results with respect to the quantity of finds, and all of them yielded a ceramic repertoire that is very similar to that of Complex B 1.

	Stone Artefacts		Ceramics (Middle Bronze Age)					Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Household/Food Production	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Oil Lamp	Spindle Whorls
5783				1						2						
5789			1					1		2						
5802			1					4		9	3					
5804			2					4		3			1			
5824	2									1						
5891	2	1		2						1	1					

Tab. 2.11 Selected finds: Stone artefacts and ceramic finds from Complex B 2, fill layers (brown), pisé floor (violet) (Source: BAI/GPIA).

55 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5790, 5806, 5865, and 5881.

Complex C

Complex C, south of the cottage/tent construction, features neither recognizable work spaces nor paved areas. The obvious conclusion that, as in B 1, it could be a formerly canopied space cannot be securely verified. Only one pit (Context 5892) could be found, containing bones (sheep, goat, domestic pig), some pieces of everyday pottery, a grinding stone, and four flint tools.

The ceramic assemblage of the sediments 5801, 5826, 5882, and 5902 is in line with the overall ceramic finds in Stratum 20—including the remarkable number of flint flakes and tools (24 in Context 5902; and 4 in Context 5882 and Context 5892 resp.). Likewise, the prevalence of rubbing stones and one quern (Context 5882) is noteworthy. The impressive bone finds of sheep, goat, and domestic pig (Contexts 5801, 5882, and 5892) as well as gazelle (Context 5882) confirm the above.

	Stone Artefacts		Ceramics (Middle Bronze Age)					Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Household/Food Production	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Oil Lamp	Spindle Whorls
5801		1	1							4						
5882	4	1	4	2	2					6			2			
5892	4	1	2		1			1			1					
5902	24	1	2	1				1	5	4	4		4	3		

Tab. 2.12 Selected finds: Stone artefacts and ceramic finds from Complex C, fill layers (brown), pit (green) (Source: BAI/GPIA).

	Bones[56]				
	undefined	Sheep/Goat	Cattle	Domestic pig	different breed
5801	x	2		4	
5882	3	10		1	1
5892	x	4		4	

Tab. 2.13 Selected finds: Bone finds from Complex C, fill layers (brown), pit (green) (Source: BAI/GPIA).

Stratum 20 reveals a close connection to the proceeding settlement on Tall Zirā‘a (Stratum 21). The ceramic assemblage tends more than Stratum to 21 the following Middle Bronze Age IIA tradition. But the Early Bronze Age III traditions are remarkable and numerous.

After the destruction of most of the settlements at the end of the Early Bronze Age III in the southern Levant, the population of the tall continued to stay at this settlement. There should be a clear demographic continuity from the Early Bronze Age II through the Intermediate Period to the Bronze Age III on Tall Zirā‘a. But the presence of so many new cultural influences marks also an influence of additional settlers resp. new ideas and inventions from the north on the tall.

56 Further bone finds that cannot be identified with respect to their species were discovered in Context 5902.

2.2.2. Catalogue of Finds – The Intermediate Bronze Age (Strata 21–20)

2.2.2.1. Catalogue of Metal Finds: Strata 21–20

In the strata of the Intermediate Period on Tall Zirā'a, altogether six metal finds were documented. These consisted of four pure copper objects. The other two objects from Stratum 20 are made from Cu_2Sn bronze.

With respect to the metal classification, the following should be noted:

- Cu_2Sn bronze is being defined from an Sn content of 1.0 % as the metal's malleability decreases with a Sn content of 1.3 % or higher. Thus, the production of bronzes with an intentionally low Sn content seems reasonable.
- Regarding the metal classification of the metal objects from Tall Zirā'a on the basis of data relevant for XRF-spectroscopy: All specifications are given in ppm (10.000 ppm = 1 %). Cu contents exceeding 100.0 % are not realistic and must be due to the calibration of the instrument being used and to object-related measuring errors. All data cited in this chapter taken from Schulze 2014.
- Values <10 ppm are defined as being below the limit of detection (<LOD).

Among the identifiable finds there are two fragments of an awl or a needle.

In order to ascertain the metals' provenance, numerous archaeometrical examinations were performed and published in Schulze 2014, esp. 121–123.

The archaeometric examinations illustrate that nearly all analyses can be linked to material from the Wādī Fēnān or Timna respectively, while similarities to material from Cyprus can only be observed once during the advanced Middle Bronze Age. Same analyses could not be attributed to any specific copper mining area.

The overall outcome that the Early Bronze Age origins of the copper/bronze employed can be traced back to the Southern Levant's south is not surprising, and neither are the imports from Cyprus, which only started to gain importance towards the end of the Middle and the beginning of the Late Bronze Age.

Metal finds						
Stratum	**Cu**	**Copper/Bronze**	**Cu_2Sn-Bronze**	**Lead**	**Iron (Ecofacts)**	**Total**
23		1				1
22	4					4
21	2					2
20	2		2			4
19	4	1	1	2	3	11
18	4	2	2		2	10
17	6		3			9
Total	22	4	8	2	5	41

Tab. 2.14 Selected finds: Number of metal finds from Strata 23–17 (Source: BAI/GPIA).

Metal finds				
Stratum	**Context**	**Complex**	**Object**	**Total No.**
23	6406	A	fragment	1
22	6021	B 1	needle/awl	4
	6305	B 1	earring	
	6325	A	needle/awl	
	6152	C 5	casting residues	
21	5901	B	amorphous fragment	2
	5944	C	fine needle	
20	5708	A	rectangular fragment	4
	5709	A	needle (?)	
	5742	A	platelet	
	5881	B 1	lumps	
19	5534	C 1	amorphous fragment	11
	5641	C 1	amorphous fragment	
	5641	C 1	amorphous fragment	
	5646	C 1	needle/awl	
	5657	C 1	needle/awl	
	5659	B	wire	
	5659	B	wire	
	5671	C 4	needle/awl	
	5683	C 3	needle	
	5686	C 4	needle	
	5694	C 4	needle/awl	
18	4299	B 2	needle/awl	11
	4542	B 1	metal sheet	
	4953	B 3	wire	
	5136	B 3	globelet	
	5137	B 6	hook	
	5247	B 3	needle/awl (?)	
	5247	B 3	needle/hair pin	
	5329	B 1	flat sheet of metal	
	5532	B 6/B 10	irregulary formend ferrous stone	
	5607	B 9	slag	
	5610	B 1	amorphous fragment	
17	4524	A 4	brooche	9
	4524	A 4	platelet	
	4653	A 4	needle/awl (?)	
	4695	A 3	amorphous fragment	
	4718	A 3/ A 4	earring	
	4727	A 3	amorphous vessel fragment	
	4728	A 3	amorphous fragment	
	4729	A 3	wire (?)	
	4890	A 3/A 4	4 ring fragments	

Tab. 2.15 Selected finds: Description of metal finds from Strata 23–17 (Source: BAI/GPIA).

Stratum 21

TZ 018703-001
Area I; Square AL 118; Complex C; Context 5944
Description: Fragment of an awl or needle
Figure Reference: Fig. 2.11
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 3.0; D (max.) 0.3
Weight: 0.6 g
Material: Copper. Analysis: Cu 403932, Sn 1368, Pb 14762, As 1085, Zn <NWG, Fe 6507, Ag 124
References: Tall Abū al-Ḥaraz Phases IB and IIA–B: Fischer 2008, 346 Fig. 311, 6 (L 7.5) and Tab. 76.—Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9, 2–4 and Fig. 9, 11: chisels. Tall al-Ḥiṣn (Beth Shean) MB Str. R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle; Str. R-3 and R-4b: Mazar – Mullins 2007, 614 Fig. 9, 5. 1 and 2: pins.

Fig. 2.11 Fragment of awl or needle, TZ 018703-001 (Source: BAI/GPIA).

TZ 018691-001
Area I; Square AM 118; Complex B; Context 5901
Description: Crumbled amorphous copper object; partly pulverized
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: —
Weight: 4.2 g
Material: Copper. Analysis: Cu 474331, Sn 118, Pb 73, As 225, Zn <NWG, Fe 17004, Ag <NWG
Reference: —

Stratum 20

TZ 017492-001
Area I; Square AO 118; Complex A; Context 5708
Description: Metal platelet (sheet)
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 1.6; W 1.5; H 0.4
Weight: 1.7 g
Material: Copper. Analysis: Cu 1298305, Sn 1303, Pb 2269, As 1187, Zn <NWG, Fe 10162, Ag 203
Reference: —

TZ 017683-001
Area I; Square AN 119; Complex A; Context 5742
Description: Fragment of a metal plate
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 1.2; H 0.2
Weight: 0.3 g
Material: Bronze (Cu_2S_n). Analysis: Cu 634126, Sn 29127, Pb 780, As 790, Zn <NWG, Fe 19803; Ag 23
Reference: —

TZ 017686-001
Area I, Square AO 118; Complex A; Context 5709
Description: Shaft with thickenings at the endings. Shaft of a needle or an awl?
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 5.0; D (max.) 0.9
Weight: 6.0 g
Material: Copper. Analysis: Cu 890881, Sn 141, Pb 763, As 670, Zn <NWG, Fe 20814, Ag <NWG
References: Tall Abū al-Ḥaraz IB and IIA–B: Fischer 2008, 346 Fig. 311, 6 (L 7.5) and Tab. 76.—Tall al-Ḥiṣn (Beth Shean) MB Str. R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle; Str. R-3 and R-4b: Mazar – Mullins, 2007, 614 Fig. 9, 5. 1 and 2: pins.

TZ 018714-001
Area I; Square AM 118; Complex B 1; Context 5881
Description: Amorphous fragment (lumps)
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 0.5
Weight: 0.4 g
Material: Bronze (Cu_2S_n). Analysis: Cu 352490, Sn 34370, Pb 23, As 509, Zn <NWG, Fe 6579, Ag <NWG
Reference: —

2.2.2.2. Catalogue of Faience/Glass Finds: Stratum 20

In Stratum 20 one find of glass/faience has been listed.
The bead was found in Context 5767.

Faience			
Stratum	**Inv.**	**Object**	**Material**
22	TZ 019536-001	2 amorphous fragments	faience ?
	TZ 018999-001	62 beads	faience
20	TZ 017666-001	1 bead	faience/glass ?
19	TZ 015496-001	1 bead	faience ?
18	TZ 017370-001	1 bead	faience/glass ?
17	TZ 014646-001	1 bead	faience/glass ?
	TZ 014647-001	1 bead	glass ?
	TZ 014692-001	1 bead	faience ?
	TZ 014693-001	1 fragment	glass ?
	TZ 016641-001	1 fragmented bead	glass ?

Tab. 2.16 Selected finds: Faience/glass finds from Strata 22–17 (Source: BAI/GPIA).

TZ 017666-001
Area I; Square AN 119; Complex A; Context 5767
Description: Cylindrical bead; completely preserved
Figure Reference: Fig. 2.12
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (opening) 0.1; D (max.) 0.5; L 0.8
Weight: —
Material: Faience
Reference: Faience beads were reported in EB I/II in Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 389 Fig. 12. 27, 4–6 and Loud 1948, Pl. 207. Faience for small objects was used in Tall al-Ḥiṣn (Beth Shean) since MB.

Fig. 2.12 Faience bead, Stratum 20, TZ 017666-001 (Source: BAI/GPIA).

2.2.2.3. Catalogue of Bone Finds: Strata 21–20

The bone finds on the Tall Zirāʿa were evaluated by N. Benecke (DAI Berlin).

On the whole, it can be observed that the majority of bone finds came from sheep or goats during the Intermediate Period. On the Tall Zirāʿa the percentage of sheep/goats climbed up to 66.0 % in Stratum 21 and 68.5 % in Stratum 20.

During the same time the trend of keeping cows and bulls declined from 19.0 % resp. 24.0 % (Strata 23 and 22) to 16.0 % in Stratum 21 and 13.0 % in Stratum 20. In contrast to cattle, the number of domesticated pigs increased significantly in the course of time from the Early to the Middle Bronze Age. In the Strata 21 and 20 there are 15.0 % resp. 16.0 % of pig bones.

Among the game animals, fallow deer and fox were verified, but to a very low level of 2.0 % in Stratum 21 and 1.2 % in Stratum 20.

Bones										
	Domesticated Animals					Wild Animals				
Stratum	Sheep/ Goat	Cattle	Domestic Pig	Donkey/ Horse[57]	Dog	Feral Pig	Gazelle	Fallow Deer	Fox	Total No.
25	7 **78 %**	2 **22 %**								9
24	20 **51 %**	12 **31 %**	3 **8 %**				2 **5 %**	2 **5 %**		39
23	119 **70 %**	32 **19 %**	10 **6 %**	1 **0.5 %**	3 **1.5 %**	1 **0.5 %**		3 **1.5 %**		169
22	219 **50 %**	105 **24 %**	60 **14 %**	4 **1 %**	6 **1.5 %**	2 **0.5 %**	6 **1.5 %**	33 **7 %**	1 **0.5 %**	436
21	175 **66 %**	42 **16 %**	40 **15 %**		3 **1 %**		2 **1 %**	3 **1 %**		265
20	195 **68.5 %**	36 **13 %**	49 **17 %**		1 **0.3 %**		1 **0.3 %**	2 **0.6 %**	1 **0.3 %**	285
19	187 **48 %**	86 **22 %**	114 **29 %**	1 **0.3 %**	2 **0.6 %**					390
18	373 **60 %**	73 **11.5 %**	173 **27.5 %**				5 **1 %**			624
17	391 **76 %**	43 **8 %**	77 **15 %**			1 **0.1 %**	4 **0.8 %**	1 **0.1 %**		517

Tab. 2.17 Selected finds: Bone finds from Strata 25–17 (Source: BAI/GPIA).

57 Mules are not included.

Among the single bone finds two objects from the Intermediate Periode strata are particularly noteworthy:

TZ 017505-001
Area I, Stratum 20, Square AO 118, Complex A, Context 5709
Description: Bead. Complete; small disc-shaped; flattened; pierced in the centre; bone can not be identified with respect to its species
Figure Reference: Fig. 2.13
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 0.2; D (outside) 0.6; D (cannulation) 0.2
Weigth: 0.8 g
References: Tall al-Ḥiṣn (Beth Shean) EB III–MB II: Mazar 2012, 388 Fig. 9, 17. 5–9 and Photo 9, 27: bone beads, D 0.6–0.8, identic.

Fig. 2.13 Bead, front and back view, Stratum 20, TZ 017505-001 (Source: BAI/GPIA).

TZ 019542-001
Area I, Stratum 21, Square AM 118, Complex B, Context 5964
Description: Spindle whorl. Fragmented; head of femur; cattle bone; pierced in the centre; flattened bottom
Figure Reference: Fig. 2.14
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: D (outside) 4.6; D (cannulation) 1
Weight: 20.3 g
References: Tall Qēmūn (Tēl Yoqnəʿām) MB IIB late–LB early: Ben-Tor et al. 2005, 381 Fig. V 12, 1–4: spindle whorls, D 2–3, more flattened.—Tall Abū al-Ḫaraz Phases V and VII: Fischer 2008, 76 Fig. 64, 2 (D ca. 2.5) and 175 Fig. 206, 1 (D ca. 1, more flattened, button).

Fig. 2.14 Spindle whorl, Stratum 21, TZ 019542-001 (Source: BAI/GPIA).

2.2.2.4. Catalogue of Stone Finds: Strata 21–20

In Strata 21–20 in total 73 finds of stone/mineral and 469 flint flakes and tools were found. The most common raw materials for ground stone tools were basalt and limestone. Furthermore, there were objects made of silicate rock, of pebble stone or alabaster. In a small number of cases, haematite/magnetite, steatite (soapstone), serpentinite, or pumice stone were used. Among the listed ecofacts, iron nodules are predominant, i.e. naturally occurring haematite (Fe_2O_3), which was also frequently found in a powdered state as it could thus be used as a colourant (ruddle).

Although, compared with limestone, basalt is much harder to work on, its hardness and its durability in particular made it eligible for the production of tools and prestigious objects alike. The porosity of its surface made it suitable for grinding and grating. In contrast, limestone was easier to handle and thus popular for pierced objects (such as weight stones) and also for the fabrication of hinge stones in order to prevent the wood revolving inside it from wearing away.

According to their individual purposes, specific forms also required certain materials:

- If a weight was made of hard haematite/magnetite it was forgery-proof.
- If a pendant was made of serpentinite it could be easily worked and end up as a highly filigree, prestigious work of art.
- Serpentinite or steatite (soapstone) were fitting materials for axes as they demonstrated the tool's high value and ensured a precise workmanship.
- Signet rings were usually made of steatite (soapstone) as this material could be engraved in a precise-manner.

The 73 objects listed, definable single finds made of stone/mineral can be separated into the following groups according to their application:

- 56.2 % food preparation (e.g. quern, lower grinding stone, mortar bowl, rubbing stone).
- 9.6 % personal items (e.g. pendant, balance weight, bead, ring, signet ring, gaming piece, gaming board, hygiene cutlery, axe).
- 13.7 % household (e.g. lid, weight stone, hammer stone, bowl, spindle whorl, potters wheel, loom weight, whetstone).
- 6.8 % architecture (e.g. hinge stone, plaster).

No military equipment (e.g. sling stone) was found. Moreover one cultic item, and 9 ecofacts are listed, as well as 469 flint flakes and tools.

Fig. 2.15 Pendant, Stratum 21, TZ 017876-001 (Source: BAI/GPIA).

Fig. 2.16 Bead, Stratum 20, TZ 017645-001 (Source: BAI/GPIA).

Stone										
Stratum	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**Total.**
Architecture	2	2	1	5		2			1	**13**
Lime plaster						1				
Hinge stone	2	2	1	5		1			1	
Household/Craft	11	5	1	5	5	6	1	3	1	**38**
Lid	1							1		
Weight stone	4	2			2	1	1	1	1	
Hammer stone		2		2	2	1		1		
Bowl	1			1		2				
Spindle whorl	4		1	1		1				
Potters wheel	1									
Loom weight/Abrader		1				1				
Whetstone				1	1					
Food Production	29	29	18	27	14	22	4	5	2	**150**
Quern	7	9	4	7	4	6			1	
Lower grinding stone	4	5	2	5	4	4	1	1	1	
Mortar bowl	3	2	3	1		3	1			
Rubbing stone	15	13	9	14	6	9	2	4		
Personal Items	3	7	2	3	4	30			2	**51**
Pendant			1		1					
Balance weight/Scale beam					1	1				
Bead	1	1	1	2	2	27				
Ring		1								
Signet ring	1									
Gaming piece/Game board	1	3		1		2				
Hygiene cutlery		1							1	
Miniature axe		1							1	
Warfare		1								**1**
Sling stone		1								
Cultic Items		1	1		1					**3**
Incence burner		1	1							
Flints: Flakes and Tools	125	313	227	175	294	699	173	61	58	**2125**
Ecofacts	5	20	5	7	2	5	1			**45**
Iron nodule	5	12	4	5		5	1			
Raw materials		8	1	2	2					
Uncertain	2	9	1			5				**17**

Tab. 2.18 Selected finds: Stone finds from Strata 25–17 (Source: BAI/GPIA).

Stratum 21

Household/Craft

TZ 017800-001
Area I; Square AO 119; Complex A; Context 5884
Description: Whetstone. Fragmented; oblong ashlar-shaped; in its cross section rectangular
Type: —
Figure Reference: Fig. 2.17
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 12.4; W 2; H 2
Weight: 114 g
Material: Limestone
Reference: —

Fig. 2.17 Whetstone, TZ 017800-001 (Source: BAI/GPIA).

TZ 018551-001
Area I; Square AM 118; Complex B; Context 6096
Description: Hammer stone. Complete; egg-shaped; one side flattened
Type: Hammer stone type 3
Figure Reference: Fig. 2.18
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 15.5; W 12.4
Weight: 3300 g
Material: Flint/Silex
Reference: —

Fig. 2.18 Hammer stone, TZ 018551-001 (Source: BAI/GPIA).

TZ 018827-001
Area I; Square AO 119; Complex A; Context 5905
Description: Weight stone. Fragmented; oval in cross section; conically pierced from both sides
Type: Weigth stone type 1.1.2
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 11; W 14; H. 5.9; D (opening) 3.8
Weight: 1107 g
Material: Basalt
Reference: —

TZ 018845-001
Area I; Square AM 118; Complex A; Context 6097
Description: Hammer stone. Complete; ashlar-shaped; one side bevelled; bottom side flattened and smooth; reddish; beat tracks
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 6.6; W 6.5; H 5.4
Weight: 299 g
Material: Silicate rock
Reference: —

TZ 018939-001
Area I; Square AL 118; Complex C; Context 5900
Description: Weight stone. Complete; conically pierced from both sides
Type: Weight stone type 1.2.2
Figure Reference: Fig. 2.19
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 8.4; W 7.5; H 2.9
Weight: 211.9 g
Material: Limestone
Reference: —

Fig. 2.19 Weight stone, TZ 018939-001 (Source: BAI/GPIA).

Food Production

TZ 017790-001
Area I; Square AN 119; Complex A; Context 5827
Description: Quern. Fragmented; upper side convex; flattened bottom side
Type: Quern type 1g
Figure Reference: Fig. 2.20
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 12.5; W 8.9; H 5.3
Weight: 742 g
Material: Basalt
Reference: —

Fig. 2.20 Quern, TZ 017790-001 (Source: BAI/GPIA).

TZ 017796-001
Area I; Square AN 118; Complex A; Context 5828
Description: Quern (?). Fragmented; upper side concave; bottom side flattened
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 12.8; W 11; H 9.3
Weight: —
Material: Basalt
Reference: —

TZ 017852-001
Area I; Square AM 118; C1mplex B; Context 5964
Description: Rubbing stone. Fragmented; originally a foot of a large bowl; round in its cross section; bottom side carefully smoothed
Type: Rubbing stone type 12.2
Figure Reference: Fig. 2.21
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 6.4; W 8.6; H 2.7
Weight: 216 g
Material: Basalt
Reference: —

Fig. 2.21 Rubbing stone, TZ 017852-001 (Source: BAI/GPIA).

TZ 017869-001
Area I; Square AN 118; Complex A; Context 5918
Description: Lower grinding stone. Fragmented; oval in its cross section; upper side concave; bottom side convex; roughly shaped; finely porous
Type: Lower grinding stone type 2b
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 18; W 20.5; H 7.1
Weight: 3674 g
Material: Basalt
Reference: —

TZ 018826-001
Area I; Square AO 119; Complex A; Context 5905
Description: Quern. Fragmented; upper side convex; bottom side flattened
Type: Quern type 1d
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 8.7; W 13; H 9
Weight: 942 g
Material: Basalt
Reference: —

TZ 018822-001
Area I; Square AN 118; Complex A; Context 5828
Description: Lower grinding stone: Complete; oval in its cross section; upper side flattened; bottom side convex
Type: Lower grinding stone type 1c
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 34; W 21.8; H 9
Weight: 8300 g
Material: Basalt
Reference: —

TZ 018836-001
Area I; Square AN 118; Complex A; Context 5828
Description: Lower grinding stone. Complete; oval in its cross section; upper side flattened; bottom side convex
Type: Lower grinding stone type 1c
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 30; W 20.6; H 6
Weight: 4958 g
Material: Basalt
Reference: —

TZ 018842-001
Area I; Square AL 118; Complex C; Context 5921
Description: Lower grinding stone. Fragmented; upper side flattened and smoothed; bottom side roughly shaped
Type: Lower grinding stone type 1e
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 12.5; W 10.4; H 3.4
Weight: 581 g
Material: Basalt
Reference: —

TZ 018844-001
Area I; Square AL 118; Complex C; Context 6074
Description: Rubbing stone. Complete; oval in its cross-section; upper and bottom side slightly convex
Type: Rubbing stone type 12.1
Figure Reference: Fig. 2.22
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 7.5; W 6.8; H 4.1
Weight: —
Material: Limestone
Reference: —

Fig. 2.22 Rubbing stone, TZ 018844-001 (Source: BAI/GPIA).

TZ 018878-001
Area I; Square AO 119; Complex A; Context 5905
Description: Quern. Fragmented; upper side convex; bottom side flattened and abraded; finely porous
Type: Quern type 1c
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 12.5; W 12.5; H 7.8
Weight: 1949 g
Material: Basalt
Reference: —

TZ 018883-001
Area I; Square AO 119; Complex A; Context 6016
Description: Rubbing stone. Complete; frustum shaped; bottom side crude
Type: Rubbing stone type 5.2
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: H 5.6; D (max.) 4.9
Weight: 193 g
Material: Basalt
Reference: —

TZ 018891-001
Area I; Square AN 118; Complex A; Context 5828
Description: Rubbing stone. Fragmented; oval in its cross section; upper side convex; bottom side flat and crude
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 9.8; W 5.8; H 2.8
Weight: 243 g
Material: Limestone
Reference: —

TZ 018956-001
Area I; Square AO 118; Complex A; Context 5904
Description: Rubbing stone. Fragmented; oval in its cross section; bottom side slightly convex
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 6.2; W 8.5; H 3.2
Weight: 211 g
Material: Basalt
Reference: —

TZ 019516-001
Area I; Square AN 118; Complex A; Context 5852
Description: Rubbing stone. Complete; round in its cross section; friction surface slightly concave; red, beige and black marbled
Type: Rubbing stone type 2
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 3.8; W 3.6; H 2.5
Weight: 46 g
Material: Silicate rock
Reference: —

Personal Items

TZ 017876-001
Area I; Square AM 118; Complex B; Context 5916
Description: Pendant. Fragmented; oval in its cross section; flattened; conical drilling from both sides; a second sloping drilling close to the edge; unusable
Type: —
Figure Reference: Fig. 2.15
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: D (max.) 1; L 4.7; W 3.7
Weight: 26 g
Material: Limestone
Reference: Tall al-Mutasallim (Megiddo) EB–MB II: Wilson – Allen 1948, Pl. 207, 2. 3 and 11: stone; pendants, grey stone and quartz; perforation much more carefully. Tall al-Mutasallim (Megiddo) EB I–II: Finkelstein et al. 2000, 389 Fig. 12. 27, 20: pendant bead amulett, here alabaster.

TZ 018603-001
Area I; Square AN 119; Complex A; Context 5917
Description: Bead. Complete; flattened; disc-shaped; carefully worked
Type: Bead type 6
Figure Reference: Fig. 2.23
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: D (max.) 0.7; D (opening) 0.18; H 0.17
Weight: < 1 g
Material: Alabaster
Reference: Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 120 Fig. 120, 2; 358–359. 364 Fig. 326; 387 f.: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?). Most of the beads consist of quartz; only bead from Fig. 364, 11 seems to be identical.

Fig. 2.23 Bead, TZ 018603-001 (Source: BAI/GPIA).

TZ 018605-001
Area I; Square AN 119; Complex A; Context 5917
Description: Scale beam. Fragmented; oblonged; bar-shaped; rounded on both sides; two perforations, each drilled from both sides, originally three perforations
Type: —
Figure Reference: Fig. 2.24
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 3.9; W 0.68; D (max.) 0.75; D (opening) 0.2
Weight: 3.6 g
Material: Alabaster
Reference: Genz 2011: surface carefully smoothed and polished.

Fig. 2.24 Scale beam, TZ 018605-001 (Source: BAI/GPIA).

TZ 019014-001
Area I; Square AM 118; Complex B; Context 5964
Description: Bead. Complete; onblonged; barrel-shaped; grey
Type: Bead type 8
Figure Reference: Fig. 2.25
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: L 2.3; D (max.) 0.8; D (opening) 0.2
Weight: 10 g
Material: Limestone
Reference: Tall al-Mutasallim (Megiddo) EB I/MB II: Wilson – Allen 1948, Pl. 207, 4 and 10: similar form, here carnelian.

Fig. 2.25 Bead, TZ 019014-001 (Source: BAI/GPIA).

Cultic Items

TZ 019110-001
Area I; Square AM 119; Complex A; Context 6020
Description: Cultic stone (Mazzebe). Monolith; complete; smoothed frontside; two depressions on the backside (each D 4; Depth 1)
Type: —
Figure Reference: Fig. 2.26
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: H 73; W 24–46; Th 17.2
Weight: —
Material: Limestone
Reference: —

Fig. 2.26 Cultic stone, TZ 019110-001 (Source: BAI/GPIA).

Flints: Flakes and Tools

TZ 018297-001; 1 projectile, 6 flakes; Area I; Square AM 118; Context 6097

TZ 018298-001; 4 flakes; Area I; Square AM 118; Context 6091

TZ 018308-001; 1 bladelet, 1 flake; Area I; Square AL 118; Context 5900

TZ 018309-001; 2 flakes; Area I; Square AL 118; Context 5921

TZ 018313-001; 1 projectile, 5 blades, 4 flakes; Area I; Square AL 118; Context 6074

TZ 018315-001; 1 tabular scraper, 3 flakes; Area I; Square AM 118; Context 5976

TZ 018316-001; 1 borer, 5 flakes, 2 uncertain; Area I; Square AL 118; Context 6074

TZ 018320-001; 1 chip, 10 flakes; Area I; Square AO 118; Context 5922

TZ 018337-001; 2 blades, 1 flake; Area I; Square AM 118; Context 6097

TZ 018341-001; 1 flake; Area I; Square AL 118; Context 5920

TZ 018345-001; 1 large blade, 1 blade, 1 chip, 1 flake; Area I; Square AL 118; Context 5944

TZ 018347-001; 1 blade; Area I; Square AO 119; Context 5905

TZ 018350-001; 1 flake; Area I; Square AO 118; Context 5922

TZ 018359-001; 6 flakes; Area I; Square AO 118; Context 5922

TZ 018362-001; 1 harvesting knife, 2 knifes, 6 blades, 9 chips, 11 flakes; Area I; Square AM 118; Context 6046

TZ 018367-001; 1 sickle blade, 1 blade, 10 chips, 11 flakes; Area I; Square AL 118; Context 5900

TZ 018389-001; 1 blade, 3 flakes; Area I; Square AM 118; Context 5976

TZ 018401-001; 1 blade, 2 flakes; Area I; Square AO 119; Context 5849

TZ 018404-001; 1 sickle blade, 1 knife, 5 blades, 2 chips, 10 flakes; Area I; Square AO 118; Context 5885

TZ 018405-001; 1 blade, 10 flakes; Area I; Square AO 118; Context 5904

TZ 018409-001; 1 blade, 3 flakes; Area I; Square AN 118; Context 5828

TZ 018413-001; 2 flakes; Area I; Square AN 119; Context 5917

TZ 18414-001; 2 blades, 1 bladelet, 4 chips, 8 flakes; Area I; Square AN 118; Context 5918

TZ 018421-001; 1 sickle blade, 1 blade, 2 chips, 4 flakes; Area I; Square AN 118; Context 5918

TZ 018422-001; 7 flakes; Area I; Square AN 118; Context 5978

TZ 018423-001; 1 sickle blade, 2 blades, 1 chips, 1 flake; Area I; Square AN 119; Context 5917

TZ 018432-001; 2 flakes; Area I; Square AM 118; Context 6072

TZ 018461-001; 1 projectile; Area I; Square AM 118; Context 5916

TZ 018464-001; 1 flake; Area I; Square AM 118; Context 5964

TZ 018466-001; 3 flakes; Area I; Square AO 119; Context 5884

TZ 018468-001; 4 flakes; Area I; Square AO 118; Context 5943

TZ 018472-001; 1 projectile, 1 sickle blade; Area I; Square AN 118; Context 5828

T**Z 018481-001**; 3 chips, 2 flakes; Area I; Square AM 118; Context 5901

TZ 018486-001; 4 flakes; Area I; Square AL 118; Context 5951

TZ 018487-001; 1 blade, 1 flake; Area I; Square AN 118; Context 5977

TZ 018490-001; 2 flakes; Area I; Square AM 118; Context 5964

TZ 018491-001; 1 sickle blade, 2 blades, 2 flakes; Area I; Square AL 118; Context 5900

TZ 018492-001; 3 flakes; Area I; Square AO 119; Context 6016

TZ 018499-001; 1 borer, 1 flake; Area I; Square AM 118; Context 5976

TZ 018500-001; 2 flakes; Area I; Square AN 118; Context 5977

TZ 018506-001; 2 flakes; Area I; Square AN 118; Context 5853

TZ 018508-001; 1 sickle blade, 1 knife, 1 blade, 8 flakes; Area I; Square AO 118; Context 5850

TZ 018511-001; 6 flakes; Area I; Square AN 119; Context 5827

TZ 018522-001; 1 sickle blade, 3 blades; Area I; Square AM 118; Context 5964

TZ 018549-001; 1 blade, 4 chips, 14 blades; Area I; Square AL 118; Context 6074

TZ 019196-001; 1 blade, 9 blades; Area I; Square AP 119; Context 6004

TZ 019197-001; 1 borer, 1 sickle blade, 1 blade, 7 flakes; Area I; Square AM 119; Context 6020

Ecofacts

TZ 019015-001
Area I; Square AN 118; Complex A; Context 6088
Description: Raw material. Ecofact; amorph; broken into two pieces
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: originally: L 2.1; W 2
Weight: 33 g
Material: Carnelian
References: —

TZ 019177-001
Area I; Square AM 119; Complex A; Context 6020
Description: Raw material
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, older Stratum**
Dimensions: —
Weight: —
Material: Bitumen
Reference: —

Stratum 20

Architecture

TZ 017724-001
Area I; Square AM 118; Complex B 2; Context 5804
Description: Hinge stone. Complete; outside roughly made; inside smoothed and abraded
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (hole) 20; L 34; W 29; H 24
Weight: —
Material: Basalt
Reference: —

TZ 017725-001
Area I; Square AM 118; Complex B 1; Context 5825
Description: Hinge stone. Complete; outside irregularly shaped and roughly made; inside smoothed and abraded
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (hole) 16; L 37; W 33; H 20
Weight: —
Material: Limestone
Reference: —

TZ 017726-001
Area I; Square AM 118; Complex B 1; Context 5825
Description: Hinge stone. Complete; outside irregularly shaped; inside abraded
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (hole) 15; L 41; W 35; H 21
Weight: —
Material: Limestone
Reference: —

TZ 017995-001
Area I; Square AM 118; Complex B 1; Context 5790
Description: 2 similar hinge stones. Complete
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimesions: D (hole) 15; D (max.) 41; H 20
Weight: —
Material: Limestone
Reference: —

Household/Craft

TZ 017519-001
Area I; Square AO 118; Complex A; Context 5709
Description: Hammer stone. Complete; round in its cross section; one side flattened
Type: Hammerstone type 1.2
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 5.9; H 5.7
Weight: 256 g
Material: Limestone
Reference: —

TZ 017521-001
Area I; Square AO 118; Complex A; Context 5709
Description: Bowl (?). Fragmented; outside flattened; burn marks
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 7; W 6.6; H 2.8
Weight: —
Material: Basalt
Reference: —

TZ 017546-001
Area I; Square AN 118; Complex B 1; Context 5735
Description: Hammer stone. Fragmented; round in its cross section; two sides flattened
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 6.25
Weight: 114 g

Material: Limestone
Reference: —

TZ 017606-001
Area I; Square AN 118; Compex A; Context 5767
Description: Whetstone. Fragment of one of the both tapered ends; smoothed surface
Type: —
Figure Reference: Fig. 2.27
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 4.5; W 3.2; H 1.5
Weight: 21 g
Material: Limestone
Reference: —

Fig. 2.27 Whetstone, TZ 017606-001 (Source: BAI/GPIA).

TZ 017607-001
Area I; Square AN 118; Complex A; Context 5734
Description: Spindle whorl. Complete; biconic in its shape; cylindrically pierced
T*ype:* Spindle whorl type 4
Figure Reference: Fig. 2.28
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 3.4; D (opening) 1; H 2
Weight: 31.4 g
Material: Limestone
Reference: Tall al-Ḥiṣn (Beth Shean) EB IB: Mazar 2012, 368 f. Photo 9, 16 and Fig. 9, 9 (esp. Photo 9, 16 f and Fig. 9, 9. 16): polished, limestone, lentil-shaped cross-section; D of this type between 0.5 to 0.9.—Tall Abū al-Ḫaraz MB II Phase IV B: Fischer 2008, 97 Fig. 104, 1: spindle whorl, greyish brown stone; seems to be identic material, D c. 3.5.—Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 171, 14: similar form, here also grey stone.—Eḍ-Ḍanaba (Ruǧm Sa'ab) EB: Kamlah 2000, Pl. 105, 10: drilled limestone disc.

Fig. 2.28 Spindle whorl, TZ 017607-001 (Source: BAI/GPIA).

Food Production

TZ 017520-001
Area I; Square AO 118; Complex A; Context 5709
Description: Quern. Fragmented; upper side convex; bottom side flattened; burn marks
Type: Quern type 2a
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 5.6; W 8.1; H 4.6
Weight: 310 g
Material: Basalt
Reference: —

TZ 017538-001
Area I; Square AO 118; Complex A; Context 5728
Description: Rubbing stone. Complete; oval in its cross section; upper side slightly convex; bottom side slightly concave
Type: Rubbing stone type 12.2
Figure Reference: Fig. 2.29
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 9.6; W 4.5; H 2.5
Weight: 193 g
Material: Basalt
Reference: —

Fig. 2.29 Rubbing stone, TZ 017538-001 (Source: BAI/GPIA).

TZ 017539-001
Area I; Square AN 119; Complex A; Context 5742
Description: Rubbing stone. Fragmented; oval in its cross section; upper side slightly convex; bottom side flattened
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 7.6; W 5.8; H 2.6
Weight: 166 g
Material: Basalt
Reference: —

TZ 017540-001
Area I; Square AO 118; Complex A; Context 5709
Description: Rubbing stone. Fragmented; upper side convex; bottom side flattened
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 12.4; W 6.6; H. 6.2
Weight: 840 g

Material: Basalt
Reference: —

TZ 017544-001
Area I; Square AO 118; Complex A; Context 5709
Description: Quern. Fragmented; upper side convex; bottom side flattened
Type: Quern type 1e
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 9.4; W 14.5; H 6.5
Weight: 1331 g
Material: Basalt
Reference: —

TZ 017551-001
Area I; Square AN 118; Complex B 1; Context 5735
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; bottom side flattened
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 5.2; W 3.7; H 2.3
Weight: 69 g
Material: Basalt
Reference: —

TZ 017552-001
Area I; Square AO 118; Complex A; Context 5708
Description: Lower grinding stone. Fragmented; oval in its cross section; upper side flattened with a slightly bevelled rim; bottom side convex and roughly worked
Type: Lower grinding stone type 1e
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 41; W 21; H 4
Weight: 9500 g
Material: Basalt
Reference: —

TZ 017586-001
Area I; Square AM 118; Complex B 1; Context 5762
Description: Rubbing stone. Fragmented
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 4.5; W 4.8; H 1.6
Weight: 46 g
Material: Basalt
R*eference:* —

TZ 017587-001
Area I; Square AM 118; Complex B 1; Context 5762
Description: Lower grinding stone. Fragmented; upper side flattened; bottom side roughly worked
Type: Lower grinding stone type 1e
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 7.5; W 5.6; H 2.2
Weight: 108 g
Material: Basalt
Reference: —

TZ 017589-001
Area I; Square AM 118; Complex B 1; Context 5762
Description: Quern. Fragmented; upper side convex; bottom side flattened
Type: Quern type 2a
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 27; W 11.5; H 5.5
Weight: 2402 g
Material: Basalt
Reference: —

TZ 017592-001
Area I; Square AN 119; Complex A; Context 5782
Description: Quern. Fragmented; upper side convex; bottom side flattened
Type: Quern type 1e
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 6.3; W 10.6; H 5.3
Weight: 412 g
Material: Basalt
Reference: —

TZ 017598-001
Area I; Square AM 118; Complex B 1; Context 5762
Description: Rubbing stone. Fragmented; oval in its cross section; loaf sized; upper side convex; bottom side flattened
Type: Rubbing stone type 16
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 6.3; W 3.2; H 2.3
Weight: 55 g
Material: Limestone
Reference: —

TZ 017599-001
Area I; Square AN 118; Complex A; Context 5736
Description: Rubbing stone. Fragmented; oval in it cross section; upper and bottom side flattened
Type: Rubbing stone type 12
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 5.4; W 8.2; H 2.4
Weight: 162 g
Material: Basalt
Reference: —

TZ 017600-001
Area I; Square AN 118; Complex A; Context 5736
Description: Rubbing stone. Complete; upper side convex; bottom side flattened; traces of use
Type: Rubbing stone type 12.1
Figure Reference: —

Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 9.4; W 7; H 3.5
Weight: 245 g
Material: Limestone
Reference: —

TZ 017601-001
Area I; Square AN 118; Complex A; Context 5736
Description: Rubbing stone. Fragmented; oval in its cross section; upper side convex; bottom side flattened
Type: Rubbing stone type 12
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 5.4; W 9; H 3.6
Weight: 176 g
Material: Silicate rock
Reference: —

TZ 017602-001
Area I; Square AN 118; Complex A; Context 5736
Description: Quern. Complete; oval shaped; finely porous
Type: Quern type 4b
Figure Reference: Fig. 2.30
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 21; W 18.7; H 5.8
Weight: 3571 g
Material: Basalt
Reference: —

Fig. 2.30 Quern, TZ 017602-001 (Source: BAI/GPIA).

TZ 017605-001
Area I; Square AN 118; Complex A; Context 5736
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; bottom side flattened
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 10.2; W 8.6; H 3.4
Weight: 350 g
Material: Silicate stone
Reference: —

TZ 017608-001
Area I; Square AL 118; Complex C; Context 5801
Description: Rubbing stone. Complete; egg-shaped
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 4.9; W 3.8; H 3.4
Weight: 86 g
Material: Basalt
Reference: —

TZ 017652-001
Area I; Square AN 119; Complex A; Context 5742
Description: Mortar (bowl). Fragmented; flattened; irregularly shaped; roughly made; concave rounded base
Type: Mortar (bowl) type 2
Figure Reference: Fig. 2.31 a.b
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 8.1; W 7; H 3.2
Weight: 112 g
Material: Limestone
Reference: —

Fig. 2.31 a Mortar (bowl), upper side, TZ 017652-001 (Source: BAI/GPIA).

Fig. 2.31 b Mortar (bowl), bottom side, TZ 017652-001 (Source: BAI/GPIA).

TZ 017723-001
Area I; Square AL 118; Complex C; Context 5882
Description: Lower grinding stone. Fragmented; oval in its cross section; upper and bottom side convex.
Type: Lower grinding stone type 2b
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 40; W 35; H 9
Weight: 2100 g
Material: Basalt
Reference: —

TZ 017795-001
Area I; Square AM 119; Complex B 2; Context 5891
Description: Quern blank. Fragmented; oval in its cross section; upper side convex; bottom side flattened and roughly made, not abraded

Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 17; W 18; H 7
Weight: —
Material: Basalt
Reference: —

TZ 017831-001
Area I; Square AN 118; Complex A; Context 5746
Description: Quern. Fragmented; upper side convex; bottom side flattened
Type: Quern type 1g
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 4.4; W 9.5; H 4
Weight: 190 g
Material: Basalt
Reference: —

TZ 017834-001
Area I; Square AM 118; Complex B 1; Context 5817
Description: Lower grinding stone. Rectangular in its cross section; upper side slightly concave; bottom side slightly convex and roughly made
Type: Lower grinding stone type 1e
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 26.5; W 19.7; H 5.8
Weight: 4644 g
Material: Basalt
Reference: —

TZ 017861-001
Area I; Square AL 118; Complex C; Context 5902
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; bottom side flattened
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 6.8; W 5.4; H 3.6
Weight: 188 g
Material: Basalt
Reference: —

TZ 018012-001
Area I; Square AL 118; Complex C; Context 5892
Description: Rubbing stone. Complete; frustum shaped; upper side rounded; bottom side slightly convex
Type: Rubbing stone type 5.1
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: H 7.5; D (max.) 5.4
Weight: 340 g
Material: Basalt
Reference: —

TZ 018847-001
Area I; Square AN 119; Complex B 2; Context 5962
Description: Rubbing stone. Complete; oval in its cross section; upper and bottom side slightly convex
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 7.2; W 4.2; H 2.8
Weight: 117 g
Material: Limestone
Reference: —

TZ 019066-001
Area I; Square AP 118, Complex A; Context 6196
Description: Lower grinding stone. Fragmented; upper side flattened; bottom side convex; burn marks
Type: Lower grinding stone type 2b
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 10; W 12.3; H 6.8
Weight: 1324 g
Material: Basalt
Reference: —

Personal Items

TZ 017596-001
Area I; Square AM 118; Complex B 1; Context 5762
Description: Gaming piece. Complete; sphere
Type: Gaming piece type 1
Figure Reference: Fig. 2.32
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 2.6
Weight: 19 g
Material: Silicate stone.
Reference: Tall Qēmūn (Tēl Yoqnəʿām) MB IIA–LB: Ben-Tor et al. 2005, 369 Fig. V 8, 1–7: identical, limestone, weights (?).

Fig. 2.32 Gaming piece, TZ 017596-001 (Source: BAI/GPIA).

TZ 017645-001
Area I; Square AO 118; Complex A; Context 5709
Description: Bead. Complete; disc-shaped; flattened; carefully worked
Type: Bead type 6
Figure Reference: Fig. 2.15 and Fig. 2.33
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 1.3; D (hole) 0.27; Th 0.47
Weight: 1.4 g
Material: Alabaster
Reference: Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 120 Fig. 120, 2; 358–359. 364 Fig. 326; 387–388:

necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?). Most of the beads consist of quartz; only bead in Fig. 364, 11 seems to be identical.

Fig. 2.33 Bead, TZ 017645-001 (Source: BAI/GPIA).

TZ 017651-001
Area I; Square AN 118; Complex A; Context 5736
Description: Bead. Complete; cylindrical
Type: Bead type 5
Figure Reference: Fig. 2.34
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 3.8; D (max.) 0.8; D (opening) 0.4
Weight: 3.2 g
Material: Sandstone reddish-brown.
Reference: Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 120 Fig. 120, 2; 358–359. 364 Fig. 326, 16; 387–388: necklace with 56 beads of man-made silicates, sandstone, limestone, molluscs and obsidian (?); Material: brown specks (quartz, calcite, aragonite).

Fig. 2.34 Bead, TZ 017651-001 (Source: BAI/GPIA).

Flints: Flakes and Tools

TZ 017517-001; 1 sickle blade; Area I; Square AO 118; Context 5708

TZ 017518-001; 1 harvesting knife, 2 sickle blades, 19 flakes; Area I; Square AO 118; Context 5709

TZ 017532-001; 1 flake; Area I; Square AO 118; Context 5726

TZ 017620-001; 1 bladelet, 8 flakes; Area I; Square AN 119; Context 5782

TZ 017621-001; 1 sickle blade, 1 projectile, 1 flake; Area I; Square AM 118; Context 5805

TZ 017628-001; 9 blades, 9 flakes, 1 uncertain; Area I; Square AN 118; Context 5735

TZ 017629-001; 1 projectile, 2 blades, 5 flakes; Area I; Square AM 118; Context 5762

TZ 017631-001; 1 sickle blade, 1 blade, 15 flakes; Area I; Square AN 118; Context 5767

TZ 017632-001; 1 sickle blade, 1 tabular scraper, 7 blades, 18 flakes; Area I; Square AN 118; Context 5734

TZ 017633-001; 2 flakes; Area I; Square AN 119; Context 5742

TZ 017634-001; 1 blade; Area I; Square AO 119; Context 5716

TZ 017635-001; 3 blades, 1 uncertain; Area I; Square AO 118; Context 5709

TZ 017639-001; 1 blade, 6 chips; Area I; Square AO 118; Context 5732

TZ 018321-001; 1 flake; Area I; Square AN 119; Context 5962

TZ 018322-001; 2 flakes; Area I; Square AN 119; Context 5962

TZ 018402-001; 1 flake; Area I; Square AM 119; Context 5891

TZ 018403-001; 2 blades, 2 bladelets, 1 chip, 12 flakes; Area I; Square AL 118; Context 5902

TZ 018410-001; 4 flakes; Area I; Square AL 118; Context 5892

TZ 018452-001; 6 flakes; Area I; Square AM 118; Context 5865

TZ 018453-001; 1 tabular scraper, 1 blade, 2 flakes; Area I; Square AL 118; Context 5882

TZ 018455-001; 1 flake; Area I; Square AN 118; Context 5736

TZ 018456-001; 2 blades; Area I; Square AM 118; Context 5818

TZ 018457-001; 1 chip, 1 uncertain; Area I; Square AM 119; Context 5824

TZ 018463-001; 1 sickle blade, 1 blade, 5 flakes; Area I; Square AL 118; Context 5902

TZ 018473-001; 1 flake; Area I; Square AN 118; Context 5767

TZ 018477-001; 1 flake; Area I; Square AN 118; Context 5736

TZ 018480-001; 1 flake; Area I; Square AM 119; Context 5891

TZ 018507-001; 1 borer, 1 projectile; Area I; Square AN 118; Context 5746

TZ 018510-001; 2 flakes; Area I; Square AN 119; Context 5742

Ecofacts

TZ 017674-001
Area I; Square AO 118; Complex A; Context 5709
Description: Iron nodule. Fragmented
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max) 5.5
Weight: —
Material: Ironstone (Fe_2O_3)
Reference: —

TZ 017675-001
Area I; Square AN 119; Complex A; Context 5782
Description: Iron nodule. Fragmented; egg-shaped
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 4.3
Weight: —
Material: Ironstone (Fe_2O_3)
Reference: —

TZ 017676-001
Area I; Square AN 118; Complex A; Context 5767
Description: Iron nodule. Fragmented; irregularly shaped
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.). 2.7
Weight: —
Material: Ironstone (Fe_2O_3)
Reference: —

TZ 017678-001
Area I; Square AO 118; Complex A; Context 5709
Description: Iron nodule. Complete; globular
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 2.7
Weight: —
Material: Ironstone (Fe_2O_3)
Reference: —

TZ 017679-001
Area I; Square AN 118; Complex A; Context 5767
Description: Iron nodule. Fragmented; irregularly shaped
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: D (max.) 3.9
Weight: —
Material: Ironstone (Fe_2O_3)
Reference: —

TZ 019528-001
Area I; Square AL 118; Complex C; Context 5882
Description: Raw material. Iron powder
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: —
Weight: 1 g
Material: Ironstone (Fe_2O_3)
Reference: —

TZ 019532-001
Area I; Square AO 118; Complex A; Context 5725
Description: Raw material
Type: —
Figure Reference: —
Date of Context: **EB IV/MB I, younger Stratum**
Dimensions: L 2.7; W 2.9; H 1.9
Weight: —
Material: Biaxal mica.
Reference: —

2.2.2.5. Catalogue of Ceramic Finds: Strata 21–20

by Andrea Schwermer

Introduction

The sparse and not very solid architectural remains found in the Strata 21 and 20 of the Tall Zirā'a give evidence of the decline of urban life that affected the entire southern Levant during the transitional period, Early Bronze Age IV and Middle Bronze Age I. The question arises whether the ceramic utensils—in their capacity as a kind of mobile cultural assets—also reflect this development.

The following description is based on the ceramic finds from the Strata 21 and 20, which in all likelihood have to be dated to the late Early Bronze Age and the onset of the Middle Bronze Age. It should be kept in mind, though, that for obvious reasons, transitional periods such as these tend to make an exact temporal placement difficult[57]. This circumstance could also account for the low number of publications[58]. Sherds that may have originally come from these strata but were found in different contexts will be disregarded just as the fragments of vessels from later periods that were moved to the Early Bronze Age strata in the course of the massive interventions that took place during the Classical periods.

Please refer to the introductory chapter on the Early Bronze Age ceramics with respect to the process of defining and categorizing the sherd finds. It also comprises a typology[59].

Types of Vessels

Distribution

The 560 rim sherds found in the Strata 21 and 20, which most likely date back to the Intermediate period can be assigned to the following types of vessels[60]:

- Holemouth vessels
- Cooking pots
- Kraters[61]
- Jugs/jars[62]
- Pithoi
- Bowls/platters[63]
- Oil lamps
- Others.

As is to be expected from a transitional period between two major eras, the two strata in this chapter yielded an assortment of Early Bronze Age and Middle Bronze Age sherds. Judging from what can be reconstructed from the single sherds that were excavated, vessel forms that are entirely individual and characteristic of this interim period cannot be made out on the Tall Zirā'a[64]. Rather, both strata held both types of vessels coming from the Early Bronze Age III and those that anticipate the Middle Bronze Age II.

It is comparatively easy to distinguish Early and Middle Bronze Age vessels from each other solely on the basis of their respective clay material and the manner in which it was processed as by the onset of the Middle Bronze Age, the use of the fast-spinning potters' wheel had prevailed and thus—with one exception which will be discussed later—the pieces were no longer hand-built. The visible sign of this technological progress is constituted by throwing marks in the shape of delicate grooves on the vessel's outside.

Apart from that, the outward forms of the various individual types of vessels change, and some Early Bronze Age forms disappear almost entirely during the Middle Bronze Age, such as the holemouth vessels and the large flat platters. For example, the cooking pots that are commonly considered as characteristic of the Middle Bronze Age are no longer shaped like holemouth jars but are straight-walled bowls and thus have a completely

57 On the excavation evidence regarding this transitional period on the Tall Zirā'a, cf. *Chap. 2.2.1.1. and 2.2.1.2.*

58 On this, also cf. Fischer 2008, 368 f., Mac Donald et al. 2001, 233 ff., Mazar 2012, 338.

59 Cf. *Chap. 1.2.2.5.*

60 With respect to the difficulties in exactly identifying sherd finds with specific types of vessels, please refer to the remarks on the pottery of the Early Bronze Ages II and III, *Chap. 1.2.2.5.*

61 On the difficulties in distinguishing kraters from large bowls, cf. Maeir 2007, 245; 255.

62 Due to the small size of most of the rim sherds, a further clear differentiation of the handled vessels into jugs, jars, and bottles was often not possible and therefore neglected. On this, also cf. Maeir 2007, 264 f.

63 Most of the sherd material at hand does not allow a clear distinction between bowls and plates. They are therefore being regarded collectively.

64 Also cf. Fischer 2008, 369. A different view is held by Mazar (2012, 338 and esp. 348) for Tall al-Ḥiṣn (Beth Shean).

different appearance. In contrast to all other Middle Bronze Age vessels, however, these cooking pots are hand-made and rather coarse, which makes them lag behind in terms of the prevailing technological standard of those times[65]. This circumstance and sporadic excavation finds suggest that this form originated in the late Early Bronze Age or at least during the transitional period to the Middle Bronze Age[66].

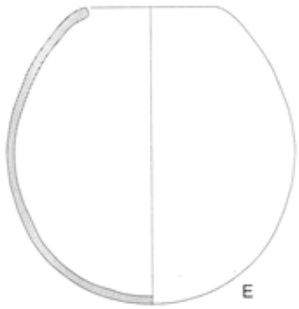


Fig. 2.35[67] Early Bronze Age holemouth-shaped cooking pot (Source: Genz 2002, 17 Fig. 5).

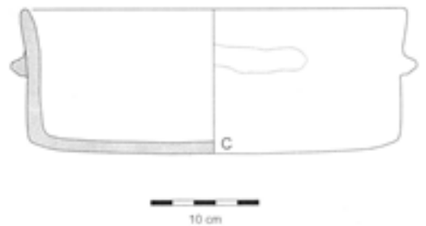


Fig. 2.36 Middle Bronze Age straight-walled cooking pot (Source: Genz 2002, 21 Fig. 9).

As another utensil from the sphere of cooking and baking, Stratum 20 yielded the bottom of a baking tray[68]. The heyday of this extraordinary and rather rare household item on the Tall Zirā'a was during the Late Bronze Age and will therefore be discussed in more detail in that context.

In the next paragraph, the different types of vessels and their occurrences in the Strata 21 and 20 will be described in more detail. Altogether the types of vessels were distributed between the two strata as follows:

Stratum	Holemouth	Cooking Pots	Kraters	Jars	Pithoi[69]	Bowls/ Platters	Oil lamps	Others	Σ
21	15	80	9	102	2	125	2	2	**337**
20	17	79	5	47	3	68	2	2	**223**
Σ	**32**	**156**	**14**	**149**	**5**	**193**	**4**	**4**	**560**

Tab. 2.19 Numeral distribution of the rim sherds to the different types of vessels in the Strata 21 and 20 (Source: Schwermer).

Compared to the four Early Bronze Age Strata 25 to 22, the two strata of the Intermediate period showed a marked decline of bowls and platters: here, their overall share amounted to only a third while they accounted for 52 % in the older strata. By contrast, the percentage of jars (27 % vs. 13 %) rose significantly. These findings go hand in hand with the decrease of holemouth jars that are a marker of the Early Bronze Age while they are more or less extinct in the Middle Bronze Age. Their function is taken over by the handled jars. As in the Early Bronze Age strata, the cooking pot also makes up the overall second largest group in the strata of the transitional period; in the younger Stratum 20, they even account for 36 % and are thus the most prevalent type of vessel.

As a rule, manifest differences in the respective shares of utility ware are not accidental but indicative of changes in eating habits, food preparation, and stockpiling and hence give evidence of changes in lifestyle and living conditions. Thus, for instance, a significantly lower share of bowls and platters could indicate that people had taken on the habit of eating from a pot, which, in turn, could only be accomplished with more solid foods. Likewise, a

65 Cf. Schwermer 2014, 98, and *Chap. 4.2* in this volume.

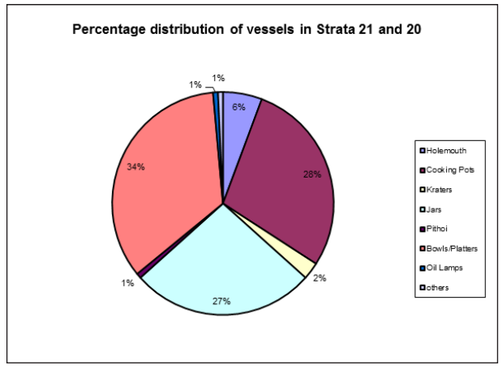
66 According to Genz 2002, 21 with Fig. 9; 26, and Kamlah 2000, Tab. 70, 5. 7–11. On the findings on the Tall Zirā'a, cf. Schwermer 2014, 106 f.; 115.

67 Figures 2.35 and 2.36 taken from Genz 2002, 17 Fig. 5; 21 Fig. 9.

68 On these baking trays, cf. Schwermer 2014, 197–223.

69 Jars with a rim diameter of 25 cm or more. On the difficulty of making precise distinctions between the various types of jars, cf. the subsequent paragraph and esp. *Chap. 3.2.2.5.*

smaller number of bowls and platters could be put down to a population decrease or be a sign of a more nomadic way of life, the latter of which would coincide with the character of this transitional period during which, judging from the architectural finds, the people probably rather lived in tents than in solid dwellings.



Graph 2.1 Percentage distribution of the rim fragments among the different types of vessels in the Strata 21 to 20 (Source: Schwermer).

Dimensions

The two following tables *(Tab. 2.20 and 2.21)* present the overall scopes of the wall thicknesses and of the opening diameters of the different types of vessels. In order to make up for possible errors of measurement we also included the range within which 80 %, and thus the large majority, of the vessels can be found.

Vessel Type	Wall Thickness (in cm)		
	Extreme Values	80 % of the Vessels	Average[70]
Holemouth	0.5–1.9	0.7–1.5	1.1
Cooking Pots*			
Holemouth Shape	0.7–1.8	0.8–1.4	1.1
Straight-walled	0.8–2.0	0.9–1.5	1.2
Kraters	0.5–2.5	0.7–1.1	1
Jars	0.4–1.7	0.5–1.2	0.8
Pithoi	0.9–1.9	0.9–1.9	1.3
Bowls/Platters	0.4–2.1	0.5–1.4	1

*Because of their different external shapes (cf. *Fig. 2.35 and 2.36*), the two types of cooking pots occurring in the Strata 21 and 20 are listed separately..

Tab. 2.20 Wall thickness of the different types of vessels in the Strata 21 and 20 (Source: Schwermer).

The wall thickness of kraters, jars, and bowls/platters from the transitional period is generally slightly below that of the corresponding Early Bronze Age vessels[71]. This is evidenced by the sherd material at hand and can be explained by the new production technique, which resulted in a more delicate Middle Bronze Age ware (see the following paragraph). The holemouth forms, however, which are characteristic of the Early Bronze Age, exhibit the same wall thickness as those of the strata lying underneath. The special position of the straight-walled Middle Bronze Age cooking pot has already been pointed out.

70 Rounded mean value of all sherds.

71 Cf. *Chap. 1.2.2.5.* with *Tab. 1.36.*

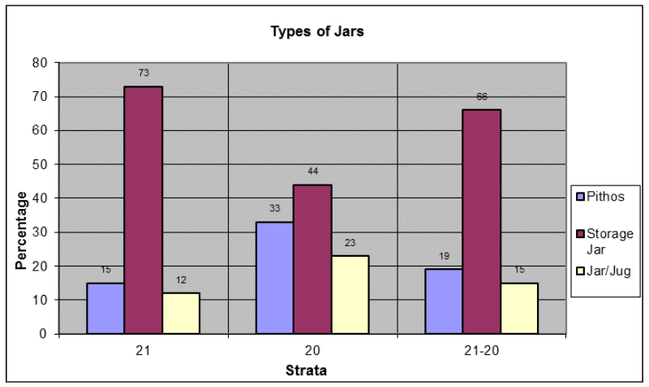
Vessel Type	Opening (in cm)		
	Extreme Values	80 % of the Vessels	Average[72]
Holemouth	8-24	10–18	14.1
Cooking Pots*			
Holemouth Shape	10–32	12–18	14.8
Straight-walled	14–50	20–40	30.3
Kraters	18–30	20–28	24
Jars	2–30	8–20	12.5
Pithoi	28–30	28–30	28.5
Bowls/Platters	10–52	14–34	24.3

* Because of their different external shapes (cf. *Fig. 2.35 and 2.36*), the two types of cooking pots occurring in the Strata 21 and 20 are listed separately.

Tab. 2.21 Opening diameters of the different types of vessels in the Strata 21 and 20 (Source: Schwermer).

Except for the kraters, the ascertainable rim diameters of the vessels found in the Strata 21 and 20 are not significantly different from the openings of the Early Bronze Age vessels, so the conclusions drawn in that chapter[73] can also apply here. The difference between an Early Bronze Age holemouth cooking pot and the same, straight-walled utensil characteristic of the Middle Bronze Age leaps to the eye when regarding the latter's average rim diameter which is more then twice the size.

With regard to the jars, the question arises whether their different forms of appearance—along with the concomitant specific functions—can be ascertained simply by looking at their respective openings. When applying the criteria developed for the Middle Bronze Age jars and jugs from the Tall al-Ḥiṣn (Beth Shean)[74], the following distribution within the Strata 21 and 20 of the Tall Zirā'a would be arrived at:



Graph 2.2 Percentage distribution of the different jar types according to the criteria from Tall al-Ḥiṣn (Beth Shean) in the Strata 21 and 20 of Tall Zirā'a (Source: Schwermer).

72 Rounded mean value of all sherds.

73 Cf. *Chap. 1.2.2.5.*

74 According to Maeir 2007, 264 f.:

Type of vessel	Diameter (in cm)	Additional Criterion
Pithos	> 15	thick vessel body
Storage Jar	-14	
Jar/Jug	< 7–8	thin vessel wall

On the possibilities and limitations of this approach, cf. in more detail *Chap. 3.2.2.5.*

The ratio of jars meant for the long-term storage of larger quantities, those used for the mid-term storage of supplies of liquids, and those employed for holding small quantities or special contents for a short period of time is 19 to 66 to 15 and thus correlates almost exactly with the distribution in Tall al-Ḥiṣn (Beth Shean) Tall al-Ḥiṣn (Beth Shean) as well as that in the Middle Bronze Age strata of the Tall Zirā'a[75].

Ware Categories

In line with the transition from the Early Bronze Age to the Middle Bronze Age, both the material and the production methods of the ceramic finds from the Strata 21 and 20 are indicative of this interim period. On the one hand, there are hand-built vessels made of clay compounds and with surface treatments that both are characteristic of the Early Bronze Age. On the other hand, many sherds have marks that were caused by a fast-spinning potter's wheel, and were crafted in a completely different fashion, as was common during the Middle Bronze Age and later. The only exception is, as already mentioned, the straight-walled cooking pot which is generally considered characteristic of the Middle Bronze Age.

The following diagram only comprises those ware categories occurring in the Strata 21 and 20 that have not already been described above. The detailed specifications of the hand-built Early Bronze Age ware categories can be found in the respective diagram and in the explanatory notes in the chapter on the pottery of the Early Bronze Ages II and III[76]. For the sake of completeness, they are also listed below:

HM Buff	Handmade Buff
HM R2B	Handmade Red to Brown
HM GW	Handmade Grain Washed
HM P	Handmade Polished
HM NP	Handmade Net Pattern
HM S	Handmade Smooth
HM Combed	Handmade Combed
HM Kh Kerak	Handmade Khirbet Kerak
HM Metallic	Handmade Metallic
HM Coarse	Handmade Coarse
CP 6	Cooking Pot 6 (Early Bronze Age cooking pot ware)

Designation	Description	Example (Section/Top View)
WM C Buff (Wheelmade Common Buff)	Wheel-thrown light ware. Beige-coloured, at its core also grey clay, with plenty of fine to medium-fine mineral temper which is usually also clearly visible on the outside. Moderately hard to hard firing.	 TZ 001262-006  TZ 001385-004
WM C R2B (Wheelmade Common Red to Brown)	Wheel-thrown red to brown, at its core also light grey clay with plenty of fine to coarse mineral temper which is usually clearly visible on the outside. Moderately hard to hard firing.	 TZ 001544-00  TZ 001173-005

75 Maeir 2007, 245 with Table 4.1. and *Chap. 3.2.2.5., Graph 3.2.*

76 *Cf. Chap. 1.2.2.5* with *Tab. 1.38.*

WM R2B P (Wheelmade Red to Brown Polished)	Wheel-thrown ware consisting of beige-coloured, light to dark red, at its core also grey clay, with medium-fine to fine mineral temper. On the outside a polished light-red to red, thick slip. Moderately hard to hard firing.	 TZ 001331-006  TZ 000397-002
WM WSl [77] (Wheelmade White Slip)	Wheel-thrown whitish ware. Reddish brown, at its core light grey clay with fine mineral temper and separate larger temper particles. Thick whitish slip, sometimes with ornamental painting. Very hard firing.	 TZ 001445-007
WM Coarse (Wheelmade Coarse)	Wheel-thrown coarse ware. Beige-coloured to reddish-brown clay with coarse mineral temper. The surface is sometimes rough and sometimes covered with a smooth slip. Moderately hard firing.	 TZ 020111-011  TZ 020717-013
CP 5 (Cooking Pot Ware 5)[78]	Hand-built, mostly coarse ware. Beige-brown to dark red clay that is beige-brown to black inside and has plenty of fine to medium-sized mineral temper, particularly crystalline embeddings. Moderately hard firing. The material is often very poriferous and may even crumble.	 TZ 004342-025  TZ 006076-002

Tab. 2.22 Ceramic ware category groups of the Middle and Late Bronze Ages and of the Iron Age (part I) on Tall Zirā'a (Source: BAI/GPIA).

Holemouth Vessels

As storage vessels that are typical of the Early Bronze Age the few specimens of holemouth jars found in the transitional Strata 21 and 20 are also hand-built and consist of the characteristic clay compounds[79]; however, other than in the underlying strata, here the reddish clays (HM R2B) are prevalent.

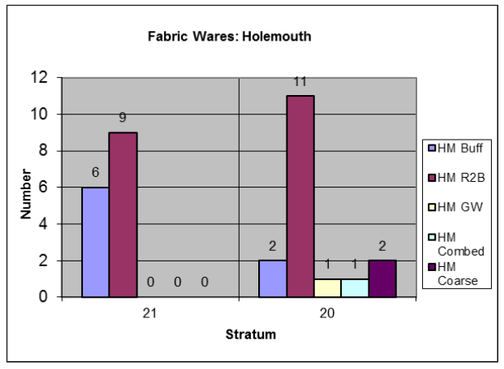
Whether and to what extent holemouth jars were still in use or even produced at the onset of the Middle Bronze Age can only be guessed at and is not substantiated by the scant number of publications on the topic. For instance, R. Amiran still names holemouth vessels in her preliminary description of ceramics of the Early Bronze Age IV while they are not included any more among the Middle Bronze Age I vessels. This, however, may also be due to the fact that here almost exclusively finds from gravesites were taken into consideration[80].

77 Also 'White Ware' (WW), cf. e.g. Maeir 2007, 287.

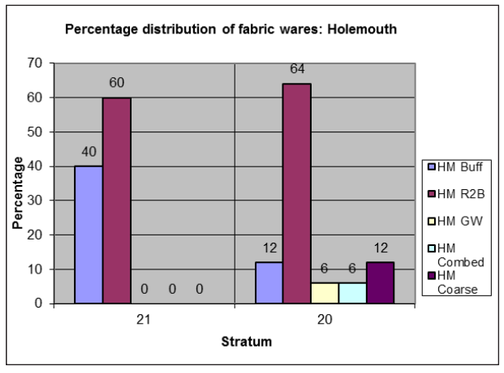
78 The designation and numbering corresponds to that of Schwermer 2014, 245–247.

79 Cf. *Chap. 1.2.2.5.*

80 Amiran 1969, 78–89.



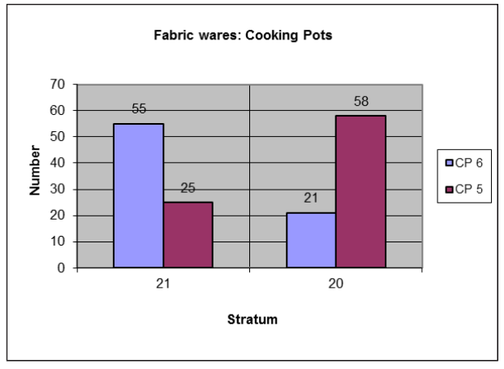
Graph 2.3 Numeral distribution of sherds of holemouth vessels among the different ware categories (Source: Schwermer).



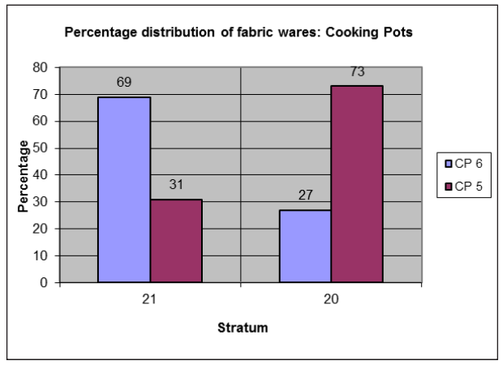
Graph 2.4 Percentage distribution of sherds of holemouth vessels among the different ware categories (Source: Schwermer).

Cooking Pots

As expected, both the holemouth-shaped cooking pots characteristic of the Early Bronze Age and the crude straight-walled form of the Middle Bronze Age with its characteristic circumferential clay bulge, usually attached beneath the rim, occur during the transitional period[81]. In the older Stratum 21, the cooking pots described in connection with the pottery of the Early Bronze Ages



Graph 2.5 Numeral distribution of cooking pot sherds among the different ware categories (Source: Schwermer).



Graph 2.6 Percentage distribution of cooking pot sherds among the different ware categories (Source: Schwermer).

The clay of the straight-walled cooking pots that are generally assessed as characteristically Middle Bronze Age is usually very coarse-grained, sometimes even poriferous, and possesses clearly visible crystalline embeddings (Cooking Pot Ware 5). As these vessels do not come up to the contemporary standard of production methods and are sometimes even carelessly manufactured

81 Cf. *Chap. 2.2.2.5.* with *Fig. 2.35 and 3.36*.

82 Cf. *Chap. 1.2.2.5.*

83 On this, cf. *Chap. 3.2.2.5.*

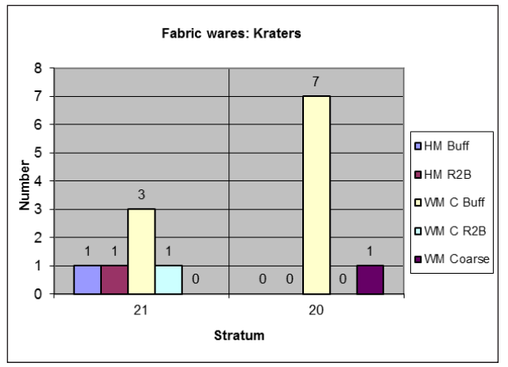
II and III are predominant[82] whereas the Middle Bronze Age cooking pots account for only about a third. In the younger Stratum 20, the numerical proportion is almost identical, albeit contrariwise. Possibly the two forms were in use simultaneously for a certain period of time, but in view of the large time span covered by even a single stratum this cannot be securely established.

it is not only difficult to date them correctly. Also their shape with its flat bottom and wide opening, which makes them resemble frying pans without a handle, is unique among the prehistoric cooking pots[83]. Thus, questions arise as to their usage and, consequently, the eating habits of those times[84].

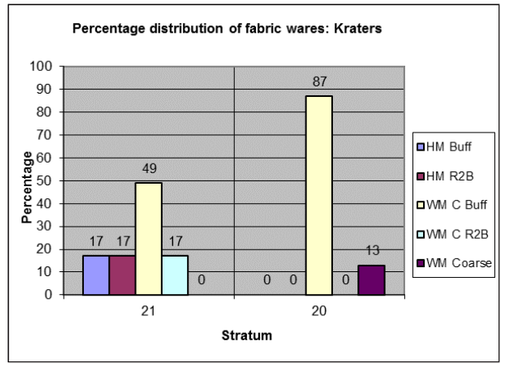
84 On this, cf. the remarks on Middle Bronze Age pottery (cf. *Chap. 3.2.2.5*) and the detailed examination, typology, and contextualization in Schwermer 2014, 97–116, 233; 260–263.

Kraters

Two-thirds of the kraters found in Stratum 21 are wheel-thrown, and in Stratum 20, the hand-built Early Bronze Age vessels have entirely vanished. The light-coloured ware is predominant in both strata. However, this fact should not be overrated in view of the small quantity of sherds.



Graph 2.7 Numeral distribution of krater sherds among the different ware categories (Source: Schwermer).

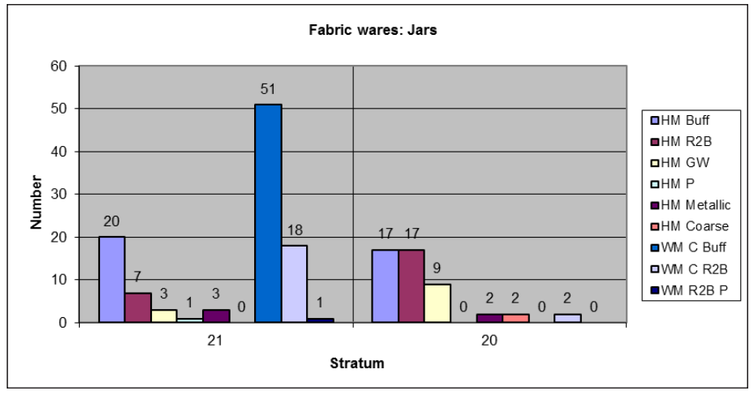


Graph 2.8 Percentage distribution of krater sherds among the different ware categories (Source: Schwermer).

Jars

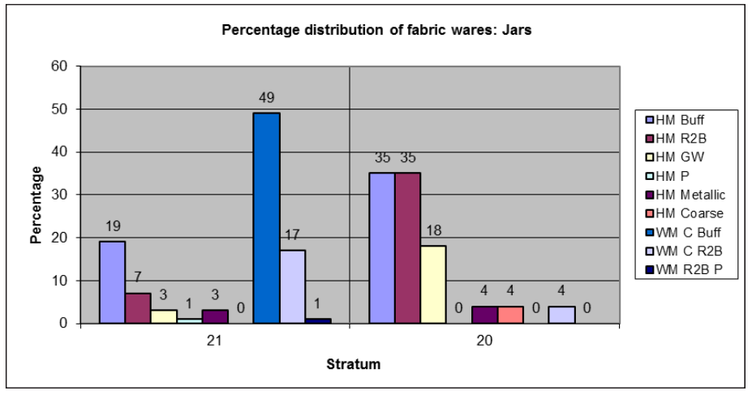
Inconsistent with the strata's chronology, the wheel-thrown jars are predominant in the older stratum whereas in the younger stratum, 96 % of these vessels were manufactured in the Early Bronze Age technique. This is either indicative of the coexistence of both production techniques for a certain period of time, or—more likely—evidence that the finds were intermingled in the course of later interventions.

In contrast to the Early Bronze Age Strata 25 to 22, except for only two individual sherds with a polished surface there are no examples of sherds either with a special design (like the net pattern in HM NP) or from a notable provenience (like Khirbet Kerak)[85]. With all due caution, this could be associated with the cultural decline of this transitional period.



Graph 2.9 Numeral distribution of jar sherds among the different ware categories (Source: Schwermer).

85 Cf. similar observations in Mazar 2012, 338.

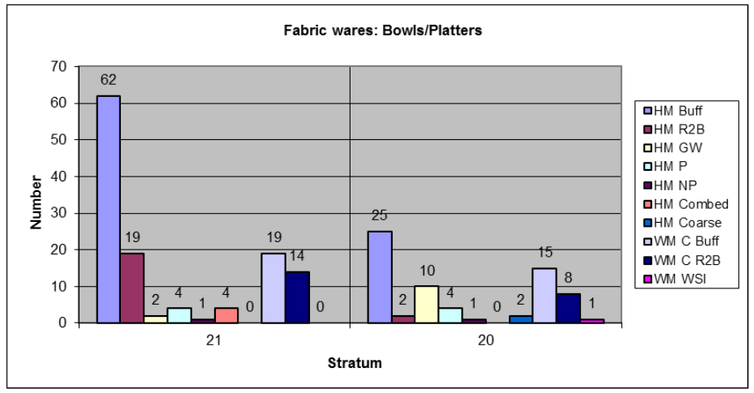


Graph 2.10 Percentage distribution of jar sherds among the different ware categories (Source: Schwermer).

Bowls/Platters

Three-fourths of all bowls and platters found in Stratum 21 were produced during the Early Bronze Age; in Stratum 20, they still account for close to two-thirds. Thus, their distribution resembles that of the jars. Moreover, the overall number of ware categories represented is almost the same. While the Early Bronze Age bowls and platters show a relatively broad range in this respect, among the wheel-thrown vessels—again in accordance with the jar finds—only the two main categories, the beige-coloured and the reddish ware, are represented. This may be put down to the fact that the technological development was still in its infancy.

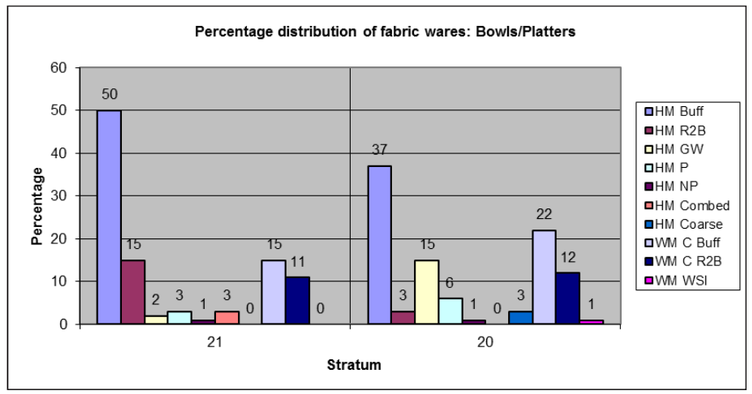
The decrease of bowls and platters with a polished or ornamented surface which had already started in the earlier strata[86] continues in the Strata 21 and 20[87].



Graph 2.11 Numeral distribution of sherds of bowls/platters among the different ware categories (Source: Schwermer).

86 Cf. *Chap. 1.2.2.5.* with *Graphs 1.8 f. and 1.10 ff.*

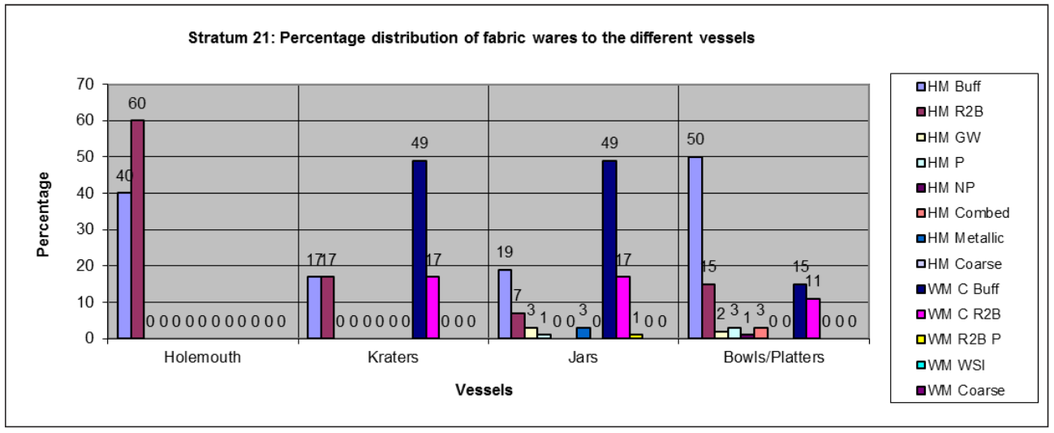
87 Also cf. Mazar 2012, 338.



Graph 2.12 Percentage distribution of sherds of bowls/platters among the different ware categories (Source: Schwermer).

Summary: Types of Vessels and Ware Categories

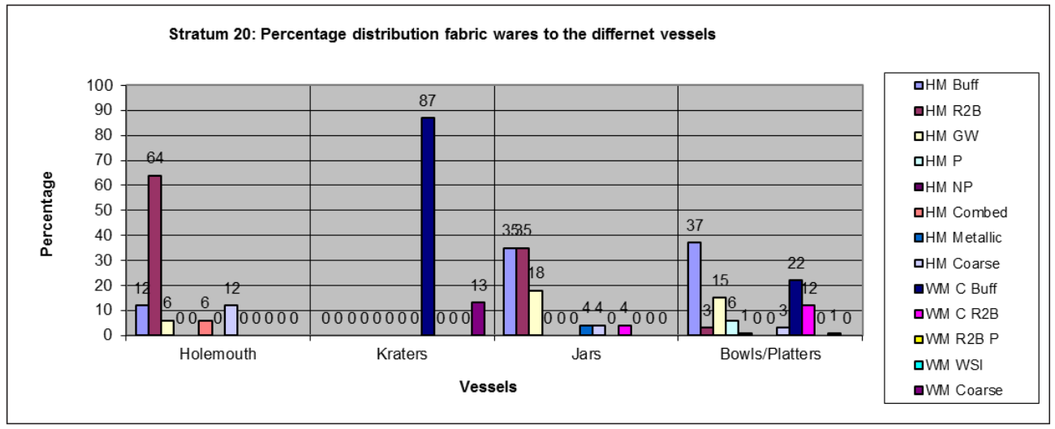
When looking at the overall distribution of the different ware categories among the various types of vessels, the predominance of the light-/beige-coloured and the reddish-brown clays leaps to the eye—both among the Early Bronze Age vessels and the wheel-thrown ones[88]. This corresponds with the findings regarding the Early Bronze Age Strata 25 to 22[89]. The bowls and platters possessing a 'front side' show the widest variance of clays employed, followed by the jars. With the introduction of the fast-spinning potter's wheel, the holemouth vessels are no longer produced in their pure form. Equally, for instance, the appearance of cooking pots changes completely between the Early Bronze Age and the Middle Bronze Age.



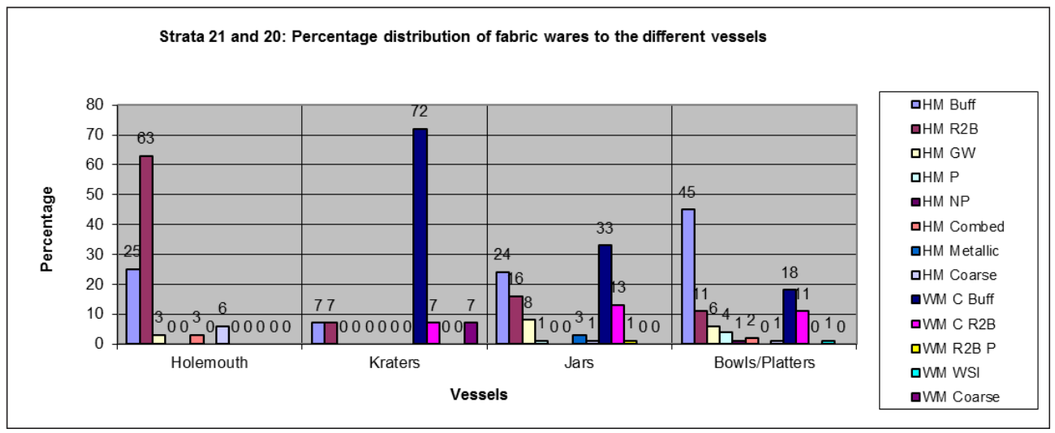
Graph 2.13 Percentage distribution of the ware categories among the different types of vessels in Stratum 21 (Source: Schwermer).

88 The cooking pots are not listed here because, inside one period, no further distinctions are being made here of the clay material from which they are made.

89 Cf. *Chap. 1.2.2.5.*

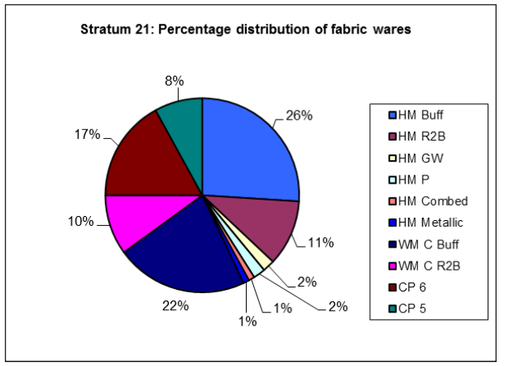


Graph 2.14 Percentage distribution of the ware categories among the different types of vessels in Stratum 20 (Source: Schwermer).

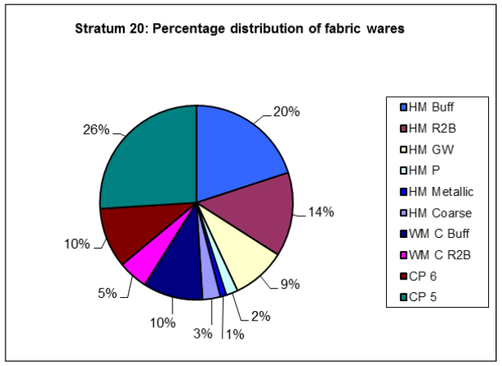


Graph 2.15 Percentage distribution of the ware categories among the different types of vessels in Stratum 21 and 20 combined (Source: Schwermer).

A glance at the distribution of the different ware categories in the two Strata 21 and 20 independent of their association with the different types of vessels reveals that the decrease of Early Bronze Age ceramics and increase of wheel-thrown pottery that were to be expected from Stratum 21 to Stratum 20 did not apply to every ware category and that, where detectable, the shift was only marginal. Actually, this supposition only proves to be true with respect to the cooking pots and, in a sort, to the ware category HM Buff. On the whole, the two strata hardly differ from each other in terms of their shares of Early Bronze Age sherds (60 vs. 59 %). The 'divide' only occurs at the passage to the first Middle Bronze Age Stratum 19 where—except for instances where find contexts were disturbed—Early Bronze Age ware categories or forms have completely disappeared.



Graph 2.16 Percentage distribution of the different ware categories to the Stratum 21 (Source: Schwermer).



Graph 2.17 Percentage distribution of the different ware categories to the Stratum 20 (Source: Schwermer).

Ornaments and Special Design

The share of ornamented vessels in the strata of the transitional period is extremely small, even when including vessel bottoms, handles, and ordinary wall sherds. Altogether, there are only about 20 sherds that show remnants of ornamental painting and merely 15 sherds have decorative incisions or reliefs[90]. The painting mainly consists of red brown stripes and/or wavy lines or of a coloured area. The incisions often comprise fine, comb-drawn parallel lines or slanted dashes that were impressed into the soft clay, usually to be found on jars at the spot where the neck blends into the body. This spot may also hold a braided relief band.

Other Ceramic Vessels and Objects of Utility

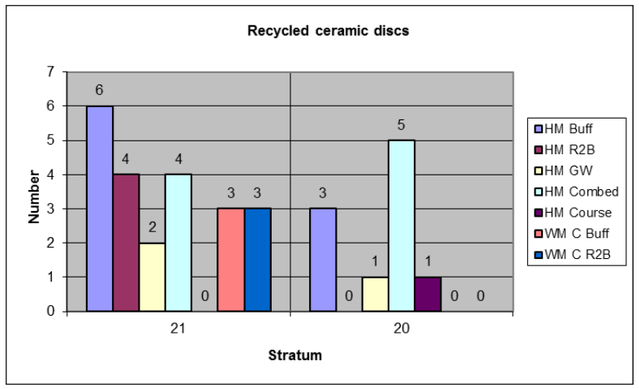
In addition to the utility vessels described above, two oil lamps—made of reddish brown clay and hand-built (HM R2B)—were found in Stratum 21. Stratum 20 also yielded two oil lamps that, too, were made of reddish clay, but these were wheel-thrown (WM C R2B). Moreover, a playboard (TZ 021312) and a miniature vessel[91] were identified in Stratum 21, as well as a mortar (TZ 021027-054) in Stratum 20.

Also in the strata under consideration there were quite a number of sherds that had originally belonged to presumably shattered vessels and were then put to a specific further use, perhaps to serve as cover plugs, grinding tools, gaming stones, or counting stones.[92] With one exception, none of these generally circular ceramic discs was pierced—thus an application as a spindle-whorl or a button can be ruled out. Most of the ceramic discs from the Strata 21 and 20 originally formed part of Early Bronze Age vessels. Their diameters range from 2.1 to 10 cm with an average of 4.6 cm, which thus falls short of that of the previous strata by more than one centimetre. The sherds' wall thickness ranges from 0.6 to 2.6 cm and has an average of 1.1 cm.

90 The straight-walled cooking pots with a circumferential bulge are not included here. On the types of decoration on Middle Bronze Age cooking pots, see *Chap. 4.2.2.* and Schwermer 2014, 103 f.

91 See TZ 021251-016 on *Plate 2.3.9* .

92 On the possible applications of secondarily manufactured clay discs, cf. Genz 2002, 107 f., and Schwermer 2014, 281 f.



Graph 2.18 Number of ceramic discs and their distribution among the different ware categories.

A particularly noteworthy find is that of a pierced, almost circular ceramic disc that was found in Stratum 21[93]. It has a diameter of 6.5 cm and is very carefully smoothed at its edge. It was probably shaped from the sherd or a larger vessel as it is not curved at all. The perforation is located exactly in the centre of the disc and has a diameter of 1 cm. It, too, is very meticulously executed. Similar pieces were found in the corresponding strata in Megiddo and Tall al-Ḥiṣn (Beth Shean) and both interpreted as the wheel of a miniature chariot that may have served as a toy or a votive offering[94].

Fig. 2.37 Ceramic disc from Stratum 21—possibly the wheel of a miniature chariot (?) (TZ 018772-001).

93 See TZ 018772-001 on *Plate 2.9.7.*

94 For the finding context cf. *Chap. 2.2.1.1.* with *Fig. 2,7* Complex C. Finkelstein et al. 2000 Vol. II, 374 Fig. 12:17:19, Mazar, Ed., 2012, 354 f. Photo 9:4 and Fig. 9.2:5 as well as Mazar/Mullins, Ed., 2007, 674 Photo 13.1.

Plate 2.1: Intermediate Bronze Age bowls from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021202-001	AO 119	5884	HM R2B (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 4, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 6.
2	bowl	TZ 021250-002	AO 118	5943	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 246 Fig. 4, 1 BL 21.	
3	bowl	TZ 021160-006	AN 119	5827	WM C R2B	MB	Tall Abū al-Ḫaraz Phase IV-V: Fischer 2006, 220 Fig. 256, 4. 5. 11.	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 97 Pl. 27, 11.
4	bowl	TZ 021251-001	AL 118	5951	HM Buff (red painted)	EB II/III	Tall Abū al-Ḫaraz Phase IIIA: Fischer 2008, 254 Fig. 260, 3.	
5	bowl	TZ 021278-003	AM 118	5976	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 246 Fig. 4, 1 BL 26a.	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 97 Pl. 27, 2. 5.
6	bowl	TZ 021465-005	AM 118	6097	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 246 Fig. 4, 1 BL 26a.	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 97 Pl. 27, 2. 5.
7	bowl	TZ 021485-010	AM 118	6097	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 246 Fig. 4, 1 BL 26a.	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 246 Fig. 4, 1 BL 26a.
8	bowl	TZ 021238-016	AN 119	5917	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 246 Fig. 4, 1 BL 26a.	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 246 Fig. 4, 1 BL 26a.
9	bowl	TZ 021278-002 TZ 021485-008	AM 118	5976	HM R2B (brown slip)	EB II/III	Tall al-Ḥiṣn (Beth Shean) EB II: (Amiran 1969, 73 Pl. 19, 4.	
10	bowl	TZ 021639-003	AM 119	6020	HM Buff coarse	EB II/III	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 2. 4: similar shape.	

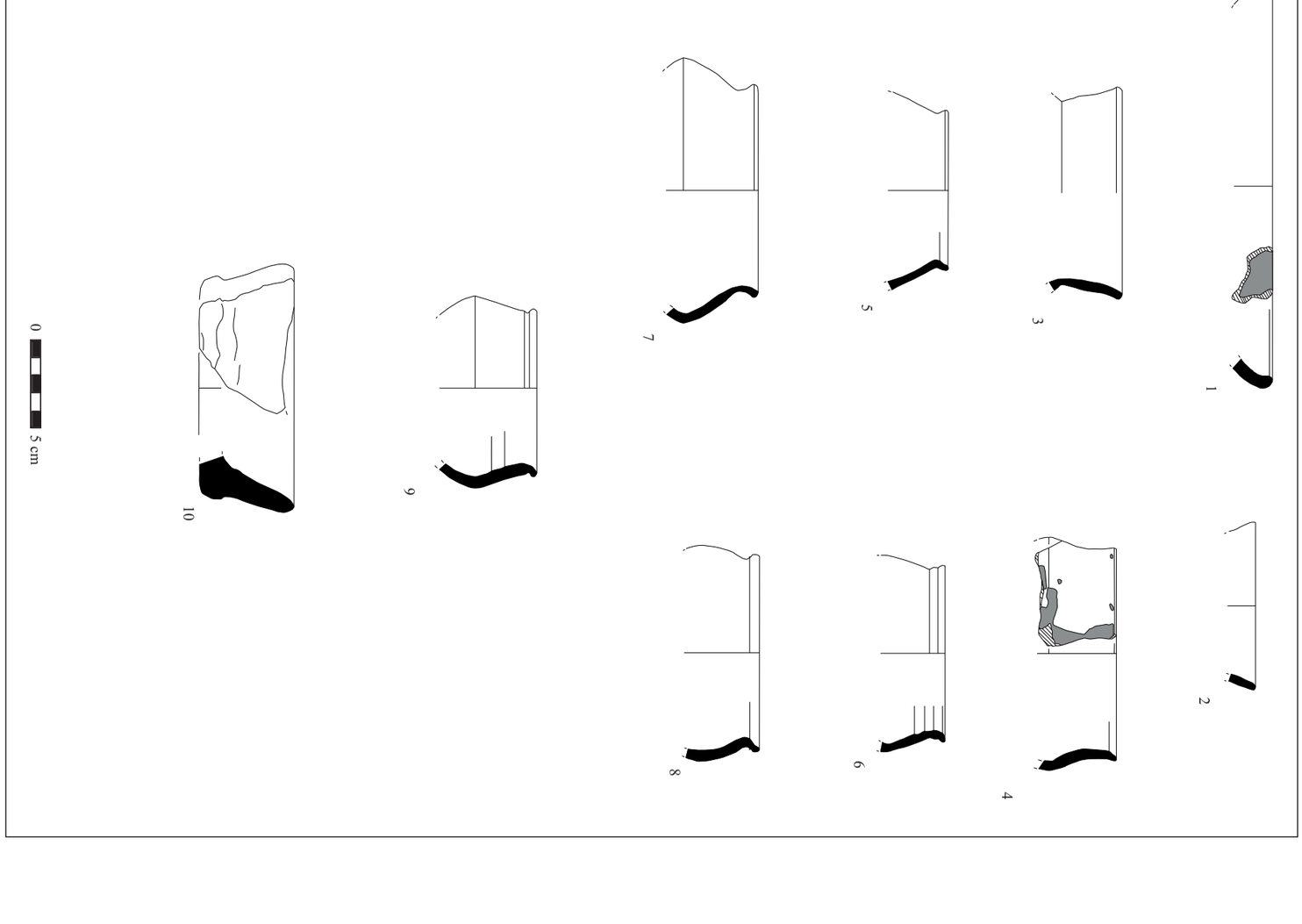


Plate 2.2: Intermediate Bronze Age bowls from Tall Zirā'a Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021234-014	AO 118	5904	HM Metallic	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 18.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3.
2	bowl	TZ 021122-021	AO 118	5850	HM Metallic	EB II/III	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 18.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3.
3	bowl	TZ 021481-010	AL 118	6074	HM Buff (light brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 6.
4	bowl	TZ 021357-013	AM 118	5964	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 16: similar.
5	bowl	TZ 021239-005	AN 118	5918	HM Buff (brown slip) combed	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 8.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3.
6	bowl	TZ 021139-019	AN 118	5828	HM Buff (brown painted)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 16.
7	bowl	TZ 021238-004	AN 119	5917	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 3.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 15.

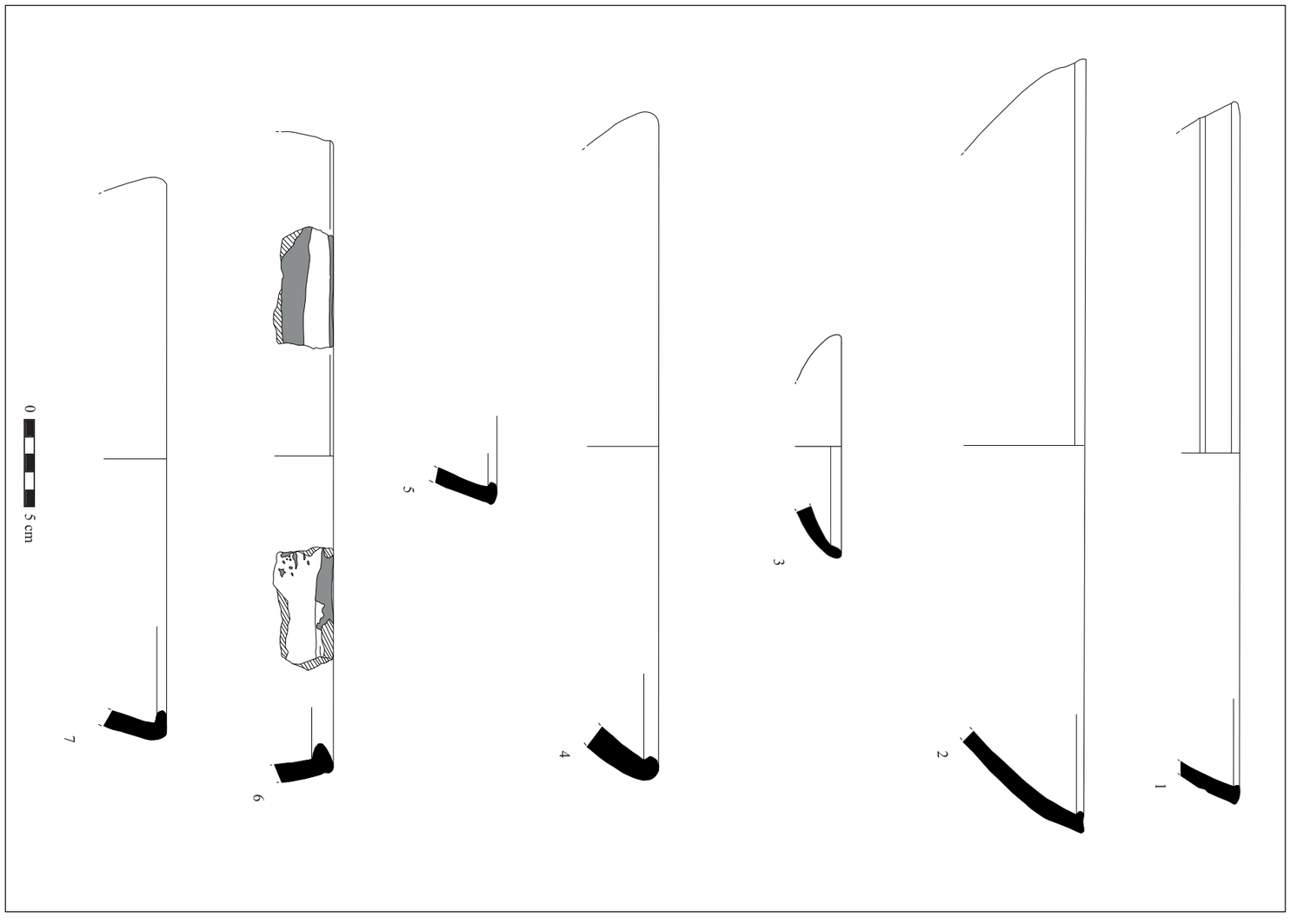


Plate 2.3: Intermediate Bronze Age kraters and platters from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	krater	TZ 021415-002	AO 119	5905	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 1.	
2	krater	TZ 021414-002	AL 118	5900	HM Buff (red painted)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1.
3	krater	TZ 021411-002	AM 118	6072	HM Buff (brown slip) combed	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 16.
4	krater	TZ 021202-018	AO 119	5884	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 1.	
5	krater	TZ 021238-025	AN 119	5917	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2: form.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 19: rim.
6	krater	TZ 021175-005	AO 119	5884	HM Metallic	EB II/III	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8. 9, 16: with spout.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 1: without ledge handle.
7	platter	TZ 021461-018	AL 118	6074	HM Buff	EB II/III	Ḫirbat al-Kerak (Tēl Bēt Yeraḥ) EB II: Amiran 1969, 61 Pl. 15, 4.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 2.
8	platter	TZ 021202-012	AO 119	5884	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 2, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 1.
9	miniature vessel	TZ 021251-016	AL 118	5951	HM Buff	EB/MB	Ṭabqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Fig. 185, 4.	

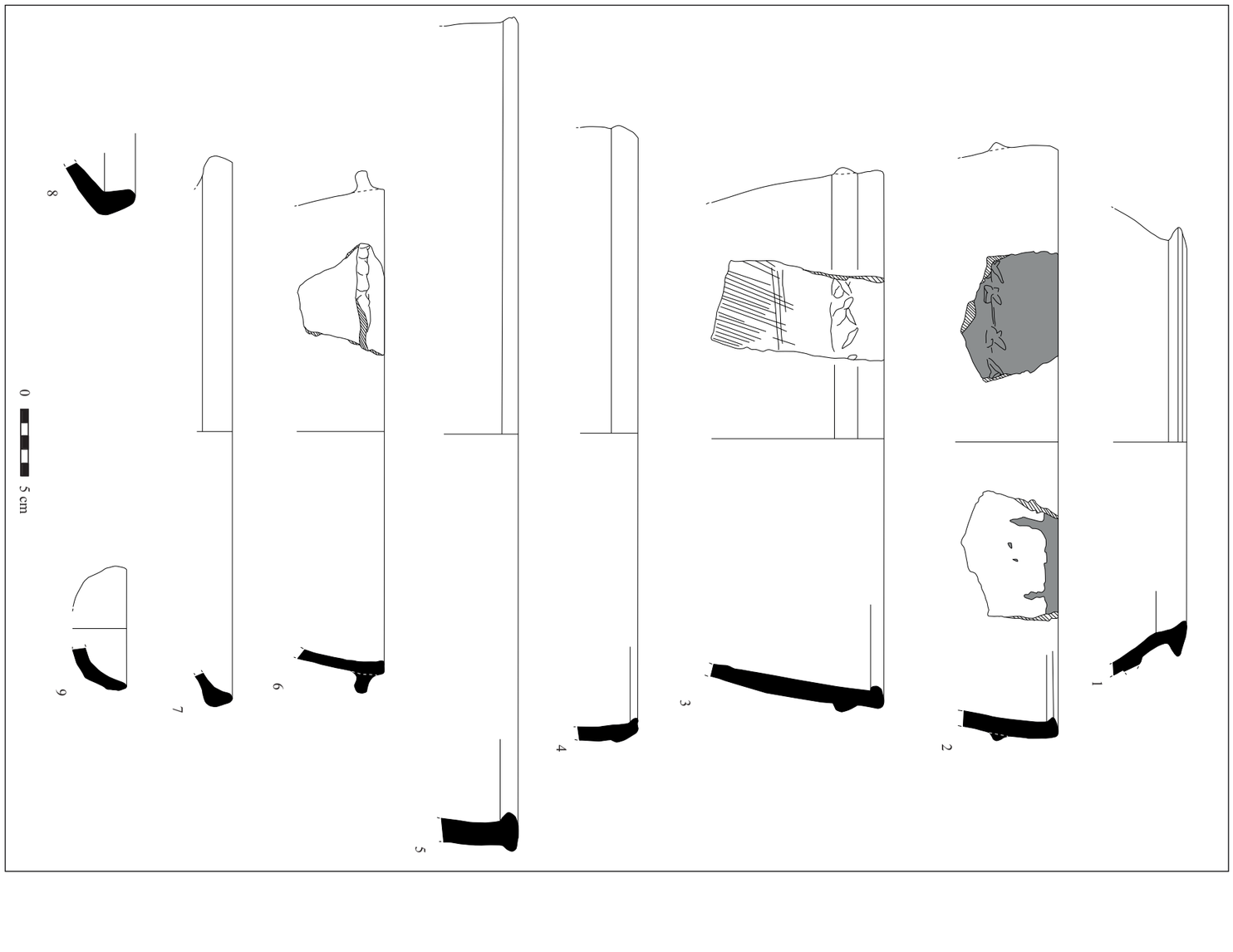


Plate 2.4: Intermediate Bronze Age holemouth jars/kraters from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	holemouth	TZ 021639-004	AM 119	6020	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 E 1, 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 182 Fig. 8. 13, 4. 5.
2	holemouth	TZ 021639-002	AM 119	6020	HM R2B	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 3.	Tall Abū al-Ḫaraz Phases IIIA/B: Fischer 2008, 284 Fig. 283, 4.
3	holemouth	TZ 021119-022	AN 118	5828	HM R2B	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 3.	Tall Abū al-Ḫaraz Phases IIIA/B: Fischer 2008, 284 Fig. 283, 4.
4	holemouth	TZ 021415-005	AO 119	5905	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 66, 4.	Qīre (Tall Qīrī) EB: Baruch 1987, 287 Fig. 70, 19.
5	holemouth	TZ 021469-007	AL 118	5921	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 F.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 282 Fig. 281, 5.
6	holemouth/ krater	TZ 021561-005	AL 118	5900	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 21.	Tall al-Mutasallim (Megiddo) MB IIB/C: Amiran 1969, 105 Pl. 32, 9: rim.
7	holemouth/ krater	TZ 021383-003	AO 118	5922	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB/LB: Bonfil 2003, 299 Fig. 116, 1.	Ṭabqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Fig. 195, 14: rim.
8	holemouth/ krater	TZ 021278-005	AM 118	5976	WM C Buff	MB	Ṭabqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Fig. 195, 14.	Tall al-Mutasallim (Megiddo) MB IIB/C: Amiran 1969, 105 Pl. 32, 9: rim.
9	holemouth/ krater	TZ 021485-012	AM 118	6097	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB/LB: Bonfil 2003, 299 Fig. 116, 3.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 373 Pl. 29, 7: rim.
10	holemouth/ krater	TZ 021302-001	AM 118	5976	WM Metalic	MB	Ṭabqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Fig. 195, 14: rim.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 11: rim.

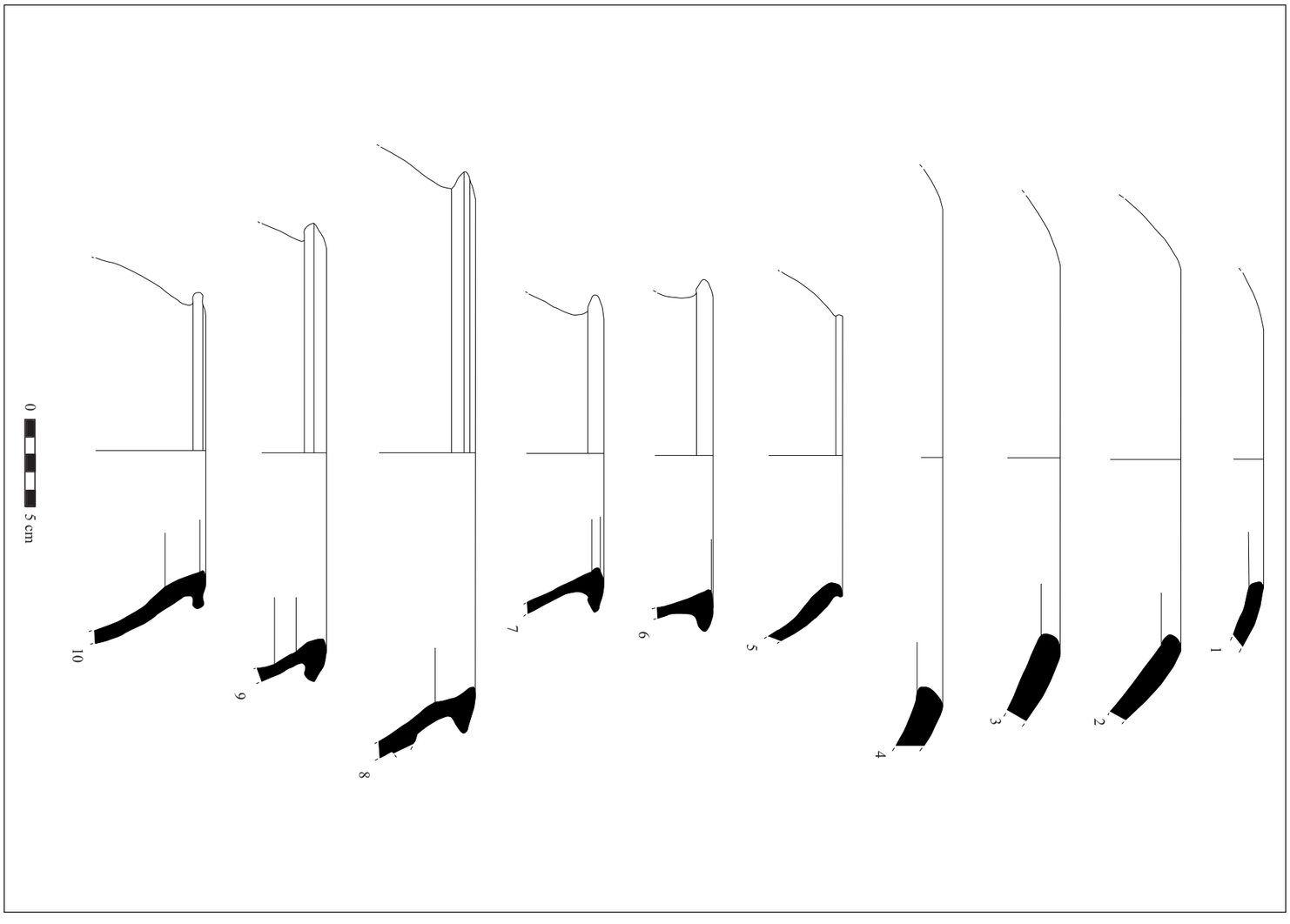


Plate 2.5: Intermediate Bronze Age jugs and (storage) jars from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	juglet (spout)	TZ 021139-002	AN 118	5828	HM BP	EB III	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76, Pl. 20, 18.	Tabqāt Faḥl (Pella) MB: Walmsley 1993, Fig. 187, 2: Tell al-Yahudiyeh-Ware.
2	jug/jar	TZ 021357-018	AM 118	5964	HM Metallic	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 J.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8. 11, 3.
3	jug/jar	TZ 021212-004	AL 118	5900	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 G 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 148 Fig. 67, 4.
4	jug/jar	TZ 021122-004	AO 118	5850	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 3.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8. 11, 2.
5	storage jar	TZ 021461-019	AL 118	6074	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 17, 9.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 10: similar.
6	storage jar	TZ 021639-006	AM 119	6020	HM Buff (brown slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 17, 9.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 10: similar.
7	storage jar	TZ 021448-004	AL 118	5951	HM Buff (brown painted)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 17, 9.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 10: similar.
8	storage jar	TZ 021639-007	AM 119	6020	HM Buff (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 17, 9.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 10: similar.
9	storage jar	TZ 021357-009	AM 118	5964	HM Buff (pink slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 7.

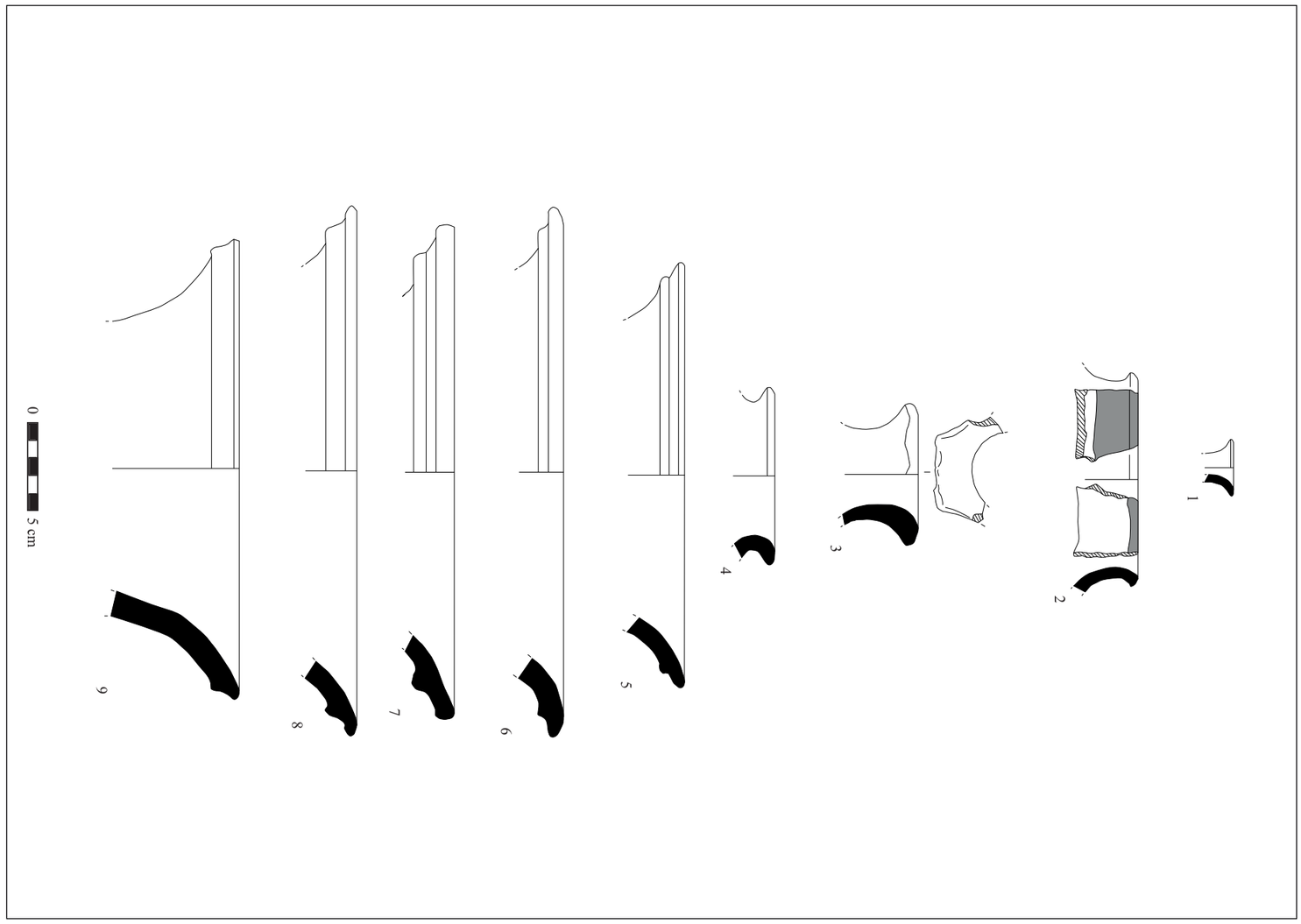


Plate 2.6: Intermediate Bronze Age jars from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jar	TZ 021203-016	AO 118	5885	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 2.
2	jar	TZ 021175-007	AO 119	5884	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 19, 4.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 180 Fig. 8. 11, 8.
3	jar	TZ 021175-008	AO 119	5884	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 19, 8.	Tall Abū al-Ḫaraz Phases IIA/B: Fischer 2008, 278 Fig. 278, 8.
4	jar	TZ 021239-018	AN 118	5818	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 H 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 149 Fig. 68, 3.
5	jar	TZ 021119-024	AN 118	5828	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 22, 6.	Tall Abū al-Ḫaraz Phases IIA/B: Fischer 2008, 278 Fig. 278, 6.
6	jar	TZ 021139-009	AN 118	5828	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 22, 6.	Tall Abū al-Ḫaraz Phases IIA/B: Fischer 2008, 278 Fig. 278, 6.
7	jar	TZ 021238-021	AN 119	5917	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 4, 1.	Tall Abū al-Ḫaraz Phases IIA/B: Fischer 2008, 278 Fig. 278, 7.
8	jar	TZ 021279-001	AN 118	5977	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 19, 4.	Tall Abū al-Ḫaraz Phases IIA/B: Fischer 2008, 278 Fig. 278, 8.
9	jar	TZ 021238-011	AN 119	5917	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 5.	Tall Abū al-Ḫaraz Phases IIIA/B: Fischer 2008, 279 Fig. 279, 8.
10	jar	TZ 021519-021	AN 118	5989	HM Buff (part. WM)	EB/MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 3.	Tall Abū al-Ḫaraz Phases IIIA/B: Fischer 2008, 279 Fig. 279, 12.

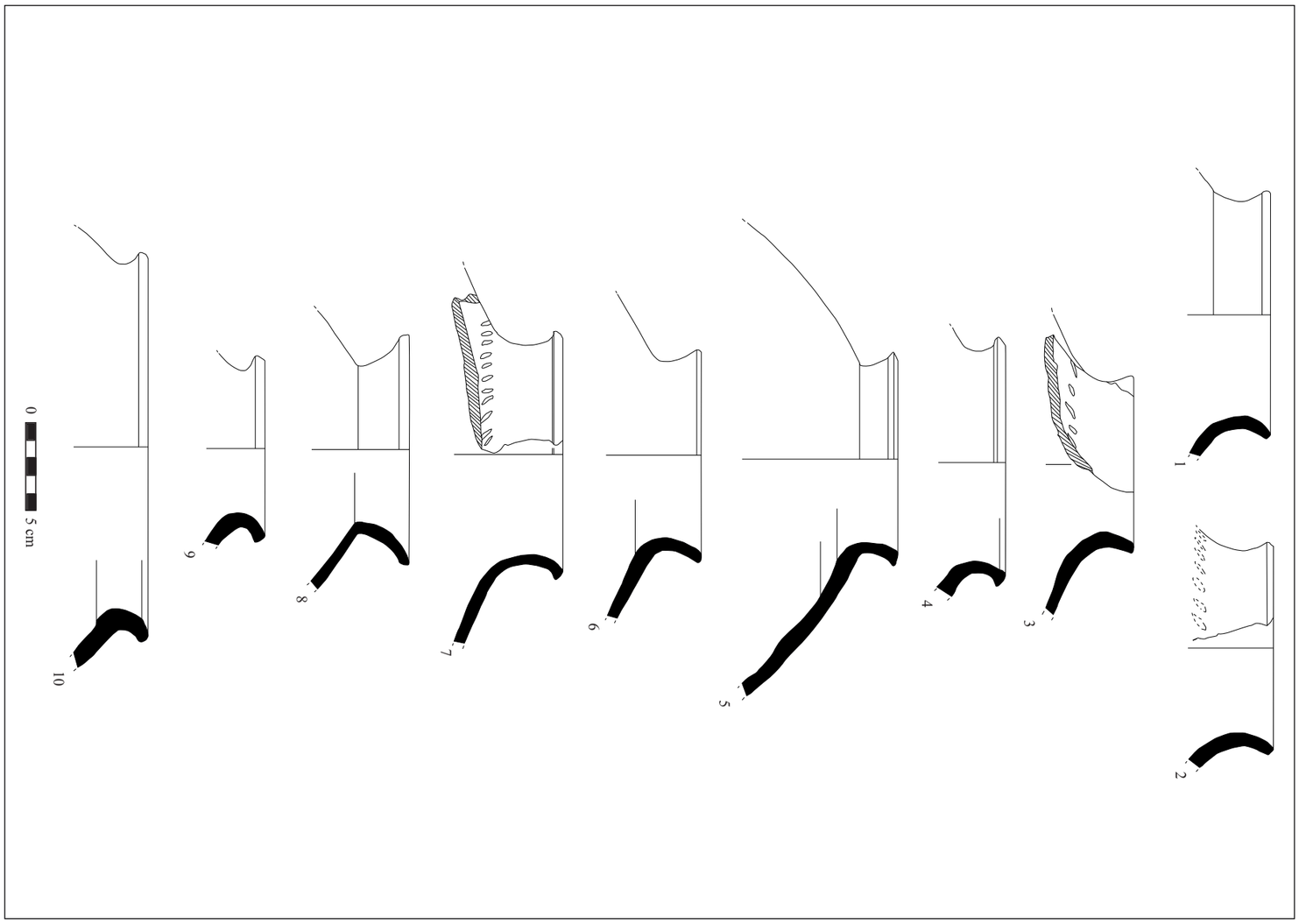


Plate 2.7: Intermediate Bronze Age jugs and jars from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 021279-003	AN 118	5977	WM C R2B painted	MB	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 201 Fig. 9, 7. 35.	Ṭabqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Fig. 192, 10.
2	jug/jar	TZ 021119-012	AN 118	5828	WM C Buff	MB	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 201 Fig. 9, 7. 35.	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 357 Pl. 2, 9.
3	jug/jar	TZ 021278-001	AM 118	5976	WM C R2B	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: (Livneh 2005, 69 Fig. II 3, 10): similar.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 13: similar.
4	jug/jar	TZ 021485-022	AM 118	6097	WM C Buff	MB	Ṭabqāt Faḥl (Pella) MB I–III: Bourke et al. 2003, Fig. 340, 13.	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 355 Pl. 20, 7: rim (here crater).
5	jug/jar	TZ 021414-007	AL 118	5900	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 101 Fig. II 19, 2. 4.	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 389 Pl. 37, 4.
6	jug/jar	TZ 021561-008	AL 118	5900	WM C Buff	MB	Ṭabqāt Faḥl (Pella) MB: Walmsley 1993, Fig. 187, 3.	Tall al-Ḥiṣn (Beth Shean)MB II: Maeir 2007, 335 Pl. 10, 15.
7	jug/jar	TZ 021262-004	AN 118	5918	WM C Buff	MB	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 215 Fig. 9. 12, 11.	Ṭabaqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Fig. 195, 19.
8	jug/jar	TZ 021416-002	AO 118	5922	WM C Buff	MB	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 215 Fig. 9. 12, 5.	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 343 Pl. 14, 27.

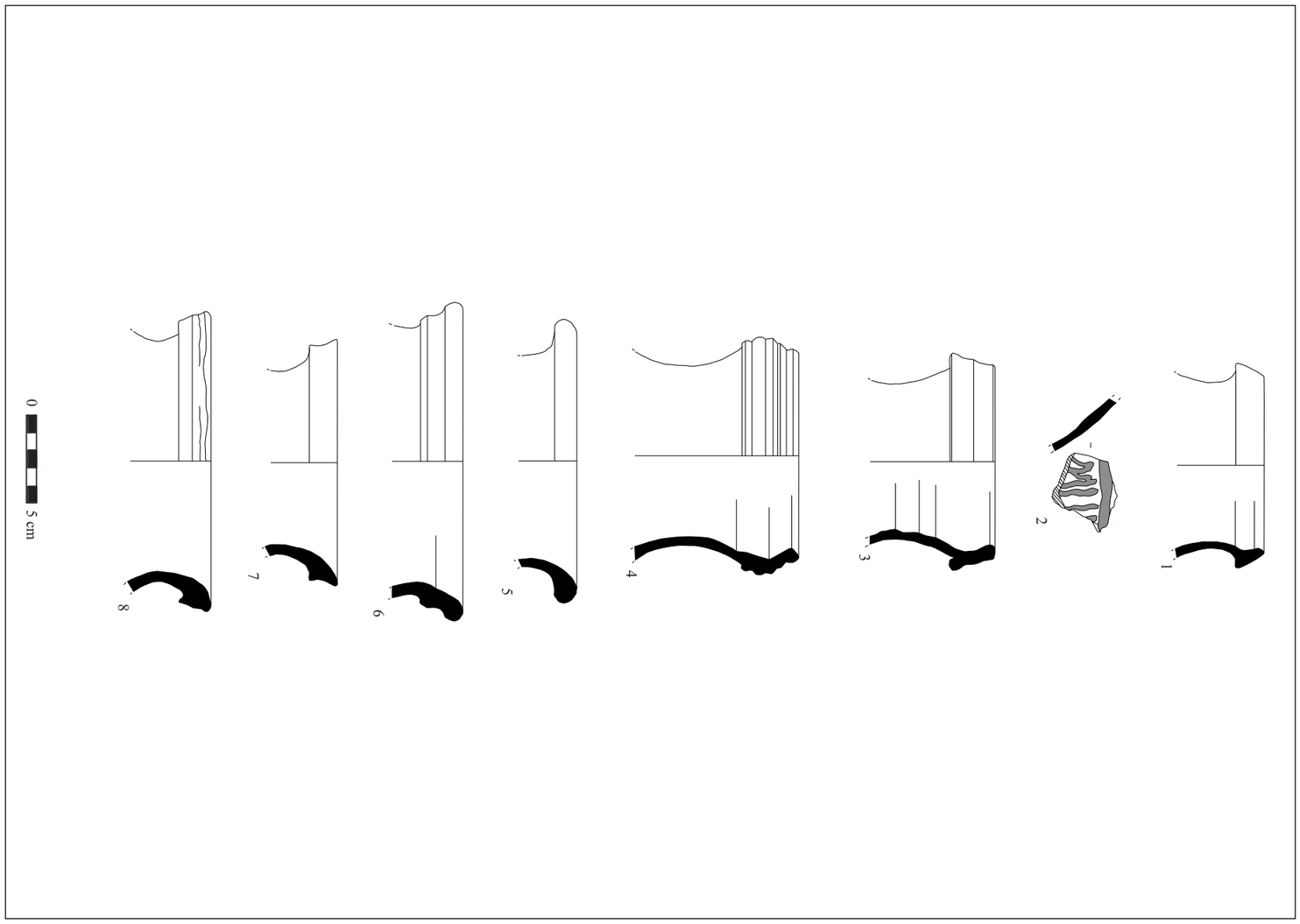


Plate 2.8: Intermediate Bronze Age jugs from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (base)	TZ 021561	AL 118	5900	HM GW	EB II/III		
2	jug/jar base)	TZ 021251-027	AL 118	5951	HM GW	EB II/III		
3	jug/jar (base)	TZ 021213-020	AM 118	5901	HM Metallic combed	EB II/III		
4	storage jar (base)	TZ 021215-007	AO 118	5904	HM Buff Coarse	EB II/III		

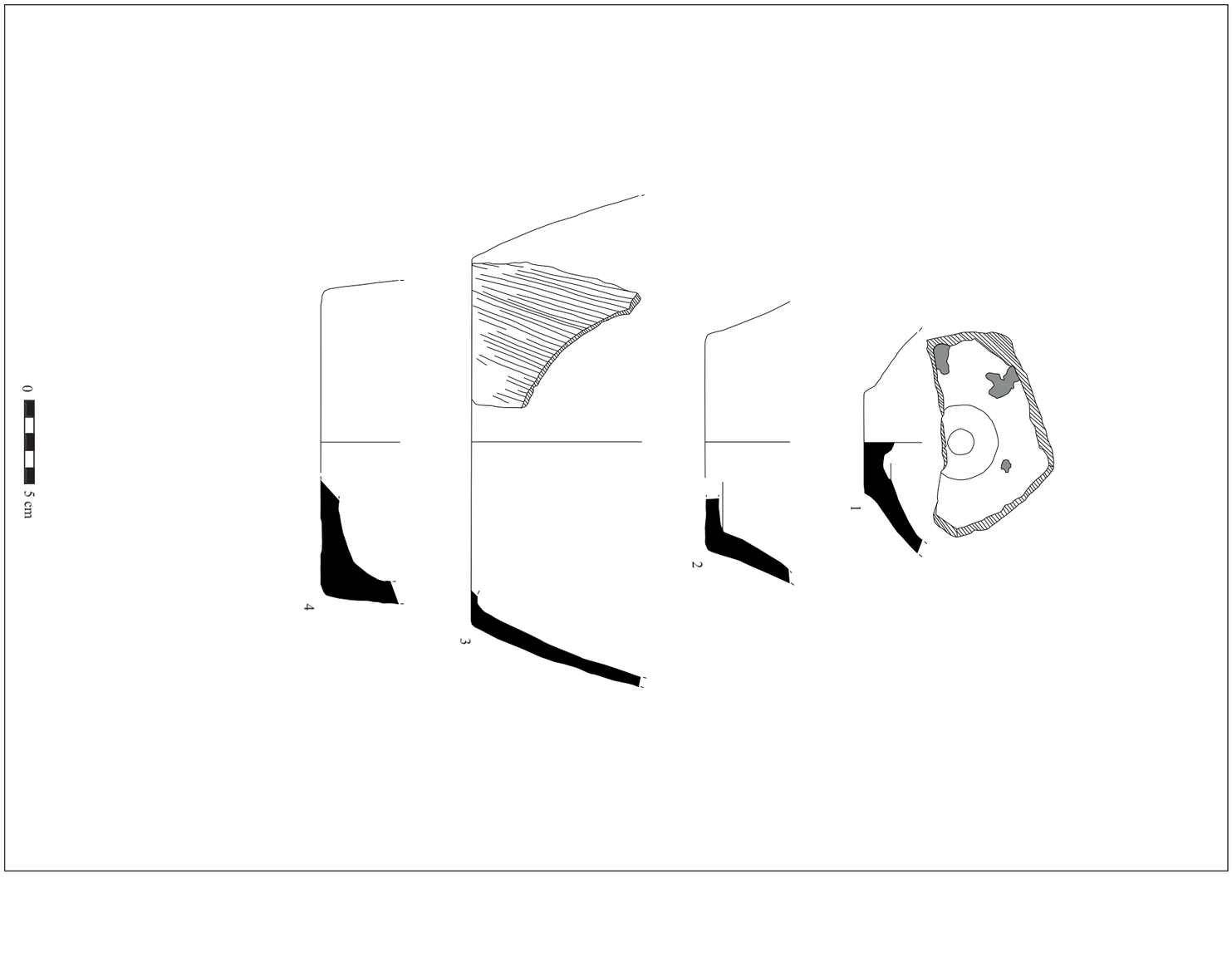


Plate 2.9: Intermediate Bronze Age jugs and other pottery from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	storage jar (body sherd)	TZ 021251-006	AL 118	5951	HM GW	EB II/III		
2	jug/jar (body sherd)	TZ 021118-001	AN 119	5827	WM C Buff painted	MB		
3	jug/jar (body sherd)	TZ 021485-005	AM 118	6097	WM C Buff painted	MB	Tall al-Ḥiṣn (Beth Shean) MB II: Maeir 2007, 286 Fig. 4, 78: paintings.	
4	lid	TZ 021481-004	AL 118	6074	HM GW combed	EB II/III		
5	lid	TZ 021215-005	AO 118	5904	HM GW combed	EB II/III		
6	lid	TZ 021215-006	AO 118	5904	HM Buff combed	EB II/III		
7	wheel (?)	TZ 018772-001	AM 118	6097	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB I/II: Finkelstein et al. 2000, 374 Fig. 12, 17. 19: discoidial flywheel or chariot part.	
8	platter (pierced)	TZ 021561-006	AL 118	5900	HM red polished	EB II/III		

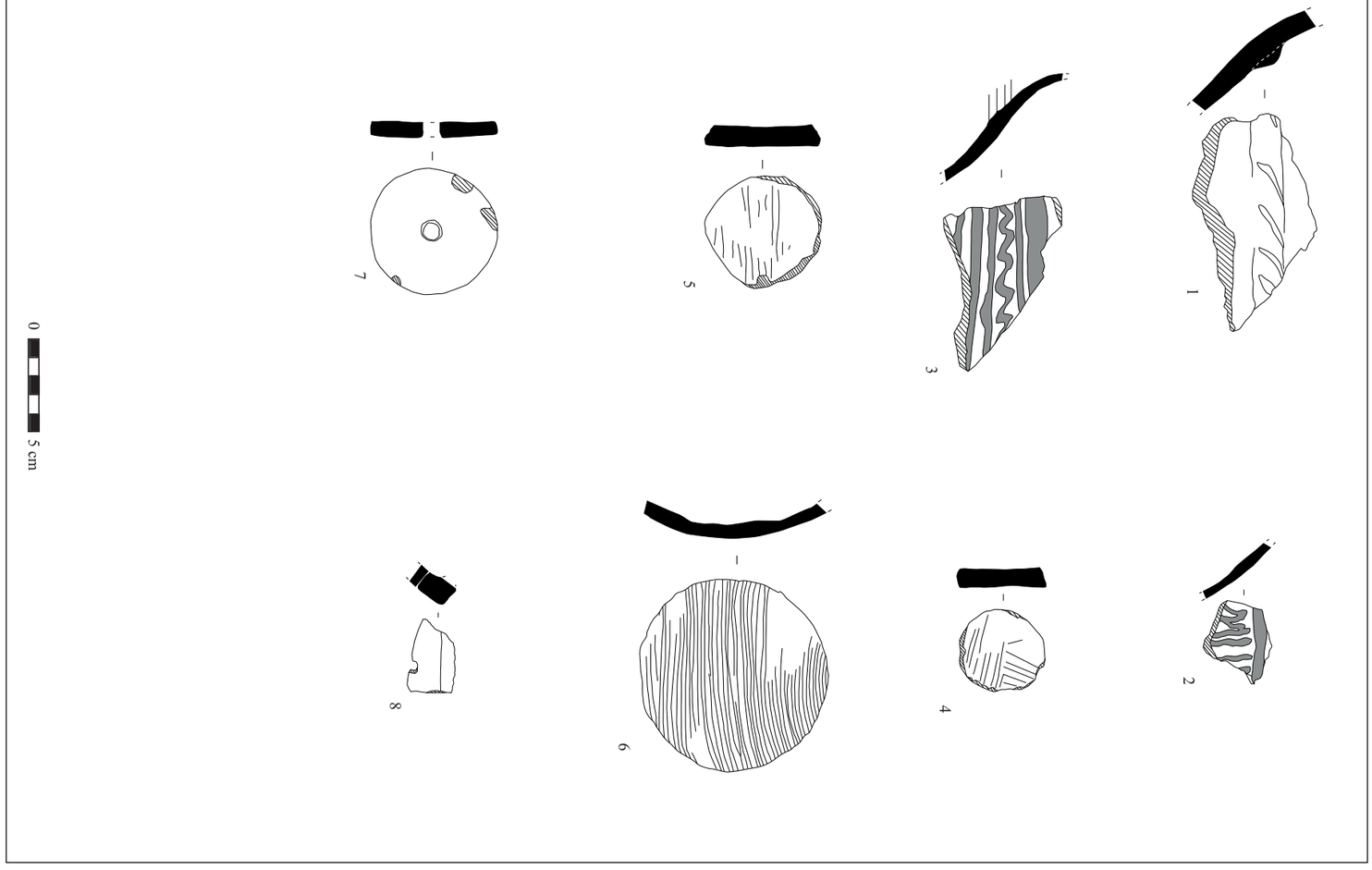


Plate 2.10: Intermediate Bronze Age jugs from Tall Zirāʿa Stratum 21—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (ledge handle)	TZ 021139-010	AN 118	5828	HM Metallic	EB II/III		
2	jug/jar (ledge handle)	TZ 021138-017	AN 119	5827	HM R2B	EB II/III		
3	jug/jar (ledge handle)	TZ 021250-006	AO 118	5943	HM Metallic	EB II/III		
4	jug/jar (handle)	TZ 021212-005	AL 118	5900	HM Metallic	EB II/III		
5	jug/jar (handle)	TZ 021161-003	AN 118	5828	HM Buff	EB II/III		
6	jug/jar (handle)	TZ 021357-014	AM 118	5964	WM C R2B	MB		

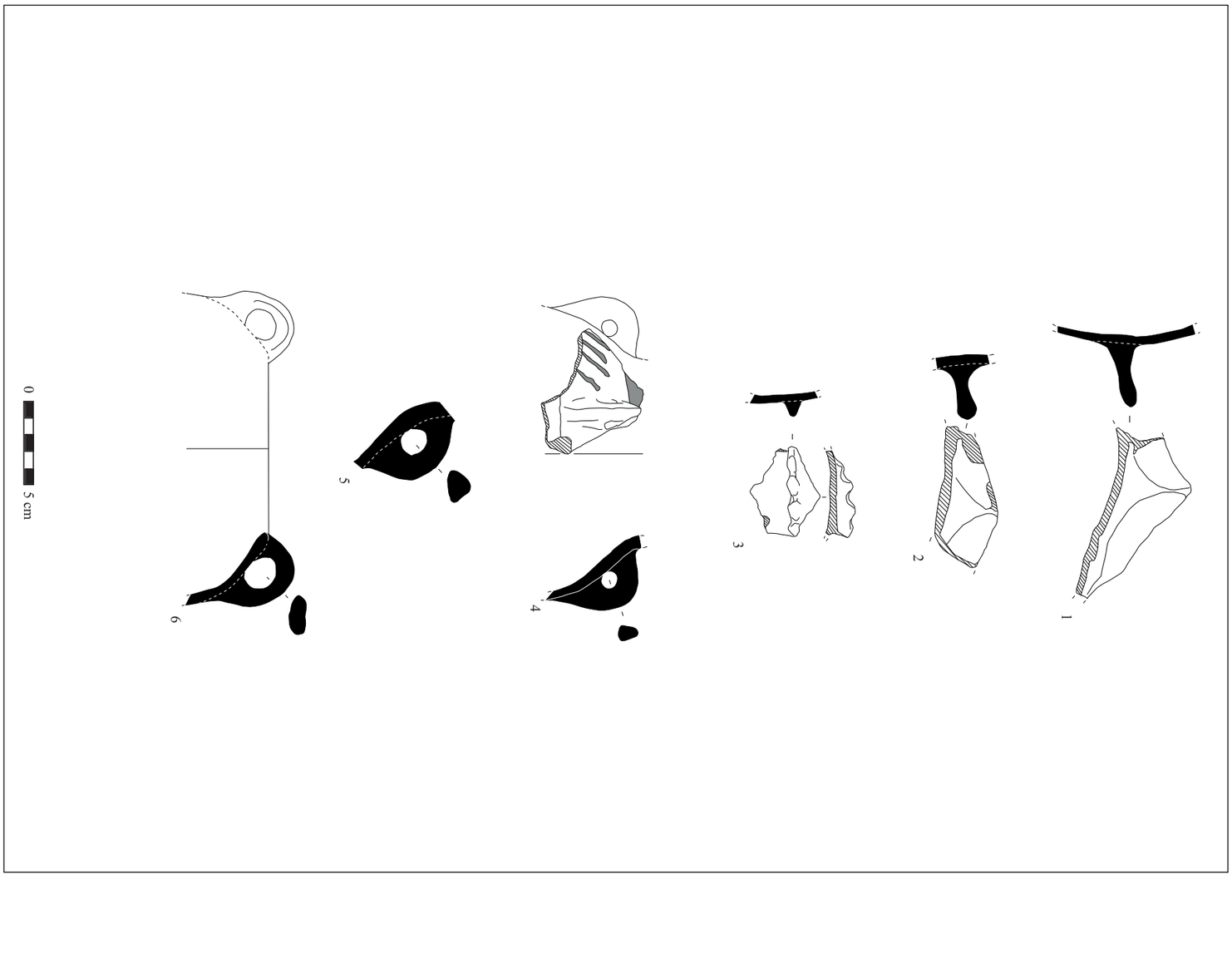


Plate 2.11a: Intermediate Bronze Age goblets and bowls from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	goblet	TZ 021109-008	AM 119	5802	WM C Buff (brown painted)	MB	Ḫirbat ar-Raḥūb Transition EB/MB: Kamlah 2000, Pl. 40, 2: identical paintings.	Tall al-Mutasallim (Megiddo) MB IIB/C: Amiran 1969, 98 Pl. 28, 13.
2	goblet	TZ 021109-004	AM 119	5802	WM C Buff (red painted)	MB	Ḫirbat ar-Raḥūb Transition EB/MB: Kamlah 2000, Pl. 40, 2: identical paintings.	Tall al-Mutasallim (Megiddo) MB IIB/C: Amiran 1969, 98 Pl. 28, 13.
3	goblet	TZ 021071-007	AN 119	5782	WM C Buff (red painted)	MB	Ḫirbat ar-Raḥūb Transition EB/MB: Kamlah 2000, Pl. 40, 1: identical paintings.	Tall al-Mutasallim (Megiddo) MB IIB/C: Amiran 1969, 98 Pl. 28, 13.
4	goblet	TZ 020996-011	AO 118	5709	WM C Buff (red painted)	MB	Ḫirbat ar-Raḥūb Transition EB/MB: Kamlah 2000, Pl. 40, 1: identical paintings.	Tall al-Mutasallim (Megiddo) MB IIB/C: Amiran 1969, 98 Pl. 28, 13.
5	bowl	TZ 021004-004	AO 118	5709	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB IIA: Finkelstein et al. 2000, 193 Fig. 9, 5. 2; Amiran 1969, 92 Pl. 25, 3.	Tall al-Qassis (Tēl Qāšīṣ) MB/LB: Bonfil 2003, 294 Fig. 113, 18.
6	bowl	TZ 021051-001	AN 119	5768	WM C R2B (buff slip)	MB	Tall al-Mutasallim (Megiddo) MB IIA: Finkelstein et al. 2000, 195 Fig. 9, 4; Amiran 1969, 97 Pl. 27, 1.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 10.
7	bowl	TZ 021076-030	AN 119	5767	WM C R2B polished	MB	Tall al-Mutasallim (Megiddo) MB IIA: Finkelstein et al. 2000, 195 Fig. 9, 2. 4; Amiran 1969, 97 Pl. 27, 2.	Tall al-Qassis (Tēl Qāšīṣ) h MB/LB: Bonfil 2003, 296 Fig. 114, 11.
8	bowl	TZ 021027-007	AN 118	5734	WM C Buff (pink slip)	MB	Ṭabqāt Faḥl (Pella) MB I: Bourke et al. 2003, Fig. 347, 3.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 8.
9	bowl	TZ 021033-008	AN 119	5742	WM C R2B	MB	Ṭabqāt Faḥl (Pella) MB I: Bourke et al. 2003, Fig. 347, 5.	Tall al-Mutasallim (Megiddo) MB IIA: Finkelstein et al. 2000, 195 Fig. 9. 4, 2; Amiran 1969, 97 Pl. 27, 2.

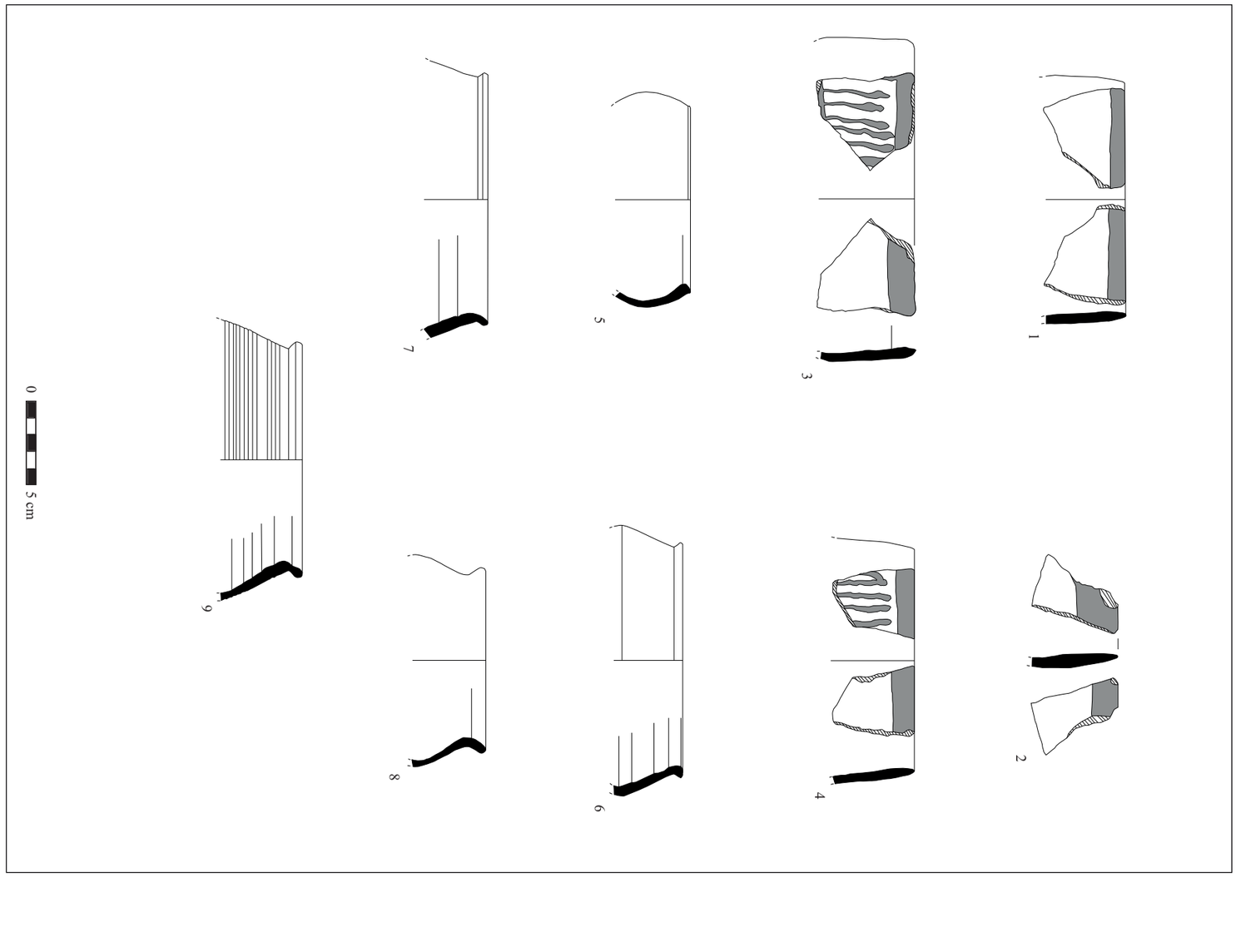


Plate 2.11b: Intermediate Bronze Age goblets and bowls from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
10	bowl	TZ 021179-001	AM 119	5891	WM C Buff	MB	Ṭabqāt Faḥl (Pella) MB IIA: Walmsley 1993, Fig. 185, 5.	Tall al-Mutasallim (Megiddo) MB IIC: Amiran 1969, 92 Pl. 26, 2.
11	bowl	TZ 021008-015	AO 118	5709	WM C Buff	MB	Qīre (Tall Qīrī) M: Ben-Tor 1987, 265 Fig. 61, 7.	Tall al-Mutasallim (Megiddo) MB II: Finkelstein et al. 2000, 195 Fig. 9, 4. 15.

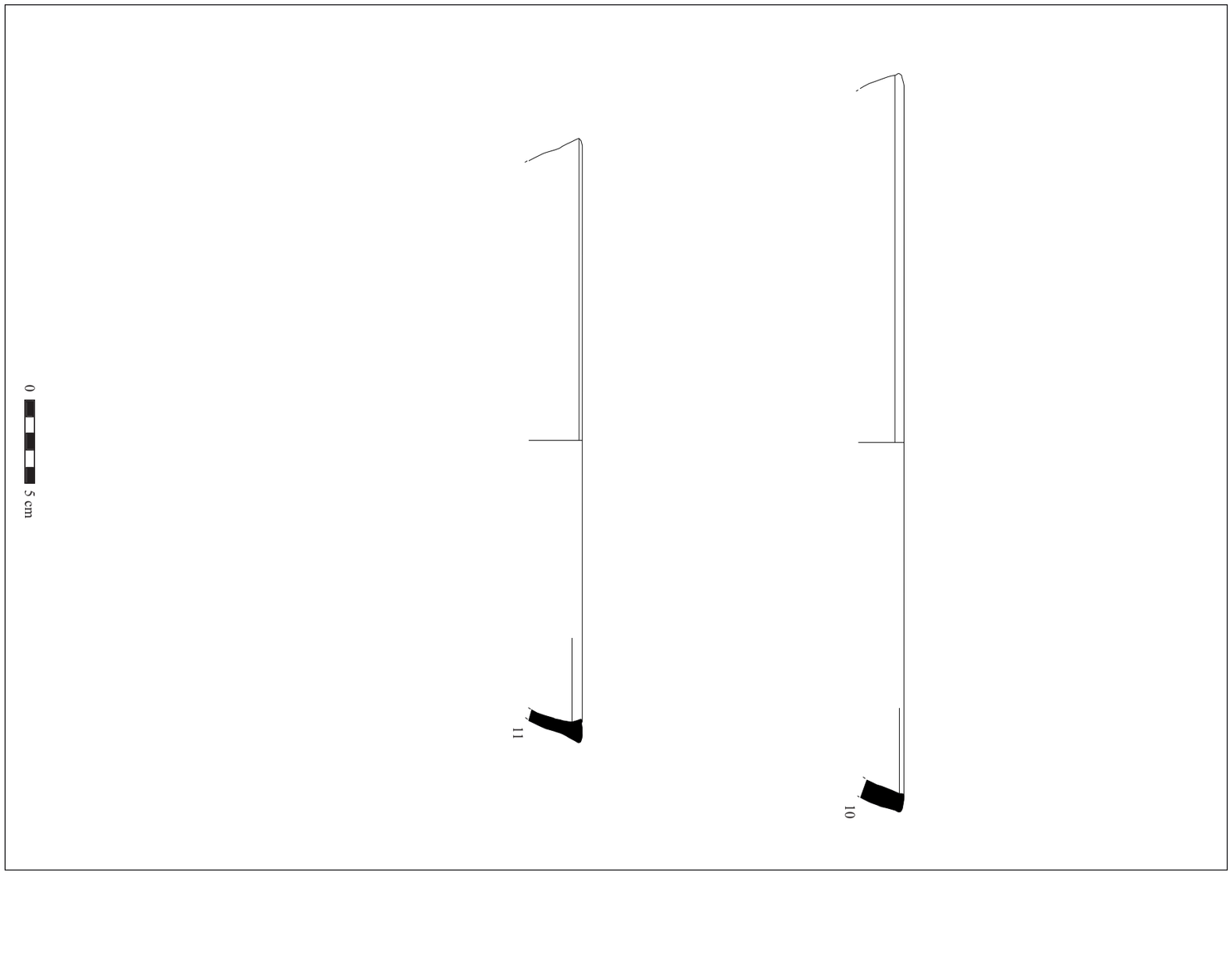


Plate 2.12: Intermediate Bronze Age bowls and kraters from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021389-003	AN 119	5962	HM Buff (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 145 Fig. 63, 8: similar.
2	bowl	TZ 021028-002	AN 118	5735	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 4.	Tall Abū al-Ḫaraz Phase IB: Fischer 2008, 252 Fig. 258, 19.
3	bowl	TZ 021233-011	AL 118	5902	HM Buff (part. WM)	EB II/III	Tall Abū al-Ḫaraz Phases IB: Fischer 2008, 252 Fig. 258, 20.	Tall as-Sulṭān (Jericho) EB III: Amiran 1969, 76 Pl. 20, 6.
4	krater	TZ 021233-016	AL 118	5902	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1.
5	krater	TZ 020996-030	AO 118	5709	HM Buff (brown painted)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 16.
6	krater	TZ 021065-056	AM 118	5762	HM Buff (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9. 10.	
7	krater/bowl	TZ 021021-009	AO 119	5716	HM Buff (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 2.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 1.
8	krater	TZ 021065-059	AM 118	5762	HM GW combed	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 22 Fig. 10 D 1, 1.	Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 177 Fig. 8, 9. 16.

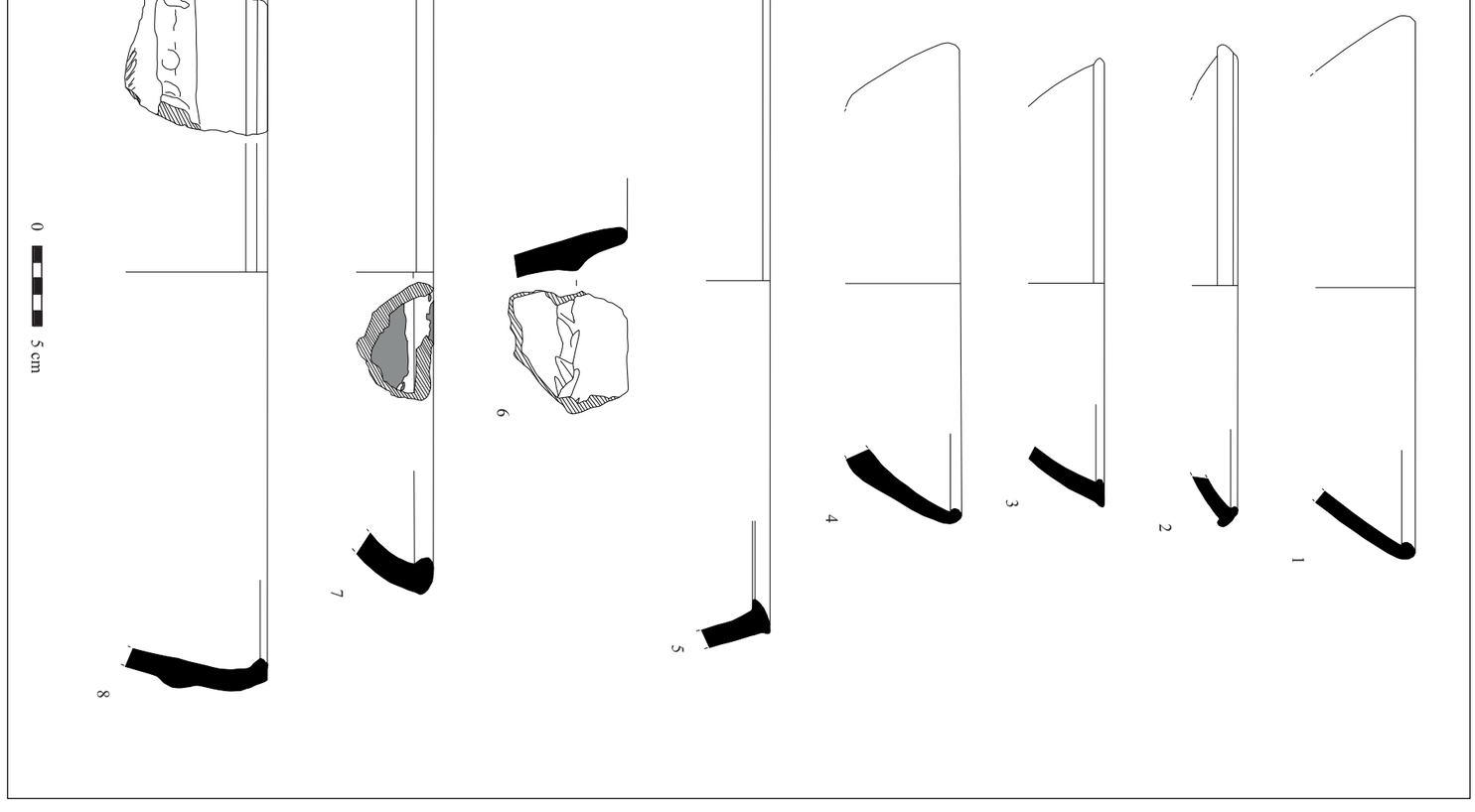


Plate 2.13: Intermediate Bronze Age platters from Tall Zirā'a Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	platter	TZ 020996-021	AO 118	5709	HM NP (brown slip)	EB II/III	Tall al-Mutasallim (Megiddo) EB III: Amiran 1969, 61 Pl. 15, 8.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 13.
2	platter	TZ 021012-009	AN 118	5734	HM Buff	EB II/III	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 146 Fig. 64, 5.
3	platter	TZ 021065-048	AM 118	5762	HM NP (red slip)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9, 5.	Ḫirbat al-Kerak (Tēl Bēt Yeraḥ) EB III: Amiran 1969, 61 Pl. 15, 4.
4	platter	TZ 021389-001	AN 119	5962	HM Buff	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 2.	Tall al-Mutasallim (Megiddo) FB III: Amiran 1969, 61 Pl. 15, 5.

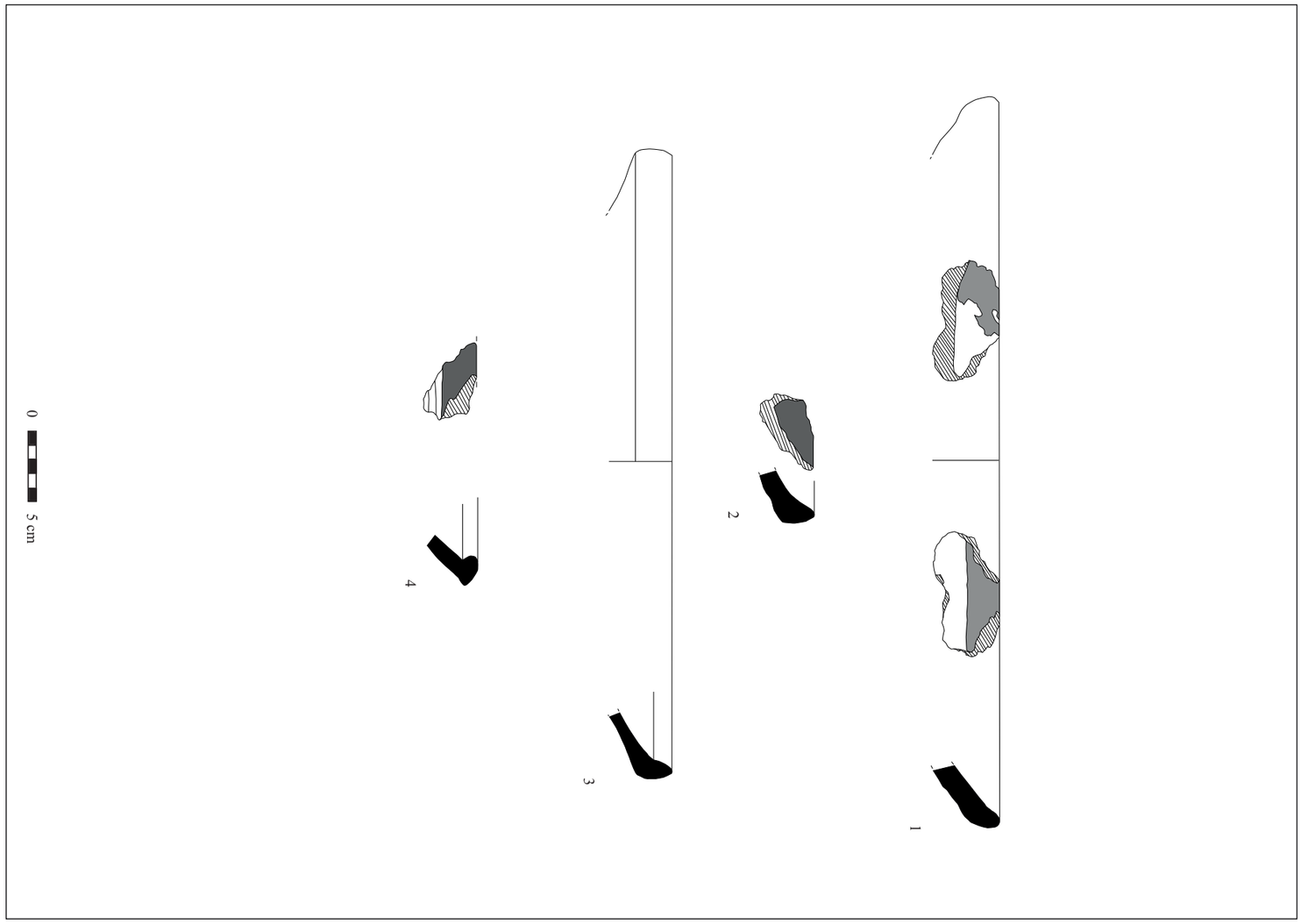


Plate 2.14: Intermediate Bronze Age storage jars from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	storage jar	TZ 021100-005	AN 118	5746	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 47, 5.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 10.
2	storage jar	TZ 021100-004	AN 118	5746	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 1.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 10.
3	storage jar	TZ 021179-002	AM 119	5891	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 47, 5.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 10.
4	storage jar	TZ 021158-003	AM 118	5818	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 17, 3.	Tall Abū al-Ḫaraz Phases IIA and B: Fischer 2008, 277 Fig. 277, 9.
5	storage jar	TZ 021037-024	AN 118	5735	HM Buff combed	EB II/III	Tall Abū al-Ḫaraz Phases IIIA and B: Fischer 2008, 279 Fig. 279, 1.	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 24 Fig. 12 L 4, 1.

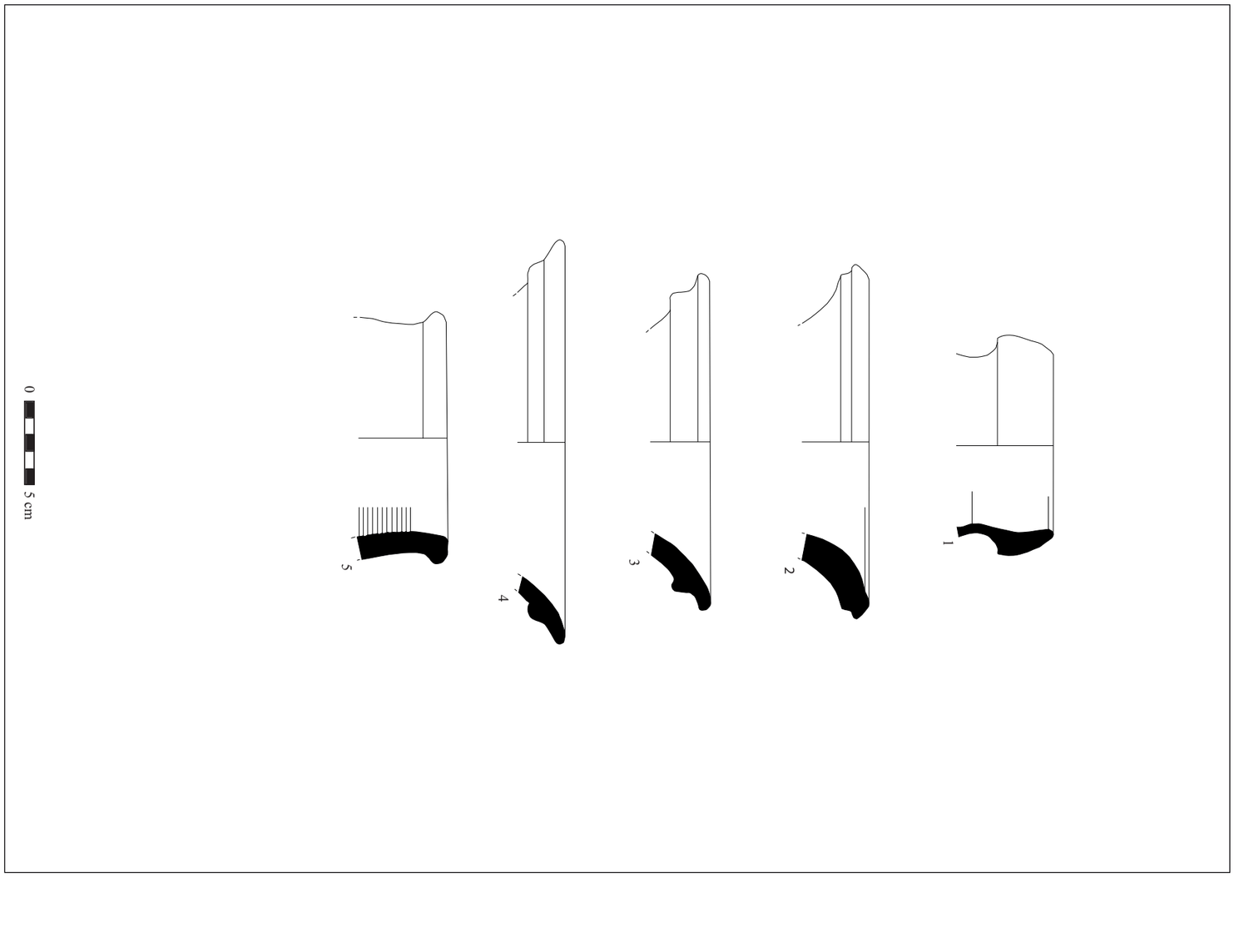


Plate 2.15a: Intermediate Bronze Age jugs and jars from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 021174-005	AL 118	5882	WM Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 266 Fig. 62, 24.	Ṭabqāt Faḥl (Pella) MB I: Bourke et al. 2003, Fig. 341, 2.
2	jug/jar	TZ 021004-019	AO 118	5709	WM C Buff (rim red painted)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 11. 15).	Tall Qēmūn (Tēl Yoqnəʿām) MB/LB: Ben-Ami – Livneh 2005, 301 Fig. IV 15, 2.
3	jug/jar	TZ 021008-013	AO 118	5709	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 15.	Tall Qēmūn (Tēl Yoqnəʿām) MB/LB: Ben-Ami – Livneh 2005, 301 Fig. IV 15, 2.
4	jug/jar	TZ 021054-008	AN 119	5742	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB/LB: Ben-Ami – Livneh 2005, 289 Fig. IV 12, 1.
5	jug/jar	TZ 021040-011	AN 119	5742	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 266 Fig. 62, 24.	Tall Qēmūn (Tēl Yoqnəʿām) MB/LB: Ben-Ami – Livneh 2005, 289 Fig. IV 14, 1.
6	jug/jar	TZ 020995-002	AO 118	5708	HM R2B	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Fig. 11 K 1.	Ḫirbat Yarīḥā aš-Šimālīyah Transition EB–MB: Kamlah 2000, Pl. 69, 7.
7	jug/jar	TZ 021004-009	AO 118	5709	WM C Buff (brown pantings)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB/LB: Ben-Ami – Livneh 2005, 301 Fig. IV 15, 12.	Ḫirbat Bēt Mirsīm MB II: Amiran 1969, 105 Pl. 43, 5.
8	jug/jar	TZ 021174-008	AL 118	5882	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 2001 Fig. 9, 7. 33.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 34.
9	jug/jar	TZ 021033-019	AN 119	5742	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB/LB: Ben-Ami – Livneh 2005, 111 Fig. II 24, 22.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 36: rim.

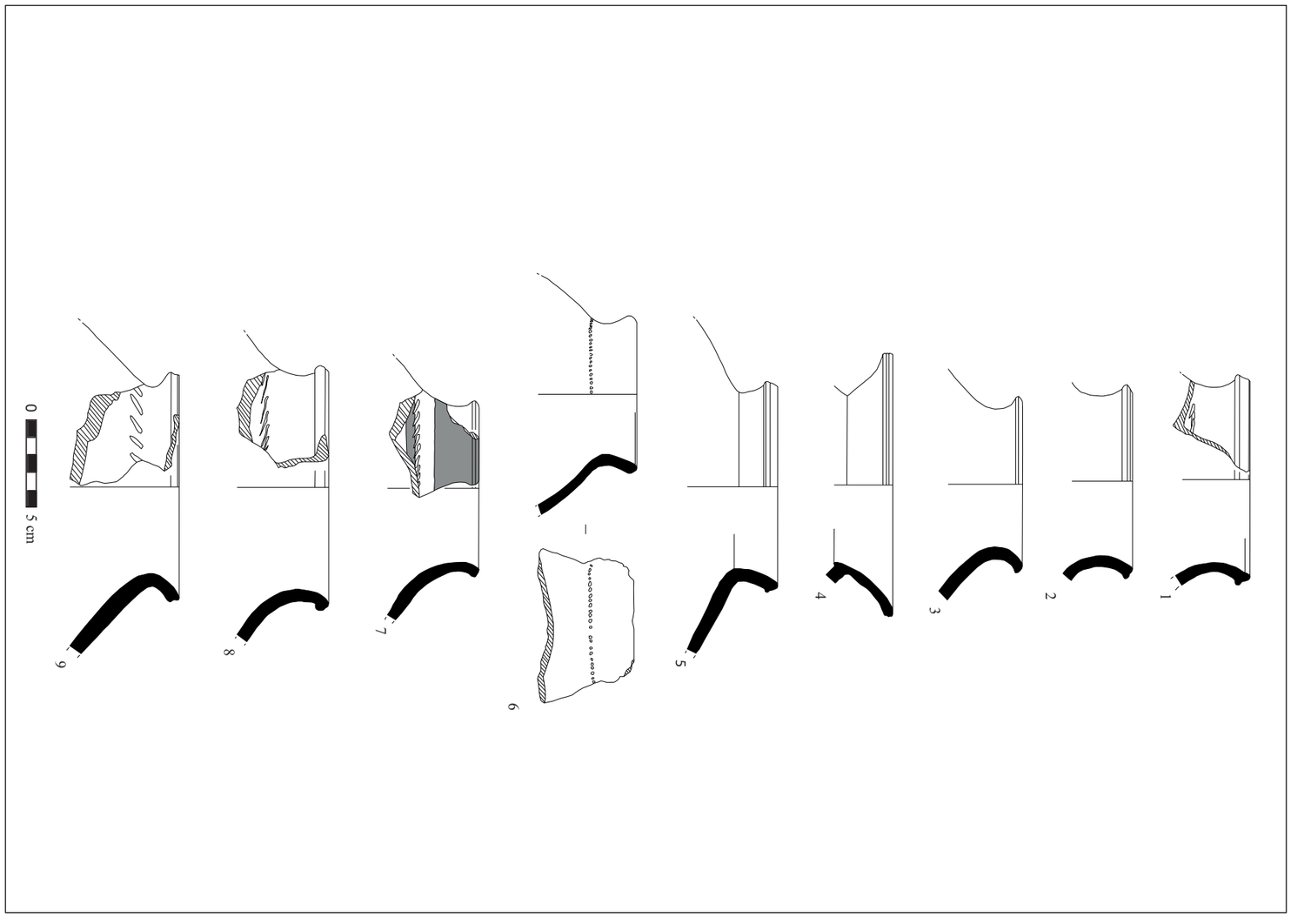


Plate 2.15b: Intermediate Bronze Age jugs and jars from Tall Zirā'a Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
10	jug/jar	TZ 021004-021	AO 118	5709	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 30.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Ben-Ami – Livneh 2005, 99 Fig. II 18, 25.
11	jug/jar	TZ 021076-024	AN 119	5767	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 29. 30.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Ben-Ami – Livneh 2005, 99 Fig. II 18, 25.
12	jug/jar	TZ 021004-023	AO 118	5709	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 31.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Ben-Ami – Livneh 2005, 99 Fig. II 18, 38.

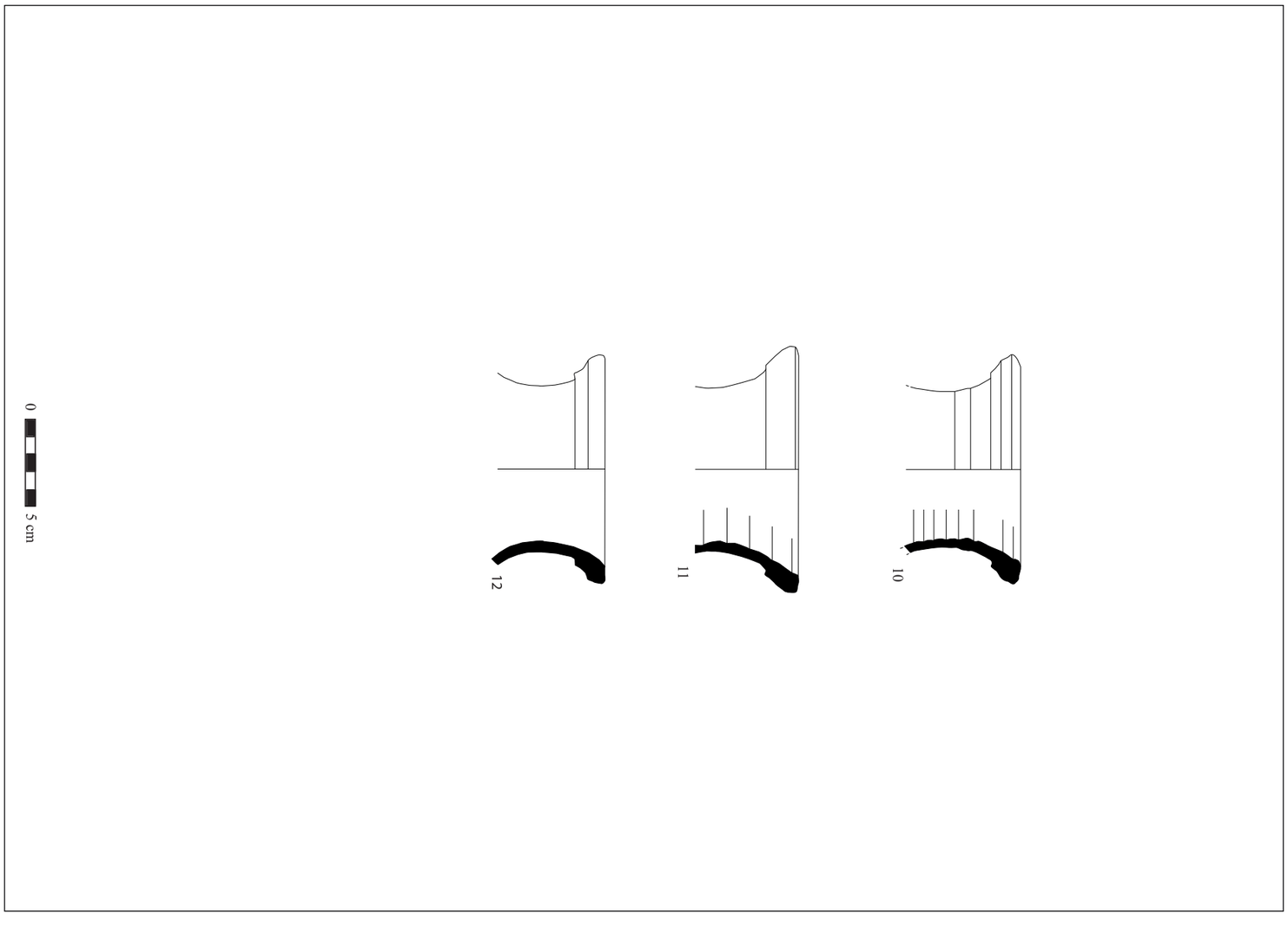


Plate 2.16: Intermediate Bronze Age jugs and kraters from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 021074-002	AN 118	5736	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 35.	Tabqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Fig. 192, 9 and 195, 6.
2	jug/jar	TZ 021028-016	AN 118	5735	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 35.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 13.
3	jug/jar	TZ 021033-018	AN 119	5742	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 69 Fig. II 3, 10.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 103 Fig. II 20, 7.
4	jug/jar	TZ 021053-007	AN 118	5735	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 240 Fig. 96, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 69 Fig. II 3, 14.
5	jug/jar	TZ 021100-003	AN 118	5746	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 75 Fig. II 6, 19.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 97 Fig. II 17, 29.
6	krater	TZ 021135-002	AN 118	5736	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 11.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 69 Fig. II 3, 3.
7	krater	TZ 020995-013	AO 118	5708	WM C Buff	MB	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 229 Fig. 263, 3.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 127 Fig. II 34, 5.
8	krater	TZ 021087-002	AM 118	5789	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 211 Fig. 85, 11.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 133 Fig. II 37, 7.
9	krater	TZ 021033-017	AN 119	5742	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 11.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 17.
10	krater	TZ 021008-009	AO 118	5709	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 11.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 21.

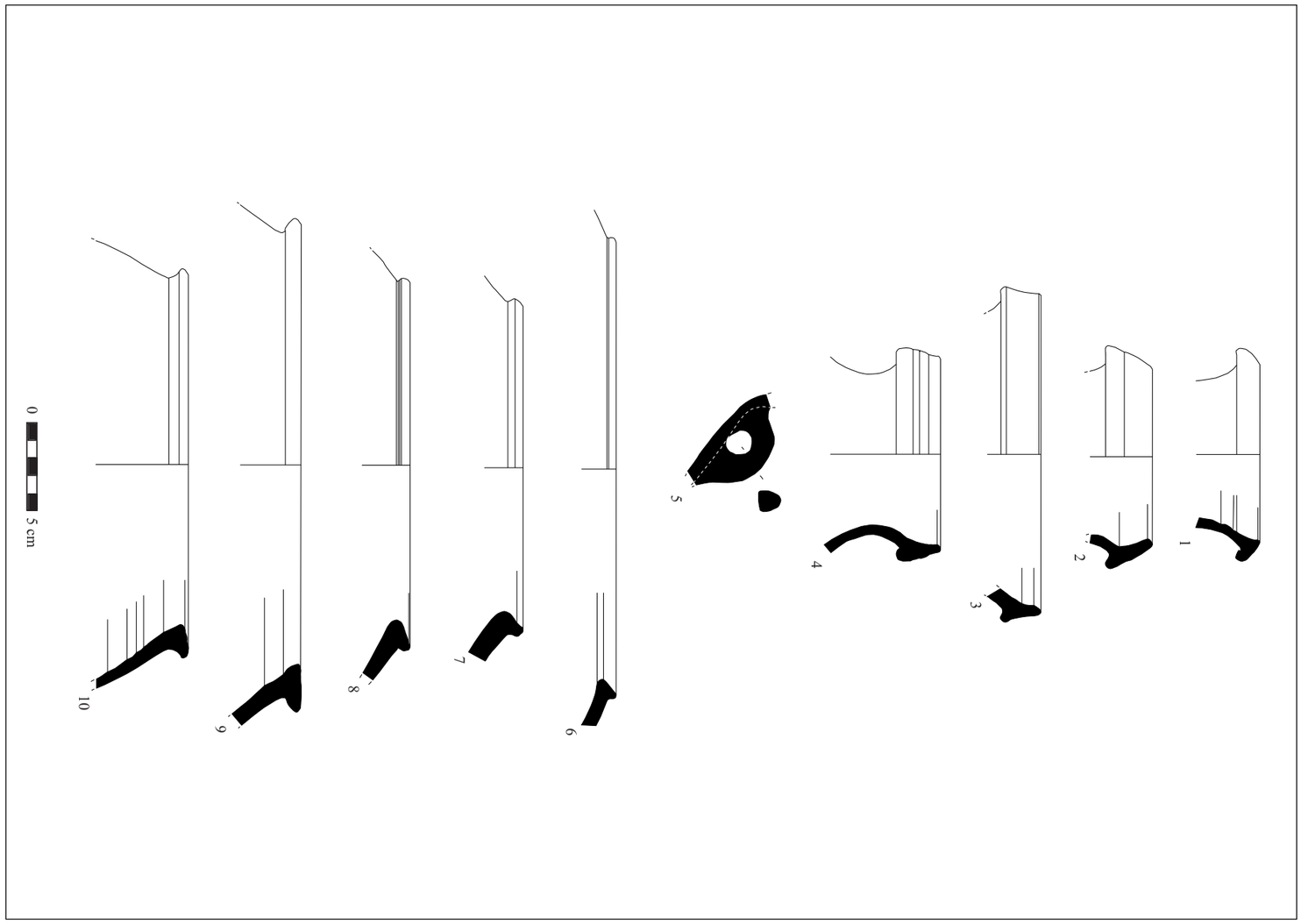


Plate 2.17: Intermediate Bronze Age jugs and (storage) jars from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 021074-003	AN 118	5736	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 33.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 12.
2	storage jar	TZ 021095-001	AM 118	5804	HM Buff (part. WM)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 K 4, 2.	Tall Abū al-Ḥaraz Phases IIA and B: Fischer 2008, 278 Fig. 278, 8.
3	jug/jar	TZ 021004-010	AO 118	5709	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 36.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 93 Fig. II 15, 20.
4	jug/jar	TZ 021214-007	AL 118	5902	WM C Buff (light green)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 30.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 87 Fig. II 12, 2.
5	jug/jar	TZ 021050-002	AN 119	5767	WM C Buff (light green)	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 19.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 77 Fig. II 7, 3.
6	jug/jar (base)	TZ 021152-008	AM 118	5865	HM Metallic	EB II/III		
7	jug/jar (base)	TZ 021174-013	AL 118	5882	HM R2B	EB II/III		
8	storage jar (base)	TZ 021101-020	AN 118	5761	HM Buff combed	EB II/III		

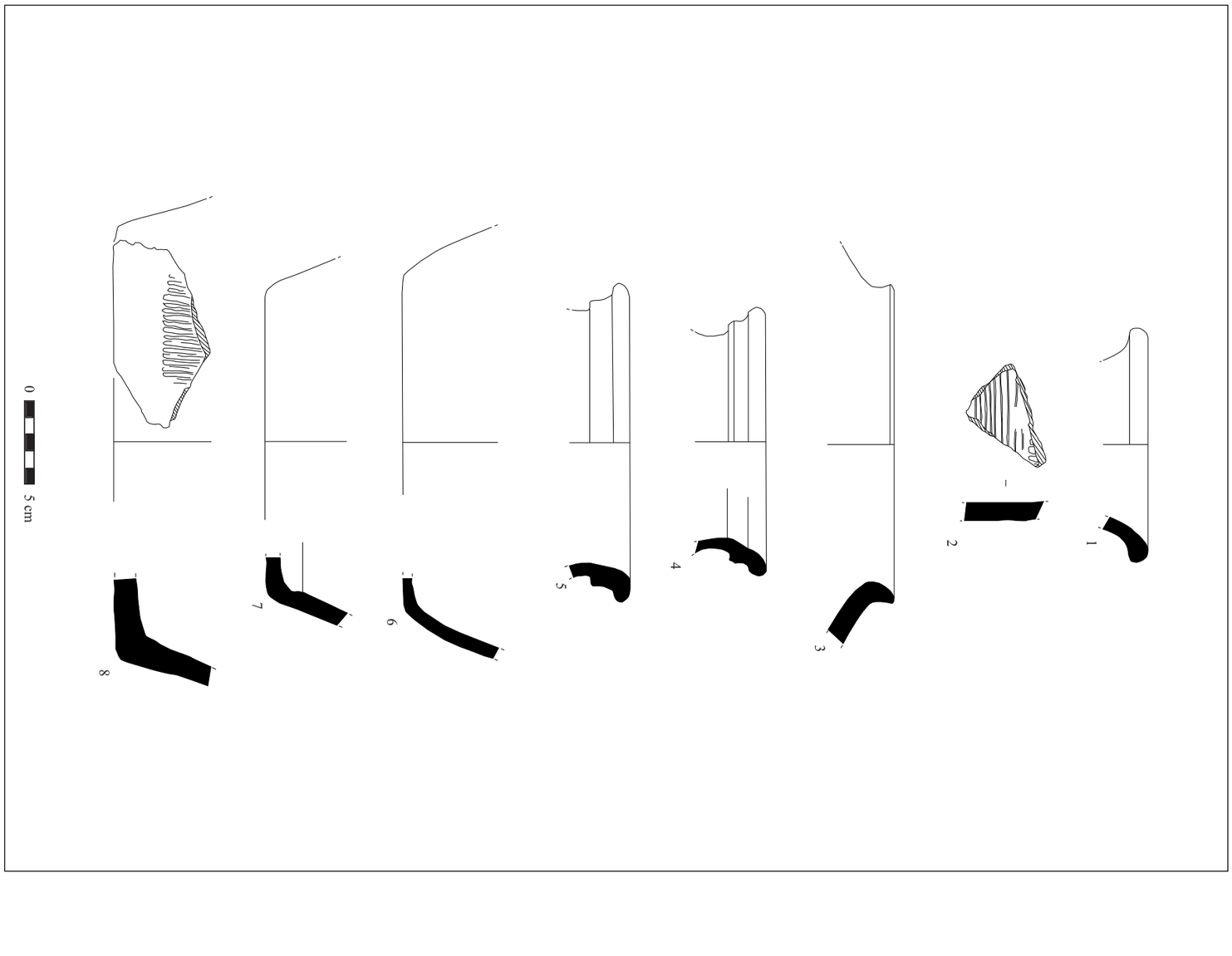


Plate 2.18: Intermediate Bronze Age jugs and jars from Tall Zirāʿa Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (ledge handle)	TZ 021037-057	AN 118	5735	HM Metallic	EB II/III		
2	jug/jar (ledge handle)	TZ 021037-035	AN 118	5735	HM Buff combed	EB II/III		
3	jug/jar (ledge handle)	TZ 021012-015	AN 118	5734	HM Metallic combed	EB II/III		
4	jug/jar (ledge handle)	TZ 021097-005	AM 118	5806	HM Buff (light brown paintings)	EB II/III		
5	juglet (handle)	TZ 021096-005	AM 118	5805	HM R2B	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 23 Fig. 11 G 1.	
6	jug/jar (perforated handle)	TZ 021096-018	AM 118	5805	HM Buff (red paintings)	EB II/III		
7	jug/jar (perforated handle)	TZ 021100-003	AN 118	5746	HM Buff (red paintings)	EB II/III		
8	jug/jar (handle)	TZ 021008-012	AO 118	5709	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 206 Fig. 9, 8. 13.	
9	krater (spout)	TZ 021013-004	AN 118	5735	HM GW	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 1, 1.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 147 Fig. 65, 3.

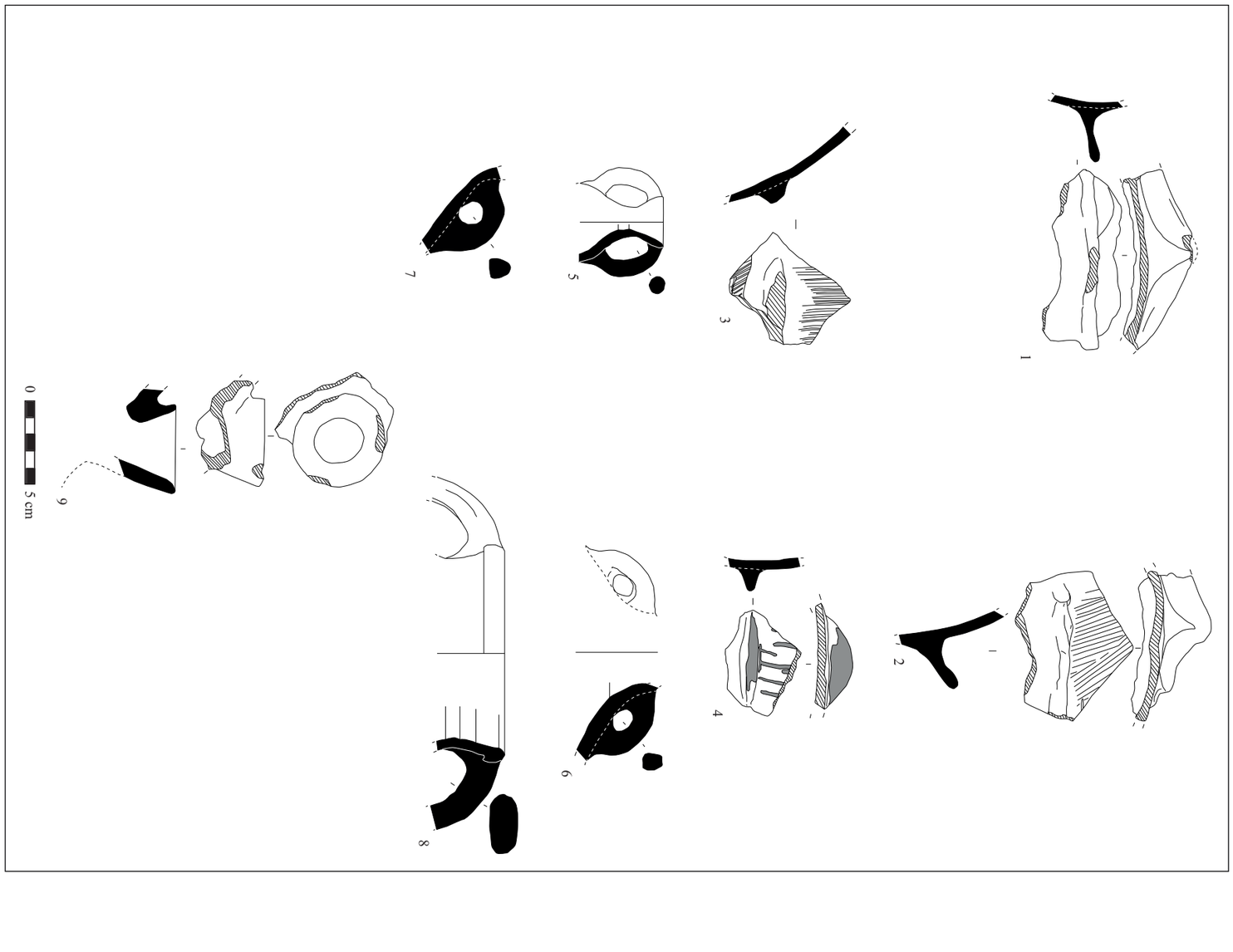
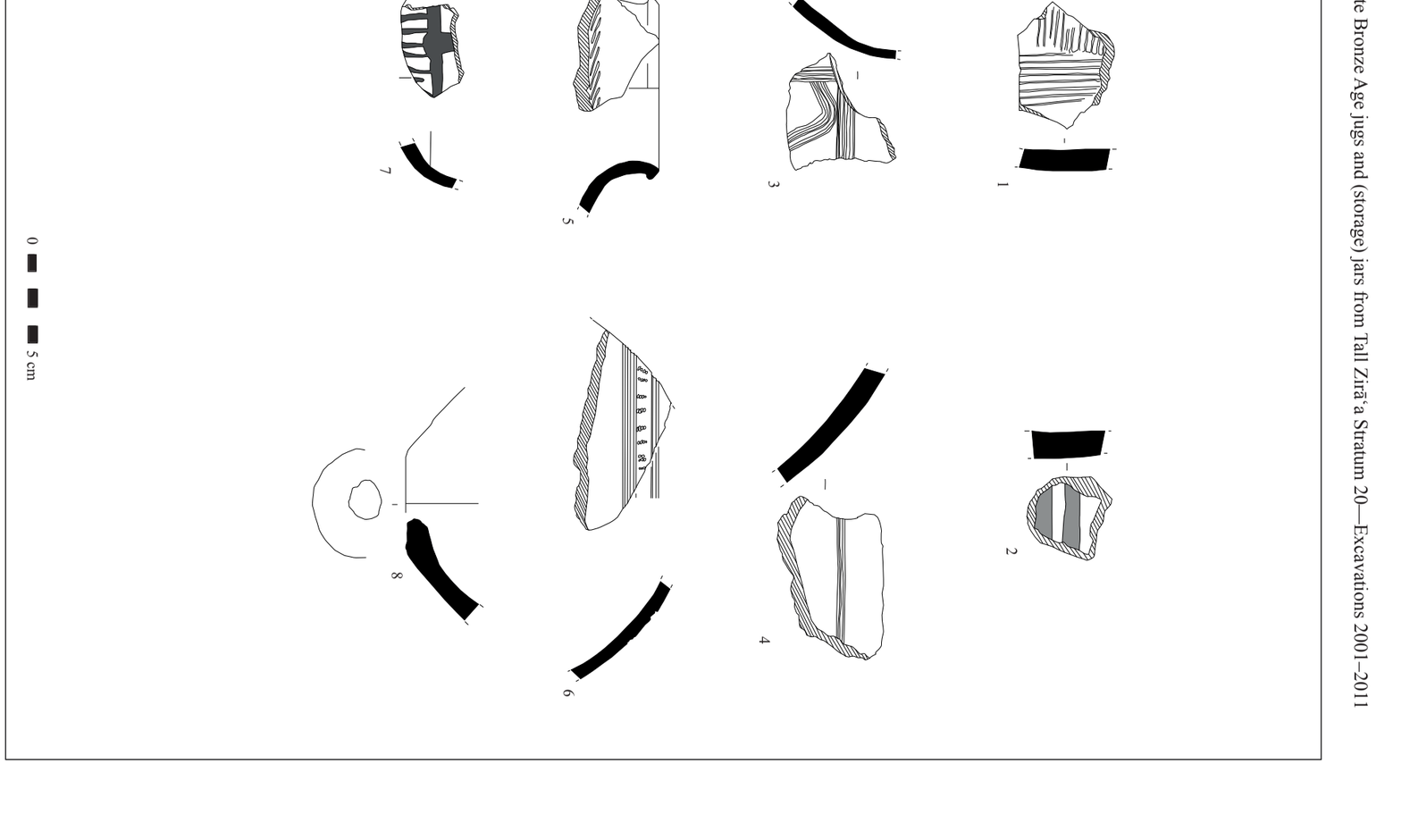


Plate 2.19: Intermediate Bronze Age jugs and (storage) jars from Tall Zirā'a Stratum 20—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	storage jar (body sherd)	TZ 021174-015	AL 118	5882	HM Buff (brown slip) combed	FB II/III		
2	storage jar (body sherd)	TZ 021065-029	AM 118	5762	HM GW	FB II/III		
3	jug/jar (body sherd)	TZ 021011-002	AO 118	5732	HM Buff (part. WM) (incised lines)	FB/MB	Ḫirbet Yarīḥā aš-Šimālīyah early MB: Kamlah 2000, Pl. 74, 9.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 268 Fig. 4. 6, 25. 12.
4	storage jar (body sherd)	TZ 021033-005	AN 119	5742	WM C Buff (incised linear and wavy lines)	MB	Tall Bēt Mirsīm MB I: Amiran 1969, 85 Pl. 22, 21–23.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 268 Fig. 4. 6, 21. 10.
5	jug/jar (body sherd)	TZ 021180-003	AL 118	5892	WM C Buff (impressi-ons)	MB	Ḫirbet Yarīḥā aš-Šimālīyah Tran-sition EB/MB: Kamlah 2000, Pl. 69, 7.	
6	jug /jar (body sherd)	TZ 021004-006	AO 118	5709	WM C Buff (incised lines and punctured decoration)	MB	Tall ad-Duwēr (Lachisch) MB I: Amiran 1969, 85 Pl. 22, 19.	Tall Waqqāṣ (Hazor) MB: Amiran 1969, 81 Fig. 80.
7	juglet/goblet (?) (body sherd)	TZ 021094-002	AM 119	5802	WM C Buff (red pain-tings)	MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 97, 1: similar paintings.	Ḫirbet ar-Raḥūb EB middle–late: Kamlah 2000, Pl. 40, 1: similar paintings.
8	jug /jar (base, pierced and burnt)	TZ 021033-001	AN 119	5742	WM C Buff	MB		



2.2.3. Conclusion

In two consecutive occupation layers, the Strata 21 and 20 give evidence of the Tall Zirāʿa's continuous settlement throughout the Intermediate Bronze Age.The excavation findings, which have so far been confined to the limits of Area I, will be supplemented by future research carried out in Area II (in the northern section; starting in 2018) and Area IV (artesian spring; starting in 2020). This will allow the researchers to rest the statements that have been made to date on wider and thus more solid evidence.

So far, the results attest to a sedentary population on the Tall Zirāʿa that kept sheep and goats (more than 66 %) as well as cattle and domestic pigs (about 15 % each). Hunting was also an important source of subsistence. Gazelle, fallow deer, and fox could be verified.

In most cases, the rather sparse metal finds were in a bad state of preservation. The substance consisted of 'pure' copper or of copper with minor concentrations of arsenic, lead, iron, or silver. One object has remarkable tin contents.

The manifold stone tools were used for the usual domestic activities, however, especially for the production of food. Raw materials such as bitumen or carnelian and also shell (pendants) give evidence of the trade that obviously still flourished at that time, and the concomitant crafts. The clayey work spaces (Stratum 21, Complexes A and C; Stratum 20, Complex A) and maybe also the areas with the roughly laid paving (Stratum 21, Complex C; Stratum 20, Complex A) can be attributed to household activities and maybe also to handicraft activities.

It is remarkable that specific types of pottery already appeared in Stratum 21—and still increased in Stratum 20. While among the cooking pots the types CP 6 and CP 5 occurred in almost equal numbers in Stratum 21, a significant shift towards CP 5 can be noted in Stratum 20. By contrast, throughout both strata, the Early Bronze Age jugs/jars, bowls, kraters, and holemouth vessels slightly predominate compared to those manufactured according to the Middle Bronze Age techniques. A game board found in Stratum 21 can be regarded as an example of the recycling of ceramic objects.

A weight stone (Stratum 21), a (shell) pendant and beads (the latter made of stone, alabaster, and maybe faience) as well as the wheel of a miniature carriage give evidence of continued handicraft traditions; some of them, however, may be heirlooms.

There is no evidence of solid stone houses that were used for habitation although they might very well be expected, especially in the proximity of the spring, an area that was sheltered from the wind and the weather. Instead, tent and hut constructions rather have to be assumed in the vicinity of the work areas for both household and crafts (Stratum 21, Complex B; Stratum 20; Complexes A and B 1).

Large parts of the excavation area were used for storing grain (silos). Work spaces were used for domestic activities such as cooking, baking, weaving, and food preparation.

The settlement on the Tall Zirāʿa must have had significantly fewer inhabitants than during the preceding Early Bronze Age and also during the subsequent Middle Bronze Age.

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3. The Middle Bronze Age II (1950–1550 BC)

by Dieter Vieweger

3.1. The Middle Bronze Age in the Southern Levant[1]

The chronology of the Middle Bronze Age in the southern Levant traditionally follows that of Egypt. This circumstance is mostly put down to Egypt's particular influence on its northerly neighbour, 'Canaan'; a reasoning that is not beyond any doubt. During the 12th Dynasty, the Egyptians regained a stronger hold on the southern Levant both overland coming from the south, and in the coastal region[2], which they could access either by land or by sea. During Egypt's Second Intermediate Period this hold loosened again. It was replaced by the 'Amorite Koine' and finally, during the era of the Hyksos, the 'Pax amurritica' that also comprised Lower Egypt. The end of the reign of the Hyksos marked the dawning of the New Kingdom that is equated with the Late Bronze Age in the Levant. This chronology is roughly illustrated in the following classification.

Egypt	Southern Levant	alternatively also termed:	Syria/Northern Levant
Old Kingdom 5th Dynasty 2450–2290 BC 6th Dynasty 2290–2155 BC	**Early Bronze Age IV/** **Middle Bronze Age I** **Early Bronze Age IV** 2400–2150 BC	Non-urban Intermediate period	Early Syrian II 2400–2150 BC
First Intermediate Period[3] 2155–1987 BC 7th–10th Dynasty	**Middle Bronze Age I** 2150–1950 BC	-	Early Syrian III 2150–2000 BC
Middle Kingdom 1987–1759 BC 11th–12th Dynasty Montuhotep II (11th Dynasty; 2007–1956 BC) unifies Egypt under his reign	**Middle Bronze Age II** 1950–1550 BC **Middle Bronze Age IIA** 1950–1750 BC	Middle Bronze Age I	Old Syrian I 2000–1800 BC
Second Intermediate Period 1757–1529 BC 13th–17th Dynasty	**Middle Bronze Age IIB**[4] 1750–1630 BC 'Amorite Koine'	Middle Bronze Age II	Old Syrian II 1800–1600 BC
Hyksos Era 1637–1529 BC 15th Dynasty (16th Dynasty)	**Middle Bronze Age IIC** 1630–1550 BC 'Pax amurritica'	Middle Bronze Age III	
New Kingdom 1539–1070 BC 18th–20th Dynasty	**Late Bronze Age** 1550–1200/1150 BC		Middle Syrian 1600–1200 BC

Tab. 3.1 Chronology of the Middle Bronze Age in Egypt and the southern Levant (Source: BAI/GPIA).

1 On the *Chap. 3.1.1.–3.1.3.*, esp. cf. Burke 2014a, 403–413; Burke 2014b, 465–481; and Cohen 2014, 451–464.

2 Weippert 1988, 206.

3 Disintegration of Egypt; reigns of minor kings.

4 In the southern Levant, the end of the Middle Bronze Age IIB is less characterized by cultural upheavals than by a changed political climate during the reign of the Hyksos in Egypt. In consequence, the Middle Bronze Age IIC is often not defined as a separate era but apportioned to the Middle Bronze Age IIB.

The culture of Syria, however, should not be subdivided in the same manner. Other than the southern Levant, it was mainly shaped by influences from Anatolia and the Mesopotamian area. It must also be taken into consideration that the trade and cultural contacts of the Syrian city states such as Mari, Yamḫad (Ḥaleb/Aleppo), Tall Mardīḫ (Ebla) and Tall al-Mašrafa (Qatna) reached far into the south and thus included cities like Tall Waqqāṣ (Hazor) and Tall al-Qāḍī (Dan)[5]. In their greater area of these two cities, the burial rites as well as the processing of ceramic and metal were strongly influenced by Syria as early as the non-urban Intermediate period. Thus the southern Levant during the Middle Bronze Age should be subdivided in a northern cultural environment that was more oriented towards Syria, and a southern region.

In the Levant, the Middle Bronze Age is the first era to provide written sources in larger numbers. In particular, these are the tablets from Mari and the so-called Egyptian execration texts. They offer a deeper insight into the political, economic, and social structure of the Levant[6] and also allow ethnical conclusions. The names (of kings, tribes, or single persons) recorded in both sources as well as the customs depicted suggest that the upper class was mostly made up by Amorites[7] (Akkadian: Amurru; Sumeran: MAR.TU). This West Semitic group was already mentioned in Mesopotamian sources around the end of the third millennium BC[8]. During the second half of the Middle Bronze Age, Hurrians were also repeatedly verified in the Syrian zone[9].

3.1.1. The Middle Bronze Age IIA (1950–1750 BC)—the Rise of the Amorite Kingdoms

In times of cultural upheaval, the questions of continuity between the new and the preceding period and of appreciating the actual new beginnings are particularly interesting[10]. The northern Levant was marked by a strong continuity between the Early Bronze Age IV and the Middle Bronze Age I. The rise of the Amorites in Syria appears to have taken place in the course of a long, steady process that had already started in the third millennium.

In the southern Levant, where during the Early Bronze Age IV only small village settlements had existed, the advance of the culture coming from Syria took place much less 'organically'. Hence, there is a much clearer distinction between the Middle Bronze Age I and its preceding era. Still, important issues remain unsolved: Were the upheavals in the southern Levant caused by the (partly violent) intrusion of Amorite elites into the south[11] or were they primarily due to an adaptive assumption of social structures and effective techniques from Syria?[12] Was the upheaval mainly triggered by groups of immigrants or did the profound social and political collapses in the southern Levant virtually provoke this immigration?[13] Was it a military subjugation[14] or an economic colonisation of the south?[15] On principle, these two concepts are not mutually exclusive[16].

In the course of the Middle Bronze Age IIA, major urban centres re-emerged in the southern Levant. The overall number of settlements also increased. Long-distance trading was re-established[17] and technological innovations—particularly in the fields of pottery and metal production *(see Fig. 3.1)*—took hold. Accordingly, new

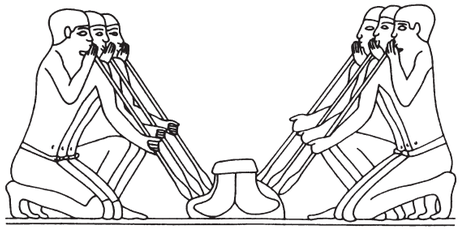


Fig. 3.1 Blast pipes used for smelting. Source: Vieweger [4]2012, 234 Fig. 202.

5 Tall Waqqāṣ (Hazor) and Tall al-Qāḍī (Dan) are mentioned in the Ebla texts in the context of deliveries of tin, and Tall Waqqāṣ (Hazor) also with respect to the export of gold, silver, and precious stones.

6 Klengel 1992, 39–83.

7 On the classical 'Amorite thesis' see Dever 1976.

8 Gzella 2011, 425–451. First-time reference to the Amorites was in the context of battles of the Akkadian king Naram-Sīn (2155–2119 BC) who fought them in the north Syrian region.

9 The Old Testament also knows of the Hurrians. They probably arrived in southern Mesopotamia and in the north of Syria coming from the highlands in the north and north-east of Mesopotamia. The Hurrians attained their greatest historical distinction by founding the Mitanni Empire.

10 Even given the advent of an Amorite upper class the material goods of this epoch should not be generally termed Amoritian. This would be misleading since the Middle Bronze Age culture comprises the achievements of all ethnicities within the society as well as influences of bygone eras and of neighbouring regions.

11 See also *Chap. 4.1.4*.

12 Among others, the production of ceramic and metal.

13 Prag 2001, 399 f.

14 Cf. the layers of destruction in Ugarit, Byblos, and Ebla.

15 Cf. Gerstenblith 1983; Cohen 2002.

16 As to this discussion, cf. Prag 1974, 103.

17 Cf. Gerstenblith 1983.

typological developments are evidenced in the excavation finds. Stimuli from outside, especially from the north, played an important part in this progress. In spite of these obvious effects of external influences, due to its unique cultural imprint the southern Levant did not mirror Syria in its development. Its emerging culture retained its individual character and is thus frequently termed 'Canaanite'[18].

The new dynasties evolving in Mesopotamia and in Syria (e.g. Babylon, Aššur [Assur], the Dynasty of Larsa[19], Tall Harīrī [Mari], Tall al-Mašrafa [Qatna], and Yamḫad [Ḥaleb/Aleppo]) can be traced back to the Amorites. From there they also founded capitals such as Ǧubail (Byblos) and ʿAsqalān (Ashkelon). Thus the Amorites controlled large parts of Mesopotamia and the Levant. Along the long-distance trading routes, two large centres emerged: the coastal region from Ra's Šamra (Ugarit) via Tall al-Fuḫḫār (Akko) to ʿAsqalān (Ashkelon), and the urban block located in the heartland along the central Syrian trading route connecting Yamḫad (Ḥaleb/Aleppo) with Tall Waqqāṣ (Hazor)[20].

In the course of this development, Tall al-Qāḍī (Dan) and ʿAsqalān (Ashkelon) turned into impressive urban centres. Starting from the Mediterranean coast, more settlements were later founded along the wadis, reaching into the western uplands and highlands. Opposed to that, the 'hinterland' in the south was populated at a very slow pace[21]. The same applies to the Jordan Valley, where the first indicators of permanent settlement date from the end of the Middle Bronze Age IIA (e.g. in Ṭabaqāt Faḥl [Pella] and in Tall al-Ḥayyāt). The funeral traditions in this region were still strongly rooted in the preceding era[22].

First settlements also emerged in the East Jordan highlands, even though the villages there at first remained small and widely dispersed along different wadis[23]. On the Tall Zirāʿa, the Strata 19 and 18 date from the Middle Bronze Age IIA. There, a bronze melting furnace could already be found and excavated in Stratum 19—a furnace that was continually in use across all Middle and Late Bronze Age strata and always in the same part of the tall. The construction of a canal (probably for draining water from the artesian spring) and other notable finds testify to an impressive upturn that already took place during the Middle Bronze Age IIA.

There are a few noteworthy early Middle Bronze Age settlements in the northeastern desert region, such as Tall Rukais[24] and Ǧāwa (Jawa)[25], located another 50 km to the east. They suggest the former existence of trading routes to Mesopotamia.

Apparently those were not peaceful times. In the Syrian cities, elaborate strongholds were being erected in a manner that had hitherto only been known from the middle Euphrates basin: massive earth mounds with mounted clay brick walls, some of them with trenches, walls, or glacis in front[26]. That way, people hoped to be able to hold out against the battering rams and besiegements of both Mesopotamian and neighbouring elites.

This military architecture soon advanced into the southern Levant. Here, the cities were at first built in an elliptical design (as in ʿAsqalān [Ashkelon] and Tall al-Fuḫḫār [Akko]), while later, during the Middle Bronze Age IIB, rectangular layouts were preferred that were easier to defend (e.g. in Tall Waqqāṣ [Hazor], Tall al-Qāḍī [Dan], and Tēl Bāṭāš[27]). These fortifications could moreover be reinforced by towers and bastions. Around the end of the Middle Bronze Age IIA, Ṭabaqāt Faḥl (Pella), located in the Jordan Rift Valley, was also surrounded by a clay brick wall that was built upon a stone foundation[28].

Depending on their construction, the gateways belonging to the defensive fortifications (one-, four-, or six-chamber gates) served for different, sometimes several, functions. The entryways into the city that could be passed directly usually contained rooms from which to control the new arrivals, storage facilities, and spaces for the closing mechanisms of the gates. One-chamber gates were sometimes constructed as so-called bent-axis gates[29]. By forcing the arrivals to make a right-angled

Fig. 3.2 Bronze-smelting furnace, Area I, Squares AN–AM 118, Complex C 1, Context 4959 (Source: BAI/GPIA).

18 Cohen 2014, 451–453.

19 Cf. e.g. Gungunum (1868–1842 BC).

20 Gophna – Beck 1981, 45–80.

21 Cohen 2002.—For archaeological data about the populating of previously uninhabited regions, cf. Broshi – Gophna 1986, 73–90

22 On Tall al-Ḥayyāt, Stratum 5 and 4; cf. Falconer 1994, 121–142. Concerning the funeral site near Gesher cf. Cohen 2009, 1–13.

23 On this, cf. Falconer 1987; about Irbid), and Greene – ʿAmr 1992, 117 (about Amman).

24 During the Middle Bronze Age IIC, this settlement was even fortified (McLaren 2003, 20 f.).

25 Helms 1989, 141–168, calls Jawa a 'caravanserai'.

26 Cf. Burke 2008 on details.

27 Also known as Timna (north-west of Tall ar-Rumēla [Beth Shemesh]); however, not to be confused with the homonymous mining centre in the south of the Negev.

28 McLaren 2003, 13–15.

turn before entering the city they were supposed to increase security in view of possible military invasions[30].

When pondering potential menacing scenarios for the cities in the southern Levant, both rivalries among the neighbouring city-states and looting attacks from Egypt seem realistic. The message engraved on a tomb stela belonging to General Ḫw-Śbk from Abydos[31], found in 1900, confirms that Sesostris III. (1836–1817 BC) penetrated into the area of Sichem during one of his campaigns. Possibly the Ephraimitic highlands thus fell under Egyptian rulership for some time.

The fact that the Egyptians knew the southern Levant well and were eager to colonialise it is also confirmed by the so-called execration texts. To what extent these were actually realized and whether or not they could have been realised at all is a matter of uncertainty. The texts do show, however, that the Egyptians invoked magical assistance in their fight against Nubian and Asian enemies. For instance, there were rituals in which they destroyed figurines of manacled enemies, or ceramic bowls engraved with the names of their foes.

Among the urban population, the predominant type of residential building was that of the courtyard house[32]. The eponymous courtyard provided fresh air and light. It was also the point of access to the residential quarters, the storage facilities, the workshop, or the merchandise. Some of the houses had their own cisterns and all of them were equipped with cooking areas. More prominent families, who, in the course of the Middle Bronze Age, could increasingly distinguish themselves by building larger houses of a better quality, even boasted of multi-storey houses[33].

The urban centres also had palatial or at least large public buildings, e.g. in Afek, Tall al-Mutasallim (Megiddo), Tall al-Kābrī, and Tall Iſšār[34].

The thriving of the urban culture was closely linked to the revival of long-distance trading. Both Egypt's Middle Kingdom (11th and 12th Dynasty) and Mesopotamia regained their former power and economic significance. In the Fertile Crescent, important streams of commerce intersected. Egypt delivered jewellery, scarabs, objects made of gold, carnelian, or faience, and alabaster vessels. From Cyprus, copper and ceramic goods were seaborne. Wool and textiles came from Syria, and the Lebanon exported wood and resins as well as finished metal goods. The southern Levant delivered olive oil and wine, particularly to Egypt, where these goods were in increasing demand during that period. Transports of tin from north to south were of major importance. In addition, the Fertile Crescent was provided with incense from the Arabian Peninsula, obsidian from Anatolia, lapis lazuli from Afghanistan, and amber from the far north.

In spite of this impressive overall increase of commercial intercourse the southern Levant contacts still played a minor part in these transactions during the Middle Bronze Age IIA. This specifically applied to Transjordan, where ceramic ware, weapons, and prestigious goods (such as cylindrical seals) from the north have been discovered but imports from Cyprus[35] and more remote parts of the world remained the exception. Even imports from Egypt were scarce, like e.g. in Tall Iſšār and ʿAsqalān (Ashkelon)[36]. Only around the end of the Middle Bronze Age IIA, scar-abs were used a little more frequently as burial gifts.

The burial forms still adhered to the traditional customs and traditions, especially in rural areas. The burial places of former times were either still in use or reused[37]. The funerary methods, however, varied widely. Depending on local conditions, the decedent's social position, and local

Fig. 3.3 Tall al-Qāḍī (Dan), bent-axis gate (Source: D. Vieweger).

29 On this, cf. Tall al-Mutasallim (Megiddo), Stratum 13, and Tall Bēt Mirsīm, Strata G–F.

30 Weippert 1988, 221–225, classifies the different gateways of the Middle Bronze Age. However, she herself notes that all forms of building and function already occurred in Ebla prior to their ad-option in the southern Levant.

31 On this, cf. e.g. Weippert 2010, 31–33.

32 Cf. Weippert 1988, 226–228, with respect to the typologisation of courtyard houses and hall houses in the Middle Bronze Age.

33 The concept of multi-storey buildings is based on the finds of stair sections and of more solid foundations.

34 Marcus et al. 2008, 221–244.

35 These were mainly found in the coastal regions, such as Dor, ʿAsqalān (Ashkelon), and Tall al-Kābrī (Tēl Kābrī).

36 Tall Iſšār (Stratum C); ʿAsqalān (Ashkelon) (Stratum 14).—Sinuhe's Narrative (see below p. 260) refers to a messenger between the upper rṯnw and Egypt.

37 Cohen 2009, 1–13.

rites[38], the bodies were buried in earth pits, in stone-lined or masoned cist tombs, or in grave chambers that had been hewn into solid rock[39]. But even though all these different customs co-existed there was still a trend from secondary towards primary burials and from solitary graves towards entombing several individual persons (families [?]) in one single grave. Everyday objects were enclosed in the tomb for the deceased to use during their stay in the netherworld.

The early Middle Bronze Age IIA marked a crucial watershed with regard to the production of ceramics. The fast wheel that had been imported from the north triumphantly took hold on both sides of the river Jordan[40]. In the urban centres, this resulted in both an increase and the standardisation of production, reflected by the growing sales numbers. Instead of a flat base, vessels manufactured for commerce were given a tapered bottom, which could be more easily fastened during transport. The extremely thin, glossy red pottery of the Middle Bronze Age IIA bears witness to the astonishingly elaborate craftsmanship of those times. Ornamental paintings and 'polished' surfaces became common practice. In rural areas, on the other hand, local trends and the traditional techniques of manual forming still prevailed[41]. However, this distinction disappeared around the end of the Middle Bronze Age IIA.

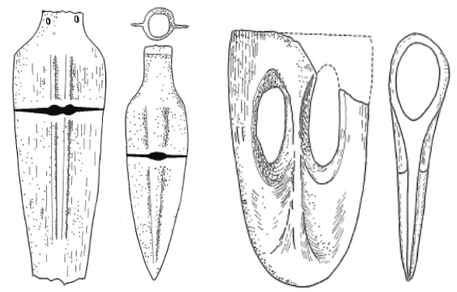


Fig. 3.4 Offerings of a 'warrior grave': dagger blade, spear blade, fenstered axe; Tall al-Ḥiṣn (Beth Shean) (in accordance with Weippert 1988, 245 Fig. 3.33).

38 Ilan 1998, 297–319.

39 Hallote 1995, 93–122.

40 Kempinski 1992, 121–126.

41 On Tall al-Ḥayyāt (Strata 5–4) and Gesher (Graves 1, 16 and 18), cf. Falconer 1994, 121–142.

In a process parallel to that of the production of ceramics, the metal industry was also revolutionised. The introduction of tin bronze allowed the production of much harder and thus more resistant and effective weapons. The availability of tin underlines the importance of the international trading network which, originating in Syria, now also included several centres in the southern Levant. On the other hand, the relevance of long-distance trading should not be overrated. During the entire course of the Middle Bronze Age IIA, arsenic bronze was commonly used because, on the one hand, tin was not available in sufficient quantities and, on the other hand, the metal production on both sides of the Jordan still adhered to the established traditions[42]. Fenstered axes, spearheads with spouts, and new dagger designs are indicators of the north's influence on the manufacture of metal[43].

The gold smiths, who processed gold and gemstones, continued to work in the traditions of Mesopotamia and Egypt. Their products were apparently only affordable for the high society of the Levantine land bridge, as hoards discovered in Ǧubēl (Byblos), Tall Mardīḫ (Ebla), and on the Tall al-ʿAǧǧūl indicate.

Local sovereigns and members of the urban elite liked to have carved or incised ornamental bone platelets mass-produced for inlays and faience or alabaster objects.

Fig. 3.5 Bowl of Middle Bronze Age date made of fine ware, provenance unknown (Source: BAI/GPIA).

42 Cohen 2009, 1–13.

43 Cf. in detail in Philip 1989.

The fictitious tale ‘Sinuhe’s Narrative’ relates the living conditions in the upper rṯnw (located in the West Jordanian highlands?)—the way they were imagined in contemporary Egypt. This Egyptian narrative, composed during the 12th Dynasty, is one of the oldest reports that deal with the southern Levant at all. In it, ‘Asians’ and ‘Rulers of foreign nations’ are described and often interpreted as antipodes—nomads on the one hand and sedentary ruling dynasties on the other. It should be kept in mind, however, that the Sinuhe tale was not written in order to give a detailed historical account of the social and economic situation in the Levant. It is much more an instructive narrative for contemporary readers, written in the form of an autobiography[44].

The stimuli for technology and commerce originating from the north, and the dawning urbanism in the southern Levant during the Middle Bronze Age IIA radiated into the backcountry. The increased demand of oil, wine, wood, and bitumen in the neighbouring country Egypt brought about a long-term flourishing of the southern Levant, which would in turn result in significant changes during the Middle Bronze Ages IIB and C.

3.1.2. The Middle Bronze Age IIB (1750–1630 BC)—the Bloom of the Amorite Kingdoms

During the Middle Bronze Age IIB, the Amorite Dynasties established themselves on a large scale in Mesopotamia and in the Levant[45]. They promoted an intensive cultural exchange between Mesopotamia and Syria. From these countries, the Levant also received multiple new impulses. All this resulted in a sort of cultural ‘koine’[46] that evolved a comparable architecture of temples, palaces, and houses, similar defensive strategies, collective iconographic models, and comparable funereal rites in a wide geographic span reaching from Mesopotamia to the coastal region around ʻAsqalān (Ashkelon).

The ruling class probably spoke Amorite although among themselves, the sovereigns corresponded in Old Babylonian. The Gods (pantheons) they worshipped were similar[47], and they even traced their origins back to mutual ancestors. They can therefore be regarded as one ethnical group[48].

Even though the ruling dynasties had many things in common they nevertheless fought over supremacy. This was reflected distinctly in the material culture: during the Middle Bronze Age IIB, heavily fortified rectangular city complexes were built everywhere, as far as the southern Levant. The massive earth mounds that had been copied from Syrian models in the Middle Bronze Age IIA and came to be the characteristic type of fortification during the Middle Bronze Ages IIB and C, protected urban areas or even upper and lower cities in unison[49]. To date, Tall Waqqās (Hazor), Tall al-Mutasallim (Megiddo), and Tall al-Qādī (Dan) possess the most impressive examples of these defensive fortifications.

Massive stone city walls of an entirely different type—cyclopean walls composed of huge boulders—were erected in Sichem (Tall Balāṭa) and Tall as-Sulṭān (Jericho).

The urban fortifications were moreover reinforced by chambered gates and bastions, e.g. in Tall Waqqās (Hazor) and Tall al-Qādī (Dan)[50]. Fortifications were even built in the satellite cities of Mīnat Rūbīn (Yavne Yam), ʻEqron (Ekron), Tēl Bāṭāš, Tall ad-Duwēr (Lachisch), and Tall al-ʻAǧǧūl that belonged to ʻAsqalān (Ashkelon)[51].

The more the political and economic power centred on (larger) cities, the more importance was apparently attached to their fortification. The surface area of important cities such as Tall Ǧazar (Gezer), Tall al-Mutasallim (Megiddo), or Tall as-Sulṭān (Jericho) increased significantly. Together with its newly constructed lower city, Tall Waqqāṣ (Hazor) reached an acreage of 74 ha—hitherto unheard of in Palestine[52].

The conception of cities during this era, the realization of their public buildings, temples, and defensive fortifications, as well as the introduction of sewer systems are indicative of foresightful urban planning. Both the quality of these building activities and their extent suggest that there was a central supervisory body.

At the same time as the cities flourished, new settlements were founded in the southern Levant. This development also comprised areas that had been only scarcely populated during the Middle Bronze Age IIA, such as Transjordan. There, the settlement activity that had only set in around the end of the Middle Bronze Age IIA now entailed further progress, which in turn resulted in a denser settlement pattern in the course of the Middle Bronze Age IIC. In the highlands and in the Jordan Valley[53], also walled cities were built[54]. A scarab dating from this period, measuring 1.3 cm, with the inscription ‘A-wsr-re’ of the Hyksos sovereign Apophis (approx. 1590–1550 BC), was found on the Tall Zirāʻa[55].

In the course of the Middle Bronze Ages IIB and C, a new trend could be observed west of the river Jordan. Here, the urban centralisation entailed a population shift from smaller towns to larger cities, which in turn even resulted in the abandonment of several villages located in the vicinity of cities[56]. In the coastal plain, remarkably dense networks of settlements evolved that were each hierarchically oriented towards one central city.

The settlements west of the river Jordan were hierarchically organised[57]:

1. fortified cities as the political centres (Tall Waqqāṣ [Hazor]; ʿAsqalān [Ashkelon]), with large palaces (including spacious yards and throne rooms), royal burial grounds (for the royal family and their household) as well as large-scale sculptures,
2. fortified administrative regional centres (such as ʿEqron [Ekron], Tall ad-Duwēr [Lachish], Tall al-Mutasallim [Megiddo]?, Ṭabaqāt Faḥl [Pella]) with governors’ palaces, Migdōl temples (priesthood), and schools of scribes[58],
3. smaller cities (Tēl Bāṭāš),
4. unfortified villages,
5. fortresses (Tēl Mevoraḵ)[59],
6. watchtowers,
7. homesteads.

Fig. 3.6 Ṭabqāṭ Faḥl (Pella), Migdōl temple from west (Source: BAI/GPIA).

44 Different opinion in Kitchen 1996 (true autobiography).
45 Hammurapi of Babylon (1728–1686 BC) also belonged to one of these families.
46 Term coined by A. Burke (2014, 403–413).
47 Simply look at the iconography.
48 As do Kamp – Yoffee 1980, 85–104.
49 Cf. Tall al-Mutasallim (Megiddo) and Tall Waqqāṣ (Hazor).
50 Also compare with the northern Syrian cities of that era, such as Ra’s Šamra (Ugarit) and Tall al-Mašrafa (Qatna).
51 According to Cohen 2002.
52 The urban areas of Tall al-Kābrī (60 ha) and ʿAsqalān (Ashkelon) (55 ha) blossomed out to a similar expanse. Weippert 1988, 217, calculates an average city area of 20 to 25 ha. Thus Tall al-Qāḍī (Dan), with its expanse of 20 ha, was in the middle range of those times.
53 Cf. Prag 1992, 155–160.
54 Fortifications in the highlands during the Middle Bronze Age IIC: ʿAmmān (citadel hill); Arbēla (Tall Irbid); Tall Ṣāfūṭ; Saḥāb, Tall al-ʿUmēri; in the Jordan Valley: Tall Abū Ḥaraz, and Tall Nimrīn.
55 TZ 009055-001.
56 Broshi – Gophna 1986, 73–90.
57 On this, see Burke 2008; 2014, 403–413.
58 Cuneiform tablets are known from, e.g., Tall Balāṭa (Sichem), Tall Gazar (Geser), and al-Ḫalīl (Hebron).
59 The fortress-like structure (Stratum 15/14; Middle Bronze Age IIA), complete with further buildings, was protected by a little immured construction during the Middle Bronze Age IIB (Stratum 13) and the Middle Bronze Age IIC (Stratum 12).

Archaeological surveys and salvage excavations conducted in the surroundings of cities and villages always give evidence of people living in tents, who accordingly did not have a fixed abode. For a realistic conception of both the social structure and the economy of society during those times, we will have to take into account the presence of considerable population groups living a nomadic or semi-nomadic way of life[60] not only during the Middle Bronze Age IIA[61]—when large parts of the highlands both in the east and in the south had no or only few permanent settlements—but also during the Middle Bronze Ages IIB and C[62]. Small animal husbandry and the ensuing meat production and especially its secondary products such as leather, wool, milk, etc. were indispensable for both the sedentary and the non-sedentary groups of society during the Middle Bronze Ages.

Fig. 3.7 Tall al-Balāṭa (Sichem), Migdōl temple (Source: BAI/GPIA).

Religious worship at open-air cult places or in temples built in the tradition of the Early Bronze Age[64] is also proven for the Middle Bronze Age IIA and into the Middle Bronze Age IIB. Among the cultic buildings, however, the single-chambered longhouse temples with a closed temple façade of the Migdōl type[65] became prevalent in the course of the Middle Bronze Age IIB. They were constructed in a symmetrical design. Most of them were entered via a front portico. The visual axis led to a dais in the rear of the temple. The buildings had a rectangular layout and could be subdivided into two or three rooms by internal walls.

Important Migdōl temples were erected in Tall al-Mutasallim (Megiddo), Tall Waqqāṣ (Hazor), and Tall al-Balāṭa (Sichem), always in the vicinity of the palace.

60 These were communities who relocated between more fertile areas (for sowing and harvesting) and grazing grounds on an annual basis.

61 Gophna – Ayalon 1980, 147–150.

62 Flannigan et al. 1996, 271–292.

63 Weippert 1988, 235–236 (ʿĒn Šems and Naharīyā).

During the Middle Bronze Age IIC, Ṭabqāṭ Faḥl (Pella)[66] also received such a structure. In Tall al-Ḥayyāt, a typologically similar, though small temple was built in a rural, remote location[67]. Migdōl temples were constructed well into the Iron Age I.

Inside these Migdōl temples or in their close surroundings, non-representational stones—so-called mazzebes—and steles were discovered. A spectacular find was that of the Mazzebe Series of Tall Ǧazer (Geser). The majority of goddess representations depicted them in the nude, indicating that they were probably connected with fertility and love, while male deities were usually portrayed with weapons. The theophorous divine names found in contemporary texts are mostly male.

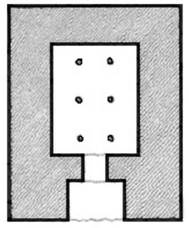


Fig. 3.8 Tall al-Balāṭa (Sichem), ground plan of Migdōl temple (Source: Weippert 1988, 279 Abb. 3.43).

Fig. 3.9 Tall al-Balāṭa (Sichem), city wall (Source: BAI/GPIA).

64 Weippert 1988, 237–238 (Tall al-Mutassallim [Megiddo], Tall Waqqāṣ [Hazor], and Tall Mūsā).

65 This type of construction had already been known in Tall Mardīḫ (Ebla) around the end of the 3rd millenium BC, cf. Mazar 1990, 162–169.

66 Bourke 2004, 1–31.

67 Faust 2005, 105–125.

The urban elite lived in courtyard houses. ‘Palace’ was the term applied to large buildings of the courtyard house type. Here, usually one spacious or two adjoining atriums constituted the central area around which a number of rooms were lined up, sometimes interspersed with single halls. These were used for representative and administrative purposes[68].

Fig. 3.10 Tall al-Balāṭa (Sichem), Mazzebe from Middle Bronze Age Temple (Source: K. Soennecken).

The burial grounds of the higher levels of society reflect the increased wealth of the elites during the Middle Bronze Ages IIB and C[69]. While during the Middle Bronze Age IIA, frequently ceramic household items along with weapons were given to the deceased for his or her journey into the netherworld, now more luxurious funerary objects such as jewellery, scarabs, and cylinder seals became customary. Weapons, however, were found in significantly smaller numbers[70]. The entombments (of persons of a higher social status) manifest an overall standardisation of the customs and practices concerning mortuary rites (and also religious faith [?]).

In most cases, the interred persons were deposited in caves or in rock-cut tombs outside the city walls[71]. Often these were single-chambered family tombs. Exceptions in this respect were a few larger burial grounds in Tall al-Balāṭa (Sichem), Tall Dōṯān, Tall Ǧazer (Geser), and Jerusalem, and grave no. 62 in Ṭabaqāt Faḥl (Pella)[72]. Here, apparently members of large families who had been influential over a long period of time were buried, as evidenced by the numerous luxury goods discovered[73].

Inner-city[74] interments were adopted from the Syrian region. Children were often buried in jars; the more expensive cist tombs, however, were reserved for adult persons.

Even though long-distance trading had already been re-established during the Middle Bronze Age IIA, the imports of bronze tools and weapons as well as those of scarabs and cylinder seals only attained a solid, reliable footing in the course of the Middle Bronze Ages IIB and C; however, they still lacked mass dimensions.

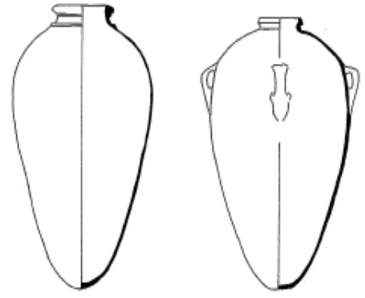


Fig. 3.11 Storage jars, Tall Ra’s al-ʿĒn (in accordance with Weippert 1988, 249 Fig. 3.36).

Metal tools (hatchets, adzes, chisels), weapons (axes, swords, daggers), cultic objects (figurines) or pieces of jewellery (dress pins, rings) were fabricated from recycled material[75] or from crude materials from Anatolia or Cyprus. The mines of Fēnān (Fenan) and Ḫirbat Manāʿiya (Timna) were either forgotten or had ceased to be exploited for other reasons[76]. Apart from bitumen, the exports to Egypt mainly consisted of the characteristic ‘Canaanite’ storage jars containing oil and wine. On both sides of the river Jordan, the hand-made cooking pots were no longer produced during the Middle Bronze Age IIB.

68 A clear distinction between palaces and spacious residential houses is rarely possible.

69 Here, the grave finds in ʿAsqalān (Ashkelon), Tall as-Sulṭān (Jericho), Tall al-Mutasallim (Megiddo), Tall al-Qāḍī (Dan), and Tall el-ʿAǧǧūl are exemplary.

70 Hallote 1995, 93–122.

71 Cf. Weippert 1988, 241–245.

72 Here, approx. 2,000 objects were found accompanying an estimated 150 buried persons dating from the Middle Bronze Age IIC to the Late Bronze Age II (McNicoll et al. 1992, 69–81).

73 Massgraves in the wake of dramatic events (fire, earthquake, war destruction, epidemic plagues) would certainly have been differently equipped; in particular, the deceased persons would have been buried hurriedly and with less generous grave furnishings.

74 On this, cf. Tall Mardi (Ebla).—Simple burials and those of children (in jars were frequently found in Tall al-Mutasallim (Megiddo), Areal C; cist graves were discovered e.g. in Tall al-Qāḍī (Dan), Tall al-Fuḫḫār (Akko), Tall al-Mutasallim (Megiddo), Tall al-Aǧǧūl, and in Ṭabaqāt Faḥl (Pella).

75 Philip et al. 2003, 89.

76 Philip et al. 2003, 93.

The Middle Bronze Age 'Tell Yahudiye' ware became renowned. It approximately dates back to Egypt's Second Intermediate Period, i.e. the Middle Bronze Ages IIB and C[77]. It is a good example of the internationalised production of a specific type of pottery, and of the sales and distribution of southern Levantine ceramic objects.

The end of the Middle Bronze Age IIB in the southern Levant is less marked by cultural upheavals than by a change in the general political climate resulting from the rise of the Hyksos Dynasty in Egypt. The previous description of the material culture during the Middle Bronze Age IIB thus also applies to the subsequent period. Therefore, only specific features of the Middle Bronze Age IIC will be addressed in the following chapter.

3.1.3. The Middle Bronze Age IIC (1630–1550 BC)—the Era of the Hyksos

The Hyksos came from Asia and ruled Egypt as Kings of the 15th and 16th Dynasty (1637–1529 BC). They brought important technological innovations to Egypt, such as the horse-drawn chariot, the composite bow, and probably also the curved sword and the socketed axe.

As early as during the 14th Dynasty, the father (whose name is unknown) of King Nehesi founded the city of Tall ad-Dabʿa (Avaris) as his new royal capital. As dynastic deity, he worshipped the Northern Syrian weather god Baal-Zaphon/Baal-Hadad in his Asian manifestation (synonymous with the Egyptian god Seth). From then on, other Canaanite gods were also officially worshipped in Egypt. This can only be explained by the immigration of Asian people into the Nile River delta.

Fig. 3.12 Ramses II with chariot, Abu Simbel (Source: D. Vieweger).

Presumably the Hyksos dynasty's accession to power was based on a prolonged Asian infiltration. They took advantage of the gradual decline of Egypt's influence and founded their own empire consisting of several federate states, which they ruled in a kind of feudal system.

Most of the Asians populating the Eastern Delta were probably West Semitic Amorites, many of whom had immigrated from the southern Levant and from the Syrian coastal region. The Amorite elites from these regions will have been instrumental in the rise of the 15th Dynasty in Egypt[78]. Most of the Hyksos kings known to date have Amorite names.

In Egypt, the Hyksos' empire stretched as far south as Hermopolis, It goes without saying that, true to the 'well-established Egyptian fashion', they also exerted their economic and military power on the southern Levant and particularly the coastal plain. In spite of this, however, their dominion did not include the southern Levant.

Fig. 3.13 'Chocolate on White' ware, unknown provenance (Source: BAI/GPIA).

During the 15th Dynasty in Egypt (1637–1529 BC), many similarities between the material culture of Tall ad-Dabʿa (Avaris) and that of the southern Levant are apparent. The overall political and socio-economic climate allowed an amazing phase of stable peace *('pax amurritica')* in the Levant and in Lower Egypt. It brought about safe long-distance trade relations and a remarkable prosperity in the entire region[79]. This assessment is illustrated by an abundance of Cypriote and Mycenaean objects found in Amorite gravesites. Among the types of pottery, the appearance of the 'Chocolate on White' ware is remarkable. It was produced in the Jordan Valley, from where it was exported as far as the Damascus area, the coastal plain, and to Tall ad-Dabʿa (Avaris).

The 'Chocolate on White' ware is usually considered as a chronological marker for the transition from the Middle Bronze Age IIC to the Late Bronze Age. Not only the ceramic industry was able to produce objects intended for export. The local stone industry imitated Egyptian alabaster products as well as scarabs to perfection and also advanced its own characteristic ways of processing stone and plaster. Scarabs were frequently found in southern Levantine graves dating from the Middle Bronze Age IIC[80].

In view of this *'pax amurritica'*, the centuries-long construction of urban defensive fortifications did not come to a complete standstill; however, it was not pushed on with the same alacrity as before[81]. The offensive weapons of the Middle Bronze Age were now particularly supplemented by chariots and well-trained archers.

The 'golden age' of the palace and temple architecture has been described above. The urban way of life reached a noticeable peak.

The end of the Middle Bronze Age is marked by the collapse of the Hyksos reign in Egypt. Ahmose (1539–1514 BC) fought against the Hyksos and, in 1529 BC, put an end to their foreign rule in Middle and Lower Egypt. This dramatic event induced Manetho to commence a new dynasty calendar and to state a new era: the 18th Dynasty and the New Kingdom.

77 First specimens of the 'Tell Yahudiye' ware were produced in the southern Levant during the Middle Bronze Age IIA; accordingly Amiran 1969, 120. She dates the last evidences to the Late Bronze Age I. Vases found in the destruction layer of Thera (Åström 1971, 415–421) justify this late scheduling.

78 Bietak 1997.

79 Oil and wine were delivered from the southern Levant, esp. to Tall ad-Dabʿa (Avaris). Cf. Bietak 1997, 87–139.

80 Eggler – Keel 2006.

81 During the Middle Bronze Age IIC, cities such as Tall al-Balāṭa (Sichem), Ḫirbat Selūn (Shilo), and Hebron were enclosed by brick walls. On this, cf. Burke 2008.

3.2. The Middle Bronze Age II on Tall Zirā‘a

3.2.1. The Middle Bronze Age II Settlement Strata (19–17)

3.2.1.1. Stratum 19: Middle Bronze Age IIA (older stratum)

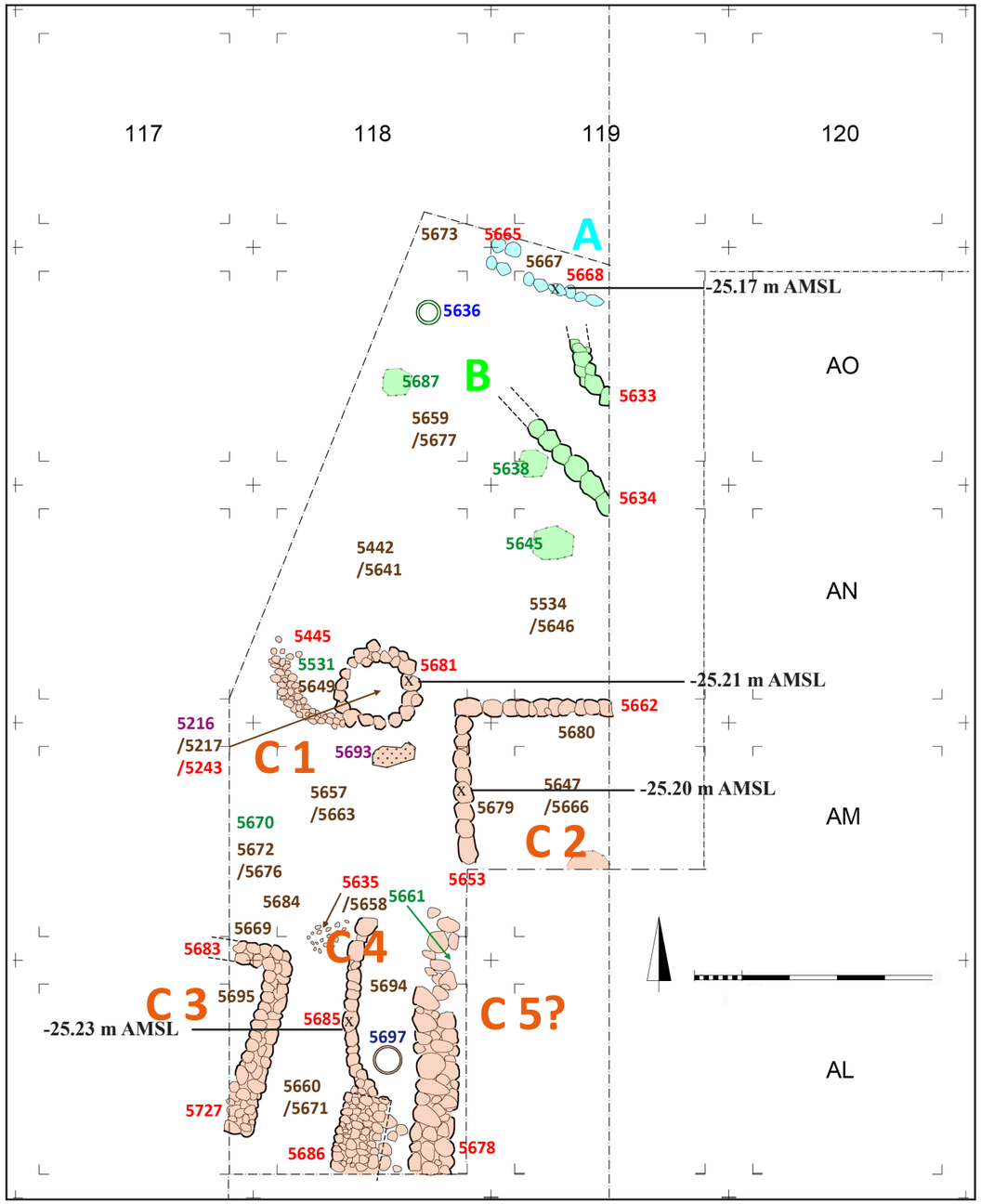


Fig. 3.14 Architectural plan, Area I, Stratum 19, Squares AL–AO 118–119, Complexes A–C, walls (red), fill layers (brown), ash layers (blue), pits (green), pisé floors (violet) (Source: BAI/GPIA).

Stratum 19 could only be excavated in the areas that were not affected by the landslide of Stratum 16. The excavation area was therefore confined to the Squares AL–AO 118–119. This can be subdivided into three complexes:

- The first area (A) is possibly constituted by a former drainage canal;
- the second (B) by a house complex with a yard area (?) (which can be defined only approximately).
- In the southern part of the excavation sector, a handicraft area with a smelting furnace in its yard area (C) can be identified.

Drainage Canal (Complex A)

The hypothetically assumed drainage canal in Complex A stretches along AO (/AP) 118 and AO 119 from WNW to SSE. It consists of a waterbed (Context 5667) and the two canal walls (Context 5668 in the south and Context 5665 in the north). This interpretation of the finds is suggested by the finds in Stratum 18, where such a canal was verified in the same spot and runs in the same direction. The sediment 5673 encompasses the previously described finds of this complex.

Since drainage canals are no rare finds in the prehistoric strata of Tall Zirā‘a (cf. also Stratum 14) and the tall's inhabitants always had to cope with draining not only its artesian spring's water but also the rainwater which fell in copious amounts in springtime, it stands to reason that such a system was also installed in this location in Stratum 19; in any case it would have made sense.

A certain percentage of the pottery still features Early Bronze Age characteristics. This type of pottery was particularly abundant in sediment 5673; much less so in Context 5667, where the Middle Bronze Age tradition prevailed. The Early Bronze Age pottery tradition was still alive on the tall during the era of Stratum 19 even though the actual use of this type of ware varied from complex to complex. Among the cooking pots, though, the type CP 5 was already generally predominant. Only one type CP 3 cooking pot was found in Complex A (Context 5673). Jugs/jars, then bowls and kraters were manufactured in the Middle Bronze Age tradition on the fast wheel.

Fig. 3.16 Furnace, Context 4726 and 4727, Stratum 17, Squares AM–AN 118 (Source: BAI/GPIA).

Fig. 3.15 Handicraft area, Complex C 1; Squares AM–AN 118 (Source: BAI/GPIA).

Fig. 3.17 Square AL 118, view from east to west (Source: BAI/GPIA).

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5667	2	1	9	1	1					5		2						
5668		1																
5673	2		3	3	2					2		13			2			

Tab. 3.2 Selected finds: Stone artefacts and ceramic finds from Complex A, wall (red), fill layers (brown) (Source: BAI/GPIA).

Apart from flake tools (two each in Contexts 5667 and 5673), one rubbing stone (Context 5667) and one mortar (Context 5668) were discovered. When also considering the bone finds verified in Context 5673 (4 sheep/goat, 4 cattle, 2 domestic pig), the surroundings of Complex A do not bear testimony of any specific activities or handcrafts, as is to be expected from a drainage canal.

	Bones[82]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5673	3	4	4	2	

Tab. 3.3 Selected finds: Bone finds from Complex A, fill layer (brown) (Source: BAI/GPIA).

House Complex (Complex B)

Complex B could either constitute a house or farm complex in its own right or it could very well be the northern end of the handicraft area Complex C—on this, cf. the architecturally better preserved Stratum 18. It only comprises the wall 5634, which (in contrast to the alignment of the handicraft area complex C or of the canal A) runs from northwest to southeast, and a second possible wall (Context 5633)—this, however, makes a semicircle and has at least partially collapsed—three pits (Contexts 5638, 5645, and 5687), and, finally, the tabun 5636. A distinct architectural structure cannot be recognized.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5633			3		1							4	3					
5645			5							9		1						
5659	3	3	24	9	4	2		1		42	5	9	6		1			
5667			4	1						2	1	5	1					

Tab. 3.4 Selected finds: Stone artefacts and ceramic finds from Complex B, wall (red), fill layers (brown), pit (green) (Source: BAI/GPIA).

82 Further bone finds that cannot be identified with respect to their species were discovered in Context 5667.

The sediments 5659 and 5677 display influences of both the Early Bronze Age tradition of ceramic production and, to a somewhat larger extent, that of the Middle Bronze Age. This conforms to essential areas of the workshop C and is another indicator that Complex B possibly forms part of the southern area C. Still, the Early Bronze Age impact on the ceramic repertoire (mostly jugs/jars and bowls, moreover one holemouth vessel) is remarkable. Among the cooking pots, the type CP 5 clearly predominates (except for five CP 6 specimens in Context 5659, another one in Context 5677, and one CP 3 specimen in Context 5659).

The bone finds in Context 5659 (19 sheep/goat, 3 sheep, 3 goat, 13 cattle, 14 domestic pig) conform to those common in Stratum 19—here, sheep/goat are quantitatively predominant and domestic pig and cattle could be verified in almost equal amounts. In Context 5659, a dog bone could be verified. Game animals are not reported.

	Bones[83]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5659	88	25	13	14	1

Tab. 3.5 Selected finds: Bone finds from Complex B, fill layer (brown) (Source: BAI/GPIA).

In Context 5659, a small, very carefully smoothed sherd was found which resembles a flat scarab in shape and size: TZ 017331-001 (*Fig. 3.18*)[84].

Fig. 3.18 Scarab-like object, TZ 017331-001, Context 5659 (Source: BAI/GPIA).

The two metal objects found in Context 5659 stand out: wire, wound up in the shape of a ring (TZ 017311-001; *Fig. 3.19*), and a fishing-hook (TZ 017310-001; *Fig. 3.20*; cf. finds from Tall Qēmūn [Tēl Yoqnəʿām] and Tall al-Ḥiṣn [Beth Shean][85]), which is self-explanatory in view of the surrounding streams that were rich in fish. Essentially, Complex B indicates both housekeeping activities and stockpiling (as evidenced by the large number of jars and storage objects). The two metal finds, however, could also be regarded as indicators of close relations to the nearby handicraft complex.

Fig. 3.19 Metal object, TZ 017310-001, Context 5659 (Source: BAI/GPIA).

Fig. 3.20 Metal object, TZ 017311-001, Context 5659 (Source: BAI/GPIA).

83 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5633, 5634, 5645, and 5677.

84 L. 2.3, W. 1.8, H. 0.8.

85 Tall Qēmūn (Tēl Yoqnəʿām) MB Stratum 23: Ben-Tor et al. 2005, 378 Fig. V 10, 9: hook (?); Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9. 4, 3–5 and Photo 9, 10: bracelets.—Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3 and R-4b: Mazar – Mullins 2007, 614 Fig. 9, 5. 4: rod.

The bronze smelting furnace (Complex C)

The furnace, which had been continuously located at almost the same spot on the tall, starting from Stratum 19 up to Stratum 14—i.e., throughout the entire Middle and Late Bronze Ages—could be verified for the first time in Stratum 19. The essential find was that of the so far oldest bronze-smelting furnace on the tall, Context 5681 in AN–AM 118.

Fig. 3.21 Area I, Squares AN–AM 118, Complex C, Context 5681 (Source: BAI/GPIA).

Complex C is located inside the Squares AL–AN 118–119. In the north, it consists of a yard area with a metal smelting furnace (C 1). To the east of this, a roofed room (C 2) is located, defined by two vertically linked single-row walls (5653 and 5662). Further south, there are the room C 3, a subdivided yard area (C 4), and also possibly another room C 5 further to the east.

Fig. 3.22 Contexts 5216, 5217 and 5243, interior of Context 5681, Squares AN-AM 118 (Source: BAI/GPIA).

Complex C 1

Area C 1 mainly stretches out across the Squares AM and AN 118. Similar to the Strata 18 to 14, it constitutes a yard area that was used for the metal smelting processes. The tall's western slope where, on a daily basis, thermal updrafts provided ideal conditions for operating the smelting furnace, seems to have been the perfect location for installing a trade of this kind.

The area comprises the Contexts 5681 (smelting furnace), an adjacent semicircular installation (Context 5445) with a post hole (a pit [?]; Context 5531), and the appendant sediment 5649. Tabun material and a clayey surface (Context 5693) can be regarded as a work space (cf. Stratum 18; Contexts 5246 and 5535). Apart from the sediments surrounding the smelting furnace there is also another pit in the south (Context 5670).

The sediments 5442, 5534, 5641, 5646, 5649, 5657, 5663, 5672, 5676, 5684 predominantly yielded early Middle Bronze Age Type CP 5 cooking pot ware. In Context 5657, the CP 5 sherds even accounted for more than 50.0 % of the total ceramic repertoire. The younger cooking pot types that were manufactured in the Middle to Late Bronze Age technique occurred only sporadically (e.g. in Contexts 5216, 5442, 5446, and 5657). Of the Early Bronze Age Type CP 6 cooking pots, four were verified in Contexts 5641, 5646, 5657, and 5663.

A handle covered by a characteristic net pattern and with a three-dimensional application[86] was found in Context 5641 (TZ 020932-005; *Fig. 3.22*). A bulge meandering across the handle seems to grow thicker to one side, suggesting that this part may constitute a serpent's head and that the bulge as a whole may be interpreted as a serpent application.

Compare:

- Tall Abū al-Ḫaraz IV/1: Fischer 2006, 42 Fig. 28, 10 and 45 Fig. 31: handle of a serpent jug;
- Tall al-Ḥiṣn (Beth Shean) EB I: Mazar 2012, 153 Photo 4, 36; 203 Pl. 14, 13; 233 Pl. 29, 2 and 18: handles with plastic, partially zoomorphic decoration; and ornamental painting (russet net pattern);
- Tall al-Mutasallim (Megiddo) MB IIB: Wilson – Allen 1948, Pl. 123, 13. 14.

Fig. 3.23 Handle of a vessel, TZ 020932-005, Context 5641 (Source: BAI/GPIA).

A very carefully worked clay disc, probably made from the flat base of a vessel (or from a thick clay sherd) (TZ 020960-021; *Fig. 3.23*)[87] was found in Context 5646. Its side wall is tapered towards the top, resulting in different diameters of its top and its bottom (5.5 cm vs. 4.5 cm). The disc is executed too meticulously to have been a simple lid. It may have been used as a gaming piece or as a little palette for compounding small quantities.

Compare:

- Tall al-Mutasallim (Megiddo) MB IIB: Wilson – Allen 1948, Pl. 257, 9. 10—disc, similar.

The Early Bronze Age pottery (mostly jugs/jars and also holemouth vessels and bowls) is predominant in Contexts 5663, 5676, and 5684; in Contexts 5442, 5534, 5641, and 5657, however, it is less important.

Fig. 3.24 Ceramic disc, TZ 020960-021, Context 5646 (Source: BAI/GPIA).

86 B 2.9; Th 0.9

87 D 4.5–5.5; Th 1.3

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5216			1	8														
5217			2							1		3						
5442	34		22	6	7	2				21		9	3					
5445	6		5							4		4	1	1				
5534		1	1	1	2			1		3								
5641	14	2	26	8	12					29	4	8	4		1	1		
5646	1		11	5	1					13	1	11			1			
5649	13		2							1		2						
5657	4		17	8	2					46	1	4	3					
5663		2	1	3	2			1		5	2	20	1		1			
5676	1	2	9	1			1			2		18	2	1	1			
5681	4		6		2					1		4	4					
5684	4		5							3		9	1		1			

Tab. 3.6 Selected finds: Stone artefacts and ceramic finds from Complex C 1, walls (red), fill layers (brown), pit (green), pisé floor (violet) (Source: BAI/GPIA).

The relative large number of flake tools in Area C 1 is remarkable (e.g. 34 flake tools in Context 5442, 14 in Context 5641, and 13 in Context 5649; cf. also C 2 and C 4), as opposed to the Complexes A and B. Querns, mortar bowls, and other large stone artefacts, however, are comparatively rare and are thus within the average range of finds in Stratum 19.

Among the bone finds, sheep and goat are predominant. Cattle and domestic pig occur in lesser quantities although in more or less equal numbers. In Context 5641, the bone of a donkey/horse/mule was found.

In Context 5657, parts of the bisected tibia of a sheep (or a goat) was found that had been polished completely on the outside and partially even on the inside, thus presumably shaping it into a spatula. Two matching fragments of this bisected tibia were actually found; flattened and slightly rounded on the tapered end. The spatula could be used from both sides so that different substances and/or varying quantities could be picked up and mixed or spackled (TZ 017480-001; *Fig. 3.24*; reference finds are known from Tall Qēmūn [Tēl Yoqnəʿām] and Tall Abū al-Ḫaraz[88]).

	Bones[89]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5217	6		1	2	
5442	52	41	9	11	
5534	1		2	1	
5641	39	13	9	10	1
5646	34	9	3	9	
5657	37	23	17	13	
5663	15	12	1	7	
5676	13	1	1	5	
5684	x	7		6	

Tab. 3.7 Selected finds: Bone finds from Complex C 1, fill layers (brown) (Source: BAI/GPIA).

88 Tall Qēmūn (Tēl Yoqnəʿām) MB IIB late: Ben-Tor et al. 2005, 381 Fig. V 12, 13: cosmetic spatula, however, only usable from one side. Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 119 Fig. 119, 4: shuttle. Tall Abū al-Ḫaraz EB: Fischer 2008, 355 Fig. 317, 4: weaving tool.

89 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5216, 5445, and 5681.

Fig. 3.25 Bone spatula [?], TZ 017480-001, Context 5657 (Source: BAI/GPIA).

In Context 5676, a tapered hollow bone was discovered. It is tapered at its lower end and widens out towards its back (handle) end; probably it was artificially flattened and evenly rounded. The function of this artefact remains unclear (TZ 019549-001; *Fig. 3.25*; reference finds from Tall Qēmūn [Tēl Yoqnəʿām], Tall al-Mutasallim [Megiddo], and Tall Abū al-Ḫaraz[90]).

Fig. 3.26 Bone awl (?), TZ 019549-001, Context 5676 (Source: BAI/GPIA).

Fig. 3.27 Bead, TZ 017241-001, Context 5442 (Source: BAI/GPIA).

The find of mineral resources in Context 5442 gives evidence of the fact that this area was used for the artisanal production, as do the metal finds (amorphous in Context 5534 and Context 5641; three fragments of an awl/needle (TZ 017308-001; cf. finds in Tall al-Ḥiṣn [Beth Shean][91]) in Context 5646; the tip of another awl or needle in Context 5657 (TZ 017309-001; cf. finds in Tall Qēmūn [Tēl Yoqnəʿām] and Tall al-Ḥiṣn [Beth Shean][92]); the iron nodule in Context 5442; the prestigious goods (faience bead and a cylindrical bead [TZ 017241-001; *Fig. 3.26*; cf. a find from Tall al-Mutasallim [Megiddo][93]) in Context 5442) and an increased occurrence of fine ceramics. There are reference finds from Tall al-Mutasallim (Megiddo) and Ṭabaqāt Faḥl (Pella)[94] that correspond to the almost spherical faience bead (TZ 015496-001; *Fig. 3.27*). In Context 5663, also a serpentinite pendant was documented (TZ 017373-001; cf. a find from Tall Qēmūn [Tēl Yoqnəʿām][95]).

Finally, a remarkable find is that of the fragment of a stone incense burner in Context 5684 (TZ 017535-001; *Fig. 3.28, 3.29 and 3.30*). It indicates—as do similar finds in many other places on the Tall Zirāʿa—that not only in the context of family life but also, and especially, in the work shops, cultic rites were often considered as necessary and thus celebrated.

Area C 1 is marked by the metal artisanry (metal finds, prestigious goods, stone tools). At the same time, there are indicators of the preparation (tabun) and consumption of food (bones, cooking pot sherds).

Fig. 3.28 Bead, TZ 015496-001, Context 5442 (Source: BAI/GPIA).

90 Tall Qēmūn (Tēl Yoqnəʿām) MB IIB late–LB: Ben-Tor et al. 2005, 379 Photo V 8 and 381 Fig. V 12, 8 (hollowed out and more pointed, L c. 10) and 9 (very similar, L c. 5): awl (?). Tall Qēmūn (Tēl Yoqnəʿām) LB early: Ben-Tor et al. 2005, 379 Photo V 8 and 381 Fig. V 12, 15 (longer and more pointed, drilled hole on the upper part, L c. 9.5): pin/pendant (?). Tall al-Mutasallim (Megiddo) EB IA similar: Finkelstein et al. 2000, 386 Fig. 12. 25, 10: casual bone tool.—Tall al-Mutasallim (Megiddo) EB III–MB IIA: Wilson – Allen 1948, Pl. 198, 5. 6. 12. 13. 15–18; 199, 21 (MB IIA, identical): bone awls.—Tall Abū al-Ḫaraz EB Phases IA and B: Fischer 2008, 49 Fig. 34, 2 (L c. 12)/199 Fig. 119, 1. 3: shuttle. Tall Abū al-ḪarazEB: Fischer 2008, 355 Fig. 317, 5: weaving tool.

91 Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9, 2–4 and Photo 9, 11: chisels. Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle; Stratum R-3 and R-4b: Mazar – Mullins 2007, 614 Fig. 9. 5, 1 and 2: pins.

92 Tall Qēmūn (Tēl Yoqnəʿām) MB Stratum 22: Ben-Tor et al. 2005, 378 Fig. V 11, 6).—Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9, 4. 3 and Photo 9, 11: chisel, nearly identical.—Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle.

93 Tall al-Mutasallim (Megiddo) EB III: Wilson – Allen 1948, Pl. 207, 6: same form, here grey stone.

94 Tall al-Mutasallim (Megiddo) EB/MB: Finkelstein et al. 2000, 391 Fig. 12. 29, 3 (glass, grey-green-blue).—Ṭabaqāt Faḥl (Pella) MB II, TOMB 8: Smith 1973, Pl. 79 m: faded blue-green faience, pierced axially, uncertain dating. Faience beads were reported in EB I/II in Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 389 Fig. 12. 27, 4–6 and Wilson – Allen 1948, Pl. 207. —Faience for small objects was used in Tall al-Ḥiṣn (Beth Shean) MB. Glass beads first appear at Tall al-Ḥiṣn (Beth Shean) in the LB Strata: Mazar – Mullins 2007, 684.

95 Tall Qēmūn (Tēl Yoqnəʿām) MB IIC: Ben-Tor et al. 2005, 111Fig. II 24, 31: bead (?).—Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 207, 11: similar, here grey stone.

Fig. 3.29 a.b.c Pedestal, TZ 017535-001, Context 5684 (Source: BAI/GPIA).

Complex C 2

Complex C 2 mainly extends across the Square AM 119. It is a presumably roofed room which was possibly attached to a building located to the south (cf. wall 5678 and C 5).

The four sediments (Contexts 5647, 5666, 5679, and 5680) and the two walls (Contexts 5653 and 5662) offered quite a uniform picture: There is an astonishingly strong influence of jugs/jars manufactured in the Early Bronze Age tradition (and one further krater). Early Bronze Age cooking pots also occur, though to a lesser extent (three in Context 5647, one in Context 5680). In Context 5647, however, the Middle Bronze Age pottery tradition predominates, which is definitely also represented in the other contexts (jugs/jars, bowls, and kraters). The 44 stone flake tools in Context 5647 are noteworthy; 27 more were found in Context 5666.

Bones were found everywhere; however, they could only be defined in Context 5647. Here, the finds of sheep/goat are predominant; cattle and a few domestic pig bones were also present and one donkey/horse/mule.

Context 5647 moreover yielded one hollow bone (sheep/goat) with four drilled holes, which had probably served as a flute (TZ 017479-001; *Fig. 3.31*; reference finds are known from, among others, Tall al-Mutasallim [Megiddo][96]).

Complex C 2 is much less marked by the metal artisanry than C 1—this is in line with its comparatively strong Early Bronze Age ceramic tradition. Possibly pottery manufactured in an earlier tradition was more in use for storage purposes (jugs/jars!) than in the artisanal context. It is thus safe to presume that C 2 was an area applied for (food) storage.

Fig. 3.30 Flute (?), TZ 017479-001, Context 5647 (Source: BAI/GPIA).

96 Tall al-Mutasallim (Megiddo) EB II/MB I/MB II: Wilson – Allen 1948, Pl. 286, 1 and 7: No 1 (EB II): tube with a large dental hole (sound generation by blowing into the upper end or by use as a fife); No. 7 (MB IIB): bone tapered towards and closed at the top, a small lateral hole and three holes running at right angles with it: a central larger one and two smaller ones at the—open—bottom. Probably used as a fife; Braun 1999, 100 f.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5647	40		14	2	1					2	3			1				
5653	2	1	4		1					2		2						
5662	3		1									4						
5666	22		4	3						5		10						
5679	12		1									8						
5680	5		1							2	1	2						

Tab. 3.8 Selected finds: Stone artefacts and ceramic finds from Complex C 2, walls (red), fill layers (brown) (Source: BAI/GPIA).

	Bones[97]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5647	31	12	7	3	1

Tab. 3.9 Selected finds: Bone finds from Complex C 2, fill layer (brown) (Source: BAI/GPIA).

Complex C 3

Complex C 3 constitutes another room southwest of the yard area C 1 and west of the yard C 4. It is located inside the Squares AL 117–118. The building seems to have possessed a more solid structure than C 2—as indicated by the double-row walls (Contexts 5683 and 5727). Here, too, a door hinge stone was found (imbedded in wall 5727).

The find of a completely preserved ornamental needle with an bent head in wall 5683 (TZ 017481-001; *Fig. 3.31*; cf. finds from Tall Qēmūn [Tēl Yoqnəʿām], Tall al-Ḥiṣn [Beth Shean], and Tall al-Mutasallim [Megiddo][98]) is noteworthy.

Indefinable bones were found in Contexts 5683 and 5695.

Fig. 3.31 Needle, TZ 017481-001, Context 5683 (Source: BAI/GPIA).

97 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5653, 5662, 5666, 5679, and 5680.

98 Tall Qēmūn (Tēl Yoqnəʿām) MB Stratum 22: Ben-Tor et al. 2005, 378 Fig. V 11, 6; and LB/MB Stratum 20b: Ben-Tor et al. 2005, 378 Fig. V. 11, 7: needle.—Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 Fig. 9, 4. 1 and Photo 9, 9: pin, L 14; common in this period in northern Israel, Transjordan, and Syria: identical. Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle.—Tall al-Ḥiṣn (Beth Shean) LB Stratum R-1: Mazar – Mullins 2007, 613 Fig. 9, 4: elongated implement, nearly identical form.—Tall al-Mutasallim (Megiddo) Stratum 14: Wilson – Allen 1948, Pl. 219, 1—loop-headed pin.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5683	2		2							1		12	3					
5695		1	2							2		3						
5727	4																	

Tab. 3.10 Selected finds: Stone artefacts and ceramic finds from Complex C 3, walls (red), fill layer (brown) (Source: BAI/GPIA).

Complex C 4

Complex C 4 is a divided yard area. It is mainly located inside the Square AL 118 and split into an eastern and a western section. In the south, the carefully masoned wall 5686 subdivides the area. To its east, there is debris, and north of it, the curiously curved wall 5685 extends this partitioning.

The ceramic finds in the sediments 5658, 5660, 5671, and 5694 (with larger shares of Early Bronze Age traditions in Contexts 5671 and 5694 and smaller quantities in Contexts 5658 and 5660) are similar to those of the other parts of the stratum; the prevailing type CP 5 cooking pots are supplemented by four type CP 6 cooking pots (two each from Contexts 5671 and 5686) and one type CP 3 specimen (Context 5658).

The ceramic repertoire is similar to that of C 2 and indicates that this room, too, was mainly used for stockpiling.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5635			2	1	1													
5658	31	1	10	3	3	1				13		3	2					
5660	3		5							1		2						
5661		1																
5671		1	9	1	1				1	5	2	10	6					
5685	4		8															
5686	5	2	12	3						3	2	9						
5694	11		13							5		17	2		1			
5697			2	4						2								
5727	4																	

Tab. 3.11 Selected finds: Stone artefacts and ceramic finds from Complex C 4, walls (red), fill layers (brown), ash layer (blue), pit (green) (Source: BAI/GPIA).

Likewise, the large number of stone flake tools (e.g. 31 in Context 5658 and 11 in Context 5694) conforms to the overall occurrence in Stratum 19.

Neither is the distribution of bone finds out of the ordinary: sheep/goat predominate, and cattle and domestic pig occur in almost matching quantities *(Tab. 3.12)*.

The ^{14}C data from Context 5658 yielded the following results:

Sample TZ 017350-001

The sample dates to 3615 ± 35 BP:

- 2026–1933 BC (= 1 Sigma: 68.2 %)
- 2122–2093 BC (5 %); 2042–1888 BC (90.4 %) (= 2 Sigma: 95.4 %)
- 2140–1876 BC (99.2 %); 1842–1820 BC (0.3 %); 1796–1781 (0.2 %) (= 3 Sigma: 99.7 %)

Sample TZ 017489-001

The sample dates to 3560 ± 35 BP:

- 1959–1878 BC (61.5 %); 1839–1828 BC (4.4 %); 1792–1785 BC (2.3 %); (= 1 Sigma: 68.2 %)
- 2021–1992 BC (5.3 %); 1983–1865 BC (70.3 %); 1850–1773 BC (19.8 %) (= 2 Sigma: 95.4 %)
- 2036–1745 BC (= 3 Sigma: 99.7 %)

	Bones[99]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5658	75	12	8	20	
5671	15	28	11	11	

Tab. 3.12 Selected finds: Bone finds from Complex C 4, fill layers (brown) (Source: BAI/GPIA).

Finally, the fragment of an awl or a needle (Context 5671; TZ 017312-001; cf. finds from Tall Qēmūn [Tēl Yoqnəʿām] and Tall al-Ḥiṣn [Beth Shean][100]), the fragment of a needle shaft (Context 5686), and the centre part of needle or an awl (Context 5694) complement the very similar evidential situations in yard C 4 and in yard C 1: the two yards—which can be divided into a northern and a southern yard only topographically, anyway—obviously form one entity and served the same purposes: they were used for the processing of metal and for the preparation (tabun 5697), consumption, and storage of food.

The function and features of Complex C 5, east of wall 5678 and within Square AL 118/119, can only be guessed at. Possibly there was an additional room that bordered on the yard Complex C 4.

99 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5635, 5660, 5685, 5686, and 5694.

100 Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle; Stratum R-3 and R-4b: Mazar – Mullins 2007, 614 Fig. 9, 5. 1 and 2: pins.— Tall Qēmūn (Tēl Yoqnəʿām) MB Stratum 22: Ben-Tor et al. 2005, 378 Fig. V 11, 6.

3.2.1.2. Stratum 18: Middle Bronze Age IIA (younger stratum)

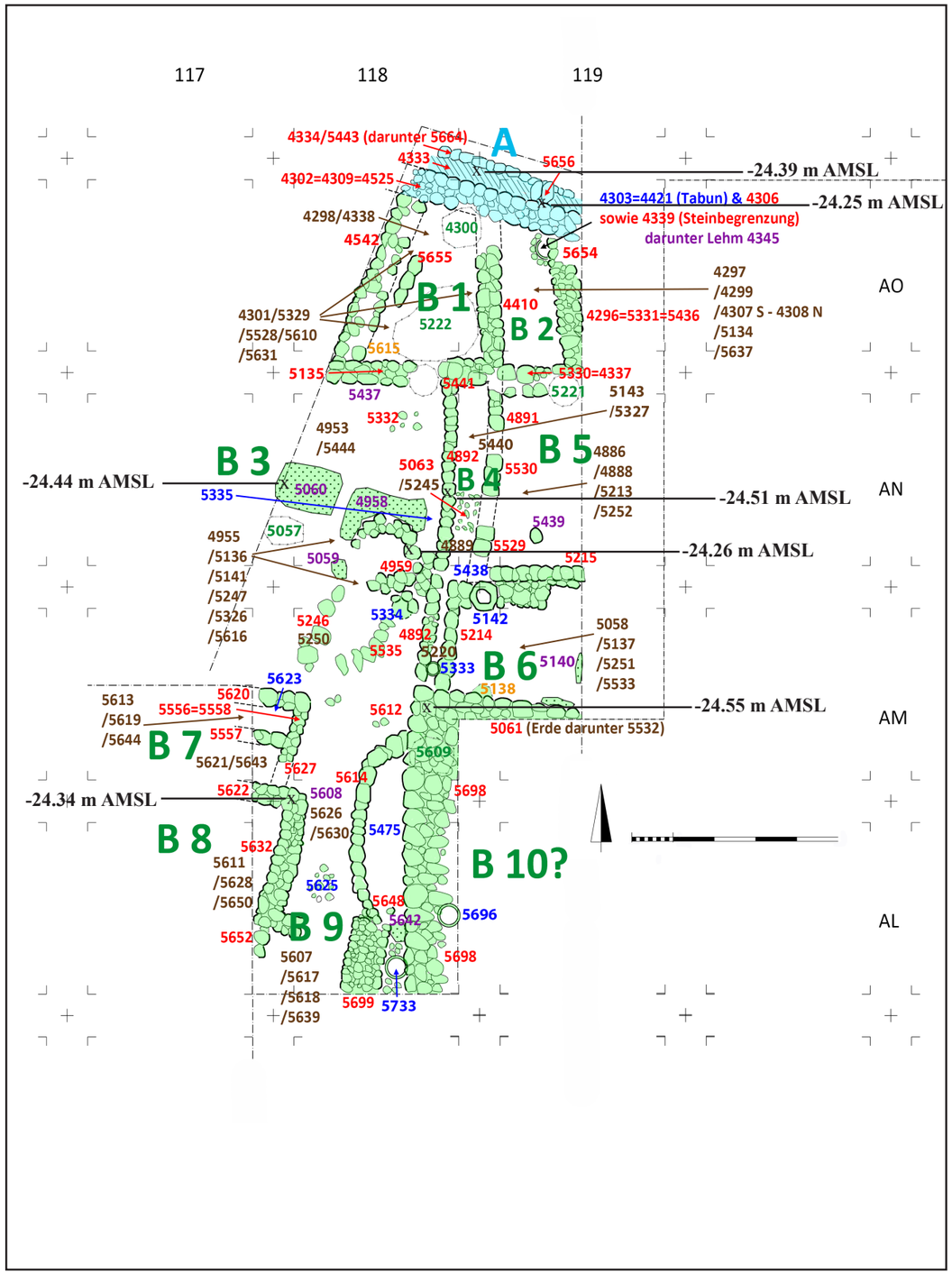


Fig. 3.32 Architectural plan, Area I, Stratum 18, Squares AL–AO 118–119, Complexes A–C, walls (red), fill layers (brown), ash layers (blue), pits (green), pisé floors (violet) (Source: BAI/GPIA).

Stratum 18 could only be excavated in those parts that were not affected by the landslide of Stratum 16. The excavation field was thus confined to the Squares AL–AO 118–119. This excavation area can be divided into two complexes:

- The first Complex A is constituted by a drainage canal,
- the second one, Complex B, consists of a multi-chambered house with one or several yards. It will subsequently be subdivided into ten separate complexes, which will be described individually.

Drainage Canal (Complex A)

The drainage canal is located in the Squares AO(/AP) 118 and AO 119 and runs from WNW to SSE. It consists of a water bed (Context 4333) and the two canal walls (Contexts 4334/5443 in the north, and Contexts 4302/4398/4525 in the south). The canal's foundation (gravel bedding) constitutes of Context 5664. The former cap stones found *in situ* are marked as Context 5656.

Fig. 3.33 Canal, Complex A, Square AO (–AP) 118–119, Stratum 18, view from south (Source: BAI/GPIA).

Fig. 3.34 Canal, Complex A, Square AO (–AP) 118–119, Stratum 18, view from east (Source: BAI/GPIA).

Drainage canals are no rare finds in the prehistoric strata of the Tall Zirā'a. They were especially numerous and elaborately constructed in Stratum 14. Usually, the supply of fresh water was a major issue of ancient oriental cities. In the case of the Tall Zirā'a, however, the drainage of the abundant water from the artesian spring and of the heavy spring rainfalls was a matter of priority. The cap stones (context 5656) indicate that the canal was no temporary construction but rather a carefully planned and executed installation.

In contrast to the northern side, the southern boundary consists of a double row of stones and must therefore be regarded not only as the southerly bounding wall of the canal but also as a house wall of Complex B (rooms B 1 and B 2).

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
4309		1		1														
4333	6	1	3															
4525			1															

Tab. 3.13 Selected finds: Stone artefacts and ceramic finds from Complex A, walls (red) (Source: BAI/GPIA).

There were only few finds within this complex and they do not present any noteworthy characteristics or specific features. Only ceramics of Middle Bronze Age tradition were documented; Early Bronze Age vessels could not be verified. As was to be expected in a drainage system, cooking pots were completely absent.

In Context 4333, a shell pendant was discovered. No metal finds occurred.

	Bones[101]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4334		1	1		

Tab. 3.14 Selected finds: Bone finds from Complex A, wall (red) (Source: BAI/GPIA).

The furnace (Complex B)

The artisanal bronze furnace, which had been continuously located at almost the same spot on the tall, starting from Stratum 19 down to Stratum 14—i.e., throughout the entire Middle and Late Bronze Ages—could also be verified in Stratum 18. The essential find was that of the bronze-smelting furnace 4959 in AN–AM 118.

Complex B is located inside the Squares AL–AO 118–119. In the north, it comprises two rooms (B 1 and B 2). To the south, these border on a yard in the center (with metal-smelting furnace; B 3; *Fig. 3.36*) with additional rooms (B 4–6) located to the south. Even further south, there are the rooms B 7 and B 8 as well as another yard area with a large silo (Context 5614/5475), here termed B 10, which enlarges the central courtyard.

101 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4333 und 4525.

Complex B 1

A relatively large, in all probability canopied room, is delimited by four walls: Contexts 4302, 4309, 4525 in the north, 4410 in the east, 5441 and 5135 in the south, and 4542 in the west. Inside the room, there is collapse debris—or more possibly a bench (for depositing objects) (Context 5655). The sediments 4298, 4338 (in the north) and 4301, 5329, 5528, 5610, 5631 (in the south) filled this area up. Two pits were excavated, Context 4300 in the northeast and Context 5222 in the southeast. The chalk-bed 5615 (-25.16 m NN) marks at least one of the occupational floors of this room (cf. Context 5610).

The ceramics are mostly manufactured in the Middle Bronze Age technique. Apart from cooking pots (almost all type CP 5; only Context 5631 yielded sherds of type CP 6), predominantly jugs and jars, and to a lesser extent also bowls and a few kraters or bottles were found in both the sediments, the pits, and the walls. Only Context 5631 (the only context where also cooking pots produced in the Early Bronze Age tradition occurred) yielded a noteworthy number of flint tools—on this, cf. the large number of this type of artifacts in the Strata 20 and 21. Furthermore, a mug/v-shaped bowl (TZ 020943-009)[102] was retrieved in Context 5631 *(Fig. 3.36)*. The small, very carefully and regularly executed vessel—the shape of which is rather uncharacteristic of the region—, has regular throwing marks in the form of deep grooves on its inside. Half of the vessel has remained intact. Its outer form is that of a truncated cone *(Fig. 3.157)*.

Compared with the entire stratum, there is quite a large number of metal finds: in Context 4542, a metal sheet rolled into a pole—possibly also for a cultic application as a cover or embellishment of a deity figurine—(TZ 014318-001; *Fig. 3.38*; cf. with finds in Tall al-Ḥiṣn [Beth Shean] and Tall al-Mutasallim [Megiddo][103]); in Context 5329 there was another sheet fragment and in Context 5610 an amorphous fragment.

Fig. 3.35 Bronze-smelting furnace, Area I, Squares AN–AM 118, Complex B, Context 4959 (Source: BAI/GPIA).

Fig. 3.36 Mug or v-shaped bowl, TZ 020943-009, Context 5631 (Source: BAI/GPIA).

Fig. 3.37 Metal sheet, TZ 014318-001, Context 4542 (Source: BAI/GPIA).

102 *Plate 3.12.10.* Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 238 Fig. 94, 2: similar.—Tall al-Mutasallim (Megiddo) LB I: Amiran 1969, 127 Pl. 38, 3.—Tall al-Ḥiṣn (Beth Shean) LB: Mullins 2007, 448 Fig. 5, 15 JR2: flowerpot (Egyptian form).—Tall al-Mutasallim (Megiddo) MB III (?)/LB early Stratum 4: Wilson – Allen 1948, Pl. 53, 5: identical form, but buff.

103 Tall al-Ḥiṣn (Beth Shean) SB Stratum R-2: Mazar – Mullins 2007, 614 Fig. 9, 5. 9: folded strips; MB Stratum R-4a–b: Mazar – Mullins 2007, 614 Fig. 9, 5. 10: folded strip.—There is also reference to Wilson – Allen 1948, Pl. 227, 1–3: fragments of headbands.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
4298	1		4	1									1		1			
4300			2															
4301			3	1														
4309		1		1														
4525			1															
4338			1			1												
4542			3	1						3		2		1				
5222			1															
5329	2		27	5	3	1				13		4						
5441										4								
5610			16	2	4					15		8	2	1				
5631	29		21							11	3	5		2				

Tab. 3.15 Selected finds: Stone artefacts and ceramic finds from Complex B 1, walls (red), fill layers (brown), pits (green) (Source: BAI/GPIA).

In Complex B 1, there is a clear predominance of sheep and goat bones; they are complemented by roughly equal shares of domestic pig and cattle bones. The concentration of bones finds in the southern Contexts 5610 and 5631 is accompanied by an impressive number of cooking pots. Both contexts also yielded a gazelle bone each, testifying to hunting activities.

The find of a miniature axe in Context 5631 is particularly noteworthy (TZ 017368-001; *Fig. 3.40*; cf. the finds in Tall al-Ḥiṣn [Beth Shean][104]); other remarkable finds in this context are those of a chalice, a stone bead (TZ 017369-001; *Fig. 3.39*; cf. the finds from Tall al-Mutassallim [Megiddo], Tall Abū al-Ḥaraz, and Ṭabaqāt

Bones[105]					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4542	5	7		1	
5222	11	17	4		
5610	58	37	12	14	1
5631	17	2	3	3	1

Tab. 3.16 Selected finds: Bone finds from Complex B 1, fill layers (brown), pit (green), wall (red) (Source: BAI/GPIA).

104 Tall al-Ḥiṣn (Beth Shean) EB III: Mazar 2012, 364 Fig. 9, 7. 2: scraper (?); L 5.7; W 2.3; Th 2, scoria; only similar; rectangular shape.—Tall al-Ḥiṣn (Beth Shean) EB III–MB II: Mazar 2007, 55 f. Photo 11. 12 and Fig. 11. 10, 1 and 2: H 0.8; L 2.7; W 1.2/H 1.1; L 1.5; W 3.3.—Highly refined miniature stone chisels, identified as igneous plutonic rock of greenish color, belonging to the family of ultra-mafic rocks. According to Itai Haviv, such rocks are known in Turkey (and the Hatay region in northwest Syria), Cyprus, the Cycladic Islands and in the eastern desert of Egypt (ibid. 655).

105 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4298, 4338, and 5329.

Faḥl [Pella][106]), and the faicence (?) bead (TZ 017370-001; *Fig. 3.41*; cf. a similar find from Tall al-Mutasallim [Megiddo][107]).

The Complex B 1 seems to have been used for the preparation of meals and for (food) storage.

Fig. 3.38 Stone bead, TZ 017369-001, Context 5631 (Source: BAI/GPIA).

Fig. 3.39 Stone hatchet, TZ 017368-001, Context 5631 (Source: BAI/GPIA).

Fig. 3.40 Faience (?) bead, TZ 017370-001, Context 5631 (Source: BAI/GPIA).

Complex B 2

The smaller room Complex B 2, adjoining from the east, is delimited by the walls 4302, 4309, 4525 (in the north), 5654, 4296, 5331, and 5436 in the east, 4337 and 5330 in the south, and also 4410 in the east.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
4296		1																
4297			4							2								
4299			9	2						4	2	3	1	1				
4303			1	1						1								
4306										1								
4307			2							1		1	1	1	1			
4308	1		2	1						6								
4309				1														
4421	1		2							4								
5325			1															
5330			1							1								
5637			9	1	1							3	2					

Tab. 3.17 Selected finds: Stone artefacts and ceramic finds from Complex B 2, walls (red), fill layers (brown), pisé floors (violet) (Source: BAI/GPIA).

106 Tall Abū al-Ḥaraz, Phase IV/2, MB II late: Fischer 2006, 58 Fig. 45, 1 and 46: beads, honey-colored amber.—Tall al-Mutasallim (Megiddo) EB I–III: Finkelstein et al. 2000, 389 Fig. 12. 27, 11 (carnelian); and 391 Fig. 12.19:11 and 23 (carnelian, red-orange].—Ṭabaqāt Faḥl (Pella), MB/LB: Smith 1973, Pl. 79 d and f; 80 n and o: carnelian.—Tall al-Mutasallim (Megiddo) MB IIB: Wilson – Allen 1948, Pl. 208, 23.

107 Tall al-Mutasallim (Megiddo) EB/MB: Finkelstein et al. 2000, 389 Fig. 12. 27, 4–6: faience beads; 391 Fig. 12. 29, 10. 11: faience blue.

The sediments 4297, 4299, 4307, 4308, 5134, and 5637 can be allocated to this room. Here, a conglomeration of sheep, goat, domestic pig, and cattle bones was discovered along with a large number of cooking pots; moreover several tabun remains. In Context 4299, there was also a metal fragment of a needle or an awl.

As in Complex B 2, the pottery manufactured in the Middle Bronze Age tradition is predominant. Apart from the almost universally used cooking pot CP 5 (only in Context 4299 two sherds of type CP 6 were discovered), both the sediments, the pits, and the walls mainly yielded jugs and jars and also bowls and one single krater. Among the few finds manufactured in the Early Bronze Age tradition, the closed vessels predominate.

Other than in Stratum 20 and Stratum 21, only very few flake tools were discovered.

The find of a needle tip in Context 4299 (TZ 014310-001; *Fig. 3.42*; cf. finds from Tall Qēmūn [Tēl Yoqnəʿām] and Tall al-Ḥiṣn [Beth Shean][108]) is noteworthy.

Fig. 3.41 Needle, TZ 014310-001, Context 4299 (Source: BAI/GPIA).

In the northeast, a tabun was found (Contexts 4303, 4421 with stone wall 4306, 4339). Underneath it a clay layer was detected.

Bones[109]					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4297	3	4		3	
4299	1		2	1	
4307		1	1	2	
4308		3			
5637	15	8	2	6	

Tab. 3.18 Selected finds: Bone finds from Complex B 2, fill layers (brown) (Source: BAI/GPIA).

A charcoal sample from Context 4303 yielded the following ^{14}C data:

Sample TZ 014129-001

The sample dates to 3570 ± 35 BP:

- 1972–1882 BC (= 1 Sigma: 68.2 %)
- 2026–1871 BC (84.2 %); 1846–1812 BC (6.6 %); 1803–1777 BC (4.6 %) (= 2 Sigma: 95.4 %)
- 2116–2098 BC (0.3 %); 2039–1751 BC (99.4 %) (= 3 Sigma: 99.7 %)

Complex B 2 most likely was used for food preparation and storage; however, it could also have served as a living room.

Complex B 3

Complex B 3 essentially extends over the Squares AM and AN 118. Like in the Strata 19–14, it constitutes a yard area used for smelting metals. The tall's western slope where, on a daily basis, thermal updrafts provided ideal conditions for operating the smelting furnace, seems to have been the perfect location for installing a trade of this kind.

The area comprises the Contexts 4959 (smelting furnace), and possibly adjacent installations (?); (Contexts 5246 and 5535)[110], a tabun (Context 5334) and specialized work areas (clay benches Context 5058 and 4960—the latter may also have been the origin of the clay brick rubble Context 5059). The area surrounding the furnace mainly yielded pottery for storing and preserving food, that is jugs/kraters and bowls. Moreover, a pit (Context 5057) and an ash layer (5335) were discovered close to the furnace, which will also have been connected with the craft work.

A ^{14}C sample was taken from the clay (brick) bench 4958 and yielded the following results:

Sample TZ 015536-001

The sample dates to 3535 ± 40 BP/HS (Humic Acid) 3,525 ± 40 BP:

- 1932–1871 BC (35.1 %); 1846–1811 BC (18.6 %); 1804–1776 BC (14.5 %) (= 1 Sigma: 68.2 %)/HS: 1914–1867 BC (25.7 %); 1848–1774 BC (42.5 %) (= 1 Sigma: 68.2 %)
- 1973–1748 BC (= 2 Sigma: 95.4 %)/HS: 1956–1743 BC (= 2 Sigma: 95.4 %)
- 2030–1735 BC (99 %) 1718–1695 BC (0.7 %) (= 3 Sigma: 99.7 %)/HS: 2024–1731 BC (98.4 %); 1721–1693 BC (1.3 %) (= 3 Sigma: 99.7 %)

Walls constitute the complex's northern (Context 5135), eastern (Context 4892), and southern (Contexts 5556, 5558, 5620) boundaries. Towards the south, the yard area extends on a more narrow scale (see below, Complex B 9). The debris 5612 could have been part of the wall Context 5698, while the debris 5332 probably belonged to the wall Context 5135. The light-coloured clay layer (Complex 5437) running in an east-west direction immediately south of the wall 5135 may have originally formed part of its former clay sheathing.

The following sediments were part of the surroundings: Contexts 4953 and 5444 in the north, Contexts 4955, 5136, 5141, 5247, 5326, and 5616 in the central area, and Context 5250 in the south. They all yielded large numbers of stone tools, such as flint, flakes and tools, querns, rubbing stones, lower grinding stones, and hammer stones. An evenly sculpted basalt stone, a rubbing and hammer stone in secondary use, was found in Context 4955 (TZ 015634-001)[111]. It is evenly waisted in the middle, widens towards the bottom, and is hollowed out on the inside. The hollowed-out bottom part used to be a pedestal; the bowl that once was part of the stone's upper end was knocked off at some time. It originally served as a censer stand.

Other finds were those of a hammer stone in Context 5326 (TZ 015937-001; cf. the finds from Tall al-Ḥiṣn [Beth Shean][112]), a pumice stone in Context 4953 (TZ 015843-001; cf. the finds from Tall al-Mutasallim [Megiddo][113]), and a door hinge stone (Context 5136). Bronze finds could also be verified: a piece of wire (?) in Context 4953; a globule in Context 5136, the fragment of a decorative needle (globe head and shaft; TZ 017263-001; cf. finds in Tall al-Ḥiṣn [Beth Shean], Tall Abū al-Ḫaraz, and Tall al-Mutasallim [Megiddo][114]) in Context 5247; moreover a metal fragment in Context 5247.

Fig. 3.42 Lid/stopper, TZ 020515-014, Context 5247 (Source: BAI/GPIA).

Finally, a lid/stopper (TZ 020515-014; *Fig. 3.43*])[115] was found in Context 5247. This carefully executed disc, made from a thick pottery sherd, slightly tapered towards the top, resulting in different diameters of its top and its bottom (3.0 cm and 3.3 cm) will probably have been used as a gaming piece[116].

With respect to its composition, the ceramic repertoire of Complex B 3 does not differ from the ones of B 1 and B 2. However, a larger number of specimens were found in a well-preserved state. The finds are indicative of the numerous activities pursued in this area.

Bones[117]					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4953	35	23	1	9	
4955	45	36	4	5	2
5136	36	8	4	12	
5141	12	2		5	
5247	5	19	5	5	1
5250	2	5	1	4	
5444	1	6	3	1	

Tab. 3.19 Selected finds: Bone finds from Complex B 3, fill layers (brown) (Source: BAI/GPIA).

108 Tall Qēmūn (Tēl Yoqnəʿām), MB Stratum 22: Ben-Tor et al. 2005, 378 Fig. V 11. 6; and LB/MB Stratum 20b: Ben-Tor et al. 2005, 378 Fig. V 11. 7, needle).—Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9, 4. 3 and Photo 9, 11: chisel: identical; MB Stratum R-3: Mazar – Mullins 2007, 612 Fig. 9, 3. 7: needle; Stratum R-3 and R-4b: Mazar – Mullins 2007, 614 Fig. 9, 5. 1 and 2: pins.

109 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4421 and 5331.

110 Possibly this is debris.

111 Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 644 f. Fig. 11, 3. 9 and Photo 11, 7a: basalt, irregular, almost identical dimensions and also otherwise very similar).—Tall Abū al-Ḫaraz, EB Phase IB: Fischer 2008, 119 Fig. 119, 14: basalt mortar.

112 Tall al-Ḥiṣn (Beth Shean) EB: Mazar 2012, 375 Fig. 9, 11. 12 and 16: here pestles, basalt, and limestone.—Tall al-Ḥiṣn (Beth Shean) MB II–LB: Mazar 2007, 648 f. Fig. 11, 4 and Photo 11, 8: pestles.—Tall al-Qassis (Tēl Qāsīṣ) MB II: Ben-Tor et al. 2005, 211 Fig. 85, 22: quern.

113 Tall al-Mutasallim (Megiddo) IA: Wilson – Allen 1948, Pl. 264, 8: coarse vulcanic stone, rubber, very similar shape.—Tall al-Mutasallim (Megiddo) IA Stratum 3: Lamon – Shipton 1939, Pl. 106:17: scoria rubber, identical shape.

114 Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 Fig. 9, 2–4 and Photo 9, 11: chisels.—Tall Abū al-Ḫaraz, Phase V: Fischer 2006, 76 Fig. 64, 6: toggle pin.—Tall al-Mutasallim (Megiddo), Stratum 13: Wilson – Allen 1948, Pl. 219, 15: toggle pin.

115 W Th 1.1

116 Cf. the corresponding finds in Tall al-Mutasallim (Megiddo) MB IIB: Wilson – Allen 1948, Pl. 257, 9 and 10: disc.

117 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4959, 5057, 5060, 5326, 5556, and 5616.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
4953	7	2	37	3	7					10			1					
4955	10	5	33	9	5	1				26		1						
4958	1	1	2	2								1		1				
4959			6	1	1					3								
5057		1	3	5														
5060	2		2							1								
5136	7	2	34	5	11					6		3						
5141	2	2	20	3						21		1	2					
5246			4															
5247	5	1	23	6	3					17		4						
5250	1	1	17	31	2					2								
5326	8	1	9	2	1					9		1						
5444			1	1	1					2		2						
5612	2					1												
5616			8	4	5					5	2	3	1	1				

Tab. 3.20 Selected finds: Stone artefacts and ceramic finds from Complex B 3, walls (red), fill layers (brown), pits (green), pisé floors (violet) (Source: BAI/GPIA).

A Middle Bronze Age holemouth vessel found in Context 5247 is particularly noteworthy, as is the miniature vessel from Context 5136 (probably the fragment of a small bowl coming from a kernos: TZ 020297-008b; *Fig. 3.43*). These were presumably used to perform libations and thus suggest a familial-domestic cultic context.

Fig. 3.43 Rim sherd of small bowl or kernos, TZ 020297-008b, Context 5247 (Source: BAI/GPIA).

In contrast to B 1 and B 2, there are a remarkably large number of flake tools, which were obviously widely used in the artisanal workshops.

As the metallurgical activity advanced in the course of time, the number of iron nodules found on the tall also increased, starting from the Strata 19 and 18; here, in the Contexts 4955, 4958, and 5332. Raw materials were moreover verified in the Contexts 4953, 4955, and 5250.

A very carefully sculpted stone loom weight from Context 4958 (TZ 015595-001; cf. finds from Tall al-Mutasallim [Megiddo][118]) and a shell pendant from Context 5444 are also noteworthy.

The remarkably large number of various bone finds is indicative of a diverse diet, with a predominance of sheep and goat, followed by domestic pig in also quite respectable quantities. Cattle are also verified, as are game animals in Context 4955 (two gazelle bones) and Context 5247 (another gazelle bone).

The complex is shaped by the metal trade (stone tools, metal finds, storage ceramics and common ware). At the same time, there are also clear indicators of the preparation (tabun) and consumption (bones, cooking pot sherds) of food.

Complexes B 4, 5, and 6

The Complexes B 4, 5, and 6 form an entity which comprises two individually subdivided rooms that were accessible from the yard area B 3 in the west.

The walls 5441 and 5330 as well as 4337 form the complex's border to the north, and the wall 5061 delimits it towards the south. The wall 5215 subdivides the structure between the Complexes B 5 and B 6. A closer look at the single-row walls 4892 and 4891, 5530 and 5529 (with respect to the connection between B 4 and B 5), at the single-row walls 4892 and 5214 (with respect to the connection between B 4 and B 6), and also at the location and accessibilities of the tabun furnaces Contexts 5142, 5333, and 5438 in B 4 and B 5/6 reveals that the western delimitation of the rooms B 4, B 5, and B 6 was not devised in the same way as their northern and southern walls. We suggest the existence of only temporary (winter) or merely waist-high walls that allowed people to access the yard area B 3 (cf. particularly the paving Context 5063 in B 4).

The single-layer paving Context 5063 was meticulously layed on a layer of clay (Context 5245). It seems to mark a passageway from the west to the east.

Complex B 4 is characterized by the layers of clay (Context 5143) and soil (Context 5327) in the north, by Context 4889 in the central part, and by Context 5220 in the south (both soil deposits). The layer of soil context 5440 is located between the Complexes B 4 and B5. Complex B 5 is filled by the sediments 4886, 4888, 5213, and 5252. Complex B 6 holds the sediments 5058, 5137, 5251, and 5533. Context 5532 was the clay basis on which the southern wall 5061 was built.

The high density of rubbing stones, lower grinding stones, querns, hammer stones, mortar bowls, and flint tools in B 4–6, along with its ceramic repertoire, makes this area very similar to the yard Complex B 3 and is further evidence supporting the reflections concerning the west-east permeability of B 4. As the rooms B 5 and B 6 show a larger density of cooking pot finds (all of them CP 5) than B 4, and B 6 moreover has a fireplace (Context 5138), which is indicative of food preparation, both B 5 and B 6 will have been used as well for storage as for cooking and baking.

As it is, e.g. the Contexts 4888, 5058, 5137, 5251, 5252, 5440, 5532, and 5533 yielded noteworthy finds of sheep and goat bones, to a slightly less extent those of domestic pig and finally also some cattle bones. Gaming animals are absent in this area.

An exceptional find is that of an architectural element in Context 4891 (TZ 015419-001). It may have been put to a secondary usage as a gaming board *(Fig. 3.44 a. b)*, like similar finds in Tall al-Mutasallim (Megiddo) and Tall al-Kafrayn[119].

Fig. 3. 44 a Gaming board, TZ 015419-001, Context 4891 (Source: BAI/GPIA).

Fig. 3.44 b Gaming board, TZ 015419-001, Context 4891 (Source: BAI/GPIA).

118 Tall al-Mutasallim (Megiddo) EB III: Finkelstein et al. 2000, 416 Fig. 12. 53, 9: limestone, grooved elongated sling stone (?). Tall al-Mutasallim (Megiddo) IA Stratum 3: Lamon – Shipton 1939, Pl. 106, 2—basalt, hammerhead, possibly used as door weight, identical shape.

119 Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 268, 4 and 5: limestone, similar; the holes are a little deeper, though.—Tall al-Kafrayn MB/LB (?): Papadopoulos – Kontorli-Papadopoulos 2010, 297 Fig. 34a. b: rectangular gaming stone, dimensions unclear, seven rows with seven holes each; little boxes with incisions on their sides (possibly also applicable as a gaming board [?]).

Fig. 3.45 Krater, TZ 020509-017, Context 5213 (Source: BAI/GPIA).

Fig. 3.46 Krater, TZ 020813-008, Context 5475 (Source: BAI/GPIA).

Bones[123]					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4886	x	2			
4888	8	12	1	4	
4891	3	4	1	1	
5137	6	8	1	9	
5143	7	5	2	5	
5213	16	16		13	
5251	1	20	1	3	
5252		27	4	2	
5327	21	24		7	
5440	8	11	2	4	
5532	3	2	1	2	
5533	5	3		3	

Tab. 3.21 Selected finds: Bone finds from Complexes B 4–6, fill layers (brown), wall (red) (Source: BAI/GPIA).

Among the ceramic finds, some ceramic feet, involuted downwards, of bowls/kraters are noteworthy[120]: TZ 020509-017 from Context 5213 (Complex B 5; *Fig. 3.45*) [121] und TZ 020813-008 from Context 5475 (Complex B 9; *Fig. 3.46*)[122].

In Context 5137, a perfect metal hook was found (TZ 015264-001; common in this period in northern Israel, Transjordan, and Syria; cf. the find from Tall al-Ḥiṣn [Beth Shean][124]). As in B 3, here, too, several iron nodules were verified in the periphery of the artisanal activities (three finds in Context 4888, two in Context 4889, and one each in Contexts 5213 and 5532); moreover, one iron nodule in Context 5532.

Among the stone finds, the stone ball in Context 4886 (TZ 016010-001; *Fig. 3.47*; cf. the finds from Tall Qēmūn [Tēl Yoqnəʿām] and Tall Abū al-Ḫaraz[125]), the rubbing stones in Context 5252 and in Context 5327, a weight stone in Context 5533, and a quern in Context 5533 are particularly noteworthy. Furthermore, a shell pendant in Context 4888 is remarkable.

Fig. 3.47 Stone ball, TZ 016010-001, Context 4886 (Source: BAI/GPIA).

120 These are two different but similar feet, presumably of a larger bowl or a krater (originally tripodal). They were manufactured very carefully. In the process, an accurate rectangular strip of clay, appr. W 2.5 (in TZ 020813-008, the seams were also meticulously flattened), was folded in once and then indented on one side in such a manner that it took on the shape of a closed loop/scroll. The remaining part of the clay bulge was bended by 90 degrees, so that it adhered to the bottom of the bowl on a quite broad surface. Cf. TZ 021631-001, Context 6328, Stratum 22 and Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 254 Fig. 4, 20 and 335 Pl. 10, 5: similar.—Ṭabqāt Faḥl (Pella) MB IIA. Walmsley et al. 1993, Fig. 187, 1: similarly shaped foot (but 'Tell al-Yahudiye' ware).

121 B 3.0; wall Th 1.2.

122 B 2.6; wall Th 1.

123 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4889, 5245, and 5529.

124 Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 Fig. 9, 4. 1 and Photo 9,9: pin, L 14.

125 Tall Qēmūn (Tēl Yoqnəʿām) MBA IIA–early LBA: Ben-Tor et al. 2005, 369 Fig. V 8, 9–16: limestone, weights (?). —Tall Abū al-Ḫaraz LB A, early Phase V: Fischer 2006, 1287 f. Fig. 139, 1 and Fig. 140: pestle, spherical, yellowish-white limestone.

A ^{14}C sample was taken from a charcoal find from Context 4888 and yielded the following results:

Sample TZ 015540-001

The sample dates to 3565 ± 35 BP/HS (Humic Acid) 3590 ± 30 BP:

- 1971–1880 BC (= 1 Sigma: 68.2 %)/HS: 2008–2004 BC (2.4 %); 1976–1900 BC (65.8 %) (= 1 Sigma: 68.2 %)
- 2023–1869 BC (80.4 %); 1846–1776 BC (15 %) (= 2 Sigma: 95.4 %)/HS: 2028–1884 BC (= 2 Sigma: 95.4 %)
- 2113–2101 BC (0.1 %); 2036–1748 BC (99.6 %) (= 3 Sigma: 99.7%)/HS: 2125–2092 BC (0.7 %); 2044–1868 BC (97 %); 1847–1775 BC (2 %) (= 3 Sigma: 99.7 %)

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
4886		1	6															
4888	1	1	15	1		1				8			2					
4889	1	1	13	2	3					9								
4891		1	2															
5058	1		1		1					1								
5061			1															
5137	10		12	1	1					9		2						
5138			3															
5143	4		13		3					3		1						
5213	13	2	23	2	1		1	1		24		4		1	2			
5220	2		5		3					1								
5245	3		7	1	1					3		1	2					
5251	1	2	9	1	1					6								
5252	11	2	9	3	1					10		1						
5327	3	2	6	4	12	1				8								
5330			1							1								
5439										1								
5440			9		6					4								
5441										4								
5529	8		2							1		3						
5532			28	13	3					3								
5533		2	3							4		3						

Tab. 3.22 Selected finds: Stone artefacts and ceramic finds from Complex B 4–6, walls (red), fill layers (brown), ash layer (blue), pisé floor (violet) (Source: BAI/GPIA).

Complex B 7

Complex B 7 consists of two small rooms that were added on to the northern wall 5622 of the only rudimentally excavated building B 8.

The walls 5620 in the north and 5556, 5558, and 5627 in the east constitute external walls of a room that can only be charted in its northwestern corner. The room is bisected from west to east by the wall 5557. Its northern half was filled by the sediments 5613, 5619, and 5644, its southern half by 5621 and 5643. Tabun remains (Context 5623) were found in the northern part. There were only few finds in all the contexts described; their repertoire corresponds to those of Stratum 18 that have been described above.

Several bones were found; however, they could not be attributed to any specific species[126].

Fig. 3.48 Complexes B 7–B 10 in AL–AM 118, view from east (Source: BAI/GPIA).

Furthermore, a few flake tools were discovered in Contexts 5557 and 5643, and 13 in Context 5613. In Context 5644, quartz was found that may have served as a raw material. Possibly Complex B 7 used to be a storage space (jugs/jars, kraters, and bowls) which, however, is remarkably devoid of finds today.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5556			1							1		7	1			1		
5557	1		4	1						1								
5613	11		3		3					2		1			1			
5619			1							1				1				
5621			1															
5643	2																	
5644			1									1						

Tab. 3.23 Selected finds: Stone artefacts and ceramic finds from Complex B 7, walls (red), fill layers (brown) (Source: BAI/GPIA).

126 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5556, 5557, 5613, 5643, and 5644.

Complex B 8

Complex B 8 is delimited in the north by the aforementioned wall 5622, and in the west by walls 5632 and 5652—both double-rowed and thus considerably more sturdy than those of Complex B 7 to the north. The sediments 5611, 5628, and 5650 again yielded only small numbers of the ceramic repertoire characteristic of Stratum 18, and also a few, although not determinable bone finds[127].

The ComplexB 8 is reminiscent of the complex B 7 to the north and will be interpreted in quite a similar way.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5611	6		1							3	1	2	2					
5628	3									2		1						
5650	4	1												1				

Tab. 3.24 Selected finds: Stone artefacts and ceramic finds from Complex B 8, fill layers (brown) (Source: BAI/GPIA).

Complex B 9

Complex B 9 continues the yard B 3 towards the south, not only topographically but also with respect to its function—however considerably narrowed and confined in the west by sheds/storage rooms (?) (B 7 and B 8) and in the east by a remarkably well-masoned and sturdy wall (building B 10, wall 5698). In the yard there is a tabun (Context 5733), a large silo (Context 5475), and a well-masoned wall fragment (Context 5699) of indefinable function.

Apart from a fragmented stone ring (TZ 015488-001; *Fig. 3.50*[128]), two rubbing stones, and a flint tool, the sediments on and in the expansive silo (Context 5475; separation wall 5614) also yielded a large quantity of ceramic finds; among them a lot of cooking ware and also a considerable number of bones of sheep/goat, sheep, and domestic pig, furthermore of cattle. The sediments in the northern yard (Contexts 5626 and 5630) correspond to this find.

Moreover, the foot of a chalice (TZ 020926-005) and a gaming piece (TZ 017378-001; cf. a find from Tall al-

Fig. 3.49 Stone ring, TZ 015488-001 (Source: BAI/GPIA).

127 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5611, 5628, and 5650.

128 Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 664 Fig. 12, 1–3: basalt and limestone, almost identical measurements. Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, Vol. 2, 375 Fig. 12.17:1–4: basalt.—Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 171, 1–13.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Chalice	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5475	10	2	10	5	12	1				10		1						
5607	11		16	7	3	1				9		4	1	2	1			
5614	3				2					3		1		1				
5617	1		3							2								
5618	5		7		2					7								
5626	52		18	6	9					18		23	1		1			
5630	34		32	7	12				1	16	3	2	10					
5639	21		11	1						3								
5642	2		5	1						3								

Tab. 3.25 Selected finds: Stone artefacts and ceramic finds from Complex B 9, wall (red), fill layers (brown), ash layer (blue), pisé floor (violet) (Source: BAI/GPIA).

Ḥiṣn [Beth Shean][129]) were found in Context 5630. On the whole, the quantity of flake tools found in B 9 is remarkably high: Context 5626 (52 finds), Context 5630 (34 finds), Context 5639 (21 finds), Context 5475 (10 finds) and Context 5607 (11 finds), a few in Context 5618 (5 finds), Context 5614 (3 finds), Context 5642 (2 finds), and Context 5617 (1 find).

In the yard area Context 5607, there was a metal fragment and also slag.

It can be safely assumed that in the northern part of Complex B 9, food was prepared and cooked (cf. also clay area Context 5608 with tabun remains and the possible cooking zone Context 5625) and also large quantities of ingredients were stored. The sediments in the southern yard area (Contexts 5607, 5617, 5618, 5639) correspond to those of the adjacent northern area with respect to their quality (flake tools, ceramic ware, especially cooking ware)—the quantity of finds, however, is considerably inferior. The tabun 5733 was set up in a well sheltered place. In the clay debris north of the tabun, not only remains of the tabun itself but also a baking sheet, a flake tool, and a larger quantitiy of ceramic ware were found which all attest to the regular use that was made of this location.

Among the definable bone finds, those of domestic pig are predominant, followed by sheep/goat and cattle.

	Bones[130]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5475	18	14	6	11	
5626	52	28	2	10	
5630	x	9	9	28	

Tab. 3.26 Selected finds: Bone finds from Complex B 9, fill layers (brown), ash layer (blue) (Source: BAI/GPIA).

129 Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 657 Fig. 11, 1: H 5.5; W 8.2; L 17, relatively large limestone pebble, highly smoothed.

130 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5607, 5614, 5617, 5618, 5628, 5639, and 5642.

Complex B 10

Complex B 10 apparently encompasses the most solid (and largest ?) building of Complex B. However, only the northern wall 5061 and the western wall 5698 are known. The tabun 5696 gives evidence of domestic activities while the pit 5609 must be regarded as a mere secondary installation (domestic activities; storage). The distribution of finds in Complex B 10 matches the characteristics of Stratum 18.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	sOil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5061			1															
5532			28	13	3					3								
5609	6		2	6	1					7	2							

Tab. 3.27 Selected finds: Stone artefacts and ceramic finds from Complex B 10, wall (red), fill layer (brown), pit (green) (Source: BAI/GPIA).

In the excavated section of Stratum 18, an elaborately constructed drainage canal (Complex A) and a multi-chambered building complex with several yard areas were uncovered. In the process, potential living rooms that were used for domestic activities (Complexes B 1, 2, and 10) were identified. The yard area B 3 was used for metal smelting activities, those in B 9 rather for familial domestic activities. The rooms B 4–6 must be regarded in the artisanal context; however, especially B 5 and 6 were probably also used for domestic activities. The rooms B 7 and 8 rather suggest an application as stockpiling and storage facilities.

	Bones				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5532	3	2	1	2	
5609	x				

Tab. 3.28 Selected finds: Bone finds from Complex B 10, fill layer (brown), pit (green) (Source: BAI/GPIA).

3.2.1.3. Stratum 17: Middle Bronze Age IIB

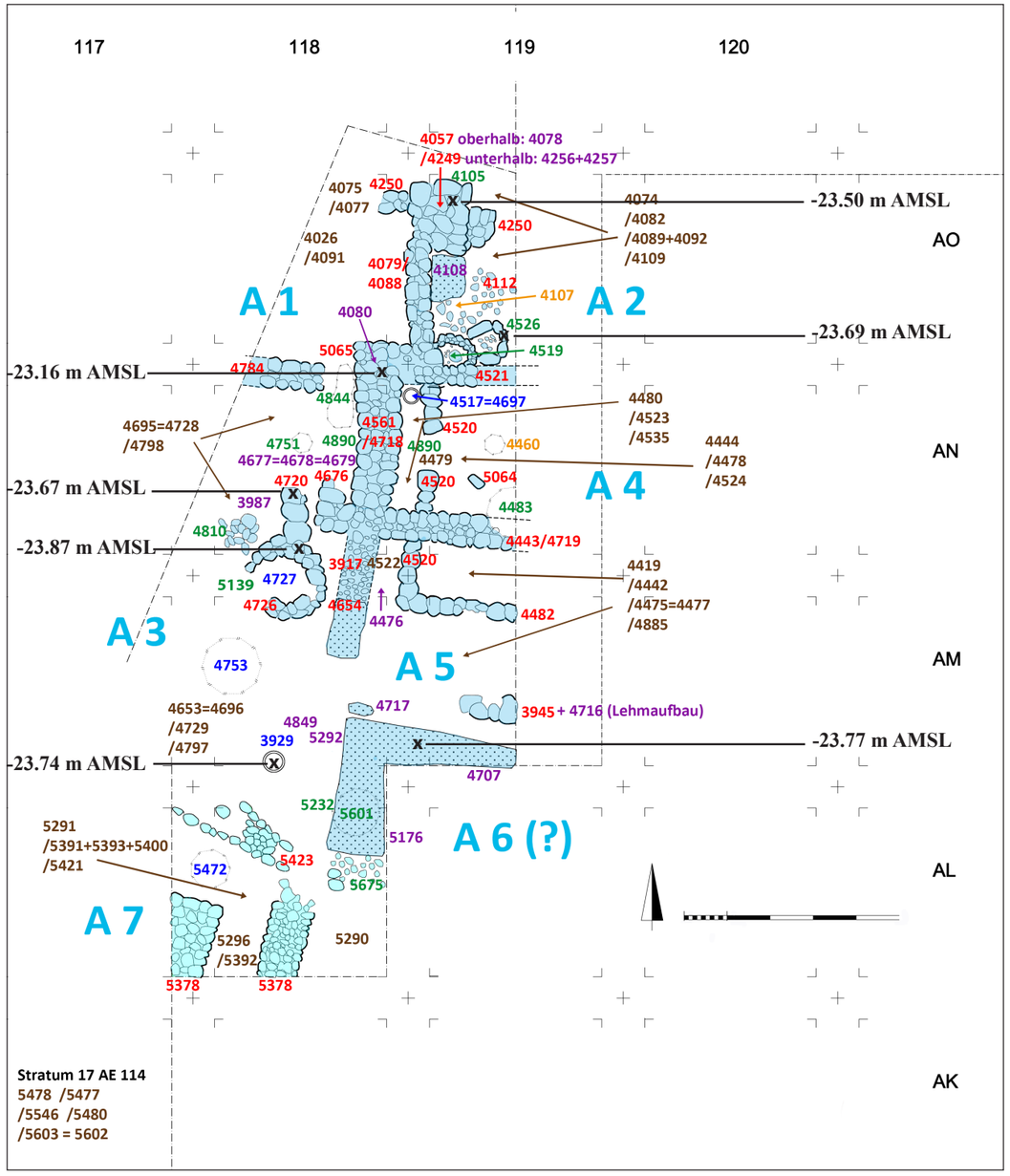


Fig. 3.50 Architectural plan, Area I, Stratum 17, Squares AL–AO 118–119, Complex A, walls (red), fill layers (brown), ash layers (blue), pits (green), pisé floors (violet) (Source: BAI/GPIA).

Stratum 17 could only be excavated in the areas that were not affected by the landslide of Stratum 16. Consequently, the excavation site was confined to the Squares AL–AO 118–119. Apart from these, six further filling layers in AE 114 (in the southern part of Area I) that were not affected by the landslide of Stratum 16 should also be mentioned: Contexts 5477, 5478, 5480, 5546, 5602, and 5603. Here, however, no architectural remains could be discovered.

The excavation area (AL–AO 118–119) should probably not be subdivided into two separate areas. Possibly a separate complex could be presumed in the southern part of the excavation area *(Fig. 3.52)*; however, substantial evidence supporting this supposition is lacking. In any case, the development and the finds that will be analysed below conform very well to the context of the yard of an artisanal metal smelter (Complex A 3). For this reason, the concept of subdividing the area into two complexes was abandoned.

The artisanal bronze furnace, which had continuously been located at almost the same spot on the tall, starting from Stratum 19 up to Stratum 14—i.e., throughout the entire Middle and Late Bronze Ages—could also be verified in Stratum 17. The essential find was that of the bronze-smelting furnace 4726 in AN/AM 118.

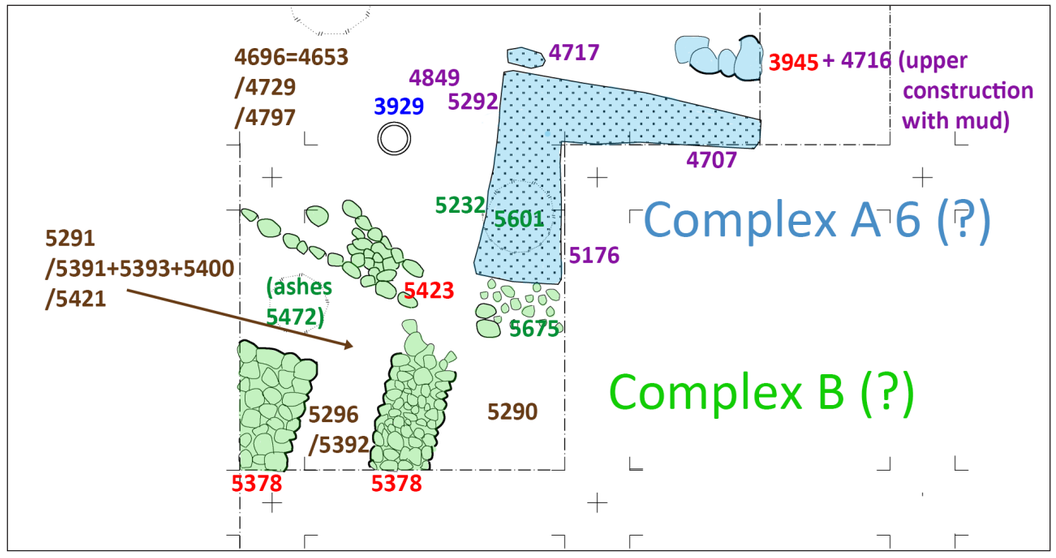


Fig. 3.51 Possible Complex B in the southern part of the excavation area (Source: BAI/GPIA).

The artisanal metal furnace (Complex A)

Complex A comprises the Squares AL–AO 118–119. It is made up by an artisanal compound which had an elaborately constructed oven for food preparation along with comprehensive facilities for storing food and preparing meals (esp. in AO 119; Complex A 2) in the northern excavation area; the central section, the vicinity of the smelting furnace, and the southern area were dominated by the treating of metal.

Complex A 1

Complex A 1 is bounded on the north by the collapse debris 4250, on the east by the furnace 4057/4249 and the walls 4079/4088, and furthermore on the south by the walls 5065 (with mud brick construction 4080) and 4784. The layers of soil 4075 and 4077 in the north as well as 4026 and 4091 in the south filled the area out.

The character of this space remains uncertain. It is even open for discussion whether it really formed a roofed room. It could very well constitute also an open area northwest of the artisanal complex. However, the large number of pieces of cooking pot ware in the fill layers (e.g. Contexts 4075 and 4091), the baking plate in Context 4057, the querns in Contexts 4077 and 4091, and the remains of tabun ovens in Contexts 4784 and 4091 suggest rather a yard that formed part of the complex.

Fig. 3.52 Context 4057 during excavation (Source: BAI/GPIA).

Fig. 3.53 Complex A 2, view from north-east (Source: BAI/GPIA).

Fig. 3.54 Contexts 4057/4249, view from south (Source: BAI/GPIA).

Almost all of the cooking pots belong to type CP 5 (only one occurrence of CP 6 in Context 4075). Moreover, there are indications of the future cooking pot tradition (MB/LB). The distribution of pottery is homogenous in the entire complex: Middle Bronze Age types are predominant—particularly the closed vessels (such as jar/jug); in addition to bowls there are also a few kraters. The bulk of ceramic finds are common ware. Early Bronze Age traditions only occur in ceramic assemblages, in which, however, the objects manufactured in the Middle Bronze Age tradition clearly prevail.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Basin
4075			12	4	1					6	1	8	2	4				1
4077		1	1	2						1		1						
4079			11	4	2					2			1					
4088			4							3								
4091		1	5	2						3		1	1					
4784	2		4	2	2					9		1						
5065			5							2								

Tab. 3.29 Selected finds: Stone artefacts and ceramic finds from Complex A 1, walls (red), fill layers (brown) (Source: BAI/GPIA).

Among the bone finds, sheep/goat, cattle, and domestic pig were verified.

	Bones[131]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4075	6	2	4	3	

Tab. 3.30 Selected finds: Bone finds from Complex A 1, fill layer (brown) (Source: BAI/GPIA).

Complex A 2

Complex A 2 is located in the northeast of the excavation area, almost entirely in the confines of Square AO 119. It was used for processing groceries and for food preparation.

This area comprises the contexts 4057 and 4249 (including the clay layers 4078, 4256, and 4257) as well as a wall—collapsed in its eastern part—which constitutes the area's western boundary (Context 4250). To the west, the space was demarcated by the walls 4079 and 4088, and to the south by the wall 4521. Furthermore, the mud (brick) bench 4108, the two silos 4519 and 4526, the hearth 4107 (with Context 4112), and the pit 4105 are located in this area. It is filled out with the sediments 4074, 4082, 4089, 4092, and 4109.

The furnace consisted of the vaulted construction 4249, made of larger stones, which arched (!) from north to south over a major, carefully placed cavity. On top of the vaulted stone find 4249, another stone layer (Context 4057) was meticulously arranged, which in turn was covered by an additional clay layer (Context 4078). Another clay layer (labelled Context 4256 in the north, and Context 4257 in the south) was attached underneath the

131 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4088, 4784, and 5065.

vaulted stone layer 4249 and separated it from the cavity. As a means of insulating them against loss of heat, the clay layers 4256 and 4257 were supplemented with ceramic sherds (esp. cooking pot sherds). To the west, the furnace is confined by a wall (Context 4250). In the east, the former wall was found to have collapsed. Charcoal was discovered in several parts of the oven, esp. inside the cavity (Context 4057) and in the covering clay layer (Context 4256). The ^{14}C sample from Context 4256 (charcoal) allowed the subsequent dating:

Sample TZ 014131-001

The sample dates to 3550 ± 30 BP/HS (Humic Acid) 3535 ± 30 BP:

- 1945–1878 BC (57.1 %); 1840–1826 BC (6.9 %); 1793–1784 (4.2 %) (= 1 Sigma: 68.2 %)/HS: 1923–1874 BC (36.9 %); 1843–1816 BC (18.3 %); 1799–1779 BC (13 %) (= 1 Sigma: 68.2 %)
- 2009–2002 BC (0.8 %); 1976–1861 BC (67.7 %); 1853–1772 BC (26.9 %) (= 2 Sigma: 95.4 %)/HS: 1949–1766 BC (= 2 Sigma: 95.4 %)
- 2023–1751 BC (= 3 Sigma: 99.7 %)/HS: 2017–1996 BC (0.5 %); 1981–1742 BC (99.2 %) (= 3 Sigma: 99.7 %)

The combination of a carefully erected bench/work top (Context 4108) made of multiple layers of relatively small stones with a mud brick overlay measuring 10–12 cm in height (measurements of the bricks: 23 x 23, 21 x 24, 21 x 21, 27 x 22, 28 x 21, 23 x 21 cm), two stone silos (Contexts 4519 and 4526) with clay residues on the stone layers, and a hearth constructed of stones (4107 in Context 4112) is not surprising.

The ^{14}C sample (charcoal) from the hearth allowed the dating as follows:

Sample TZ 014142-001

The sample dates to 3530 ± 35 BP/HS (Humic Acid) 3550 ± 35 BP:

- 1920–1871 BC (30.5 %); 1846–1811 BC (21.2 %); 1804–1776 (16.5 %) (= 1 Sigma; 68.2 %)/HS: 1947–1877 BC (52.1 %); 1841–1821 BC (9.6 %); 1796–1782 BC (6.6 %) = 1 Sigma: 68.2 %)
- 1949–1751 BC (= 2 Sigma: 95.4 %)/HS: 2011–2000 BC (1.6 %); 1977–1771 BC (93.8 %) (= 2 Sigma: 95.4 %)
- 2023–1737 BC (99.2 %); 1715–1697 BC (0.5 %) (= 3 Sigma: 99.7 %)/HS: 2031–1743 BC (= 3 Sigma: 99.7 %)

132 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4074, 4088, 4092, and 4257.

Apart from cooking pots, jugs/jars, and bowls the hearth also contained flint tools and charcoal. In this area, there must have also been at least one tabun; remains were verified in the soil area 4109 and also possibly in Context 4092, moreover in the pit 4105, in the hearth (Contexts 4107 and 4112), and in the perimeter of the clay bench 4108.

Some (few) flint tools were found in the hearth 4107, on the clay bench 4108, in the oven area (Contexts 4249 and 4256), and in the southern area (Context 4521). Rubbing stones were discovered in the oven area (Contexts 4057 and 4250) and in the wall 4521.

The bone finds testify to the consumption of sheep and goat (Contexts 4078, 4105, and 4107) and of domestic pig (Contexts 4107, 4108, 4109, 4112, and 4250). The total absence of the otherwise omnipresent cattle bones can probably be ascribed to the large number of unidentifiable finds and does not imply a complete lack of cattle in this area.

Bones[132]					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4078	1	1			
4105		4			
4107	12	7		3	
4108	x			1	
4109				1	
4112	x			1	
4250	2			1	

Tab. 3.31 Selected finds: Bone finds from Complex A 2, walls (red), ash layer (blue), mod. disturbance (orange), pit (green), pisé floors (violet) (Source: BAI/GPIA).

Remarkable finds were those of the fragment of a baking tray on the clay bench (Context 4108) and, in Context 4082, of a bowl with three pedestal feet that were shaped like handles (two of them are intact; cf. also the similar finds in Contexts 5213 and 5475 of Stratum 18).

The silos 4519 and 4526 were surprisingly bare of finds. In view of its small yield of ceramic sherds the pit 4105 must probably be regarded as a garbage disposal.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Basin
4057		2	2															
4074			4		2					1								
4079			11	4	2					2			1					
4082			1	1		1												
4088			4							3								
4089			1	4														
4092			2							1				1				1
4105			2							2		3	1	1				
4107	1		6	2						2		1	3					
4108	2		6	2						4			1					
4109			1	2	1					2								
4112			2							6	1		3	1				
4249	1																	
4250		1																
4256	1		5	2						8	1	3						
4257				2						3		2						
4521	3	1		1						4								

Tab. 3.32 Selected finds: Stone artefacts and ceramic finds from Complex A 2, walls (red), fill layers (brown), ash layer (blue), pit (green), pisé floors (violet), mod. disturbances (orange) (Source: BAI/GPIA).

Just as in Complex A 1, almost all of the cooking pots can be classified as type CP 5 (exceptions in Contexts 4112 and 4256: one CP 6 each). Stratum 17 is marked by the nature of its distribution of pottery: the types manufactured in the Middle Bronze Age tradition are predominant—among these, particularly the closed vessels (such as jugs/jars); there are also bowls and kraters and one bottle. Almost all pieces of pottery are common ware. Early Bronze Age traditions only occur in ceramic assemblages, which are clearly dominated by objects fashioned in the Middle Bronze Age tradition.

Complex A 3

Complex A 3 stretches over the Squares AL 118–AN 118. It constitutes a yard area that was used for the process of smelting metal. The tall's western slope, where thermal updraughts daily provided ideal conditions for operating a smelting furnace, seems to have been a perfect spot for setting up a workshop of this kind. This observation applies to all strata of the Middle and Late Bronze Ages (Strata 19–14).

The area comprises Contexts 4726 and 4727 (smelting furnace), an adjacent installation (Context 4720), and the walls 4784, 4561/4718, 4676, 3917, and 5423. The latter possibly delimited the proper yard area to the south. The mud brick debris (Contexts 4677, 4678, and 4679) seems to originate from the nearby wall 4561/4718. In the southeasterly area, the architecture is dominated by the mud brick walls 5176 and 5292 (which, in conjunction with

Fig. 3.55 Smelting furnace, Context 4726 (Source: BAI/GPIA).

the mud brick wall 4707/5176, presumably had formerly formed a building section A 6 of its own). The clay block 4849 may have originally belonged to this mud brick construction.

The ash pit 4753 must have belonged to the smelting furnace. The tabun 3929 provided the southeasterly yard area with an individual function. The proximate pit 5232 yielded, among other finds, a grinding stone.

There were pits in all parts of the yard: Contexts 4751, 4844, and 4890 in the north, 4810 close to the smelting furnace, and also Context 5232 in the south. The pit 4751 contained bones of sheep or goat, cattle, domestic pig, and of one gazelle.

The bronze smelting furnace (interior 4727; double-rowed encircling wall 4726; upper rim: -23.76 m NN; lower rim: -25.35 m NN) which was constructed in a cathedral-like fashion with a dome had a diameter of 1.60 m and a clear span of 85 cm. A grinding plate and a former hinge stone were also used in the building material. The soil inside the furnace was ashey, clayey, and with a greyish tinge. Among the finds were sherds of an overthrown vessel/crucible containing bronze. In between the vessel and the bronze-bearing melted mass was a light (yellowish-green, probably due to staining from the bronze) calcareous layer; ash-like 'fibres' could be detected on the sides of the crucible (TZ 020229-019; altitude of find: -24.30 m NN) and in the soil surrounding it. The crucible was blackened on the inside (fire); on the outside it did not show any burn marks. A weight stone was also found in this context (another one south of it in a pit).

The pit 5139 disturbed the otherwise closed dome construction of the smelting furnace.

The ^{14}C sample from the crucible yielded the subsequent dating:

Sample TZ 015567-001

Context 4727 from Square AN 118
The sample dates to 3440 ± 35 BP/HS (Humic Acid) 3470 ± 35 BP:

- 1869–1847 BC (10.7 %); 1775–1689 BC (57.5 %) (= 1 Sigma: 68.2 %)/HS: 1877–1841 BC (25 %); 1821–1796 BC (16.2 %); 1782–1744 BC (27 %) (= 1 Sigma: 68.2 %)
- 1880–1662 BC (= 2 Sigma: 95.4 %)/HS: 1886–1692 BC (95.4 %) (= 2 Sigma: 95.4 %)
- 1891–1625 BC (= 3 Sigma: 99.7 %)/HS: 1929–1658 BC (= 3 Sigma: 99.7 %)

Sample TZ 015541-001

Context 4727 from Square AN 118
The sample dates to 3485 ± 35 BP:

- 1878–1839 BC (25.5 %); 1828–1792 BC (23.5 %); 1785–1755 BC (19.2 %) (= 1 Sigma: 68.2 %)
- 1896–1735 BC (90.3 %); 1717–1695 (5.1 %) (= 2 Sigma: 95.4 %)
- 1944–1682 BC (= 3 Sigma: 99.7 %)

Possibly Context 4720 has to be regarded as an annexe to the furnace that was associated with the smelting process or its preparatory measures. Apart from the crucible of Context 4727, metal finds were also discovered in the wall 4718 (completely preserved earring TZ 015250-001; with reference finds in Tall Qēmūn [Tēl Yoqnəʿām], Tall al-Mutasallim [Megiddo], and Tall al-Ḥiṣn [Beth Shean][133]), in the pit 4890 (presumably four more bronze rings and three iron nodules), and in the sediments 4653 (fragment of an awl/needle [?]), in Context 4695 (amorphous object), in Context 4728 (amorphous object), and in Context 4729 (bronze wire [?]).

Fig. 3.56 Part of a chalice, TZ 006821-009, Context 4797 (Source: BAI/GPIA).

133 Tall al-Mutasallim (Megiddo): Finkelstein et al. 2000, 389 Fig. 12. 27, 2: ring, here silver, D c. 1.7.—Tall al-Mutasallim (Megiddo) Stratum 13 and 10: Wilson – Allen 1948, Pl. 225, 1 and 4: earrings/silver.—Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 f. Fig. 9, 4. 5 and 3 and Fig. 9, 10: bracelets.—Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3-4: Mazar – Mullin 2007, 619 Fig. 9, 8. 7: earring/silver.

Fig. 3.57 Cramic disc (lid), made from a chalice (?), TZ 006632-015, Context 4696 (Source: BAI/GPIA).

Other items that were certainly used for production purposes are the iron nodules (Contexts 4677, 4797, 4890; extraction of ruddle). A remarkable find was that of a complete bottom of a potter's wheel with a concentric depression in Context 4729 (TZ 015604-001; reference finds in Tall al-Qassis [Tēl Qāšīṣ], Tall al-Mutasallim [Megiddo], and Tall Abū al-Ḫaraz[134]).

The sediments both in the north (Contexts 4695, 4728, 4798) and in the south (Contexts 4653, 4696, 4729, 4797) yielded unusually large amounts of all kinds of ceramics (incl. cooking ware, jars, jugs, kraters, oil lamps, bottles, lids). Among them were also six amphora-like jugs (Context 4729) and two fragmented chalices (Context 4797; TZ 006821-001; *Fig. 3.60;* and TZ 006821-009[135]; *Fig. 3.56*), both of which indicate a familial-cultic context. An irregular ceramic disk made from a thick ceramic sherd, probably put to a secondary use as a lid, was found in Context 4696 (TZ 006632-015[136]; *Fig. 3.57*). Its margins were not smoothened. Its original painting

Fig. 3.58 Bead, TZ 014646-001, Context 4695 (Source: BAI/GPIA).

Fig. 3.59 Bead, TZ 014647-001, Context 4695 (Source: BAI/GPIA).

134 Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Ben-Tor et al. 2003, 88 Fig. 41, 5: basalt, D c. 15, pierced axially.—Tall Abū al-Ḫaraz Phase V (LB early): Fischer 2006, 62 Fig. 52; 76 Fig. 64, 11: basalt, pierced.—Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 268, 1–3.

135 Another chalice was found in pit 5139 (TZ 020334-002).

136 D max 6.6, W Th 1.4.

137 Tall al-Mutasallim (Megiddo) MB/LB: Finkelstein et al. 2000, 391 Fig. 12. 29, 15: glass.—Ṭabaqāt Faḥl (Pella) MB II, Tomb 8: Smith 1973, Pl. 79 m: faded blue-green faience, pierced axially.

Fig. 3.60 Foot of a chalice, TZ 006821-001, Context 4797 (Source: BAI/GPIA).

is unusual: the buff clay is covered by a thick white layer which is coarsely painted with russet and mustard yellow ornaments.

This area is also special in that it yielded several door hinge stones (Contexts 4726 and 4749) and numerous prestigious goods such as four glass/faience beads (or bead fragments) (TZ 014646-001—cf. finds from Tall al-Mutasallim [Megiddo] and Ṭabaqāt Faḥl [Pella][137]; TZ 014647-001—cf. find from Tall al-Mutasallim [Megiddo][138]; as well as TZ 016641-001—cf. find from Tall al-Mutasallim [Megiddo][139]; *Fig. 3.58, 3.59, and 3.61*), glass fragments, raw glass (?), a pendant (shell), and a spindle whorl made of bone in Context 4695 (TZ 014645-001; reference finds from Tall Qēmūn [Tēl Yoqnəʿām] and Tall Abū al-Ḫaraz[140]; *Fig. 3.62*) . This bone that was whittled to the shape of a cone and had a axial, meticulously executed piercing was flattened on its bottom side. Today it is broken into five disk-shaped pieces. Presumably it was used as a spindle whorl (or button [?]).

Fig. 3.61 Bead, TZ 016641-001, Context 4695 (Source: BAI/GPIA).

Fig. 3.62 Spindle whorl, TZ 014645-001, Context 4695 (Source: BAI/GPIA).

138 Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 207, 16.

139 Tall al-Mutasallim (Megiddo) EB I: Finkelstein et al. 2000, 393 Fig. 12. 30, 3: faience cylindrical, light blue.

140 Tall Qēmūn (Tēl Yoqnəʿām) MB IIB late–LB early: Ben-Tor et al. 2005, 381 Fig. V 12, 1–4: spindle whorls, D 2.2–3; flatter than the TZ example. Tall Abū al-Ḫaraz Phases V and VII: Fischer 2008, 76 Fig. 64, 2: D c. 2.5, and 175 Fig. 206, 1: button, D c. 1.

Fig. 3.63 Signet ring, TZ 014648-001, Context 4695, photograph (Source: BAI/ GPIA).

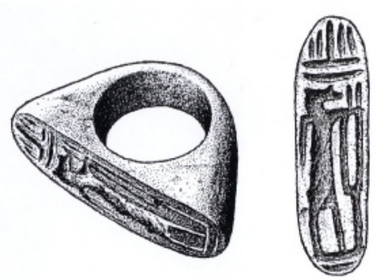


Fig. 3.64 Signet ring, TZ 014648-001, Context 4695, drawing (Source: BAI/GPIA; drawing by E. Brückelmann).

The undoubtedly most unusual find is a signet ring made of soapstone (TZ 014648-001; *Fig. 3.63* and *3.64*) in Context 4695. The iconography on the stamp side appears to be Egyptian[141].

A stone bead was found in the wall 3917.

From the mud brick debris 3987[142] a ^{14}C sample was taken that yielded the following data:

Sample TZ 014128-001

The first sample dates to 3,640 ± 40 BP/the second sample dates to 3685 ± 35 BP/

HS (Humic Acid) first sample: 3555 ± 40 BP/HS second sample: 3685 ± 35 BP:

First sample:

- 2117–2098 BC (9 %); 2039–1945 BC (59.2 %) (= 1 Sigma: 68.2 %)/HS: 1955–1876 BC (52.8 %); 1842–1820 BC (9.1 %); 1797–1781 BC (6.3 %) (= 1 Sigma: 68.2 %)
- 2136–1907 BC (= 2 Sigma: 95.4 %)/HS: 2020–1993 BC (5.1 %); 1983–1768 BC (90.3 %) (= 3 Sigma: 95.4 %)
- 2200–2136 BC (0.9 %); 2153–1879 BC (98.8 %) (= 3 Sigma: 99.7 %)/HS: 2116–2098 BC (0.2 %); 2039–1739 BC (99.3 %); 1712–1699 BC (0.2 %) (= 3 Sigma: 99.7 %)

Second sample:

- 2135–2028 BC (= 1 Sigma: 68.2 %)/HS: 2135–2018 BC (= 1 Sigma: 68.2 %)
- 2196–2171 BC (4.8 %); 2146–1960 BC (90.6 %) (= 2 Sigma: 95.4 %)/HS: 2196–2171 BC (4.8 %); 2146–1960 BC (90.6 %) (= 2 Sigma: 95.4 %)
- 2206–1920 BC (= 3 Sigma: 99.7 %)/HS: 2206–1920 BC (= 3 Sigma: 99.7 %)

	Bones[143]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
3917		2			1
3929		1		1	
3987	x	8			
4677		25		1	
4695	31	41	7	7	1
4718	9	1		1	
4727	15	70			
4729	x	66	4	1	
4751	8	2	1	1	1
4798	36	40	3	10	
5139		4			

Tab. 3.33 Selected finds: Bone finds from Complex A 3, walls (red), fill layers (brown), pits (green), pisé floors (violet) (Source: BAI/GPIA).

141 Cf. Tall al-Mutasallim (Megiddo) MB IIB: Wilson – Allen 1948, Pl. 151, 146: almost identical iconography of a stamp on a scarab. Prof. Dr. J. Quack (Heidelberg), 21.06.2016: „Anthropomorphous idol with apron and (Was) sceptre. Judging from its proportions, the head is definitely animal. Its elongated snout suggests Sobek with a crocodile's head (who is quite popular in the late Middle Kingdom); the figure can hardly be Seth or Anubis since it lacks their distinctive ears."

142 Here, also a shell fragment was recovered (pendant [?]).

143 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4561, 4654, 4696, 4727, 4784,4797, 4890, and 5232.

	Stone Artefacts		Ceramics (Middle Bronze Age)									Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Chalices/Oil lamps	Holemouth	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Basin
3917	1		2	2	1													
3929			4															
3987			17	11	2				1	9								
4561		2																
4653		1	1															
4654			1		1					2	1							
4677		1	3		1					1								
4695	13	1	43	9	4			6[144]	1	17	1	8	1	1				
4696	11		17	10	9					15				8				
4718			16	1						1								
4726		1	1							1		1						
4727	5	1	9	17								2	3					
4728			1															
4729	9	2	27	10	1	1		1[144]		2	2	5	5	3		5		
4784	2		4	2	2					9		1						
4797		1	14	2						3		1		7				
4798	6	2	34	18	1				2	14		2		1				
4810			1									2						
4844				4					1	2								
4849			1															
4890			4	2	1			1[145]		13								
5139		1	1															
5232	4	2	14	2	2					5								

Tab. 3.34 Selected finds: Stone artefacts and ceramic finds from Complex A 3, walls (red), fill layers (brown), pits (green), pisé floors (violet) (Source: BAI/GPIA).

The food, too, shows a diverse picture. Stratum 17 yielded an unusually large number of bones (sheep/goat, cattle, and domestic pig; sheep/goat clearly outweighing domestic pig and cattle). Without fail food was prepared and/or consumed in the yard area. The finds in Context 3917 (wild boar), Context 4695 (fallow deer), and Context 4751 (gazelle) also give testimony to the importance of hunting for the population's nutrition.

The distribution of ceramics corresponds to that of the other complexes in Stratum 17: Almost all cooking pots belong to type CP 5 (CP 6 in Contexts 4654, 4695, and 4729). There are a few noteworthy occurrences of

144 Oil lamps.

145 Chalice.

jars/jugs as well as bowls and kraters manufactured in the Early Bronze Age tradition. There is a strong predominance of Middle Bronze Age ware—especially the closed vessels (such as jug/jar); apart from bowls there are also kraters and one bottle; likewise holemouth vessels in Contexts 3987, 4695, 4798, and 4844, and a chalice in Context 4890. Early Bronze Age ceramic sherds were only found in ceramic assemblages, which were otherwise clearly dominated by objects produced in the Middle Bronze Age tradition.

Complex A 4

Complex A 4 is a room that is partitioned by a small wall. It was used for baking, presumably also cooking (hearth; many cooking pot fragments), and apparently also for playing games (Context 5064).

To the north, this room is delimited by the wall 4521, to the west by Contexts 4561/4718, and to the south by Contexts 4443/4719. It is moreover divided by a single-row wall (Context 4520). In the westerly division of the room A 4 was a tabun (Contexts 4517, 4697). Three pits could be verified (Contexts 4460, 4483, and 4890): Context 4460 was filled with plenty of ash and charcoal. It may have been a fireplace. The pit 4890 contained not only various ceramic finds but also a bronze ring and an olive kernel.

The identifiable bone remains always testified to the consumption of sheep and goat as well as domestic pig and also cattle (Contexts 4480 and 4520).

A remarkable, though unfortunately fragmented, stone (Context 5064) had an even surface which was ornamented with a scratched network of several lines running orthogonally and parallel to each other. In its vicinity,

Bones[146]					
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
4444	11	15		2	
4478		5			
4479	2	3			
4480	x	3	1	1	
4483	1	6		1	
4520		5	1		
4524	11	1		2	
4535				1	
4718	9	1		1	

Tab. 3.35 Selected finds: Bone finds from Complex A 4, walls (red), fill layers (brown), pit (green) (Source: BAI/GPIA).

Fig. 3.65 Game board, TZ 015992-001, Context 5064, view from front and above (Source: BAI/GPIA).

Fig. 3.66 Game board, TZ 015992-001, Context 5064, view from above (Source: BAI/GPIA).

146 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4561, 4719, and 4890.

numerous ‘lids’ were found—possibly they were the playing pieces of a game in which the stone constituted the board (TZ 015992-001; *Fig. 3.65 and 3.66*; compare with finds from Tall al-Mutasallim [Megiddo])[147]. By chance, a modern reference was discovered on the Byzantine settlement in the ʿAğlūn mountains) in June 2016. *(Fig. 3.69)*.

The sediments in the westerly area were given the context numbers 4480, 4523, and 4535, and those in the easterly area 4444, 4478, and 4524. The sediment of the partitioned westerly part of the room was labelled Context 4479. In Context 4524, a dress pin, a metal fragment (small plate), a shell pendant, and a quern were found.

Context 4444 yielded a bowl with nubs on its rim (TZ 006244-001/TZ 006298-001)[148]. The delicate buff, wide bowl has the following measurements: rim D 24 cm, H 7 cm, and D of the ring-shaped base 10 cm. At a later date, the base was—probably intentionally—pierced, which resulted in a hole with a diameter of approx. 4 cm. The bowl’s rim is bended to the inside and displays slightly upright, cylindrical nubs of about 1 cm in at least two places. On the one hand, these are ornamental; however, since they are large enough, they may also have served as gripping aids[149].

^{14}C dating of the charcoal finds from Context 4480 yielded the following results:

Fig. 3.67 Part of game board, TZ 015992-001, Context 5064 (Source: BAI/GPIA).

Fig. 3.68 Game board, Gizeh, today British Museum (Source: BAI/GPIA).

Sample TZ 014136-001

Context 4480 from Square AN 119
The sample dates to 3435 ± 35 BP:

- 1867–1848 BC (8.6 %); 1774–1687 BC (59.8 %) (= 1 Sigma: 68.2 %)
- 1879–1837 BC (14.2 %); 1830–1657 (80.3 %) 1652–1645 BC (0.9 %) (= 2 Sigma: 95.4 %)
- 1889–1623 BC (= 3 Sigma: 99.7 %)

Fig. 3.69 Modern game board, Ḫirbat al-Badīyah, June 2016 (Source: BAI/GPIA).

147 Tall al-Mutasallim (Megiddo) Stratum 5 (= IA II): Wilson – Allen 1948, Pl. 268, 6: similar.—Tall al-Mutasallim (Megiddo) Stratum 19 (EB or earlier): Wilson – Allen 1948, Pl. 272: incised stones from the pavement of Stratum 19.

148 The pieces are matching.

149 Cf.: Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 15, 12: here with two „long bar handles“.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Chalices	Pixys	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
4443			1												1			
4444			17	12		1				2								
4478			13	12	2					1								
4479			1							2								
4480	1		2							3								
4483			1	4				5				1						
4517					1													
4520										2								
4521	2	1		1						4								
4523			2							2								
4524		1	18	2	1				1									
4535			2															
4561		2																
4697				2						5			1					
4718			16	1						1								
4719				1														
4890			4	2	1		1			13								

Tab. 3.36 Selected finds: Stone artefacts and ceramic finds from Complex A 4, walls (red), fill layers (brown), pits (green), pisé floors (violet) (Source: BAI/GPIA).

The ceramic assemblage corresponds to the usual repertoire in Stratum 17; however, here the ware manufactured in the Early Bronze Age tradition is largely absent. Almost all of the cooking pots are Type CP 5 (a few CP 3). Apart from the cooking vessels, the closed vessels (such as jug/jar) predominate; moreover, there are bowls and also two kraters and one bottle. Context 4483 yielded the particularly noteworthy pyxis (5 sherds; TZ 006338-001; *Fig. 3.71*) and also the framents of an egg shell ware jug/jar (TZ 006338-003; *Fig. 3.72*).

Fig. 3.70 Sherds from a pyxis, TZ 006338-001, Context 4483 (Source: BAI/GPIA).

Fig. 3.71 Rim fragments from an egg shell ware jug/jar, TZ 006338-003, Context 4483 (Source: BAI/GPIA).

Fig. 3.72 Dress pin, TZ 014317-001, Context 4524 (Source: BAI/GPIA).

Metal finds were verified in Context 4524[150]: a dress pin (TZ 014317-001; *Fig. 3.73*; during this period common in Northern Israel, Transjordan, and Syria; cf. finds in Tall Qēmūn [Tēl Yoqnəʿām], Tall al-Mutasallim [Megiddo], and Tall al-Ḥiṣn [Beth Shean][151]) and another bronze fragment; in Context 4890, four bronze rings and three iron nodules were found

Complex A 5

Complex A 5 resembles A 4 in that it is partitioned by small, single-row walls. However, the finds and contexts registered here do not suggest any dominant function in the artisanal complex.

To the north, it is delimited by the walls 4443/4719, to the west by 3917[152]/4654, and to the south by the clay wall 4707. The room is divided by the single-row stone walls 4520, 4482, and 3945/4716. In addition to mud brick walls there were also areas and blocks of clay (Contexts 4476 and 4717) that must be regarded as collapse debris. The sediments from this area are Contexts 4419, 4442, 4475, 4477, 4522, and 4885.

Among the usual bone finds (sheep/goat, cattle, and domestic pig) merely the wild boar found in Context 3917 is remarkable.

	Bones[153]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
3917		2			1
4442	x	3			
4475	x	1	2		
4477		1			
4520		5	1		
4522		5		1	

Tab. 3.37 Selected finds: Bone finds from Complex A 5, walls (red), mod. disturbances (orange) (Source: BAI/GPIA).

150 A shell pendant was also found at this location.

151 Tall Qēmūn (Tēl Yoqnəʿām) MB Stratum 20b: Ben-Tor et al. 2005, 378 Fig. V 11, 7: needle.—Tall al-Mutasallim (Megiddo) Stratum 13: Wilson – Allen 1948, Pl. 219, 13–15: toggle pins.—Tall al-Ḥiṣn (Beth Shean) IB: Mazar 2012, 361 Fig. 9, 1. 4 and Photo 9.9: pin, L 14).—Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3-4: Mazar – Mullins 2007, 614 Fig. 9, 1–5: pins and rods.

152 Here, a stone bead was found.

153 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 4419, 4476, 4717, and 4719.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Pixys	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
3917	1		2	2	1													
3945				1														
4419			1	2														
4442		1	6	3						1								
4443			1												1			
4475			9	6						2								
4476			1															
4477										5								
4520										2								
4522			3					3	1	1		1	1					
4654			1		1					2	1							
4717	1	1	1	2	1		1					1						
4719				1														
4885										1								

Tab. 3.38 Selected finds: Stone artefacts and ceramic finds from Complex A 5, walls (red), mod. disturbances (orange), pisé floors (violet) (Source: BAI/GPIA).

The ceramic assemblage corresponds to the usual repertoire in Stratum 17 and shows a strong affinity to that of Complex A 4: the cooking pots are almost entirely type CP 5 (only few are CP 3). Apart from those, the closed vessels (such as jug/jar) are predominant; moreover there are bowls and three kraters. Special finds were those of three sherds from pyxides in Context 4522 and of a stone bowl in Context 4442.

Complex A 6

The function of Complex A 6 can only be guessed at. The walls 4707, 5176, and 5292 suggest that there once was another room belonging to Complex A, located to the south or to the east. The wall thickness indicates a representative chamber. The low number of finds, however, does not allow any conclusion regarding its specific character and function.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5176										1								
5292	3	1																

Tab. 3.39 Selected finds: Stone artefacts and ceramic finds from Complex A 6, pisé floors (violet) (Source: BAI/GPIA).

Complex A 7

Its southern area can probably be regarded as the southern extension of Complex A even if its character is very hard to identify because the remaining architecture is only fragmented. Complex A 7 comprises the walls 5423 and 5378, the pit 5675[154], the ash pit 5472, and the sediments 5291, 5391, 5393, 5400, and 5421 as well as 5296, 5392, and finally 5290 in the south-easterly excavation area. The function of the nowadays hardly discernible stone setting 5432 remains ultimately unclear. Is it the boundary between the yard area and either a storage complex or living quarters to the south or does it constitute the rudiment of another installation inside the yard compound? When taking into account the findings in Stratum 18, the substructure of a canal also seems possible—however, no interpretation of any kind can be proven in view of the existing evidence.

	Bones[156]				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5291	6	38	2	9	
5421	35	11	7	23	

Tab. 3.40 Selected finds: Bone finds from Complex A 7, mod. disturbances (orange) (Source: BAI/GPIA).

In the sediment 5291, not only a stone spindle whorl (TZ 15420-001; cf. finds from Tall al-Ḥiṣn [Beth Shean]) and Tall al-Mutasallim [Megiddo]), two shell pendants, and a grinding stone were found but also 13 stone tools. Moreover, a large amount of all types of ceramics were discovered. Furthermore, bones, especially of sheep/goat and domestic pig and also of cattle were verified. Similarly, the sediment 5421 yielded an exceptionally large quantity and diversity of ceramic fragments. Two spindle whorls made of stone (TZ 015457-001; TZ 015466-001; cf. finds from Tall al-Ḥiṣn [Beth Shean]) and Tall al-Mutasallim [Megiddo][155]), a lid from limestone (TZ 015984-001) and a fragmented stone bead (?), three grinding stones, an elaborately and accurately shaped mortar made of dense limestone (for pestling olives or nuts; TZ 015414-001; *Fig. 3.73*), one weight stone and silex tools were verified, just like a large number of sheep/goat bones, a quite remarkable quantity of bones from domestic pigs and also some cattle bones. A considerable amount of all types of ceramics was found in the sediment 5400. Apart from a bulk of pottery the wall 5378 also yielded

154 About the limestone spindle whorl that was found in this location, also see Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 664 Fig. 12, 3–6 and 11: basalt and limestone.—Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 375 Fig. 12, 7. 8. 17:limestone.—Tall al-Mutasallim (Megiddo) FB/MB: Wilson – Allen 1948, Pl. 171, 1–13.

155 Cf. both spindle whorls (TZ 015420-001 and TZ 015457-001): Tall al-Ḥiṣn (Beth Shean) EB IB: Mazar 2012, 368 f. Photo 9, 16 and Fig. 9, 1–14: unpolished, basalt and limestone, lentil-shaped cross-section; D of this type between 3.1 und 5.3, D of the hole ranging from 0.6 to 1.5.—Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 664 Fig. 12, 1. 3 and 9: basalt.—Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 375 Fig. 12. 17, 1–4: basalt.—Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 171, 1–13.

156 Further bone finds that cannot be identified with respect to their species were discovered in Contexts 5378, 5391, 5393, and 5675.

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Pilgrim Flasks	Holemouths	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Spindle Whorls
5290	4		1							3		2	3					
5291	12	2	19	10	1					2		5						
5296												3						
5378	6	2	5	5	4					13	1	1						
5393	1		1															
5400			2	1	1					8								
5421	7	8	60	34	15	1		2		27	1	2	3					
5472	2		2															
5675	2	1	8	2					1	6						1		

Tab. 3.41 Selected finds: Stone artefacts and ceramic finds from Complex A 7, wall (red), fill layers (brown), ash layer (blue), pit (green) (Source: BAI/GPIA).

a grinding bowl and a weight stone. Further stone tools were found in the pit 5472 and in the wall 5378.

The remarkable number of ceramic finds and the multitude of stone artifacts are indicative of a storage area although the cooking vessels and the animal bone finds also suggest the process of food preparation. Both the composition of the ceramic repertoire and the species of bone finds are characteristic of Stratum 17; however, here the bones of domestic pig are predominant.

Fig. 3.73 Mortar bowl, TZ 015414-001, Context 5421 (Source: BAI/GPIA).

South-easterly part of Area I (AE 114)

In the south-easterly part of Area I, six additional contexts belonging to Stratum 17 are located; however, neither any architectural structure nor any development at all is discernible. These are the subsequent contexts: 5477, 5478, 5480, 5546, 5602, and 5603.

The sediments (5477, 5478, and 5546) yielded several flake tools as well as bones, particularly those of sheep/goat and also of cattle and domestic pig—in Context 5478 and Context 5546, also gazelle bones. The ceramic assemblage corresponds to the usual repertoire in Stratum 17. In Context 5477, an olive kernel was verified.

	Bones				
	unidentified	Sheep/Goat	Cattle	Domestic pig	different breed
5477		6	7	1	
5478	13	10	3		2
5480		3	1	1	
5546	5	1		3	1

Tab. 3.42 Selected finds: Bone finds from Square AE 114, mod. disturbances (orange) (Source: BAI/GPIA).

	Stone Artefacts		Ceramics (Middle Bronze Age)							Cooking Pots		Ceramics (Early Bronze Age)						
	Flint tools	Mills, Mortars, Grinders etc.	Jars/Jugs	Bowls	Kraters	Flasks	Pithoi	Oil Lamps	Spindle Whorls	CP 5	CP 6	Jars/Jugs	Bowls	Kraters	Holemouths	Platters	Flasks	Basin
5477	10		8	4	1					4								
5478	14	1	9	1								2	1					1
5480			2							1								
5546	3			1									3					
5602			1	1	1		1											

Tab. 3.43 Selected finds: Stone artefacts and ceramic finds from Square AE 114, wall (red), mod. disturbances (orange) (Source: BAI/GPIA).

3.2.2. Catalogue of Finds: The Middle Bronze Age (Strata 19–17)

3.2.2.1. Catalogue of Metal Finds: Strata 19–17

In the strata 19 to 17 of the Middle Bronze Age on Tall Zirā'a, altogether 30 metal finds were documented. These are predominantly copper objects and a few made of bronze. Two objects could not be assigned to one group or the other, due to the lack of analyses. In Stratum 19, two lead objects are remarkable, one of which might be a fishing-hook. The five iron finds of the Strata 19 to 17 consist of iron nodules which occur frequently in the limestone around the Tall Zirā'a, or of their decomposition products. They were—if not used as pounders—frequently ground and powdered and used as red chalk.

With respect to the metal classification, the following should be noted:

With respect to the metal classification, the following should be noted:

- Cu_2Sn bronze is being defined from an Sn content of 1.0 % as the metal's malleability decreases with a Sn content of 1.3 % or higher. Thus, the production of bronzes with an intentionally low Sn content seems reasonable.
- Regarding the metal classification of the metal objects from Tall Zirā'a on the basis of data relevant for XRF-spectroscopy: All specifications are given in ppm (10.000 ppm = 1 %). Cu contents exceeding 100.0 % are not realistic and must be due to the calibration of the instrument being used and to object-related measuring errors. All data cited in this chapter taken from Schulze 2014.
- Values <10 ppm are defined as being below the limit of detection (<LOD).

Four of the copper/bronze finds could not be assigned to their original type ore use due to their disintegration and amorphous form. Among the definable finds there are one needle fragment, seven fragments of awls or needles, two decorative needles (?), two rings, one hook, one amorphous vessel fragment, two fragments of wire, one platelet and two fragments of sheet metal.

In order to ascertain the metals' provenance, numerous archaeometrical examinations were performed and published in Schulze 2014, esp. 121–123.

The following extract from those examiations which are relevant for Strata 25–17 is taken from the results published in Tab. 11-2 of said publication („Bleiisotopenverhältnisse sowie die jeweiligen Standardfehler SE für die mittels fs-LA-ICP-MCMS analysierten Proben der Metallobjekte vom Tall Zirā'a, Jordanien"). These are shown in the following *Tab. 3.43*.

Metal finds						
Stratum	**Cu**	**Copper/Bronze**	**Cu_2Sn-Bronze**	**Lead**	**Iron (Ecofacts)**	**Total**
23		1				1
22	4					4
21	2					2
20	2		2			4
19	4	1	1	2	3	11
18	4	2	2		2	10
17	6		3			9
Total	22	4	8	2	5	41

Tab. 3.44 Selected finds: Number of metal finds from Strata 23–17 (Source: BAI/GPIA).

Metal finds				
Stratum	**Context**	**Complex**	**Object**	**Total No.**
23	6406	A	fragment	1
22	6021	B 1	needle/awl	4
	6305	B 1	earring	
	6325	A	needle/awl	
	6152	C 5	casting residues	
21	5901	B	amorphous fragment	2
	5944	C	fine needle	
20	5708	A	rectangular fragment	4
	5709	A	needle (?)	
	5742	A	platelet	
	5881	B 1	lumps	
19	5534	C 1	amorphous fragment	11
	5641	C 1	amorphous fragment	
	5641	C 1	amorphous fragment	
	5646	C 1	needle/awl	
	5657	C 1	needle/awl	
	5659	B	wire	
	5659	B	wire	
	5671	C 4	needle/awl	
	5683	C 3	needle	
	5686	C 4	needle	
	5694	C 4	needle/awl	
18	4299	B 2	needle/awl	10
	4542	B 1	sheet metal	
	4953	B 3	wire	
	5136	B 3	globelet	
	5137	B 6	hook	
	5247	B 3	needle/awl (?)	
	5247	B 3	needle/hair pin (?)	
	5329	B 1	flat sheet of metal	
	5532	B 6/B 10	irregulary formend ferrous stone	
	5607	B 9	slag	
	5610	B 1	amorphous fragment	
17	4524	A 4	brooche	9
	4524	A 4	platelet	
	4653	A 3	needle/awl (?)	
	4695	A 3	amorphous fragment	
	4718	A 3/A 4	earring	
	4727	A 3	amorphous vessel fragment	
	4728	A 3	amorphous fragment	
	4729	A 3	wire (?)	
	4890	A 3/A 4	4 ring fragments	

Tab. 3.45 Selected finds: Description of metal finds from Strata 23–17 (Source: BAI/GPIA).

The archaeometric examinations illustrate that the analyses which are marked violet can be linked to material from the Wādī Fēnān or Timna respectively, while similarities to material from Cyprus can only be observed once during the advanced Middle Bronze Age. The unmarked analyses could not be attributed to any specific copper mining area.

Catalogue Stratum 19

TZ 017308-001
Area I; Square AN 119; Complex C 1; Context 5646
Description: Three fragments of an awl or needle
Figure Reference: Fig. 3.74
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 3.7; max. D 0.3
Weight: 1.0 g
Material: Copper. Analysis: Cu 555314, Sn 1176, Pb 499, As 113, Zn <LOD, Fe 6296, Ag 12
References: Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361f. Fig. 9.4:2 and 3 and Photo 9.11—Chisels); Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3 (Mazar – Mullins, Ed., 2007, 612 Fig. 9.3: 7—needle), Strata R-3 and R-4b (Mazar – Mullins, Ed., 2007, 614 Fig. 9.5:1 and 2—pins).

Fig. 3.74 Awl/needle fragments, TZ 017308-001 (Source: BAI/GPIA).

TZ 017309-001
Area I; Square AM 118; Complex C 1; Context 5657
Description: point of an awl or needle; fragment
Figure Reference: Fig. 3.75
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 4.8; max. D 0.5
Weight: 2.0 g
Material: Copper. Analysis: Cu 498008, Sn 863, Pb 2639, As 540, Zn <LOD, Fe 13232, Ag 58
References: Tall Qēmūn (Tēl Yoqnəʿām) MB Str. 22 (Ben-Tor et al., Ed., 378 Fig. V.11:6); Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361f. Fig. 9.4:3 and Photo 9.11—chisel, nearly identic), and Tall al-Ḥiṣn (Beth Shean) MB Stratum R-3 (Mazar – Mullins, Ed., 2007, 612 Fig. 9.3: 7—needle).

Fig. 3.75 Point of awl/needle, TZ 017309-001 (Source: BAI/GPIA).

The overall outcome that the Early Bronze Age origins of the copper/bronze employed can be traced back to the Southern Levant's south is not surprising, and neither are the imports from Cyprus, which only started to gain importance towards the end of the Middle and the beginning of the Late Bronze Age. The cluster tables of the Tall Zirāʿa finds which show this (cf. Tab. XX) are taken from Schulze 2014.

TZ 017312-001
Area I; Square AL 118; Complex C 4; Context 5671
Description: Fragment of an awl or needle
Figure Reference: Fig. 3.76
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 2.6; max. D 0.4
Weight: 1.4 g
Material: Copper. Analysis: Cu 1231364, Sn <LOD, Pb 759, As 4542, Zn <LOD, Fe 11777, Ag 30
References: Tall al-Ḥiṣn (Beth Shean) MB Str. R-3 (Mazar/Mullins, Ed., 2007, 612 Fig. 9.3: 7 – needle), Str. R-3 and R-4b (Mazar/Mullins, Ed., 2007, 614 Fig. 9.5:1 and 2 – pins); Tall Qēmūn (Tēl Yoqnəʿām) MB Str. 22 (Ben-Tor et al., Ed., 378 Fig. V.11:6).

Fig. 3.76 Awl/needle fragment, TZ 017312-001 (Source: BAI/GPIA).

TZ 017482-001
Area I; Square AL 118; Complex C 4; Context 5694
Description: Shaft of an awl or needle
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 4.9; max. D. 0.4
Weight: 2.9 g
Material: Copper. Analysis: Cu 261243, Sn <LOD, Pb 759, As 60, Zn <LOD, Fe 20669, Ag 18
Reference: —

TZ 017685-001
Area I; Square AL 118; Complex C 4; Context 5686
Description: Shaft of an awl or needle
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 2.0; max. D 0.4
Weight: 0.6 g
Material: Bronze (Cu2Sn). Analysis: Cu 574606, Sn 9619, Pb 179, As 307, Zn <LOD, Fe 17170, Ag 95
Reference: —

TZ 017310-001
Area I; Square AO 118; Complex B; Context 5659
Description: Fragment of a wire; wound up into a ring shape
Figure Reference: Fig. 3.77
Date of Context: **MB IIA (older Stratum)**
Dimensions: max. D 2.3; D (wire) 0.3
Weight: 2.5 g
Material: Lead. Analysis: Cu <LOD, Sn 253, Pb 235400, As 9116, Zn 117, Fe 4041, Ag 49
Reference: —

Fig. 3.77 Fragment of a wire, TZ 017310-001 (Source: BAI/GPIA).

TZ 017311-001
Area I; Square AO 118; Complex B; Context 5659
Description: Fragment of a wire which tapers down (fishhook ?)
Figure Reference: Fig. 3.78
Date of Context: **MB IIA (older Stratum)**
Dimensions: L. 2.9
Weight: 1.7 g
Material: Lead. Analysis: Cu <LOD, Sn 257, Pb 238675, As 11634, Zn <LOD, Fe 4776, Ag 12
References: Tall Qēmūn (Tēl Yoqnəʿām) MB Str. 23 (Ben-Tor et al., Ed., 378 Fig. V.10:9 – hook?); Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361f. Fig. 9.4:4-5 and 3 and Photo 9.10 – bracelets); Tall al-Ḥiṣn (Beth Shean) MB Str. R-3 and R-4b (Mazar/Mullins, Ed., 2007, 614 Fig. 9.5:4 - rod).

Fig. 3.78 Fragment of a wire (fishhook?), TZ 017311-001 (Source: BAI/GPIA).

TZ 017481-001
Area I; Square AL 118; Complex C 3; Context 5683
Description: Needle with a loop-shaped eye; completely preserved
Figure Reference: Fig. 3.79
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 17.2; max. D 1.2; D (shaft) 0.5; D (point) c. 1.2 cm
Weight: 21.1 g
Material: Bronze/Copper
References: Tall Qēmūn (Tēl Yoqnəʿām) MBA Str. XXII (Ben-Tor et al., Ed., 378 Fig. V.11:6) and LB/MB Str. XXb (Ben-Tor et al., Ed., 378 Fig. V.11:7, needle); Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361 Fig. 9.4:1 and photo 9.9 – pin, length 14 cm, common in this period in northern Israel, Transjordan and Syria – identic); Tall al-Ḥiṣn (Beth Shean) MB Str. R-3 (Mazar/Mullins, Ed., 2007, 612 Fig. 9.3: 7 – needle); Tall al-Ḥiṣn (Beth Shean) LB Str. R-1 (Mazar/Mullins, Ed., 2007, 613 Fig. 9.4 – elongated implement, nearly identic form), and Tall al-Mutasallim (Megiddo) Str. XIV (Wilson/Allen, 1948, Ed., Megiddo II, Pl.219:1, loop headed pin).

Fig. 3.79 Needle with loop-shaped eye, TZ 017581-001 (Source: BAI/GPIA).

TZ 015504-001
Area I; Square AN 119; Complex C 1; Context 5534
Description: Iron powder; Powdery residues of an iron nodule (red chalk ?)
Figure Reference: Fig. 3.80
Date of Context: **MB IIA (older Stratum)**
Dimensions: —
Weight: 3 g
Material: —
Reference: —

Fig. 3.80 Iron powder, TZ 015504-001 (Source: BAI/GPIA).

TZ 016319-001
Area I; Square AN 118; Complex C 1; Context 5641
Description: Crumbled, partly pulverized residues of an iron nodule (red chalk ?)
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: —
Weight: 16.7 g
Material: —
Reference: —

TZ 016320-001
Area I; Square AN 118; Complex C 1; Context 5641
Description: Crumbled, partly pulverized residues of an

iron nodule (red chalk ?)
Figure Reference:
Date of Context: **MB IIA (older Stratum)**
Dimensions: —
Weight: 14.9 g
Material: —
Reference: —

Catalogue Stratum 18

TZ 014310-001
Area I; Square AO 119; Complex B 2; Context 4299
Description: Point of an awl or needle
Figure Reference: Fig. 3.81
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 5.6; max. D 0.5
Weight: 3.5 g
Material: Copper. Analysis: Cu 503632, Sn 156, Pb 1638, As 397, Zn <LOD, Fe 20909, Ag <LOD
References: Tall Qēmūn (Tēl Yoqnəʿām) MB StrXXII (Ben-Tor et al., Ed., 378 Fig. V.11:6) and LB/MB Str. XXb (Ben-Tor et al., Ed., 378 Fig. V.11:7, needle); Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361 f. Fig. 9.4:3 and Photo 9.11 – chisel, identic), and Tall al-Ḥiṣn (Beth Shean) MBA Str. R-3 (Mazar/Mullins, Ed., 2007, 612 Fig. 9.3: 7 – needle), Str. R-3 and R-4b (Mazar/Mullins, Ed., 2007, 614 Fig. 9.5:1 and 2 - pins).

Fig. 3.81 Point of awl/needle, TZ 014310-001 (Source: BAI/GPIA).

TZ 015188-001
Area I; Square AN 118; Complex B 3; Context 4953
Description: Fragment of a wire
Figure Reference: Fig. 3.82
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 1.6; max. D 0.1
Weight: 0.2 g
Material: Bronze (Cu2Sn). Analysis: Cu 424436, Sn 20411, Pb 545, As 46, Zn <LOD, Fe 11206, Ag 40
Reference: —

Fig. 3.82 Fragment of a wire, TZ 015188-001 (Source: BAI/GPIA).

TZ 015503-001
Area I; Square AM 119; Complex B 6/10; Context 5532
Descriptions: Amorphous fragment. The fragment is broken into three parts; probably a fragment of an iron nodule ?
Figure Reference: Fig. 3.83
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.9; W 6.0; H 3.7
Weight: Together 205 g
Material: —
Reference: —

Fig. 3.83 Fragment of iron nodule (?), TZ 015503-001 (Source: BAI/GPIA).

TZ 017263-001
Area 1; Square AN 118; Complex B 3; Context 5247
Description: Fragment of a pull broach or a hairpin; point at a thin shaft
Figure Reference: Fig. 3.84
Date of Context: **MB IIA (younger Stratum)**
Dimensions: max. D 1.0
Weight: 1.4 g
Material: Copper. Analysis: Cu 500418, Sn 1097, Pb 123, As 40, Zn <LOD, Fe 14690, Ag 18
References: Tall al-Mutasallim (Megiddo) Str. XIII (Wilson/Allen 1948, Ed., Tall al-Mutasallim (Megiddo) II, Pl.219:15 – toggle pin); Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age (Mazar 2012, Ed., 361 Fig. 9.4:2 an3 3 and photo 9.11 – chisels), and Tall Abū al-Ḥaraz Phase V (Fischer 2006, 76 Fig. 64: 6 –toggle pin).

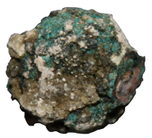


Fig. 3.84 Fragment of a pull broach or a hairpin, TZ 017263-001 (Source: BAI/GPIA).

TZ 015264-001
Area I; Square AM 119; Complex B 6; Context 5137
Description: Hook (latch?) made from a flat band, bent regularly; the long side with a round taper; almost complete
Figure Reference: Fig. 3.85
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 10.5; W 1.1; H 0,5

Weight: —
Material: Bronze (Cu2Sn). Analysis: Cu 602343, Sn 19223, Pb 1006, As 1351, Zn <LOD, Fe 3803, Ag 64
References: Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361 Fig. 9.4:1 and photo 9.9 – pin, length 14 cm) – common in this period in northern Israel, Transjordan and Syria

Fig. 3.85 Hook (latch?), TZ 015264-001 (Source: BAI/GPIA).

TZ 014318-001
Area I; Square AO 118; Complex B 1; Context 4542
Description: Stick. Sheet rolled-up to a stick
Figure Reference: Fig. 3.86
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 4.9; max. D 0.9
Weight: 6.6 g
Material: Copper. Analysis: Cu 784593, Sn 5859, Pb 445, As 365, Zn 103, Fe 7897, Ag 47
References: Tall al-Ḥiṣn (Beth Shean) LB Str. R-2 (Mazar/Mullins, Ed., 2007, 614 Fig. 9.5:9 – folded strips), MB Str. R-4a-b (Mazar/Mullins, Ed., 2007, 614 Fig. 9.5:10 – folded Strips); here also a reference to Tall al-Mutasallim (Megiddo) II, Plate 227:1-3 – fragments of headbands).

Fig. 3.86 Rolled-up copper sheet, TZ 014318-001 (Source: BAI/GPIA).

TZ 015501-001
Area I; Square AN 118; Complex B 3; Context 5247
Description: Amorphous fragment
Figure Reference: Fig. 3.87
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.1; W 3.3; H 1.4
Weight: 66 g
Material: Ferrous Stone
Reference: —

Fig. 3.87 Ferrous stone, amorphous fragment, TZ 015501-001 (Source: BAI/GPIA).

TZ 016318-001
Area I; Square AO 118; Complex B 1; Context 5610
Description: Amorphous fragment
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 1.7; W 1.6; H 0.8 cm
Weight: 6.3 g
Material: Copper/Bronze
Reference: —

TZ 017250-001
Area I; Square AN 118; Complex B 3; Context 5136
Description: Amorphous fragment
Figure Reference: Fig. 3.88
Date of Context: **MB IIA (younger Stratum)**
Dimensions: max. D 0.7
Weight: 0.4 g
Material: Copper. Analysis: Cu 283258, Sn 10, Pb <LOD, As 2395, Zn <LOD, Fe 859, Ag 21
Reference: —

Fig. 3.88 Copper, amorphous fragment, TZ 017250-001 (Source: BAI/GPIA).

TZ 017286-001
Area I; Square AO 118; Complex B 1; Context 5329
Description: Fragment of a metal sheet; flat thin sheet broken into three pieces
Figure Reference: Fig. 3.89
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 3.3; W 1.3; H 0.2
Weight: 1.1 g
Material: Copper/Bronze
Reference: —

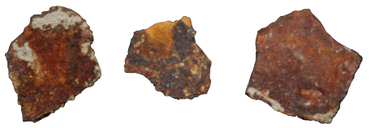


Fig. 3.89 Three fragments of a metal sheet, TZ 017286-001 (Source: BAI/GPIA).

Catalogue Stratum 17

TZ 015196-001
Area I; Square AM 118; Complex A 3; Context 4729
Description: Fragment of a wire
Figure Reference: —
Date of Context: **MB IIB**
Weight: 0.3 g
Material: Copper. Analysis: Cu 841900, Sn 4590, Pb 291, As 1456, Zn <LOD, Fe 5640, Ag 257
Reference: —

TZ 014317-001
Area I; Square AN 119; Complex A 4; Context 4524
Description: Pull broach, tapered; secundary bend out of shape
Figure Reference: Fig. 3.90
Date of Context: **MB IIB**
Dimensions: L 6.8; W 2.9; max. D 0.4
Weight: 2.2 g
Material: Copper. Analysis: Cu 741368, Sn 174, Pb 67, As 414, Zn <LOD, Fe 15173, Ag 17
References: Tall Qēmūn (Tēl Yoqnəʿām) MB Str. XXb (Ben-Tor et al., Ed., 378 Fig. V.11:7, needle); Tall al-Mutasallim (Megiddo) Str. XIII (Loud 1948, Megiddo II, Pl.219:13-15 – toggle pins); Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361 Fig. 9.4:1 and photo 9.9 – pin, length 14 cm; common in this period in northern Israel, Transjordan and Syria), and Tall al-Ḥiṣn (Beth Shean) MB Str. R-3-4 (Mazar/Mullins, Ed., 2007, 614 Fig. 9.5:1, 3 and 4 – pins and rods).

Fig. 3.90 Pull broach, TZ 014317-001 (Source: BAI/GPIA).

TZ 015250-001
Area I; Square AN 118; Complex A 3/4; Context 4718
Description: (Ear-)ring
Figure Reference: Fig. 3.91
Date of Context: **MB IIB**
Dimensions: D (opening) 1.8; D (inner opening) 1.1
Weight: 0.1 g
Material: Bronze (Cu2Sn). Analysis: Cu 288173, Sn 12530, Pb 6040, As 223, Zn <LOD, Fe 15006, Ag <LOD
References: Tall al-Mutasallim (Megiddo) (Finkelstein et al. 2000 Vol. 2, 389 Fig. 12.27:2, ring, here silver, dm ca. 1.7 cm); Tall al-Mutasallim (Megiddo) Str. XIII and X (Wilson/Allen 1948, Ed., Tall al-Mutasallim (Megiddo) II, Pl.225:1 and 4 – earrings/silver); Tall al-Ḥiṣn (Beth Shean) Intermediate Bronze Age Mazar 2012, Ed., 361f. Fig. 9.4:4-5 and 3 and Photo 9.10 – bracelets), and Tall al-Ḥiṣn (Beth Shean) MB Str. R-3-4 (Mazar/Mullins, Ed., 2007, 619 Fig. 9.8:7 – earring/silver).

Fig. 3.91 (Ear-)ring fragment, TZ 015250-001 (Source: BAI/GPIA).

TZ 014564-001
Area I; Square AN 119; Complex A 4; Context 4524
Description: Platelet; fragment
Figure Reference: Fig. 3.92
Date of Context: **MB IIB**
Dimensions: L 2.0; W 1.7; H 0.7
Weight: 4.4 g
Material: Copper. Analysis: Cu 312865, Sn 14, Pb 20, As 611, Zn <LOD, Fe 51474, Ag <LOD
Reference: —

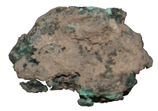


Fig. 3.92 Platelet, TZ 014564-001 (Source: BAI/GPIA).

TZ 015169-001
Area I; Square AN 119; Complex A 3/4; Context 4890
Description: Four fragments of a ring
Figure Reference: Fig. 3.93
Date of Context: **MB IIB**
Dimensions: —
Weight: 1.4 g
Material: Copper. Analysis: Cu 234427, Sn 3286, Pb 188, As 352, Zn <LOD, Fe 16670, Ag 27
Reference: —

Fig. 3.93 Four fragments of a ring, TZ 015169-001 (Source: BAI/GPIA).

TZ 014511-001
Area I; Square AM 118; Complex A 3; Context 4653
Description: Shaft of an awl or needle
Figure Reference: Fig. 3.94
Date of Context: **MB IIB**

Dimensions: L 3.0; max. D 0.3
Weight: 0.4 g
Material: Copper. Analysis: Cu 335056, Sn 7666, Pb 716, As 144, Zn <LOD, Fe 11630, Ag <LOD
Reference: —

Fig. 3.94 Shaft of awl/needle, TZ 014511-001 (Source: BAI/GPIA).

TZ 015194-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Amorphous fragment
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 0.4; W 0.3
Weight: 0.3 g
Material: Bronze (Cu2Sn. Analysis: Cu 88879, Sn 35721, Pb 241, As 145, Zn <LOD, Fe 67824, Ag <LOD
Reference: —

TZ 015243-001
Area I; Square AN 118; Complex A 3; Context 4728
Description: Amorphous fragment
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: max. D 1.2
Weight: 1.1 g
Material: Copper. Analysi s: Cu 506078, Sn 85, Pb 387, As 1034, Zn <LOD, Fe 23510, Ag 10
Reference: —

TZ 015262-001
Area I; Square AN 118; Complex A 3; Context 4727
Description: Amorphous fragment; content of the vessel TZ 20229-019
Figure Reference: —
Date of Context: **MB IIB**
Dimensions:
Material: Bronze
Weight: —
Reference: —

3.2.2.2. Catalogue of Faience Finds: Strata 19–17

In the Middle Bronze Age Strata 19–17, seven glass/faience finds have been listed; among these, there were five in Stratum 17 (all from the same context) and one each in Stratum 18 and 19. These were six beads (TZ 014646-001; TZ 014647-001; TZ 014692-001; TZ 017370-001 and TZ 015496-001), one fragment of a bead (TZ 016641-001) and one rod-shaped fragment (TZ 014693-001).

From this evidence it can be concluded that glass was known and valued as a jewellery material during the early eras on Tall Zirāʿa. However, there is no proof of an industrial production or shaping of glass, as there is for later periods.

Faience			
Stratum	**Inv.**	**Object**	**Material**
22	TZ 019536-001	2 amorphous fragments	faience ?
	TZ 018999-001	62 beads	faience
20	TZ 017666-001	1 bead	faience/glass ?
19	TZ 015496-001	1 bead	faience ?
18	TZ 017370-001	1 bead	faience/glass ?
17	TZ 014646-001	1 bead	faience/glass ?
	TZ 014647-001	1 bead	glass ?
	TZ 014692-001	1 bead	faience ?
	TZ 014693-001	1 fragment	glass ?
	TZ 016641-001	1 fragmented bead	glass ?

Tab. 3.46 Selected finds: Faience/glass finds from Strata 22–17 (Source: BAI/GPIA).

Catalogue Stratum 19

TZ 015496-001
Area I; Square AN 118; Complex C 1; Context 5442
Description: Spherical bead; blue in colour; completely preserved
Figure Reference: Fig. 3.95
Date of Context: **MB IIA (older Stratum)**
Dimensions: D (opening) 0.1; D (max.) 0.4
Weight: < 1 g
Material: Faience?
Reference: Tall al-Mutasallim (Megiddo) EB/MB (Finkelstein et al. 2000, Vol. 2, 391 Fig. 12.29:3—glass, grey-green-blue), and Ṭabaqāt Faḥl (Pella) MB II—TOMB 8 (Smith 1973, Pl. 79:m—faded blue-green faience, pierced axially, Date is unclear).
Faience beads were reported in EB I/II in Tall al-Mutasallim (Megiddo) (Finkelstein et al. 2000, Vol. 2, 389 Fig. 12.27:4-6 and Loud 1948, Pl. 207). Faience for small objects was used in Tall al-Ḥiṣn (Beth Shean) since MB. Glass beads appear first at Tall al-Ḥiṣn (Beth Shean) in the LB Strata (Mazar – Mullins 2007, Ed., 684).

Fig. 3.95 Spherical bead, TZ 015496-001 (Source: BAI/GPIA).

Catalogue Stratum 18

TZ 017370-001
Area I; Square AO 118; Complex B 1; Context 5631
Description: Bead, slim in shape; bluish shimmering in colour; completely preserved
Figure Reference: Fig. 3.96
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (opening) 0.1; D (max.) 0.3; L 0.1
Weight: —
Material: Faience?
Reference: Tall al-Mutasallim (Megiddo) EB/MB (Finkelstein et al. 2000, Vol. 2, 389 Fig. 12.27:4-6—faience beads/391 Fig. 12.29:10-11—faience blue).

Fig. 3.96 Bead, TZ 017370-001 (Source: BAI/GPIA).

Catalogue Stratum 17

TZ 014646-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Bead of round shape; the upper side and the underside are flattened; light green colour; completely perserved
Figure Reference: Fig. 3.97
Date of Context: **MB IIB**
Dimensions: D (opening) 0.3; D (max.) 0.9
Weight: < 1 g
Material: Glass/Faience?
Reference: Tall al-Mutasallim (Megiddo) MB/LB (Finkelstein et al. 2000, Vol. 2, 391 Fig. 12.29:15—glass), and Ṭabaqāt Faḥl (Pella) MB II—TOMB 8 (Smith 1973, Pl. 79:m—faded blue-green faience, pierced axially).

Fig. 3.97 Bead, TZ 014646-001 (Source: BAI/GPIA).

TZ 014647-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Cylindrical bead; turquoise in colour; completely preserved
Figure Reference: Fig. 3.98
Date of Context: **MB IIB**
Dimensions: D (opening) 0.3; D (max.) 0.9; L 2
Weight: 2 g
Material: Glass/Faience?
Figure Reference: Tall al-Mutasallim (Megiddo) MB IIA (Wilson – Allen 1948, Ed., Pl. 207:16)—light-coloured cylindrical bead in neclace, probably faience.

Fig. 3.98 Cylindrical bead, TZ 014647-001 (Source: BAI/GPIA).

TZ 014692-001
Area 1; Square AN 118; Complex A 3; Context 4695
Description: Bead; completely pulverized; brownish elements
Figure Reference: Fig. 3.99
Date of Context: **MB IIB**
Dimensions: —
Weight: < 1 g
Material: Glass/Faience?
Reference: —

Fig. 3.99 Pulverized bead, TZ 014692-001 (Source: BAI/GPIA).

TZ 014693-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Rod-shaped fragment
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 0.3; W. 0.1; H 0.1
Weight: —
Material: Glass/Faience?
Reference: —

TZ 016641-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Fragment of a spherical bead; turquoise in colour
Figure Reference: Fig. 3.100
Date of Context: **MB IIB**
Dimensions: L (preserved) 0.6; D (opening) 0.2; D (max.) 0.7
Weight: < 1 g
Material: Glass/Faience?
Reference: Tall al-Mutasallim (Megiddo) EB I (Finkelstein et al. 2000, Vol. 2, 393 Fig. 12.30:3—faience cylindrical, light blue).

Fig. 3.100 Bead fragment, TZ 016641-001 (Source: BAI/GPIA).

3.2.2.3. Catalogue of Bone Finds: Strata 19–17

The bone finds on the Tall Zirāʿa were evaluated by N. Benecke (DAI Berlin). The data for Strata 25 to 17 as shown here cannot be regarded as equivalent in a comprehensive comparision. In Stratum 25, only the Early Bronze Age defense system was excavated (city wall, glacis and the space in between). The result shown in the table below (Tab. 3.XX) therefore does not represent the immediate housing and living areas of the Tall's inhabitants of the time, as in the other strata. Therefore, in the synopses Stratum 25 is foregone, while Stratum 24 (FBA II), of which only a small part has been examined, is listed with a caveat.
There are four remarkable finds of bone objects in the Middle Bronze Age Strata 19–17:

Catalogue Stratum 19

TZ 017479-001
Area I; Square AM 119; Complex C 2; Context 5647
Description: Sheep/goat, long bone, shaft. Bone with four drilled holes: fragment of a flute
Figure Reference: Fig. 3.101
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 4.7; W 1.4; H 0.7; D opening 0,4
Weight: 2,5 g
References: Tall al-Mutasallim (Megiddo) EB II/MBI/MB II (Wilson/Allen 1948, Ed., Pl. 286:1 and 7); No 1 (EB II): Pipe with a big hole in the middle (sound generation by blowing into the upper end of the pipe or by use as a fife); No. 7 (MBA IIB): Bone tapering towards the closed upper end, one small lateral hole and three holes at a right angle with it: on larger hole in the middle and two smaller ones at the bottom end, which is open. Probably used as a fife.

Fig. 3.101 Bone flute fragment, a) outside, b) inside, TZ 007479-001 (Source: BAI/GPIA).

TZ 017480-001
Area I; Square AM 118; Complex C 1; Context 5657
Description: Sheep/goat, tibia, shaft. Two fitting fragments of a halved tibia, polished on the outside and also on some of the inside rims; the taper is flattened and slightly rounded. Usable on both ends, so that different materials or different amounts could be scooped up, stirred or spread out. Cosmetic spatula?
Figure Reference: Fig. 3.102
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 7.8; H 0.6; D 1.3
Weight: 5,6 g
References: Tall Qēmūn (Tēl Yoqnəʿām) MB IIB late (Ben-Tor et al., Ed., 381 Fig. V.12: 13—cosmetic spatula, but with only one usable end); Tall Abū al-Ḫaraz FB Phase IB (Fischer 2008, 119 Fig. 119: 4, shuttle), and Tall Abū al-Ḫaraz EB (Fischer 2008, 355 Fig. 317:4, weaving tool).

Fig. 3.102 Two fragments of a cosmetic spatula (?), TZ 017480-001 (Source: BAI/GPIA).

TZ 019549-001
Area I; Square AM 118; Complex C 1; Context 5676
Description: Cattle, long bone, shaft. Tapered long bone; one end is pointed, the other end (handle?) is broad, probably artificially flattened and evenly rounded. Awl?
Figure Reference: Fig. 3.103
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 7.1; B 1.8 x 1.7
Weight: 11,9 g
Reference: Tall Qēmūn (Tēl Yoqnəʿām) MB IIB late-LB (Ben-Tor et al., Ed., 379 Photo V.8 and 381 Fig. V.12:8 (hollow and more pointed, length ca. 10 cm) and 9 (very similiar, length ca. 5 cm)—awl?); Tall Qēmūn (Tēl Yoqnəʿām) LB early (Ben-Tor et al., Ed., 379 Photo V.8 and 381 Fig. V.12:15 (longer and with a sharper point, partially drilled hole in the upper part, length ca. 9.5 cm)—pin/pendant?); Tall al-Mutasallim (Megiddo) EB IA similar (Finkelstein et al. 2000 Vol. 2, 386 Fig. 12.25:10—casual bone tool); Tall al-Mutasallim (Megiddo) EB III-MB IIA (Wilson/Allen 1948, Ed., Pl.198:5, 6, 12, 13, 15-18, Pl. 199:21 (MB IIA, identic)—bone awls); Tall Abū al-Ḫaraz FB Phases IA and B (Fischer 2008, 49 Fig. 34: 2 (length ca. 12 cm)/199 Fig. 119:1 and 3—shuttle), and Tall Abū al-Ḫaraz EB (Fischer 2008, 355 Fig. 317:5) – weaving tool).

Fig. 3.103 Awl (?), TZ 019549-001 (Source: BAI/GPIA).

Catalogue Stratum 17

TZ 014645-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Bone carved to a conus with carefully drilled central hole; bottom side flattened; broken into five slice-shaped segments. Spindle whorl/button?
Figure Reference: Fig. 3.104
Date of Context: **MB IIB**
Dimensions: H 1.1, D max 1.8; D hole 0,4 cm
References: Tall Qēmūn (Tēl Yoqnəʿām) MB IIB late-LB early (Ben-Tor et al., Ed., 381 Fig. V.12:1-4—spindle whorls, D 2.2–3, flatter than the example from the Tall Zirāʿa), and Tall Abū al-Ḫaraz phases V and VII (Fischer 2008, 76 Fig. 64:2, D ca. 2.5, and 175 Fig. 206:1, D ca. 1, button).

Fig. 3.104 Spindle whorl or button (?), a) upside, b) downside, TZ 014645-001 (Source: BAI/GPIA).

Evaluation of the data

On the whole, it can be observed that the majority of bone finds came from sheep or goats during all periods. On the Tall Zirāʿa the percentage of sheep/goats were always between about 50 % and 75 % of all bone artifacts (with a minimum of 48 % in Stratum 19, MBA IIA, and a maximum of 76 % in Stratum 17, MBA IIB).
Therefore it can be assumed that not only a high percentage of the meat consumption on the Tall was dependent on the breeding of sheep and goat, but also the production of milk, wool and leather. Finally, those animals probably played an crucial part in the fertilisation of fields and grassland/pasture.

Sheep/goat bones, percentage among total bones on Tall Zirāʾa								
Stratum	24	23	22	21	20	19	18	17
Percent	51	70	50	66	68.5	*48*	60	**76**

Tab. 3.47 Percentage of Sheep/goat bones to all bones in Strata 24–17 (Source: BAI/GPIA).

The trend of keeping cows and bulls declined from Early to Middle Bronze Age. This can be explained by the increasingly arid climate, which made it more difficult to provide appropriate living conditions for cattle. Possibly, the 31 % cattle in stratum 24 are not really statistically significant; therefore, the 24 % in Stratum 22 (EB III) can be more reliably indicated as a maximum. In Stratum 18 (MB IIA) and Stratum 17 (MB IIB), only 11.5 % resp. 8 % are registered. Apart from their meat, the importance of cattle must have been based on their milk, the leather and especially on their efficiency as plough and draught animals.

Cattle bones, percentage among total bones on Tall Zirāʾa								
Stratum	24	23	22	21	20	19	18	17
Percent	**31**	19	**24**	13	13	22	11.5	*8*

Tab. 3.48 Percentage of Cattle bones to all bones in Strata 24–17 (Source: BAI/GPIA).

In contrast to cattle, the number of domestic pigs increased significantly from the Early to Late Bronze Age. In Strata 19 and 18 (both MB IIA), almost one third of all bones are attributed to pigs, i.e. to the production of meat and the disposal of organic waste. In Strata 23 and 24 (FB II resp. II/III), the proportion was only 8 resp. 6 %.

Domestic pig bones, percentage among total bones on Tall Zirāʾa								
Stratum	24	23	22	21	20	19	18	17
Percent	8	*6*	14	15	17	**29**	**27.5**	15

Tab. 3.49 Percentage of Domestic pig bones to all bones in Strata 24–17 (Source: BAI/GPIA).

Apart from these main groups of bone finds, there is evidence of ecofacts of further domestic animals and of hunted game, although in much smaller quantities.

Dog bones are only represented in a very small number.

Donkey, horse, and mule, on the other hand, are almost continuously represented, but usually only with a share of less than one percent of the examined finds.

Among the game animals, feral pig and twice fox have been verified. The evidence indicates that during the Early Bronze Age, the ecosystem in the vicinity of Tall Zirā'a including turf and forest probably still was intact, while after the Early Bronze Age the consumption of animals belonging to these ecosystems drops significantly.

Game animal bones, percentage among total bones on Tall Zirā'a								
Stratum	24	23	22	21	20	19	18	17
Total percent	10	2	9.5	2	1,2	0	1	1.9
Fallow deer percent	5	1,5	7	1	0.6	0	0	1
Gazelle percent	5	0	1.5	1	0.3	0	1	0.8

Tab. 3.50 Percentage of game animal bones to all bones in Strata 24–17 (Source: BAI/GPIA).

Bones[157]										
	Domesticated Animals					Wild Animals				
Period/ Stratum	Sheep/ Goat	Cattle	Domestic Pig	Donkey/ Horse[158]	Dog	Feral Pig	Gazelle	Fallow Deer	Fox	Total No.
EB 25	7 **78 %**	2 **22 %**								9
EB II 24	20 **51 %**	12 **31 %**	3 **8 %**				2 **5 %**	2 **5 %**		39
EB II/III 23	119 **70 %**	32 **19 %**	10 **6 %**	1 **0.5 %**	3 **1.5 %**	1 **0.5 %**		3 **1.5 %**		169
EB III 22	219 **50 %**	105 **24 %**	60 **14 %**	4 **1 %**	6 **1.5 %**	2 **0.5 %**	6 **1.5 %**	33 **7 %**	1 **0.5 %**	436
EB IV/ MB I 21	175 **66 %**	42 **16 %**	40 **15 %**		3 **1 %**		2 **1 %**	3 **1 %**		265
EB IV/ MB I 20	195 **68.5 %**	36 **13 %**	49 **17 %**		1 **0.3 %**		1 **0.3 %**	2 **0.6 %**	1 **0.3 %**	285
19 A	4	4	2							
19 B	25	13	14	1						
19 C1	106	43	64		1					
19 C2	12	7	3		1					
19 C3										
19 C4	40	19	31							
= MB IIA 19	187 **48 %**	86 **22 %**	114 **29 %**	1 **0.3 %**	2 **0.6 %**					390
18 A	1	1								
18 B1	72	19	18				2			
18 B2	16	5	12							
18 B3	99	18	41				3			
18 B4–6	134	13	53							
18 B7										
18 B8										
18 B9	51	17	49							
18 B10	2	1	2							
= MB IIA 18	373 **60 %**	73 **11.5 %**	173 **27.5 %**				5 **1 %**			624

157 When adding up the numbers in vertical direction (number of bones of one species) the sum does not always fit the total of the summands, i.e. it is smaller. This is because finds that count for two areas of a stratum, e.g. in walls, are not added twice.

158 Mules are not included.

Bones										
	Domesticated Animals					Wild Animals				
Period/ Stratum	Sheep/ Goat	Cattle	Domestic Pig	Donkey/ Horse	Dog	Feral Pig	Gazelle	Fallow Deer	Dog	Total No.
17 A1	2	4	3							
17 A2	12		7							
17 A3	260	15	22			1	1	1		
17 A4	39	2	8							
17 A5	17	3	1			1				
17 A6										
17 A7	49	9	32							
Southeastern Area	20	11	5				3			
= MB IIB 17	391 **76 %**	43 **8 %**	77 **15 %**			1 **0.1 %**	4 **0.8 %**	1 **0.1 %**		517

Tab. 3.51 Selected finds: Bone finds from Strata 25–17 (Source: BAI/GPIA).

3.2.2.4. Catalogue of Stone Finds: Strata 19–17

In Strata 19–17 in total 155 finds of stone/mineral and 665 flint flakes and tools were found. The most common raw materials were basalt and limestone. Furthermore, there were objects made of silicate rock, of pebble stone or alabaster. In a small number of cases, haematite/magnetite, steatite (soapstone), serpentinite, or pumice stone were used. Among the listed ecofacts, iron nodules are predominant, i.e. naturally occurring haematite (Fe_2O_3), which was also frequently found in a powdered state as it could thus be used as a colourant (ruddle).

Although, compared with limestone, basalt is much harder to work on, its hardness and its durability in particular made it eligible for the production of tools and prestigious objects alike. The porosity of its surface made it suitable for grinding and grating. In contrast, limestone was easier to handle and thus popular for pierced objects (such as weight stones) and also for the fabrication of hinge stones in order to prevent the wood revolving inside it from wearing away.

According to their individual purposes, specific forms also required certain materials:

- If a weight was made of hard haematite/magnetite it was forgery-proof.
- If a pendant was made of serpentinite it could be easily worked and end up as a highly filigree, prestigious work of art.
- Serpentinite or steatite (soapstone) were fitting materials for axes as they demonstrated the tool's high value and ensured a precise workmanship.
- Signet rings were usually made of steatite (soapstone) as this material could be engraved in a precise-manner.

The 155 objects listed, definable single finds made of stone/mineral can be separated into the following groups according to their application:

- 49.0 % food preparation (e.g. quern, lower grinding stone, mortar bowl, rubbing stone).
- 11.0 % household (e.g. lid, weight stone, hammer stone, bowl, spindle whorl, potters wheel, loom weight, whetstone).
- 7.7 % personal items (e.g. pendant, balance weight, bead, ring, signet ring, gaming piece, gaming board, hygiene cutlery, axe).
- 3.2 % architecture (e.g. hinge stone, plaster).

One sling stone (military equipment) was found. Moreover two cultic items and 30 ecofacts are listed, as well as 665 flint flakes and tools.

The typology of stones is in accordance with Jakubik 2013 and 2016, and of the flakes/tools with Schröder forthcoming. For an overview of the used typology cf. *Chapter 1.2.2.4*.

Fig. 3.105 Bowl of a censer, TZ 015634-001 (Source: BAI/GPIA).

Fig. 3.106 Mortar bowl, TZ 015414-001 (Source: BAI/GPIA).

Stone										
Stratum	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**Total.**
Architecture	2	2	1	5		2			1	**13**
Lime plaster						1				
Hinge stone	2	2	1	5		1			1	
Household/Craft	11	5	1	5	5	6	1	3	1	**38**
Lid	1							1		
Weight stone	4	2			2	1	1	1	1	
Hammer stone		2		2	2	1		1		
Bowl	1			1		2				
Spindle whorl	4		1	1		1				
Potters wheel	1									
Loom weight/Abrader		1				1				
Whetstone				1	1					
Food Production	29	29	18	27	14	22	4	5	2	**150**
Quern	7	9	4	7	4	6			1	
Lower grinding stone	4	5	2	5	4	4	1	1	1	
Mortar bowl	3	2	3	1		3	1			
Rubbing stone	15	13	9	14	6	9	2	4		
Personal Items	3	7	2	3	4	30			2	**51**
Pendant			1		1					
Balance weight/Scale beam					1	1				
Bead	1	1	1	2	2	27				
Ring		1								
Signet ring	1									
Gaming piece/Game board	1	3		1		2				
Hygiene cutlery		1							1	
Miniature axe		1							1	
Warfare		1								**1**
Sling stone		1								
Cultic Items		1	1		1					**3**
Incense burner		1	1							
Flints: Flakes & Tools	125	313	227	175	294	699	173	61	58	**2125**
Ecofacts	5	20	5	7	2	5	1			**45**
Iron nodule	5	12	4	5		5	1			
Raw materials		8	1	2	2					
Uncertain	2	9	1			5				**17**

Tab. 3.52 Selected finds: Stone finds from Strata 25–17 (Source: BAI/GPIA).

Stratum 19

Architecture

TZ 019109-001
Area I; Square AL 118; Complex C 3; Context 5727
Description: Hinge stone. Complete
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: D (depression) 13; L 40; W 35; H 22
Weight: —
Material: Basalt
Reference: —

Household/Craft

TZ 017375-001
Area I; Square AL 118; Complex C 4; Context 5671
Description: Spindle whorl. Complete; disc-shaped; biconic perforated
Type: —
Figure Reference: Fig. 3.107
Date of Context: **MB IIA (older Stratum)**
Dimensions: D (perforation) 0.5; L 4.7 W 4; H 2
Weight: 49.1 g
Material: Basalt
Reference: —

Fig. 3.107 Spindle whorl, TZ 017375-001 (Source: BAI/GPIA).

Food Production

TZ 015588-001
Area I; Square AN 119; Complex C 1; Context 5534
Description: Rubbing stone. Fragmented; oval in its cross section; disc-shaped; five parallel grooves at the bottom side
Type: —
Figure Reference: Fig. 3.108
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 5.5; W 8.4; H 1.9
Weight: —
Material: Basalt
Reference: —

Fig. 3.108 Rubbing stone, TZ 015588-001 (Source: BAI/GPIA).

TZ 017376-001
Area I; Square AO 119; Complex A; Context 5668
Description: Mortar bowl. Fragmented; oval in its cross section; upper side slightly concave; bottom side convex; carefully worked
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 28; W 4.5; H 16
Weight: —
Material: Basalt
Reference: —

TZ 017381-001
Area I; Square AN 118; Complex C 1; Context 5641
Description: Mortar bowl. Fragmented; upper and bottom side smoothed
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 8.3; W 6.2; W Th 2.6
Weight: —
Material: Basalt
Reference: —

TZ 017383-001
Area I; Square AM 118; Complex C 1; Context 5676
Description: Quern. Fragmented
Type: Quern type 4b
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 14.5; W 18; H 7.8
Weight: 2133 g
Material: Basalt
Reference: —

TZ 017384-001
Area I; Square AN 118; Complex C 1; Context 5641
Description: Quern. Fragmented
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 14.5; W 18.5; H 8.3
Weight: 3287 g
Material: Basalt
Reference: —

TZ 017385-001
Area I; Square AO 118; Complex B; Context 5659
Description: Lower grinding stone. Fragmented; bottom side roughly worked
Type: Lower grinding stone type 2b
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 12; W 12; H 7.5
Weight: 1379 g
Material: Basalt
Reference: —

TZ 017386-001
Area I; Square AO 118; Complex B; Context 5659
Description: Mortar bowl. Fragmented; round in its cross section
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: H 9; D (max.) 20
Weight: —
Material: Basalt
Reference: —

TZ 017387-001
Area I; Square AM 118; Complex C 4; Context 5661
Description: Quern. Complete; oval in its cross section
Type: Quern type 4b
Figure Reference: Fig. 3.109
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 23; W 18; H 7
Weight: 3957 g
Material: Basalt
Reference: —

Fig. 3.109 Quern, TZ 017387-001 (Source: BAI/GPIA).

TZ 017388-001
Area I; Square AM 118; Complex C 1; Context 5663
Description: Quern. Fragmented
Type: Quern type 1c
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 11; W 13.5; H 7.8
Weight: 1625 g
Material: Basalt
Reference: —

TZ 017389-001
Area I; Square AM 118; Complex C 2; Context 5653
Description: Lower grinding stone. Fragmented
Type: Lower grinding stone type 2a
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 12; W 10; H 5.8
Weight: 851 g
Material: Basalt
Reference: —

TZ 017390-001
Area I; Square AM 118; Complex C 1; Context 5663
Description: Rubbing stone. Fragmented; frustum shaped; picking traces
Type: Rubbing stone type 5.1
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 6; W 5.3; H 8.2
Weight: —
Material: Basalt
Reference: —

TZ 017427-001
Area I; Square AM 118; Complex C 4; Context 5658
Description: Rubbing stone. Complete; trapezoid in its cross section
Type: Rubbing stone type 10.2
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 6.7; W 3.4; H 5.8
Weight: —
Material: Silicate stone
Reference: —

TZ 017428-001
Area I; Square AO 118; Complex B; Context 5659
Description: Rubbing stone. Complete; egg-shapped; rubbing traces at the bottom side; picking traces at the point
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 9.4; W 5.6; H 6.5
Weight: —
Material: Silicate stone
Reference: —

TZ 017429-001
Area I; Square AO 119; Complex B; Context 5667
Description: Rubbing stone. Complete; egg-shaped
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 5.7 ; D (max.) 4.2
Weight: —
Material: Silicate stone
Reference: —

TZ 017430-001
Area I; Square AM 118; Complex C 1; Context 5676
Description: Rubbing stone. Complete; oval in its cross section; nearly disc-shaped; upper side slightly convex; bottom side flattened; with rubbing traces
Type: Rubbing stone type 12.1
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: H 4.7; D (max.) 9.8
Weight: —
Material: Silicate stone
Reference: —

TZ 017536-001
Area I; Square AL 118; Complex C 4; Context 5686
Description: Rubbing stone. Fragmented
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 9.2; W 5; H 4.2
Weight: 181 g
Material: Basalt
Reference: —

TZ 017541-001
Area I; Square AL 118; Complex C 4; Context 5686
Description: Rubbing stone. Complete; oval in its cross section; upper and bottom side convex; usuable on both sides.
Type: Rubbing stone type 12
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: D (max.) 4.5; H 1.9
Weight: 42 g
Material: Basalt
Reference: —

TZ 017542-001
Area I; Square AL 118; Complex C 3; Context 5695
Description: Rubbing stone. Fragmented; oval in its cross section; upper and bottom side convex
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 7; W 10; H 5.5
Weight: 647 g
Material: Basalt
Reference: —

Personal Items

TZ 017241-001
Area I; Square AN 118; Complex C 1; Context 5442
Description: Bead. Almost complete; cylindrical
Type: —
Figure Reference: Fig. 3.110
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 1.8; D (max.) 0.7; D (opening) 0.3
Weight: —
Material: Limestone
Reference: Tall al-Mutasallim (Megiddo) EB III: Wilson – Allen 1948, Pl. 207, 6—same form, grey stone.

Fig. 3.110 Bead, TZ 017241-001 (Source: BAI/GPIA).

TZ 017373-001
Area I; Square AM 118; Complex C 1; Context 5663
Description: Pendant. Complete; irregularly shaped; conical perforations from both sides
Type: —
Figure Reference: Fig. 3.111
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 2.6; W 2; Th 0.7
Weight: —
Material: Serpentinit
Reference: Tall Qēmūn (Tēl Yoqnəʿām) MB IIC: Ben-Tor et al. 2005, 111 Fig. II 24, 31: bead (?).—Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 207, 11: similar, here grey stone.

Fig. 3.111 Pendant, TZ 017373-001 (Source: BAI/GPIA).

Cultic Items

TZ 017535-001
Area I; Square AM 118; Compex C 1; Context 5684
Description: Foot of a censer. Fragmented; oval in its cross section; secondary use as pestal or rubbing stone
Type: Bowl type 2 B
Figure Reference: Fig. 3.112
Date of Context: **MB IIA (older Stratum)**
Dimensions: H 7; D (foot) 7.5
Weight: 518 g
Material: Basalt
Reference: —

Fig. 3.112 Foot of a censer, TZ 017535-001 (Source: BAI/GPIA).

Flints: Flakes and Tools

TZ 016289-001; 2 sickle blades, 1 knife, 1 tabular scraper, 1 core, 12 blades, 2 bladelets, 15 flakes; Area I; Square AN 118; Context 5442

TZ 016290-001; 1 sickle blade, 3 flakes; Area I; Square AN 118; Context 5445

TZ 017408-001; 2 sickle blades, 1 blade, 11 flakes; Area I; Square AN 118; Context 5641

TZ 017411-001; 1 burin; Area I; Square AN 119; Context 5646

TZ 017412-001; 5 blades, 1 bladelet, 33 flakes, 1 uncertain; Area I; Square AM 119; Context 5647

TZ 017413-001; 1 borer, 1 bladelet, 11 flakes; Area I; Square AN 118; Context 5649

TZ 017416-001; 1 blade, 1 flake; Area I; Square AM 118; Context 5653

TZ 017417-001; 1 sickle blade, 3 flakes; Area I; Square AM 118; Context 5657

TZ 017418-001; 1 sickle blade, 1 ad-hoc-tool, 1 blade, 5 chips, 21 flakes; Area I; Square AM 118; Context 5658

TZ 017419-001; 1 sickle blade, 1 blade, 1 flake; Area I; Square AO 118; Context 5659

TZ 017420-001; 1 sickle blade, 1 flake; Area I; Square AL 118; Context 5660

TZ 017421-001; 1 chip, 2 flakes; Area I; Square AN 119; Context 5662

TZ 017422-001; 1 blade, 1 bladelet, 20 flakes; Area I; Square AM 119; Context 5666

TZ 017423-001; 2 blades; Area I; Square AO 119; Context 5667

TZ 017424-001; 1 blade, 1 flake; Area I; Square AP 119; Context 5673

TZ 017426-001; 1 sickle blade; Area I; Square AM 118; Context 5676

TZ 017487-001; 1 sickle blade, 1 blade, 1 chip, 7 flakes; Area I; Square AL 118; Context 5694

TZ 017506-001; 1 sickle blade, 1 flake; Area I; Square AN 118; Context 5445

TZ 017509-001; 1 blade, 1 chip, 10 flakes; Area I; Square AM 119; Context 5679

TZ 017510-001; 1 blade, 3 flakes; Area I; Square AN 119; Context 5680

TZ 017511-001; 1 core; Area I; Square AN 119; Context 5680

TZ 017512-001; 1 sickle blade, 3 flakes; Area I; Square AN 118; Context 5681

TZ 017513-001; 2 blades; Area I; Square AL 118; Context 5683

TZ 017514-001; 1 sickle blade, 2 flakes; Area I; Square AL 118; Context 5685

TZ 017515-001; 5 flakes; Area I; Square AL 118; Context 5686

TZ 017527-001; 2 sickle blades, 1 blade, 1 flake; Area I; Square AM 118; Context 5684

TZ 018521-001; 1 sickle blade, 3 flakes; Area I; Square AL 118; Context 5727

Ecofacts

TZ 015470-001
Area I; Square AN 118; Complex C 1; Context 5442
Description: Raw material. Fragmented; amorphous; broken into two pieces
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 3; W 1.9; H 0.8
Weight: —
Material: Carnelian
Reference: —

TZ 015504-001
Area I; Square AN 119; Complex C 1; Context 5534
Description: Iron nodule. Ecofact; powdered
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: —
Weight: 3 g
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016319-001
Area I; Square AN 118; Complex C 1; Context 5641
Description: Iron nodule. Ecofact; powdered
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: —
Weight: 16.7 g
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016320-001
Area I; Square AN 118; Complex C 1; Context 5641
Description: Iron nodule. Ecofact; powdered
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: —
Weight: 14.9 g
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016428-001
Area I; Square AN 118; Complex C 1; Context 5442
Description: Iron nodule. Complete; spherical
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: —
Weight: 4.7 g
Material: Ferric Oxide (Fe_2O_3)
Reference: —

Uncertain

TZ 017488-001
Area I; Square AN 119; Complex C 2; Context 5680
Description: Rubbing stone (?). Fragmented; triangel-shaped at its cross section; roughly worked; no traces of rubbing or picking
Type: —
Figure Reference: —
Date of Context: **MB IIA (older Stratum)**
Dimensions: L 8 ; W 3.5 ; H 3.6
Weight: —
Material: Basalt
Reference: —

Stratum 18

Architecture

TZ 015942-001
Area I; Square AN 118; Complex B 3; Context 5136
Description: Hinge stone. Irregularly in its cross section; upper side with a 4 cm deep depression; inside hemispheric
Type: —
Figure Reference: Fig. 3.113
Date of Context: **MB IIA (younger Stratum)**
Dimensionss: D (max.) 12.3; H 6.3
Material: Basalt
Reference: —

Fig. 3.113 Hinge stone, TZ 015942-001 (Source: BAI/GPIA).

TZ 015993-001
Area I; Square AN 119; Complex B 5; Context 5213
Description: Hinge stone. Complete; oval in its cross section; upper and bottom side convex; exterior roughly shaped
Type: —
Figure Reference: Fig. 3.114
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 38; W 34; H 25
Weight: —
Material: Basalt
Reference: —

Fig. 3.114 Hinge stone, TZ 015993-001 (Source: BAI/GPIA).

Household /Craft

TZ 015937-001
Area I; Square AN 118; Complex B 3; Context 5326
Description: Hammer stone. Complete; oval-shaped; bottom flattened; roughly worked
Type: Hammer stone type 2
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 5.7; W 4.1; H 3.7
Weight: —
Material: Basalt
Reference: Tall al-Ḥiṣn (Beth Shean) EB: Mazar 2012, 375 Fig. 9, 11. 12 and 16: here pestles, basalt and limestone.—Tall al-Ḥiṣn (Beth Shean) MB II–SB: Mazar 2007, 648 f. Fig. 11, 4 and Photo 11, 86: pestles.—Tall al-Qassis (Tēl Qāšīṣ) MB II: Ben-Tor et al. 2003, 211 Fig. 85, 22: quern.

TZ 015951-001
Area I; Square AM 119; Complex B 6; Context 5533
Description: Weight stone. Fragmented; round in its cross section; conical drilling; interior pecking traces; bottom side flattened; roughly worked
Type: Weight stone type 1.2.1
Figure Reference: Fig. 3.115
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 5.3; D (max.) 11.3; D (opening) 8.5
Weight: —
Material: Limestone
Reference: —

Fig. 3.115 Weight stone, TZ 015951-001 (Source: BAI/GPIA).

TZ 015967-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Weight stone. Fragmented; triangular-shaped in its cross section; upper side smoothed
Type: Weight stone type 1
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: W 5.8; H 3.7; D (max.) >15
Weight: —
Material: Limestone
Reference: —

TZ 015595-001
Area I; Square AN 118; Complex B 3; Context 4958
Description: Loom weight. Complete; abraded; carefully worked; secondary used as rubbing stone (?)
Type: Loom weight type 2
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 5.8; D (max.) 4.4
Weight: —
Material: Basalt
Reference: Tall al-Mutasallim (Megiddo) EB III: Finkelstein et al. 2000, 416 Fig. 12. 53, 9: limestone, grooved elongated slingstone (?).—Tall al-Mutasallim (Megiddo) IA Str. 3: Lamon – Shipton 1939, Pl. 106, 2: basalt, hammer head, possibly used as door weight, identical shape.

TZ 016013-001
Area I; Square AN 118; Complex B 3; Context 5136
Description: Hammer stone. Complete; globular
Type: Hammer stone type 1
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 6.5
Weight: —
Material: Silicate stone
Reference: —

Food Production

TZ 013529-001
Area I; Square AO 119; Complex A; Context 4333
Description: Quern. Fragmented; finely porous
Type: Quern type 3a
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 12.5; W 14; H 4.7
Weight: 1325 g
Material: Basalt
Reference: —

TZ 014105-001
Area I; Square AO 119; Complex B 2; Context 4309
Description: Lower grinding stone. Fragmented; oval in its cross section; upper side concave; bottom side convex; roughly worked

Type: Lower grinding stone type 2a
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 33; W 25.5; H 18.3
Weight: 1530 g
Material: Basalt
Reference: —

TZ 015586-001
Area I; Square AL 118; Complex B 10; Context 5475
Description: Rubbing stone. Fragmented
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 8.4; W 6.7; H 4.3
Weight: —
Material: Basalt
Reference: —

TZ 015614-001
Area I; Square AN 118; Complex B 3; Context 5136
Description: Lower grinding stone. Fragmented; nearly rectangular in its cross section; upper and bottom side convex
Type: Lower grinding stone type 2a
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 24; W 28; H 6.5
Weight: 8200 g
Material: Basalt
Reference: —

TZ 015636-001
Area I; Square AM 119; Complex B 6; Context 5251
Description: Lower grinding stone. Fragmented; oval in its cross section; upper side flattened; bottom side convex and roughly worked; medium porous
Type: Lower grinding stone type 1c
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 14; W 23; H 9
Weight: 4197 g
Material: Basalt
Reference: —

TZ 015637-001
Area I; Square AN 119; Complex B 5; Context 5252
Description: Lower grinding stone. Complete; oval in its cross section; upper side flattened; bottom side convex
Type: Lower grinding stone type 1c
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 29; W 18; H 8.5
Weight: 5274 g
Material: Basalt
Reference: —

TZ 015645-001
Area I; Square AN 119; Complex B 5; Context 4886
Description: Quern. Fragmented; rectangular in its cross section; upper and bottom side convex; carefully worked; bevelled
Type: Quern type 3c
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 22; W 15.8; H 5
Weight: 3180 g
Material: Basalt
Reference: —

TZ 015653-001
Area I; Square AM 119; Complex B 6; Context 5533
Description: Quern. Fragmented
Type: Quern type 3c
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 17; 14.5; H 6.6
Weight: 2551 g
Material: Basalt
Reference: —

TZ 015656-001
Area I; Square AN 118; Complex B 3; Context 5141
Description: Quern. Fragmented; oval in its cross section; upper side concave; bottom side convex
Type: Quern type 3c
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 15.8; W 13.4; H 6
Weight: 1442 g
Material: Basalt
Reference: —

TZ 015670-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Quern. Fragmented; oval in its cross section; upper side concave; bottom side convex
Type: Quern type 3b
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 19.4; W 17; H 6.5
Weight: 2742 g
Material: Basalt
Reference: —

TZ 015686-001
Area I; Square AN 118; Complex B 4; Context 5327
Description: Quern. Fragmented
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 9; W 5.2; H 6
Weight: 393 g
Material: Basalt
Reference: —

TZ 015697-001
Area I; Square AN 118; Complex B 3; Context 4953
Description: Quern. Fagmented; medium porous
Type: Quern type 3c
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.5; W 10.5; H 5.5
Weight: 510 g
Material: Basalt
Reference: —

TZ 015704-001
Area I; Square AN 118; Complex B 3; Context 5057
Description: Rubbing stone. Complete; frustum shaped; upper and bottom side flattened
Type: —
Figure Reference: Fig. 3.116
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 6.1; H 5
Weight: —
Material: Basalt
Reference: —

Fig. 3.116 Rubbing stone, TZ 015704-001 (Source: BAI/GPIA).

TZ 015712-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Rubbing stone. Complete; cuboid; upper side convex; bottom side flattened
Type: —
Figure Reference: Fig. 3.117
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 9.3; W 6.9; H 6.2
Weight: —
Material: Basalt
Reference: —

Fig. 3.117 Rubbing stone, TZ 015712-001 (Source: BAI/GPIA).

TZ 015755-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Rubbing stone. Fragmented
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.3; W 5.7; H 4.3
Weight: —
Material: Basalt
Reference: —

TZ 015783-001
Area I; Square AN 118; Complex B 4; Context 4889
Description: Rubbing stone. Complete; disc-shaped
Type: Rubbing stone type 12.1
Figure Reference: Fig. 3.118
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 8; W 7.1; H 3.6
Weight: —
Material: Limestone
Reference: —

Fig. 3.118 Rubbing stone, TZ 015783-001 (Source: BAI/GPIA).

TZ 015794-001
Area I; Square AM 118; Complex B 3; Context 5250
Description: Rubbing stone. Fragmented; cuboid
Type: —
Figure Reference: Rubbing stone type 6
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 5.1; W 5.8; H 4.2
Weight: —
Material: Basalt
Reference: —

TZ 15814-001
Area I; Square AO 119; Complex B 2; Context 4296
Description: Quern. Fragmented; medium porous
Type: Quern type 3a
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 9; W 12.8; H 4.2
Weight: 768 g
Material: Basalt
Reference: —

TZ 015819-001
Area I; Square AM 119; Complex B 6; Context 5251
Description: Mortar bowl. Fragmented; nearly cuboid; bevelled; picking traces; depression on upper (D 5; Depth 1.5) and bottom side (D 2; Depth 0.7); useable from upper and bottom side
Type: —
Figure Reference: Fig. 3.119
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 7.7; W 9.3; H 6.6
Weight: —
Material: Basalt
Reference: —

Fig. 3.119 Mortar bowl, TZ 015819-001 (Source: BAI/GPIA).X15

TZ 015823-001
Area I; Square AN 119; Conplex B 5; Context 4891
Description: Mortar bowl. Fragmented; bottom side convex
Type: Mortar bowl type 2A2b
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 3.8; D (max.) 28
Weight: —
Material: Basalt
Reference: —

TZ 015830-001
Area I; Square AN 118; Complex B 3; Context 5141
Description: Quern. Fragmented
Type: Quern type 3c
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 20.8; W 14.3; H 6.5
Weight: 3049 g
Material: Basalt
Reference: —

TZ 015882-001
Area I; Square AN 119; Complex B 5; Context 5213
Description: Rubbing stone. Complete; semi-globular; bottom side flattened, slightly abraded
Type: Rubbing stone type 2
Figure Reference: Fig. 3.120
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 9.7; H 7.2
Weight: 3049 g
Material: Basalt
Reference: —

Fig. 3.120 Rubbing stone, TZ 015882-001 (Source: BAI/GPIA).

TZ 015884-001
Area I; Square AN 118; Complex B 3; Context 5247
Description: Rubbing stone. Complete; triangel-shaped at its cross section; disc-shaped
Type: Rubbing stone type 12.2
Figure Reference: Fig. 3.121
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 12.2; W 8.7; H 5
Weight: —
Material: Basalt
Reference: —

Fig. 3.121 Rubbing stone, TZ 015884-001 (Source: BAI/GPIA).

TZ 015897-001
Area I; Square AN 118; Complex B 4; Context 5327
Description: Rubbing stone. Fragmented; oval in its cross section; upper side concave; bottom side chopped off
Type: Rubbing stone type 3
Figure Reference: Fig. 3.122
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 9.3; W 6.2; H 4.5
Weight: —
Material: Basalt
Reference: —

Fig. 3.122 Rubbing stone, TZ 015897-001 (Source: BAI/GPIA).

TZ 015898-001
Area I; Square AN 119; Complex B 5; Context 5252
Description: Rubbing stone. Complete; oval in its cross section; upper and bottom side flattened
Type: Rubbing stone type 12.1
Figure Reference: Fig. 3.123
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 8.1; H 4.3
Weight: —
Material: Basalt
Reference: —

Fig. 3.123 Rubbing stone, TZ 015898-001 (Source: BAI/GPIA).

TZ 015917-001
Area I; Square AL 118; Complex B 9; Context 5475
Description: Rubbing stone. Fragmented; round in its cross section; upper side convex; bottom side concave
Type: Rubbing stone type 2.1
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 3.8; D (max.) 7.6
Weight: —
Material: Basalt
Reference: —

TZ 015999-001
Area I; Square AN 119; Complex B 5; Context 5213
Description: Lower grinding stone. Fragmented; oval in its cross section; bevelled; upper side concave (8); rim; bottom side convex; secondary use as door hinge
Type: Lower grinding stone type 3a
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 40; W 29.5; H 13.7
Weight: 16.900 g
Material: Basalt
Reference: —

TZ 016062-001
Area I; Square AN 119; Complex B 5; Context 4888
Description: Rubbing stone. Completed; cuboid; upper side convex; bottom side flattened
Type: Rubbing stone type 12.1
Figure Reference: Fig. 3.124
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 8.3; W 7.7; H 5.1
Weight: —
Material: Flint/Silex
Reference: —

Fig. 3.124 Rubbing stone, TZ 016062-001 (Source: BAI/GPIA).

TZ 017380-001
Area I; Square AL 118; Complex B 7; Context 5650
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; bottom side flattened
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 5.1 W 3.6; H 3
Weight: —
Material: Basalt
Reference: —

Personal Items

TZ 015419-001
Area I; Square AN 119; Complex 4–6; Context 4891
Description: Game board. Complete; nearly rectangular in its cross section; rows of small depressions
Type: —
Figure Reference: Fig. 3.44, 3.125
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 7.2; W 3.4; H 2.4
Weight: —
Material: Limestone
Reference: Tall al-Mutasallim (Megiddo) MB IIA: Wilson – Allen 1948, Pl. 268, 4 and 5: limestone, similar, but deeper depressions.—Tall al-Kafrayn MB/LB (?): Papadopoulos 2010, 297 34a and b: rectangular game stone (?), seven rows with seven depressions each; incarved squares.—See also TZ 015992-001, Context 5064 from Stratum 17.

Fig. 3.125 Game board, TZ 015419-001 (Source: BAI/GPIA).

TZ 015488-001
Area I; Square AL 118; Complex B 9; Context 5475
Description: Ring/spindle whorl (?). Fragmented
Type: —
Figure Reference: Fig. 3.126
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 2; D (max.) 3.7; D (opening) 1.5; W Th 0.6–1.2
Weight: —
Material: Basalt
Reference: Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 664 Fig. 12, 1–3: basalt and limestone, nearly identical scale.—Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 375 Fig. 12. 17, 1–4: basalt.— Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 171, 1–13.

Fig. 3.126 Ring, TZ 015488-001 (Source: BAI/GPIA).

TZ 015843-001
Area I; Square AN 118; Complex B 3; Context 4953
Description: Hygiene cuttlery. Complete; prisma-shaped; e.g. useable for personal care
Type: Rubbing stone type 17.4
Figure Reference: Fig. 3.127
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.5; W 3.3; H 4.9
Weight: —
Material: Pumice
Reference: Tall al-Mutasallim (Megiddo) IA: Wilson – Allen 1948, Pl. 264, 8: coarse vulcanic stone, rubber, very similar form.—Tall al-Mutasallim (Megiddo) IA – Str. 3: Lamon – Shipton 1939, Pl. 106, 17: scoria rubber, identical shape.

Fig. 3.127 Hygiene cuttlery, TZ 015843-001 (Source: BAI/GPIA).

TZ 016010-001
Area I; Square AN 119; Complex B 5; Context 4886
Description: Gaming piece (sphere). Complete
Type: Gaming piece type 1
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D 4.4
Weight: —
Material: Pebble
Reference: Tall Qēmūn (Tēl Yoqnəʿām) MB IIA–LB early: Ben-Tor et al. 2005, 369 Fig. V 8, 9–16: limestone, weights (?).—Tall Abū al-Ḫaraz LB early Phase V: Fischer 2006, 1287 f. Fig. 139, 1. 140: pestle, spherical, yellowish-white limestone.

TZ 017368-001
Area I; Square AO 118; Complex B 1; Context 5631
Description: Ceremonial axe. Fragmented; nearly cuboid in its cross section; dark green
Type: —
Figure Reference: Fig. 3.128 a.b
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 2.7; W 2.2; H 1.1
Weight: —
Material: Steatite
Reference: Tall al-Ḥiṣn (Beth Shean) EB III: Mazar 2012, 364 Fig. 9, 7. 2: scraper (?), L 5.7; W 2.3; Th 2; scoria, rectangular-shaped.—Tall al-Ḥiṣn (Beth Shean) EB III–MB II: Mazar 2007, 655 f. Photo 11. 12 and Fig. 10, 1. 2; 11: H 0.8; L 2.7; W 1.2/H 1.1; L 1.5; W 3.3.—Highly refined miniature stone chisels, identified as igneous plutonic rock of greenish color, belonging to the family of ultra-mafic rocks. Such rocks are known in Turkey/and the Hatay region in northwest Syria, Cyprus, the Cycladic Islands and in the eastern desert of Egypt.

Fig. 3.128 a Ceremonial axe, TZ 017368-001 (Source: BAI/GPIA).

Fig. 3.128 b Ceremonial axe, TZ 017368-001 (Source: BAI/GPIA).

TZ 017369-001
Area I; Square AO 118; Complex B 1; Context 5631
Description: Bead. Complete; conical drilled from both sides
Type: —
Figure Reference: Fig. 3.129
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 0.5; D (opening) 0.2; H 0.3
Weight: —
Material: Carnelian
Reference: Tall Abū al-Ḫaraz Phase IV/2 (MB II late): Fischer 2006, 58 Fig. 45, 1. 46: beads, honey-colored amber.—Tall al-Mutasallim (Megiddo) EB I–III: Finkelstein et al. 2000, 389 Fig. 12. 27, 11 (carnelian) and 391 Fig. 12. 19, 11 and 23 (carnelian, red orange).—Ṭabaqāt Faḥl (Pella) MB/LB: Smith 1973, Pl. 79 d and f; Pl. 80 n and o: carnelian.—Tall al-Mutasallim (Megiddo) MB IIB: Wilson – Allen 1948, Pl. 208, 23.

Fig. 3.129 Bead, TZ 017369-001 (Source: BAI/GPIA).

TZ 017378-001
Area I; Square AL 118; Complex B 9; Context 5630
Description: Gaming piece. Complete; globular; white
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 3.8 W 3.2; H 2.4
Weight: —
Material: Pebble
Reference: Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 657 Fig. 11. 1: H 5.5; W 8.2; L 17, relatively large limestone pebble, highly smoothed.

Warfare

TZ 015903-001
Area I; Square AN 118; Complex B 4; Context 5327
Description: Sling stone. Complete; egg-shaped
Type: —
Figure Reference: Fig. 3.130
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 4.2
Weight: 65.3 g
Material: Basalt
Reference: —

Fig. 3.130 Sling stone, TZ 015903-001 (Source: BAI/GPIA).

Cultic Items

TZ 015634-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Incense burner. Fragmented; secondary use as hammer stone
Type: —
Figure Reference: Fig. 3.131
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 11.9; D 11.5; D (foot) 10.4
Weight: —
Material: Basalt
Reference: Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 644 f. Fig. 11, 3. 9 and Photo 11, 7a: basalt, irregular, shape comparable.—Tall Abū al-Ḫaraz EB Phase IB: Fischer 2008, 119 Fig. 119, 14: basalt mortar.

Fig. 3.131 Bowl of a censer, TZ 015634-001 (Source: BAI/GPIA).

Flints: Flakes and Tools

TZ 013855-001; 1 blade; Area I; Square AO 119; Context 4308

TZ 013874-001; 1 blade; Area I; Square AO 118; Context 4298

TZ 013991-001; 1 tabular scraper; Area I; Square AO 119; Context 4421

TZ 016087-001; 1 blade, 5 flakes; Area I; Square AO 119; Context 4333

TZ 016128-001; 1 flake; Area I; Square AN 119; Context 4888

TZ 016129-001; 1 knife; Area I; Square AN 118; Context 4889

TZ 016142-001; 1 blade, 6 flakes; Area I; Square AN 118; Context 4953

TZ 016143-001; 1 borer, 2 blades, 1 projectile, 6 flakes; Area I; Square AN 118; Context 4955

TZ 016144-001; 1 blade; Area I; Square AN 118; Context 4958

TZ 016178-001; 1 flake; Area I; Square AM 119; Context 5058

TZ 016179-001; 2 flakes; Area I; Square AN 118; Context 5060

TZ 016195-001; 2 sickle blades, 5 flakes; Area I; Square AN 118; Context 5136

TZ 016196-001; 1 sickle blade, 3 blades, 6 flakes; Area I; Square AM 119; Context 5137

TZ 016197-001; 1 burin, 1 knife; Area I; Square AN 118; Context 5141

TZ 016198-001; 1 burin, 1 blade, 2 flakes; Area I; Square AN 118; Context 5143

TZ 016225-001; 3 blades, 10 flakes; Area I; Square AN 119; Context 5213

TZ 016228-001; 2 flakes; Area I; Square AM 118; Context 5220

TZ 016234-001; 3 flakes; Area I; Square AN 118; Context 5245

TZ 016235-001; 1 burin, 2 blades, 2 flakes; Area I; Square AN 118; Context 5247

TZ 016236-001; 1 flake; Area I; Square AM 118; Context 5250

TZ 016237-001; 1 sickle blade; Area I; Square AM 119; Context 5251

TZ 016238-001; 1 sickle blade, 2 blades, 1 bladelet, 1 chip, 6 flakes; Area I; Square AN 119; Context 5252

TZ 016259-001; 1 sickle blade, 1 projectile, 2 blades, 1 bladelet, 3 flakes; Area I; Square AN 118; Context 5326

TZ 016260-001; 1 blade, 1 flake, 1 uncertain; Area I; Square AN 118; Context 5327

TZ 016261-001; 1 blade, 1 flake; Area I; Square AO 118; Context 5329

TZ 016294-001; 3 blades, 7 flakes; Area I; Square AL 118; Context 5475

TZ 017395-001; 8 flakes; Area I; Square AN 119; Context 5529

TZ 017396-001; 1 sickle blade, 2 knifes, 1 blade, 7 flakes; Area I; Square AL 118; Context 5607

TZ 017397-001; 1 sickle blade, 2 blades, 3 flakes; Area I; Square AM 118; Context 5609

TZ 017398-001; 1 core, 2 blades, 3 chips; Area I; Square AL 118; Context 5611

TZ 017399-001; 2 flakes; Area I; Square AM 118; Context 5612

TZ 017400-001; 2 projectiles, 1 tabular scraper, 8 flakes; Area I; Square AM 118; Context 5613

TZ 017401-001; 1 sickle blade; Area I; Square AL 118; Context 5617

TZ 017402-001; 1 sickle blade, 1 blade, 1 chip, 2 flakes; Area I; Square AL 118; Context 5618

TZ 017403-001; 1 sickle blade, 2 blades, 49 flakes; Area I; Square AL 118; Context 5626

TZ 017404-001; 3 flakes; Area I; Square AL 118; Context 5628

TZ 017405-001; 3 sickle blades, 1 tabular scraper, 2 blades, 1 bladelet, 6 chips, 21 flakes; Area I; Square AL 118; Context 5630

TZ 017406-001; 1 sickle blade, 3 blades, 25 flakes; Area I; Square AO 118; Context 5631

TZ 017407-001; 1 borer, 1 knife, 1 blade, 18 flakes; Area I; Square AL 118; Context 5639

TZ 017409-001; 1 flake, 1 uncertain; Area I; Square AL 118; Context 5642

TZ 017410-001; 2 flakes; Area I; Square AM 118; Context 5643

TZ 017414-001; 1 core, 1 blade, 2 flakes; Area I; Square AL 118; Context 5650

TZ 017507-001; 1 flake; Area I; Square AM 118; Context 5557

TZ 017508-001; 2 chips, 1 flake; Area I; Square AL 118; Context 5614

Ecofacts

TZ 015456-001
Area I; Square AN 118; Complex B 3; Context 5247
Description: Raw material. Amorph
Type: —
Figure Reference: Fig. 3.132
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 4.7; W 3.4; H 3.2
Weight: —
Material: Slate
Reference: —

Fig. 3.132 Raw material, TZ 015456-001 (Source: BAI/GPIA).

TZ 015458-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Raw material. Amorph
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.7; W 3.7; H 4
Weight: —
Material: Alabaster
Reference: —

TZ 015467-001
Area I; Square AM 118; Complex B 3; Context 5250
Description: Raw material. Amorph
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 8.8; W 6.1; H 1
Weight: —
Material: Quarz
Reference: —

TZ 015486-001
Area I; Square AM 118; Complex B 3; Context 4953
Description: Raw material. Amorph
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 2; W 1; H 0.5
Weight: —
Material: Silicate stone
Reference: —

TZ 016070-001
Area I; Square AN 119; Complex B 5; Context 5252
Description: Raw material. Amorph; core
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 10.7; W 8; H 6.1
Weight: —
Material: Flint/Silex
Reference: —

TZ 016314-001
Area I; Square AO 119; Complex B 2; Context 5637
Description: Raw material. Amorph; globular; reddish
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: —
Weight: —
Material: —
Reference: —

TZ 016317-001
Area I; Square AM 118; Comples B 7; Context 5644
Description: Raw material. Amorph
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: —
Weight: —
Material: Quarz
Reference: —

TZ 016321-001
Area I; Square AL 118; Complex B 9; Context 5607
Description: Raw material. Amorph
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: —
Weight: —
Material: Limestone
Reference: —

TZ 015501-001
Area I; Square AN 118; Complex B 3; Context 5247
Description: Iron nodule. Amorph
Type: —

Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.1; W 3.3; H 1.4
Weight: 66 g
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 015502-001
Area I; Square AN 118; Complex B 3; Context 5332
Description: Iron nodule. Complete
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 1.7
Weight: 66 g
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 015503-001
Area I; Square AM 119; Complex B 6/10; Context 5532
Description: Iron nodule (?). Amorph; broken into three pieces
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.9; W 6.0; H 3.7
Weight: 205 g
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016383-001
Area I; Square AN 119; Complex B 5; Context 5213
Description: Iron nodule. Amorph; semi-globular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 1.7; D (max.) 5.3
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016386-001
Area I; Square AN 118; Complex B 4; Context 4889
Description: Iron nodule. Amorph; semi-globular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 1.4; D (max.) 5.3
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016389-001
Area I; Square AN 118; Complex B 4; Context 4889
Description: Iron nodule. Amorph; semi-globular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 2.1 ; D (max.) 6.8
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016391-001
Area I; Square AN 118; Complex B 3; Context 4958
Description: Iron nodule. Amorph; globular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 4
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016401-001
Area I; Square AN 119; Complex B 5; Context 4888
Description: 3 Iron nodules. Amorph; semi-globular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 5.8
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016407-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Iron nodule. Complete; globular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 2.9
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 017719-001
Area I; Square AM 119; Complex B 6/10; Context 5532
Description: Iron nodule. Complete; globular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: D (max.) 4.6
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

Uncertain

TZ 014104-001
Area I; Square AO 119; Complex A; Context 4309
Description: Rubbing stone (?). Fragmented
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 26.5; W 24.5; H 9.5
Weight: —
Material: Basalt
Reference: —

TZ 015421-001
Area I; Square AN 118; Complex B 3; Context 5247
Description: Hinge stone (?). Complete; globular; drilling at one side
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 2.7; D (max.) 3.2
Weight: —
Material: Limestone
Reference: —

TZ 015583-001
Area I; Square AM 119; Complex B 6; Context 5533
Description: Bowl with pedestal. Fragmented; unfinished; tube-shaped
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 6.4; D (max.) 5.6
Weight: —
Material: Basalt
Reference: —

TZ 015710-001
Area I; Square AN 118; Complex B 3; Context 4955
Description: Lower grinding stone (?). Fragmented; upper side flattened; no rubbing traces
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 16.5; W 16; H 3
Weight: —
Material: Basalt
Reference: —

TZ 015752-001
Area I; Square AN 118; Complex B 3; Context 5136
Description: Pedestal of a bowl (?). Fragmented; cuboid; two joining pieces
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 7; W 7.2; H 9.1
Weight: —
Material: Basalt
Reference: —

TZ 015758-001
Area I; Square AM 119; Complex B 10; Context 5061
Description: Blank of quern (?). Fragmented; nearly cuboid; upper side and bottom side flattened; no traces of use
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: —
Material: Basalt
Reference: —

TZ 015848-001
Area I; Square AN 118; Complex B 3; Context 5247
Description: Lower grinding stone (?). Fragmented; in its cross section nearly rectangular
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 8.2; W 4; H 4.6
Material: Basalt
Reference: —

TZ 015975-001
Area I; Square AN 118; Complex B 3; Context 5136
Description: Part of a handle (?)
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: L 5.3; W 5.9; H 3.4
Weight: —
Material: Silicate stone
Reference: —

TZ 016008-001
Area I; Square AM 119; Complex B 6; Context 5137
Description: Hinge stone (?). Complete; in its cross section round; on the upper side three small depressions and one larger deepening; bottom side convex
Type: —
Figure Reference: —
Date of Context: **MB IIA (younger Stratum)**
Dimensions: H 6; D (max.) 34
Weight: —
Material: Limestone
Reference: —

Stratum 17

Architecture

TZ 015615-001
Area I; Square AM 118; Complex A 3; Context 4729
Description: Hinge stone. Complete; nearly round in its cross section; roughly worked; no traces of abration
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: D (opening) 13; D (max.) 24; H 9
Weight: —
Material: Limestone
Reference: —

TZ 015995-001
Area I; Square AN 118; Complex A 3; Context 4726

Description: Hinge stone. Complete; irregular in its cross section
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 28; W 25; H 14: D (opening) 10
Weight: —
Material: Basalt
Reference: —

Household/Craft

TZ 014207-001
Area I; Square AM 119; Complex A 5; Context 4442
Description: Bowl. Complete; roughly made; bottom side convex
Type: —
Figure Reference: Fig. 3.133
Date of Context: **MB IIB**
Dimensions: L 17; W 12.5; H 5.9
Weight: —
Material: Limestone
Reference: —

Fig. 3.133 Bowl, TZ 014207-001 (Source: BAI/GPIA).

TZ 015420-001
Area I; Square AL 118; Complex A 7; Context 5291
Description: Spindle whorl. Complete; cylindrical
Type: —
Figure Reference: Fig. 3.134
Date of Context: **MB IIB**
Dimensions: H 1.5; D (max.) 3
Weight: —
Material: Limestone
Reference: Tall al-Ḥiṣn (Beth Shean) EB/IB: Mazar 2012, 368 f. Photo 9, 16 and Fig. 9, 1–14: unpolished, basalt and limestone, lentil-shaped cross-section; D of this type 3.1–5.3; D (opening) 0.6–1.5.—Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 664 Fig. 12, 1. 3 and 9: basalt.—Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 375 Fig. 12. 17, 1–4: basalt.—Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 171, 1–13.

Fig. 3.134 Spindle whorl, TZ 015420-001 (Source: BAI/GPIA).

TZ 015457-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Spindle whorl. Fragmented; disc-shaped; from both sides conical perforated
Type: —
Figure Reference: Fig. 3.135
Date of Context: **MB IIB**
Dimensions: H 2.5; D (max.) 6; D (opening) 2
Weight: —
Material: Limestone
Reference: Tall al-Ḥiṣn (Beth Shean) EB/IB (Mazar 2012, 368 f. Photo 9, 16 and Fig. 9, 1–14: unpolished, basalt and limestone, lentil-shaped cross-section; D of this type 3.1–5.3, D (opening) 0.6–1.5.—Tall al-Mutassallim (Megiddo) EB: Finkelstein et al. 2000, 375 Fig. 12. 17, 1–4: basalt.—Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 171, 1–13.

Fig. 3.135 Spindle whorl, TZ 015457-001 (Source: BAI/GPIA).

TZ 015466-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Spindle whorl. Fragmented; disc shaped.
Type: —
Figure Reference: Fig. 3.136
Date of Context: **MB IIB**
Dimensions: D (max.) 2.5; H 0.6;
Weight: —
Material: Silicate stone
Reference: —

Fig. 3.136 Spindle whorl, TZ 015466-001 (Source: BAI/GPIA).

TZ 015604-001
Area I; Square AM 118; Complex A 3; Context 4729
Description: Lower part of a potter's wheel. Almost complete; deep abraded depression in its centre; upper side nearly smooth; round in its cross section
Type: —
Figure Reference: Fig. 3.137
Date of Context: **MB IIB**
Dimensions: D (max.) 24; D (opening) 8.3; H 12
Weight: —
Material: Basalt
Reference: Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Ben-Tor et al. 2003, 88 Fig. 41, 5: basalt, D c. 15, perforated.—Tall Abū al-Ḫaraz Phase V (LB early): Fischer 2006, 62 Fig. 52; 76 Fig. 64, 11: basalt, perforated.—Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 268, 1–3.

Fig. 3.137 Potter's wheel, TZ 015604-001 (Source: BAI/GPIA).

TZ 015749-001
Area I; Square AN 118; Complex A 3; Context 4727
Description: Weight stone. Fragmented; ring-shaped
Type: Weight stone type 1.1.2
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: D (max.) 12.4; D (inside) 4.9; H 3.6
Weight: 570 g
Material: Basalt
Reference: —

TZ 015836-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Weight stone. Complete; ring-shaped; from both sides conical perforated
Type: Weight stone type 1.2.5
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: D (max.) 15; D (inner side) 2.6; H 6.4
Weight: 1829 g
Material: Basalt
Reference: —

TZ 015940-001
Area I; Square AL 118; Complex A 3; Context 5232
Description: Weight stone. Complete; irregularly shaped; natural perforation (not centered)
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 12.1; W 9.3; H 9.3
Weight: 1357 g
Material: Calcareous sinter
Reference: —

TZ 015984-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Lid. Complete; nearly round in its cross section; both sides flat
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: D (max.) 12.3; H 3.1
Weight: 723 g
Material: Limestone
Reference: —

TZ 017374-001
Area I; Square AL 118; Complex A 7; Context 5675
Description: Spindle whorl. Fragmented; round in its cross section; both sides flat; from both sides conical perforation (not centred)
Type: Spindle whorl type 2
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: D (max.) 4.6; D (opening) 0.8; H 0.9
Weight: 10 g
Material: Limestone
Reference: Tall al-Ḥiṣn (Beth Shean) MB II: Mazar 2007, 664 Fig. 12, 3–6 and 11: basalt and limestone.—Tall al-Mutasallim (Megiddo) EB: Finkelstein et al. 2000, 375 Fig. 12. 17, 7 and 8: limestone.—Tall al-Mutasallim (Megiddo) EB/MB: Wilson – Allen 1948, Pl. 171, 1–13.

TZ 017377-001
Area I; Square AL 118; Complex A 7; Context 5378
Description: Weight stone. Fragmented; irregularly shaped; from both sides conical perforation
Type: Weight stone type 1.2.1
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: D (max.) 12; D (opening) 2.1; H 4.8
Weight: 518 g
Material: Basalt
Reference: —

Food Production

TZ 013322-001
Area I; Square AO 119; Complex A 2; Context 4057
Description: Quern. Fragmented
Type: Quern type 3a
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 6.2; W 15; H 4
Weight: 541 g
Material: Basalt
Reference: —

TZ 013496-001
Area I; Square AO 119; Complex A 2; Context 4057
Description: Quern. Fragmented; oval in its cross section
Type: Quern type 3a
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 13.2; W 14; H 4.6
Weight: 1204 g
Material: Basalt
Reference: —

TZ 013360-001
Area I; Square AO 118; Complex A 2; Context 4250
Description: Rubbing stone. Fragmented; nearly rectangular in its cross section
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 10; W 8; H 6
Weight: 845 g
Material: Basalt
Reference: —

TZ 013436-001
Area I; Square AO 118; Complex A 1; Context 4091
Description: Rubbing stone. Complete; nearly cuboid; traces of use
Type: Rubing stone type 6
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 7.2; W 6; H 4.3
Weight: 308 g
Material: Basalt
Reference: —

TZ 013449-001
Area I; Square AO 118; Complex A 1; Context 4077
Description: Rubbing stone. Fragmented; oval in its cross section
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 7.5; W 8; H 5.7
Weight: 517 g
Material: Basalt
Reference: —

TZ 014610-001
Area I; Square AM 118; Complex A 4; Context 4653
Description: Quern. Fragmented
Type: Quern type 3c
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 12.2; W 14; H 7.4
Weight: 1803 g
Material: Basalt
Reference: —

TZ 015414-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Mortar bowl. Complete; round in its cross section; upper side with traces of use; bottom side flat
Type: —
Figure Reference: Fig. 3.106 and 3.138
Date of Context: **MB IIB**
Dimensions: L 9.7; W 6.8; H 6.3
Weight: —
Material: Dense limestone
Reference: —

Fig. 3.138 Mortar bowl, TZ 015414-001 (Source: BAI/GPIA).

TZ 015582-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; bottom side flat
Type: Rubbing stone type 3
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 11.6; W 7.8; H 5.2
Weight: 720 g
Material: Silicate stone
Reference: —

TZ 015635-001
Area I; Square AE 114; Context 5478
Description: Quern. Fragmented; oval in its cross section
Type: Quern type 3a
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 19; W 13.5; H 5.7
Weight: 2085 g
Material: Basalt
Reference: —

TZ 015609-001
Area I; Square AN 118; Complex A 3; Context 4726
Description: Lower grinding stone. Fragmented; oval in its cross section; upper side smoothed and concave; bottom side convex
Type: Lower grinding stone type 1a
Figure Reference: Fig. 3.139
Date of Context: **MB IIB**
Dimensions: L 31; W 16.8; H 7
Weight: 4375 g
Material: Basalt
Reference: —

Fig. 3.139 Lower grinding stone, TZ 015609-001 (Source: BAI/GPIA).

TZ 015625-001
Area I; Square AN 118; Complex A 3; Context 4561
Description: Lower grinding stone. Fragmented; oval in its cross section; upper side smoothed and concave; bottom side convex
Type: Lower grinding type 1a
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 23; W 14; H 5.3
Weight: 2741 g
Material: Basalt
Reference: —

TZ 015626-001
Area I; Square AN 118; Complex A 3; Context 4561
Description: Lower grinding stone. Complete; oval in its cross section; upper side smoothed and concave; bottom side convex
Type: Lower grinding type 1a
Figure Reference: Fig. 3.140
Date of Context: **MB IIB**
Dimensions: L 36.4; W 17.7; H 10
Weight: 6300 g
Material: Basalt
Reference: —

Fig. 3.140 Lower grinding stone, TZ 015626-001 (Source: BAI/GPIA).

TZ 015659-001
Area I; Square AL 118; Complex A 3; Context 5232
Description: Rubbing stone. Complete, nearly cuboid
Type: —
Figure Reference: Fig. 3.141
Date of Context: **MB IIB**
Dimensions: L 17; W 8.3; H 5.3
Weight: —
Material: Basalt
Reference: —

Fig. 3.141 Rubbing stone, TZ 015659-001 (Source: BAI/GPIA).

TZ 015664-001
Area I; Square AN 119; Complex A 4; Context 4524
Description: Quern. Fragmented; in its cross section oval
Type: Quern type 3b
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 27.5; W 12.5; H 6.5
Weight: 3019 g
Material: Basalt
Reference: —

TZ 015756-001
Area I; Square AM 118; Complex A 5; Context 4717
Description: Quern. Fragmented; in secondary use; upper side convex
Type: Quern type 3a
Figure Reference: Fig. 3.142
Date of Context: **MB IIB**
Dimensions: L 7.3; W 9.7; H 3.5
Weight: 416 g
Material: Basalt
Reference: —

Fig. 3.142 Quern, TZ 015756-001 (Source: BAI/GPIA).

TZ 015774-001
Area I; Square AN 118; Complex A 3; Context 4798
Description: Mortar bowl. Fragmented; oval in its cross section; upper side with traces of use
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 13; W 13.5; H 4.7
Weight: 1090 g
Material: Basalt
Reference: —

TZ 015807-001
Area I; Square AN 119; Complex A 2; Context 4521
Description: Rubbing stone. Fragmented; upper side and bottom side slightly convex
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 8; W 9.9; H 4.3
Weight: 467 g
Material: Basalt
Reference: —

TZ 015825-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; yellow traces of paint
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 7.9; W 4.7; H 5
Weight: 249 g
Material: Basalt
Reference: —

TZ 015838-001
Area I; Square AM 118; Complex a 3; Context 4797
Description: Rubbing stone. Complete; cuboid, upper side and bottom side slightly convex
Type: Rubbing stone type 14.2
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: H 5.2; D (max.) 6
Weight: 267 g
Material: Basalt
Reference: —

TZ 015860-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Rubbing stone. Fragmented; oval in its cross section; upper side and bottom side slightly convex; depression in the centre of the bottom side
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 7.6; W 6.6; H 2.4
Weight: 227 g
Material: Basalt
Reference: —

TZ 015908-001
Area I; Square AN 118; Complex A 3; Context 4677
Description: Quern. Fragmented
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 11; W 14.7; H 6
Weight: 1250 g
Material: Basalt
Reference: —

TZ 015957-001
Area I; Square AL 118; Complex A 7; Context 5291
Description: Rubbing stone. Fragmented; oval in its cross section; bottom flat and traces of use
Type: Rubbing stone type 12.2
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 7.1; W 6.4; H 2.3
Weight: 103 g
Material: Limestone
Reference: —

TZ 015966-001
Area I; Square AL 118; Complex A 6; Context 5292
Description: Rubbing stone. Complete; oval in its cross section; bottom side flat
Type: Rubbing stone type 3
Figure Reference: Fig. 3.143
Date of Context: **MB IIB**
Dimensions: L 8.9; W 4; H 3.9
Weight: 171 g
Material: Limestone
Reference: —

Fig. 3.143 Rubbing stone, TZ 015966-001 (Source: BAI/GPIA).

TZ 015986-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Rubbing stone. Complete; oval in its cross section; upper side concave; bottom side convex
Type: Rubbing stone type 12
Figure Reference: Fig. 3.144
Date of Context: **MB IIB**
Dimensions: L 15.5; W 6.6; H 3.1
Weight: 423 g
Material: Limestone
Reference: —

Fig. 3.144 Rubbing stone, TZ 015986-001 (Source: BAI/GPIA).

TZ 016000-001
Area I; Square AL 118; Complex A 7; Context 5290
Description: Lower grinding stone (?). Complete; round in its cross section; carefully worked
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 37; W 32; H 12
Weight: —
Material: Limestone
Reference: —

TZ 016012-001
Area I; Square AN 118; Complex A 3; Context 5139
Description: Rubbing stone. Complete; oval in its cross section; upper side convex; bottom side flat; traces of use
Type: Rubbing stone type 3
Figure Reference: Fig. 3.145
Date of Context: **MB IIB**
Dimensions: L 11; W 7.7; H 5
Weight: 603 g
Material: Pebble stone
Reference: —

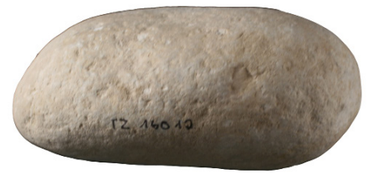


Fig. 3.145 Rubbing stone, TZ 016012-001 (Source: BAI/GPIA).

TZ 016039-001
Area I; Square AM 118; Complex A 3; Context 4729
Description: Rubbing stone. Complete; egg-shaped; traces of use (picking and rubbing)
Type: Rubbing stone type 13
Figure Reference: Fig. 3.146
Date of Context: **MB IIB**
Dimensions: L 9.8; W 5.3; H 4.2
Weight: 318 g
Material: Silicate stone
Reference: —

Fig. 3.146 Rubbing stone, TZ 016039-001 (Source: BAI/GPIA).

TZ 016048-001
Area I; Square AN 118; Complex A 3; Context 4798
Description: Rubbing stone. Complete; in its cross section nearly rectangular; bottom side flat
Type: —
Figure Reference: Fig. 3.147
Date of Context: **MB IIB**
Dimensions: L 7; W 6; H 5.2
Weight: 333 g
Material: Silicate stone
Reference: —

Fig. 3.147 Rubbing stone, TZ 016048-001 (Source: BAI/GPIA).

TZ 017382-001
Area I; Square AL 118; Complex A 7; Context 5378
Description: Mortar bowl. Fragmented; round in its cross section
Type: Mortar bowl type 1A1
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 13; W 10; H 6.4
Weight: 1470 g
Material: Basalt
Reference: —

Personal Items

TZ 012962-001
Area I; Square AM 118; Complex A 5; Context 3917
Description: Bead. Complete
Type: —
Figure Reference: Fig. 3.148
Date of Context: **MB IIB**
Dimensions: D 1
Weight: —
Material: Carnelian
Reference: —

Fig. 3.148 Bead, TZ 012962-001 (Source: BAI/GPIA).

TZ 014648-001
Area I; Square AN 118; Complex A 3; Context 4695
Description: Signet ring. Complete; egyptian iconography; cf. *Chap. 3.2.1.3*
Type: —
Figure Reference: Fig. 3.63, 3.64, 3.149
Date of Context: **MB IIB**
Dimensions: L 4.1; H 2.5; W 1.2; D (Opening) 1.8
Weight: —
Material: Steatite
Reference: Tall al-Mutasallim (Megiddo) MB IIB: Wilson – Allen 1948, Pl. 151, 146: Iconography nearly identical.

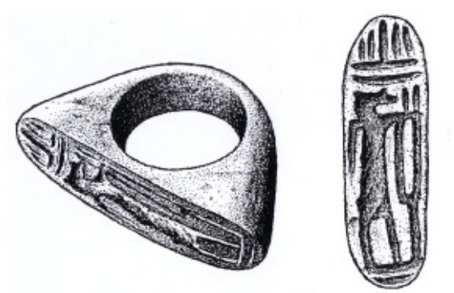


Fig. 3.149 Signet ring, TZ 014648-001 (Source: BAI/GPIA).

TZ 015992-001
Area I; Square AN 119; Complex A 4; Context 5064
Description: Game board. Monolith; irregularly shape; upper side flat with horizontal and vertical lines, carved into the stone like on a chessboard
Type: —
Figure Reference: Fig. 3.67, 3.150
Date of Context: **MB IIB**
Dimensions: L 35; W 29; H 26
Weight: —
Material: Limestone
Reference: Tall al-Mutasallim (Megiddo) Stratum 5 (= IA II): Wilson – Allen 1948, Pl. 268, 6: similar.—Tall al-Mutasallim (Megiddo) Stratum 19 (EB or earlier): Wilson – Allen 1948, Pl. 272: incised stones from the pavement of Stratum 19.

Fig. 3.150 Game board, TZ 015992-001 (Source: BAI/GPIA).

Flints: Flakes and Tools

TZ 012975-001; 1 borer; Area I; Square AM 118; Context 3917

TZ 013259-001; 1 flake; Area I; Square AO 119; Context 4256

TZ 013260-001; 1 uncertain; Area I; Square AO 119; Context 4249

TZ 013864-001; 1 sickle blade, 1 bladelet; Area I; Square AO 119; Context 4108

TZ 013873-001; 1 blade; Area I; Square AO 119; Context 4107

TZ 013984-001; 1 tabular scraper; Area I; Square AN 119; Context 4521

TZ 013992-001; 1 harvesting knife; Area I; Square AN 119; Context 4480

TZ 014707-001; 1 harvesting knife, 5 flakes; Area I; Square AM 118; Context 4696

TZ 014716-001; 2 knifes, 1 blade, 2 flakes; Area I; Square AM 118; Context 4696

TZ 014721-001; 1 flake; Area I; Square AM 118; Context 4717

TZ 014722-001; 1 flakes; Area I; Square AM 118; Context 4729
TZ 014999-001; 1 sickle blade, 1 blade, 6 flakes; Area I; Square AM 118; Context 4729

TZ 015006-001; 1 tabular scraper, 1 blade, 3 flakes; Area I; Square AN 118; Context 4695

TZ 015007-001; 1 burin, 2 flakes; Area I; Square AN 118; Context 4798

TZ 015017-001; 1 harvesting knife, 2 blades, 5 flakes; Area I; Square AN 118; Context 4695

TZ 015020-001; 1 scraper, 1 flake, 1 uncertain; Area I; Square AN 118; Context 4798

TZ 015478-001; 1 blade; Area I; Square AN 119; Context 4521

TZ 016090-001; 1 flake; Area I; Square AN 119; Context 4521

TZ 016100-001; 5 flakes; Area I; Square AN 118; Context 4727

TZ 016106-001; 1 blade, 1 flake; Area I; Square AN 118; Context 4784

TZ 016233-001; 1 sickle blade, 1 blade, 2 flakes; Area I; Square AL 118; Context 5232

TZ 016248-001; 1 projectile, 2 blades, 1 flake; Area I; Square AL 118; Context 5290

TZ 016249-001; 1 projectile, 1 sickle blade, 1 large blade, 2 blades, 7 flakes; Area I; Square AL 118; Context 5291

TZ 016250-001; 3 flakes; Area I; Square AL 118; Context 5292

TZ 016275-001; 1 flake; Area I; Square AL 118; Context 5393

TZ 016282-001; 1 blade, 6 flakes; Area I; Square AL 118; Context 5421

TZ 016292-001; 1 projectile, 1 flake; Area I; Square Al 118; Context 5472
TZ 016296-001; 1 core, 9 flakes; Area I; Square AE 114; Context 5477

TZ 016297-001; 1 sickle blade, 3 blades, 3 chips, 2 flakes; Area I; Square AE 114; Context 5478

TZ 016298-001; 1 ad-hoc-tool, 1 blade, 1 chip, 2 flakes; Area I; Square AE 114; Context 5478

TZ 016306-001; 1 ad-hoc-tool, 2 flakes; Area I; Square AE 114; Context 5546

TZ 017393-001; 1 blade, 5 flakes; Area I; Square AL 118; Context 5378

TZ 017425-001; 1 blade, 1 flake; Area I; Square AL 118; Context 5675

Ecofacts

TZ 014631-001
Area I; Square AN 118; Complex A 3; Context 4677
Description: Iron nodule. Fragmented
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: D (max.) 2
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016387-001
Area I; Square AN 119; Complex A 3; Context 4890
Description: 3 Iron nodules. Fragmented; semi globular
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimension: D 4.0–4.2
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

TZ 016400-001
Area I; Square AM 118; Complex A 3; Context 4797
Description: Iron nodule. Complete; egg shaped
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimension: D (max.) 4.2
Weight: —
Material: Ferric oxide (Fe_2O_3)
Reference: —

Uncertain

TZ 015813-001
Area I; Square AL 118; Complex A 7; Context 5421
Description: Hinge stone (?). Complete; oval in shape
Type: —
Figure Reference: Fig. 3.151
Date of Context: **MB IIB**
Dimensions: L 17; W 14; H 5.6
Weight: 2197 g
Material: Basalt
Reference: —

Fig. 3.151 Hinge stone (?), TZ 015813-001 (Source: BAI/GPIA).

TZ 015858-001
Area I; Square AL 118; Complex A 6; Context 5176
Description: Blank of quern (?). Fragmented; upper side convex; bottom side flat; roughly made
Type: —
Figure Reference: —
Date of Context: **MB IIB**
Dimensions: L 15.5; W 12; H 6.2
Weight: 1661 g
Material: Basalt
Reference: —

3.2.2.5. Catalogue of Ceramic Finds: Strata 19–17

by Andrea Schwermer

Introduction

The Strata 19 to 17 of the Tall Zirāʿa evidence remains of a solidly built-up area that bear witness to urban structures. The Strata 19 and 18 can be classed with the Middle Bronze Age IIA, and Stratum 17 with the Middle Bronze Age IIB. Remains of urban fortifications could not be found; however, this is due to the fact that large parts of the western walls had been whipped off in the course of the land slide or collapse already mentioned that took place during the Late Bronze Age. As was the case in the strata underneath[159], this also affected the ceramic assemlage.

The following description is based on the ceramic finds from the Strata 19 to 17, which in all likelihood date from the Middle Bronze Age. Neither sherds that may have originally come from these strata but were ultimately found in different contexts nor the remains of vessels of later periods that were moved into the Middle Bronze Age layers in the course of the massive disturbances during the classical epochs were included.

Detailed information on the treatment of the sherd finds including their typologisation can be found in the preliminary notes to the introductory chapter on the Early Bronze Age ceramics[160].

For comparison and in order to regard the Middle Bronze Age ceramic finds of the Tall Zirāʿa in a larger regional context, refer to the publications on the excavations in Ṭabqāṭ Faḥl (Pella)[161], Tall Abū al-Ḫaraz[162], Tall al-Ḥiṣn (Beth Shean)[163], Tall al-Qassis (Tēl Qāšīš)[164], Tall Qēmūn (Tēl Yoqnəʿām)[165], and Qīre (Tall Qīrī)[166].

The Types of Vessels

Distribution

The 1233 rim sherds found in the Strata 19 to 17, that in all likelihood date back to the Middle Bronze Age II, can be distributed to the following types of vessels[167]:

- Cooking pots
- Kraters[168]
- Jars[169]
- Pithoi
- Bowls
- Oil lamps
- Others

As, from the Middle Bronze Age on, both the production method and the clay composition of most of the prehistoric domestic ware remained essentially the same, the outer shape of a vessel is more often than not the only indicator of its chronological classification. If the rim sherds are very small a positive assignment to a specific epoch is sometimes difficult. In order to preclude a falsification of the statistics of the overall sherd finds, these ambiguous specimens are always classed with the stratum where they were discovered, both here and when regarding the ceramic finds of the Late Bronze Age and Iron Age strata. In any case, assembling these data is more about finding out about developments and trends relating to the production and use of ceramic ware than about determining the exact *status quo* down to every single sherd[170].
Keeping this in mind, the different types of vessels can be distributed to the Strata 19 to 17 as follows:

159 Cf. *Chap. 1.2.2.5.*
160 Cf. *Chap. 1.2.2.5.*
161 Bourke et al. 2006.
162 Fischer 2006.
163 Maeir 2007.
164 Bonfil 2003.
165 Ben-Ami – Livneh 2005.
166 Ben-Tor 1987.
167 On the difficulties of positively assigning sherd finds to specific types of vessels, refer to the information on the pottery of the Early Bronze Ages II and III (*Chap. 1.2.2.5*). Also cf. Maeir 2007, 242.
168 On the difficulties of distinguishing between craters and large bowls, see Maeir 2007, 245, 255.
169 A further differentiation of the handled vessels into jars, jugs, and bottles is often impossible due to the small size of most of the rim sherds, and is therefore omitted here. Also cf. Maeir 2007, 264 f. and the subsequent passage.
170 Also see Maeir 2007, 243.

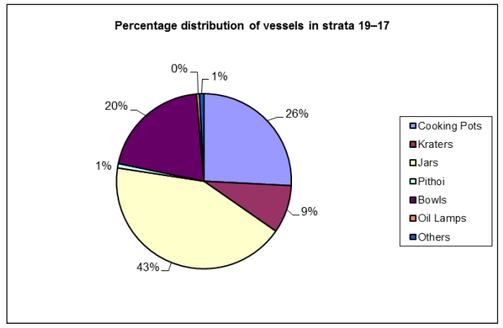
Stratum	Cooking Pots	Kraters	Jars	Pithoi[171]	Bowls	Oil lamps	Others	Σ
19	91	19	168	3	51	3	0	**335**
18	134	71	239	4	84	1	4	**537**
17	93	19	120	3	116	3	6	**361**
Σ	**318**	**109**	**527**	**10**	**251**	**7**	**10**	**1233**

Tab. 3.53 Numeral distribution of the rim sherds to the different types of vessels in the Strata 19 to 17 (Source: Schwermer).

Compared to the Early Bronze Age strata and those of the intermediate period, the numerical proportions of the ceramic vessels have undergone a visible shift. This, however, does not apply for the cooking pots, which make up a continuous share of about 25 %. The share of bowls/platters markedly declines from 52 % over 34 % to finally 20 % in the strata of the Middle Bronze Age II. This may be explained by the fact that by then, the large flat plates and platters that had been part of the basic inventory during the Early Bronze Age were no longer produced. Conversely, the share of jars steadily rose to 43 % in the Strata 19 to 17. The increase of kraters to an average of 9 % possibly correlates with the decrease of the bowls and large platters that had formerly been used for serving meals[172].

When comparing the Strata 19 to 17 with each other it becomes apparent that the two older strata are usually more similar in terms of the distribution of the different types of vessels. Especially with respect to its markedly lower share of jars (34 %) and a considerably larger share of bowls (32 %), Stratum 17 differs significantly from the two older strata. The only type of vessel that is evenly distributed among all three strata is that of the cooking pots.

The next section but one will give a more detailed account of the different types of vessels and their occurrence in the Strata 19 to 17.



Graph 3.1 Percentage distribution of the rim sherds to the different types of vessels in the Strata 19 to 17 (Source: Schwermer).

Dimensions

The two following tables (*Tab. 3.54* and *3.55*) present the overall scopes of the wall thicknesses and of the opening diameters of the different types of vessels. In order to make up for possible errors of measurement, we also included the range within which 80 %, and thus the large majority, of the vessels can be found.

Type of Vessels	Wall Thickness (in cm)		
	Extreme Values	80 % of the Vessels	Average[173]
Cooking Pots	0.4–2.9	0.8–1.6	1.2
Kraters	0.5–1.5	0.6–1.1	0.8
Jars	0.3–1.6	0.4–0.9	0.6
Pithoi	0.6–1.7	0.6–1.6	1
Bowls	0.25–1.5	0.35–1	0.7

Tab. 3.54 Wall thickness of the different types of vessels in the Strata 19 to 17 (Source: Schwermer).

171 Jars with a rim diameter of 25 cm and more. On the problem of differentiating the jars, cf. the subsequent passage.

172 In Tall al-Ḥiṣn (Beth Shean), the numeral proportion of the types of vessels that have been attributed to the Middle Bronze Age II is completely different (cf. Maeir 2007, 245 with Table 4.1). For instance, here the share of bowls (42 %) is much larger whereas that of the cooking pots (11 %) is considerably lower. At 10 %, only the kraters occur in approximately equal numbers. When drawing comparisons like this, however, it must be kept in mind that the criteria applied when acquiring data may not be identical in the different find places.

173 Rounded mean value of all sherds.

Some of the kraters, jars, and bowls from the Middle Bronze Age strata have significantly thinner walls than the corresponding finds in the older strata. This is due to the advancement of the technological possibilities with respect to the production of ceramics, but also to the fact that certain forms like, for instance, the thick-walled plates and platters have entirely disappeared. Only the Middle Bronze Age cooking pot that already occurred during the intermediate period between the Early and the Middle Bronze Age and was still hand-built has a considerably thicker wall and thus conforms to the finds of earlier periods.

Type of Vessels	Opening (in cm)		
	Extreme Values	80 % of the Vessels	Average[174]
Cooking Pots	10–60	20–40	31
Kraters	10–54	16–27	20.8
Jars	2–32	8–18	12.6
Pithoi	26–48	26–32	30
Bowls	8–50	10–30	19.8

Tab. 3.55 Opening diameters of the different types of vessels in the Strata 19 to 17 (Source: Schwermer).

The disappearance of the large plates and platters during the Middle Bronze Age also influences the average opening diameter of the bowls as a class of their own: it is considerably smaller than that of the corresponding finds from the Strata 25 to 20. The kraters, too, have a narrower opening and were presumably altogether a little smaller than they used to be. The openings of cooking pots and of jars, however, almost exactly match those from the Strata 21 and 22.

Since, depending on their respective functions, the jars were given different shapes the question arises whether an opening diameter can serve as the only defining attribute. Linking the opening diameter to a specific function, type always seems somewhat arbitrary if there are not enough complete vessels as reference objects or even none at all. Rim sherds only rarely allow a valid conclusion about the actual holding capacity of a jar since the fragments usually do not extend past the neck of the vessel and it is thus next to impossible to deduce a jar's overall shape.

As a simple solution to the problem, however, classifying the jars by means of their opening diameter for rough orientation purposes is absolutely acceptable and legitimate. Accordingly, for instance, the Middle Bronze Age jars from Tall al-Ḥiṣn (Beth Shean) have been classified as follows[175]:

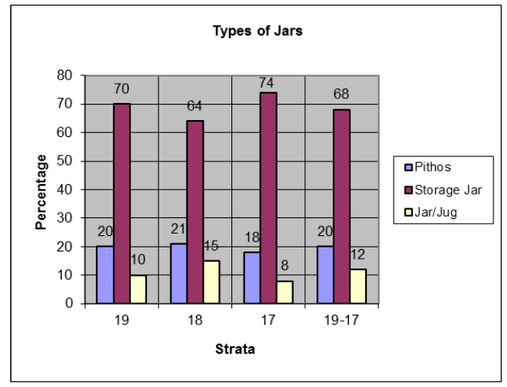
Type of Vessel	Diameter (in cm)	Additional Criterion
Pithos	> 15	thick body
Storage Jar	9–14	
Jar/Jug	< 7–8	thin wall

Tab. 3.56 Classification of different vessel types at the Tall al-Ḥiṣn (Beth Shean) (Source: Maeir 2007).

174 Rounded mean value of all sherds.

175 Maeir 2007, 264 f.

If this schema is applied to the sherd finds from Tall Zirā'a, the following distribution can be obtained:



Graph 3.2 Percentage distribution of the types of jars in the Strata 19 to 17 of Tall Zirā'a, on the basis of the criteria from Tall al-Ḥiṣn (Beth Shean) (Source: Schwermer).

About two-thirds to three-fourths of the jars would be allocated to the category of storage jars that were used for storing medium-sized quantities of supplies, probably for a limited period of time. On the basis of a broad definition of pithoi, 20 % of the vessels would have served to store larger quantities for a longer period of time. Small jars and jugs, however, in which liquids were only briefly reposited and/or immediately distributed would have accounted for merely just over 10 %. These findings are almost identical with those from the Tall al-Ḥiṣn (Beth Shean), where pithoi make up 19.6 %, storage jars 69.5 %, and jars/jugs 10.9 %[176].

176 Maeir 2007, 245 with Table 4.1.

Ware Categories

With the exception of the straight-walled cooking pots that have already been mentioned repeatedly, the Middle Bronze Age common ware was only manufactured on the fast-spinning potter's wheel and consisted of carefully prepared clays. Some of these clay types, among them the most common ones, have already been introduced in the chapter on the transitional period[177]. They will therefore only be briefly listed below:

WM C Buff	Wheelmade Common Buff
WM C R2B	Wheelmade Common Red to Brown
WM R2B P	Wheelmade Red to Brown Polished
WM WSl	Wheelmade White Slip
WM Coarse	Wheelmade Coarse
CP 5	Cooking Pot Ware 5 (Middle Bronze Age cooking pot ware)

The following diagram only features those ware categories occurring in the Strata 19 to 17 that have not been previously described.

Designation	Description	Example (Section/Top View)	
WM Buff P **(Wheelmade Buff Polished)**	Wheel-thrown ware made of beige clay, core also grey clay, with plenty of fine to medium-fine mineral temper that is usually clearly visible also on the outside. Moderately hard to hard fir-ing. Thick beige-coloured slip. Moderately hard to hard firing.	 TZ 021076-030	 TZ 020969-006
WM Brick-Red **(Wheelmade Brick-Red)**	Wheel-thrown red ware made of brick-red clay (thicker sherds also with a core of brownish-red clay) with plenty of mineral temper that is also visible on the surface. Coarse outside without slip. Moderately hard to hard firing.	  TZ 001262-003	
WM BP **(Wheelmade Black Polished)**	Wheel-thrown fine black ware. Grey to greyish-black clay with a fine texture. Glossy black slip, sometimes with decorative incisions. Hard firing. Dating: LB (MB?)	 TZ 020178-006	 TZ 001562-005

177 Cf. *Chap. 2.2.2.5* with *Tab. 2.22.*

Designation	Description	Example (Section/Top View)	
ChocWh[178] **(Chocolate on White)**	Wheel-thrown white ware with reddish-brown painting. Beige to reddish clay with medium-fine mineral temper. Thick white, also glossy slip with reddish-brown stripes and geometrical forms. Hard firing. Dating: MB II/LB I Finding places: Central Jordan Valley and south Lebanon.	 TZ 002442-014	 TZ 020088-023
CP 3[179] **(Cooking Pot Ware 3)**	Beige to light brown clay that has plenty of medium-sized crystalline inclusions (feldspar, quartz, mica) at its core, also grey. The surface is coarse and has only few visible lime particles. The firing is moderately hard to hard.	 TZ 004250-035	 TZ 020865-003

Tab. 3.57 Ceramic ware category groups of the Middle and Late Bronze Ages and of the Iron Age (part II) (Source: BAI/GPIA)[180].

Cooking Pots

In each of the three Middle Bronze Age II strata examined in this chapter the straight-walled cooking pots that are made of coarse-grained clay and often, as it seems, carelessly executed[181], account for more than 90 % of these basic utensils. The few examples consisting of a different clay compound and—at least partially—produced in a different fashion come from cooking pots dating from the late Middle Bronze Age and early Late Bronze Age. These occur only in rather small quantities on Tall Zirāʿa, whereas they are much more abundant in other sites in that particular region[182].

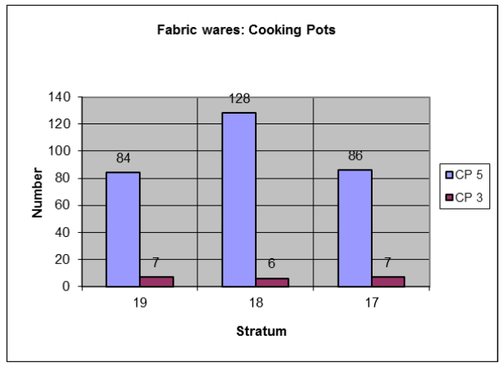
178 A detailed study on 'Chocolate on White' ware can be found in Fischer 2006, 255–280. In the Middle Bronze Age strata of Tall Zirāʿa, only a few specimens of the 'Chocolate on White' ware occur, in contrast to other sites in the region such as Ṭabqāṭ Faḥl (Pella), Tall Abū al-Ḫaraz, and Tall al-Ḥiṣn (Beth Shean).

179 The designation and numbering conforms to that of Schwermer 2014, 245–247.

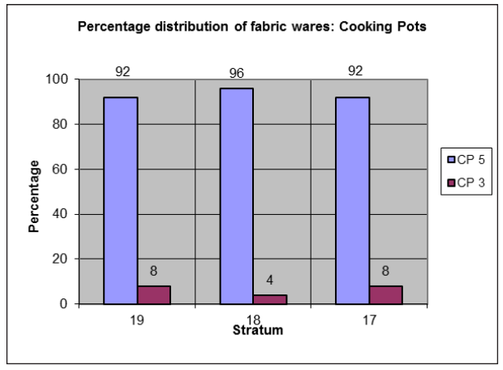
180 Part I of the diagram on the ceramic ware groups of the Middle and Late Bronze Ages and of the Iron Age see *Chap. 2.2.2.5* with *Tab. 2.22.*

181 Cf. *Chap. 2.2.2.5.*

182 On this, cf. Schwermer 2014, 117–128, and *Chap. 4* in this volume.



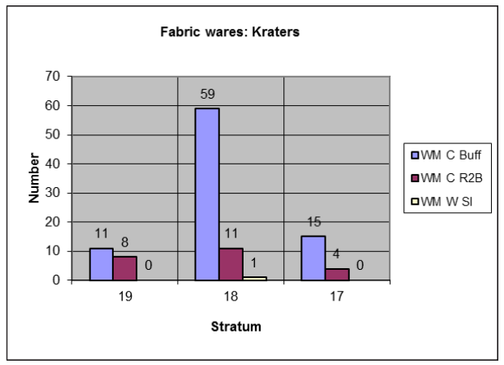
Graph. 3.3 Numeral distribution of cooking pot sherds among the different ware categories (Source: Schwermer).



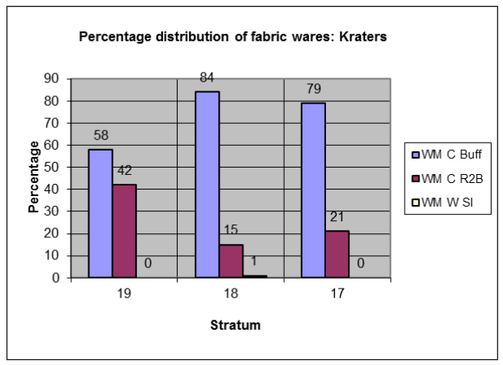
Graph. 3.4 Percentage distribution of cooking pot sherds among the different ware categories (Source: Schwerner).

Kraters

Except for one single sherd, the kraters are made of the two main ware categories, the beige-coloured and the red clays. Here, the light-coloured wares are clearly predominant in the two younger strata. In both groups, the kraters with a simple inverted rim constitute the largest share and account for 61 %[183].



Graph. 3.5 Numeral distribution of krater sherds among the different ware categories (Source: Schwermer).

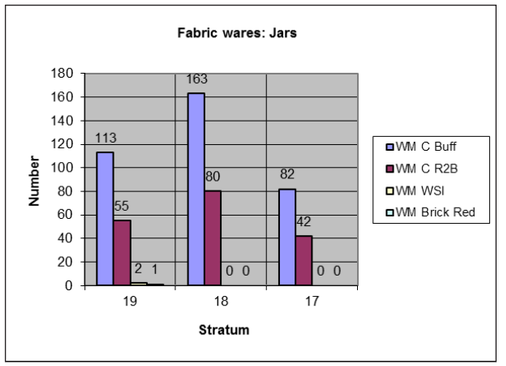


Graph. 3.6 Percentage distribution of krater sherds among the different ware categories (Source: Schwermer).

183 See e.g. TZ 020861-007 on *Plate 3.4.7* and TZ 020157-009 on *Plate 3.14.7*.

Jars

The distribution of the jars among the ware categories is similar to that of the kraters. Everywhere, two-thirds of them are made of the beige to light brown clay and one-third of the reddish material.

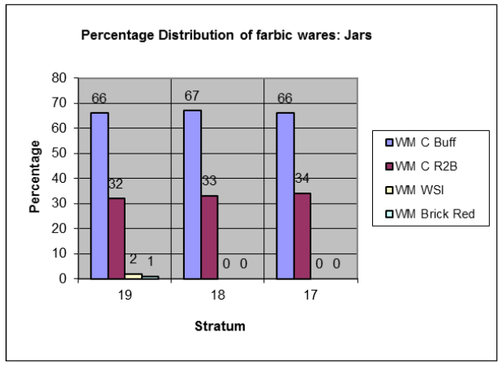


Graph. 3.7 Numeral distribution of sherds of jars among the different ware categories (Source: Schwermer).

There are hardly any sherds from an exceptional provenance or with an unusual design among the rim fragments. Except for three examples of the black polished ware, there were also none of the rarer and presumably more precious pieces among the non-diagnostic sherds found in the strata in question.

One of these pieces of black polished ware is the very fine and delicate spout of a juglike vessel (TZ 020442-001) from Stratum 18. Both, its shape and the clay it is made of, could indicate that it was imported from Cyprus[185].

Similar to the majority of the kraters, 14 % of the jars have a simple inverted rim and a very short neck[184]. At 21 %, their share is largest in Stratum 18.



Graph. 3.8 Percentage distribution of sherds of jars among the different ware categories (Source: Schwermer).

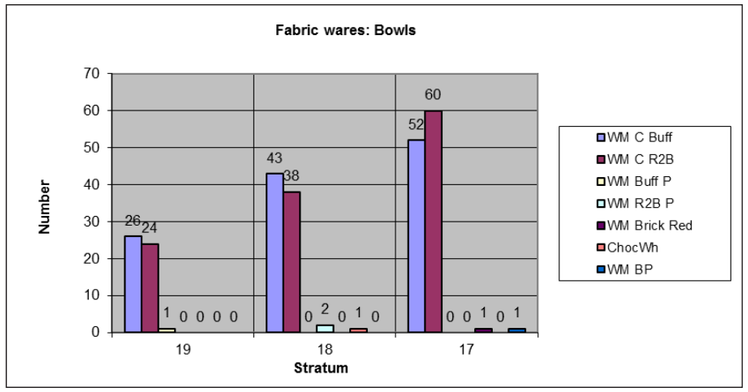
Fig. 3.152 Spout of a little jug from Stratum 18, TZ 020442-001 (Source: BAI/GPIA).

184 See e.g. TZ TZ 020946-001 on *Plate 3.7.8* and TZ 020902-018 on *Plate 3.16.7*.

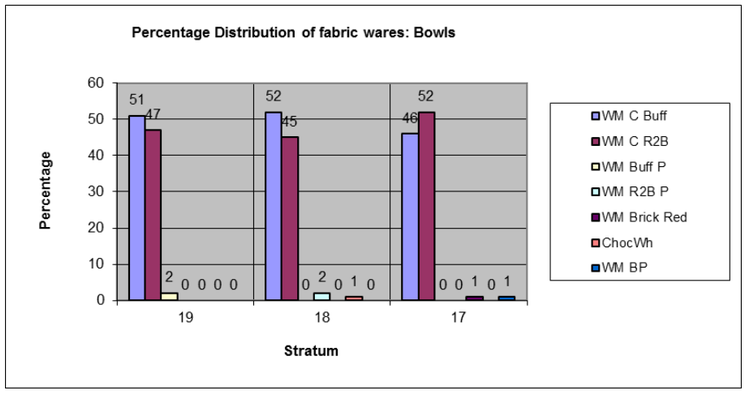
185 Similar examples from the late Middle Bronze Age have been verified in Gibeon, although here made of 'Tell al-Yahudiyeh' ware (Amiran 1969, 119 with Photo 120), Tall Ra's al-'Ēn (Amiran 1969, 106 with Photos 107. 109, Pl. 33:8), and Tall al-Mutasallim (Megiddo) (Wilson–Allen 1948, Pl. 26,12. 123,2. 51,1). Thus, like in Tall al-Ḥiṣn (Beth Shean), on Tall Zirā'a (only) one sherd from a Middle Bronze Age stratum would have been imported from Cyprus (Maeir 2007, 291).

Bowls

Among all the types of vessels, the bowls cover the widest range of ware categories. Nevertheless, like the kraters and the jars, they, too, are mostly made of the beige-coloured and the reddish clays (in each stratum 97 or 98 %, respectively). Unlike the kraters and jars, however, here these two waregroups are more or less evenly balanced. The rim pieces examined are obviously fragments of common everyday utensils.



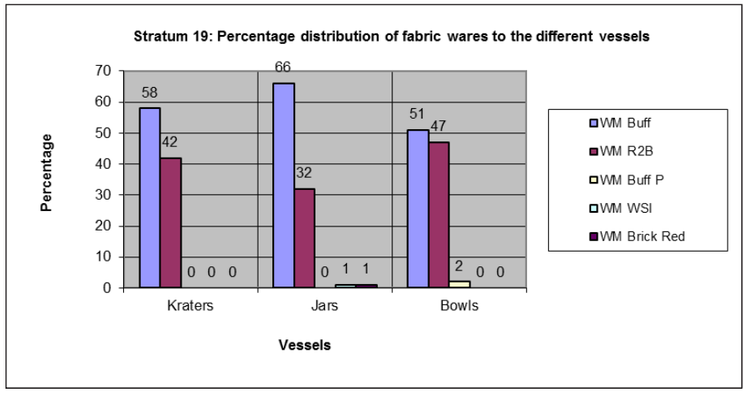
Graph. 3.9 Numeral distribution of the sherds of bowls/platters among the different ware categories (Source: Schwermer).



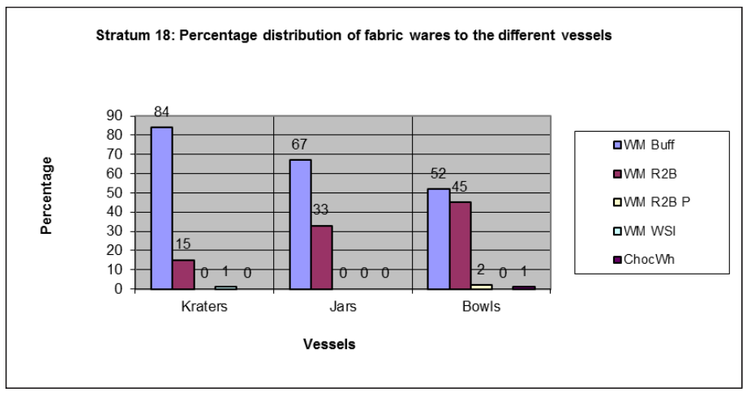
Graph. 3.10 Percentage distribution of the sherds of bowls/platters among the different ware categories (Source: Schwermer).

Summary:
Types of Vessels and Ware Categories

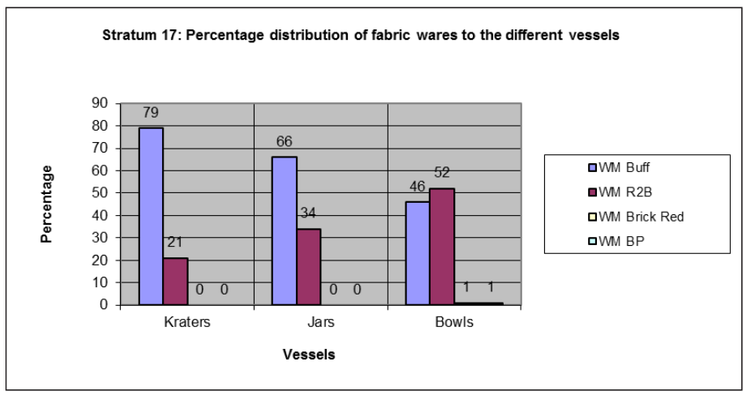
When looking at the overall distribution of the different types of vessels and ware categories among all strata from the Middle Bronze Age, the predominance of the common beige-coloured and reddish clays at almost 100 % leaps to the eye. Between these two, the light-coloured clays are clearly prevalent, except for the bowls, where the proportion seems to be more or less balanced. On the whole, the variance of clays employed seems to be smaller than during the two preceding epochs. In view of the unique nature of their clays, the cooking pots have not been included in the diagrams.



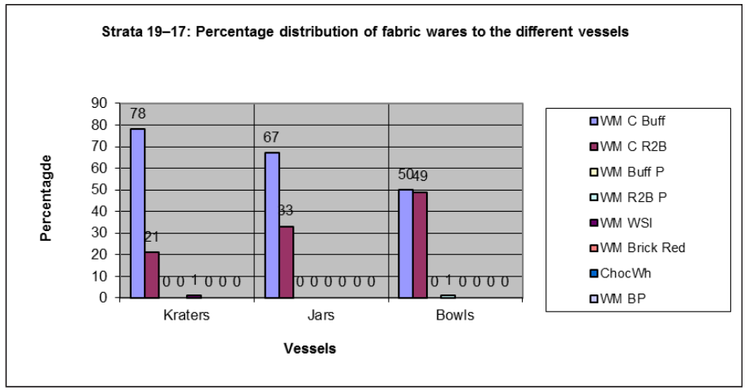
Graph. 3.11 Percentage distribution of the ware categories among the different types of vessels in Stratum 19 (Source: Schwermer).



Graph. 3.12 Percentage distribution of the ware categories among the different types of vessels in Stratum 18 (Source: Schwermer).

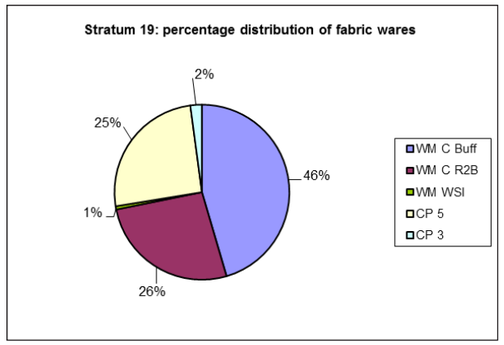


Graph. 3.13 Percentage distribution of the ware categories among the different types of vessels in Stratum 17 (Source: Schwermer).

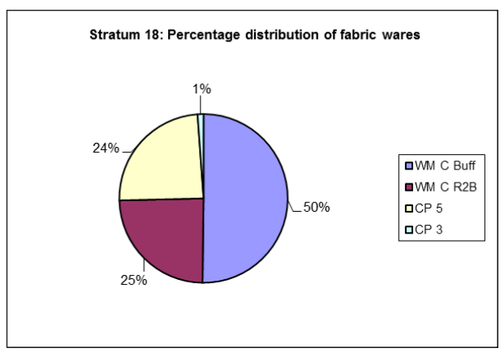


Graph. 3.14 Percentage distribution of the ware categories among the different types of vessels in the Strata 19–17 (Source: Schwermer).

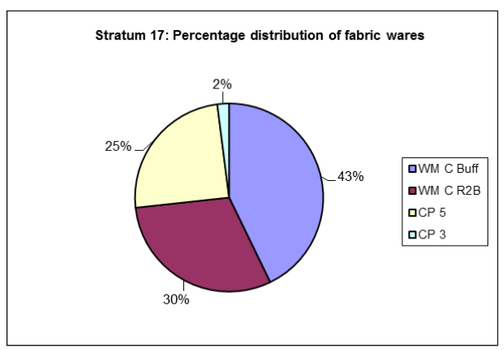
A glance at the distribution of the different ware categories among the three Strata 19 to 17—including the cooking pot ware and irrespective of their individual assignment to the different types of vessels—reveals a comparatively uniform picture. Taken together, the beige and reddish-brown ware as well as the clay used for the straight-walled Middle Bronze Age cooking pots account for 97, 99, and 98 %, respectively, in the three Middle Bronze Age strata and thus are almost identically distributed.



Graph. 3.15 Percentage distribution of the ware categories in Stratum 19 (Source: Schwermer).



Graph. 3.16 Percentage distribution of the ware categories in Stratum 18 (Source: Schwermer).



Graph. 3.17 Percentage distribution of the ware categories in Stratum 17 (Source: Schwermer).

Decorations and Special Design

Very few sherds from the Middle Bronze Age strata—even though comparatively more than during the transitional period (Strata 21 and 20)—show any kind of decor[186]. Even when including bottoms, handles, and plain wall sherds the overall number of painted fragments is about 90, and of those with decorative incisions or a relief amount to approximately 80.

The ornamental paintings can be subdivided into the following categories[187]:

Design	**Colour**
stripes/lines	red or brown red and black/brown and black
stripes and waves	red or brown red and black
flat geometrical	red or brown
net/grid	red or brown

On jars, the simple stripe pattern is usually painted on the rim and on the neck where-as on bowls and plates it consists of concentric circles.

Decorative incisions or relief decors have the following patterns[188]:

Decorative incisions:
- combed, fine parallel straight lines
- combed, fine parallel wavy lines
- combed, fine parallel straight and wavy lines
- herringbone pattern
- indented dots or strokes

Relief decor:
- interlaced band
- plain clay bulge
- clay bulge with ornamental incisions
- appliquéd snake pattern

A circumferential relief decor or incision can usually be found on jars where the neck blends into the body of the vessel. Sometimes it can also be seen on kraters just underneath the rim. On bowls it is quite rare.

An extraordinary example was found in Stratum 19: the handle of a jar or a krater (TZ 20932-005) that is painted with a reddish-brown grid or net pattern on its upper surface. A bulge meandering snake-like across the handle seems to grow thicker to one side, suggesting that this part may constitute a serpent's head and that the bulge as a whole may be interpreted as a serpent appliqué[189].

Fig. 3.153 Jar handle with a snake appliqué from Stratum 19, TZ 020932-005 (Source: BAI/GPIA).

Two kraters—possibly also large bowls—from Stratum 18 have such an unusual and rare design[190] on their bottoms that they need to be looked at separately (TZ 020509-017 und TZ 020813-008)[191]: Each vessel bottom used to rest on three 'feet'. These were manufactured very carefully. In the process, an accurate rectangular strip of clay, appr. 2.5 cm wide (in TZ 020813-008 and TZ 021631-001, the seams were also meticulously flattened), was folded in once and then indented on one side in such a manner that it took on the shape of a closed loop/scroll. The remaining part of the clay bulge was bent by 90 degrees, so that it adhered to the bottom of the bowl on a quite broad surface.

186 According to Maeir, this is a "common phenomenon in MB II pottery of the southern Levant". He reasons that there was a large demand of ceramics in those times and also regards it as a result of their being produced in "workshop industries" (Maeir 2007, 292).

187 Also cf. Maeir 2007, 1991 f. with almost identical findings for Tall al-Ḥiṣn (Beth Shean).

188 Also cf. Maeir 2007, 1991 f. with almost identical findings for the Tall al-Ḥiṣn (Beth Shean). The straight-walled cooking pots with a circumferential bulge are not included here. On the forms of decoration on Middle Bronze Age cooking pots, see Schwermer 2014, 103 f.

189 Cf. similar examples from Tall Abū al-Ḫaraz, Phase IV/1, (Fischer 2006, 42 Fig. 28:10 and 45 Fig 31) and Tell el-Ḥōsn (Beth Shean), although Early Bronze Age IB, Mazar 2012, Ed., 153: Photo 4.36/203 Pl. 14:13/233 Pl: 29:2 and 18).

190 Approximately comparable finds for this period have only been documented for Tall al-Ḥiṣn (Beth Shean) (Meir 2007, 254 Photo 4.20 and 335 Pl. 10:5) and for Ṭabqāṭ Faḥl (Pella) MBA; the latter, however, is made from 'Tell al-Yahudijeh'-Ware (Walmsley et al. 1993, 187:1).

191 A third, almost identical example was found in Stratum 22 (TZ 021631-001). Presumably, this piece also originated from one of the Middle Bronze Age strata and has merely been relocated into the lower stratum.

Fig. 3.154 Loop base of a bowl/krater from Stratum 18, TZ 020509-017 (Source: BAI/GPIA).

Fig. 3.155 a.b Loop base of a bowl/krater from Stratum 18, TZ 020813-008 (Source: BAI/GPIA).

Stratum 17 yielded a delicately crafted buff, wide bowl with a rim diameter of 24 cm, a height of 7 cm; the diameter of the ring-shaped base is 10 cm (TZ 006244-001 and TZ 006298-001). At a later date, the base was—probably intentionally—pierced, which resulted in a hole with a diameter of approx. 4 cm. The bowl's rim is bent to the inside and has slightly upright, cylindrical nubs of about 1 cm in at least two places. On the one hand, these are ornamental; however, since they are large enough, they may also have served as gripping aids[192].

Fig. 3.156 a.b.c Delicately crafted bowl from Stratum 17, TZ 006298-001 and TZ 006244-001 (Source: BAI/GPIA).

Further Ceramic Vessels and Utensils

Apart from the household vessels described above, Strata 19 to 17 yielded a total of seven oil lamps[193], four of which are made of reddish-brown (WM C R2B) and three of which are made of beige-coloured clay (WM C Buff). Moreover, a miniature vessel that may have been part of a kernos (TZ 020178-008), the remains of a pilgrim flask (?) (TZ 020509-004, *Plate 3.20.1*), those of a chalice (TZ 020926-005, *Plate 3.16.1*), and half a frustum-shaped small mug or v-shaped bowl (TZ 020943-009, *Fig. 3.157 a.b.c* and *Plate 3.12.10*) were found in Stratum 18[194]. The latter is a small, very delicately crafted vessel the shape of which is rather uncharacteristic of the region. On its inside there are very regular throwing marks that have the form of deep grooves[195].

192 Similar examples from this period are known from Megiddo, here with 'long bar handles' (Wilson – Allen 1948, Pl. 15:12), and from Ṭabqāṭ Faḥl (Pella) (Walmsley et al. 1993, 192:3).

193 See *Tab. 3.53.*

194 Dimensions: H 6, bottom D c. 5.5, opening D 9.5.

195 *Cf. also 281.* Similar pieces have been verified for Tall al-Qassis (Tēl Qāšīṣ) (Ben-Tor – Bonfil 2003, 238 Fig. 94,2), Megiddo, (Amiran 1969, 127 Pl. 38:3, and Wilson – Allen 1948, Pl. 53,5), as well as Tall al-Ḥiṣn (Beth Shean) (Mullins 2007, 448 Fig. 5,15:JR2), here interpreted as a 'flower pot'.

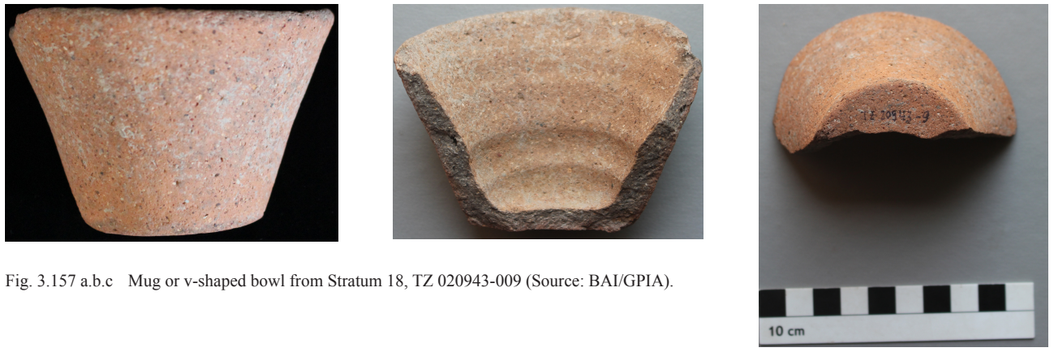


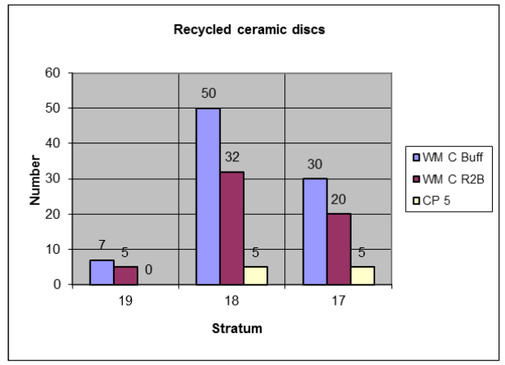
Fig. 3.157 a.b.c Mug or v-shaped bowl from Stratum 18, TZ 020943-009 (Source: BAI/GPIA).

Two chalices (TZ 006821-001, *Plate 3.32.7* and TZ 006821-009) were found in Stratum 17, moreover two pilgrim flasks (?) (TZ 020714-023 and TZ 020777-037, *Plate 3.31.2*), a stand (TZ 006821-002), and a melting pot/smelter (?) (TZ 020229-019).

The Middle Bronze Age Strata 19 to 17, too, yielded disc-shaped objects and tools that had been fashioned from broken clay vessels of former times; in fact, they were much more numerous here than in the older strata.

Strata	Number of Ceramic Vessels	Number of Ceramic Discs
25–22 (EB II/III)	755	30
21–20 (EB IV/MB I)	560	32
19–17 (MB II)	1.233	154

Tab. 3.58 Number of vessel sherds and secondarily produced ceramic discs in the Strata 25 to 17 (Source: Schwermer).



Graph. 3.18 Number of ceramic discs and their distribution among the different ware categories (Source: Schwermer).

In accordance with the findings concerning the ceramic vessels, the majority of all of these objects can be assigned to the ware category WM C Buff; the remainder, like some examples from the cooking pot ware, have a reddish-brown colouring. Three of the ceramic discs are pierced centrally which suggests that they were used as spindle-whorls. Three further discs have rudimentary drill holes (two on one side, and one on both sides). These were either unfinished spindle-whorls or supports for drills. The 'simple' ceramic discs may have served as cover plugs, grinding tools, gaming pieces, or counting stones[196].

The wall thickness of these ceramic discs, some of which were crafted very carefully while others remained rather coarse, range from 0.45 cm to 2.75 cm with an average of 0.9 cm, which corresponds exactly to the measurements of the ceramic vessels.[197] The diameters of all discs range from 1.8 cm to 12 cm; however, 80 % of them are between 3 cm and 5 cm. The average diameter is 4 cm and thus once again smaller than that of the corresponding pieces from the transitional period. Keeping in mind that, due to the irregular working of the discs and possibly the fact that they are fragments, measurement results also depend on the exact spot where the individual diameter is measured, the high percentage of the pieces with a diameter between 3 cm and 5 cm is suggestive of some sort of standardisation of this type of objects. At least their dimensions do not seem to be entirely arbitrary[198].

Some ceramic discs merit special attention because they are crafted very carefully or in other ways extraordinary. For example, a finely sanded specimen from Stra-

196 On the possible function of secondarily produced ceramic discs cf. Genz 2002, 107 f., and Schwermer 2014, 281 f.

197 Cf. *Tab. 3.54.*

198 In contrast to the comparatively small number of ceramic discs from the Early Bronze Age strata and those from the intermediate period to the Middle Bronze Age, the representative quantity found in the Strata 19 to 17 allows this conclusion.

Fig. 3.158 Ceramic disc from Stratum 19 in the shape of a small oval plate, TZ 017331-001 (Source: BAI/GPIA).

Fig. 3.159 Ceramic disc from Stratum 19, TZ 020960-021 (Source: BAI/GPIA).

tum 19 (TZ 017331-001, *Fig. 3.158* and *Plate 3.10.6*) has the shape of a small oval plate and, also due to its size, is reminiscent of a flat scarab.

A thick ceramic disc from Stratum 17 (TZ 006632-015, *Fig. 3.161* and *Plate 3.33b.9*) is not extraordinary in terms of its delicate workmanship—it has been processed rather coarsely—but because of the striking surface treatment and painting of the original vessel: the buff clay is covered by a very thick white layer with a rugged reddish-brown and mustard yellow painting.

Another ceramic disc, also from Stratum 19, that was crafted very carefully and probably made from the flat bottom of a vessel (TZ 020960-021, *Fig. 3.159* and *Plate 3.10.3*) has a tapered rim, resulting in a difference of 1 cm between its top and bottom diameters (4.5 cm vs. 5.5 cm). It may have been used as a small palette for compounding or blending small quantities[199]. A similar, somewhat smaller example (3 cm vs. 3.3 cm) was found in Stratum 18 (TZ 020515-014, *Fig. 3.160* and *Plate 3.22b.10*). This, too, seems to be too finely executed to have served as a simple plug.

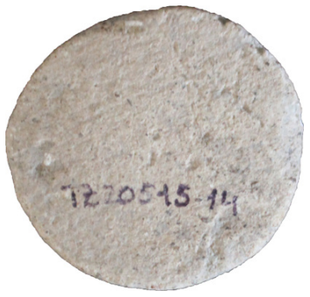


Fig. 3.160 Ceramic disc from Stratum 18, TZ 020515-014 (Source: BAI/GPIA).

Fig. 3.161 Painted ceramic disc from Stratum 17, TZ 006632-015 (Source: BAI/GPIA).

199 A similar example has been verified for Megiddo, MB IIB, (Wilson – Allen 1948, Pl. 257,9. 10).

Plate 3.1: Middle Bronze Age bowls from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	carinated bowl	TZ 020955-001	AN 118	5649	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 367 Pl. 26, 1: probably different base.	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 97 Pl. 27, 1: without groove on rim.
2	carinated bowl	TZ 020969-006	AL 118	5671	WM C R2B (red slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 246 Pl. 4, 1 BL 25.	Tall Abū al-Ḫaraz Phase IV/1: Fischer 2006, 220 Fig. 256, 4.
3	bowl	TZ 020958-010	AO 118	5659	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 3.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 341 Pl. 13, 5.
4	bowl	TZ 020960-008	AN 119	5646	WM C Buff (light green slip)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 7.
5	bowl	TZ 020958-017	AO 118	5659	WM C R2B	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 2.	Tall al-Mutasallim (Megiddo) MB IA: Amiran 1969, 97 Pl. 27, 1.
6	bowl	TZ 020968-002	AO 119	5667	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 189 Fig. 77, 4; 100 Fig. 81, 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 73 Fig. II 5, 2.

Plate 3.1: Middle Bronze Age bowls from Tall Zirāʿa Stratum 19—Excavations 2001–2011

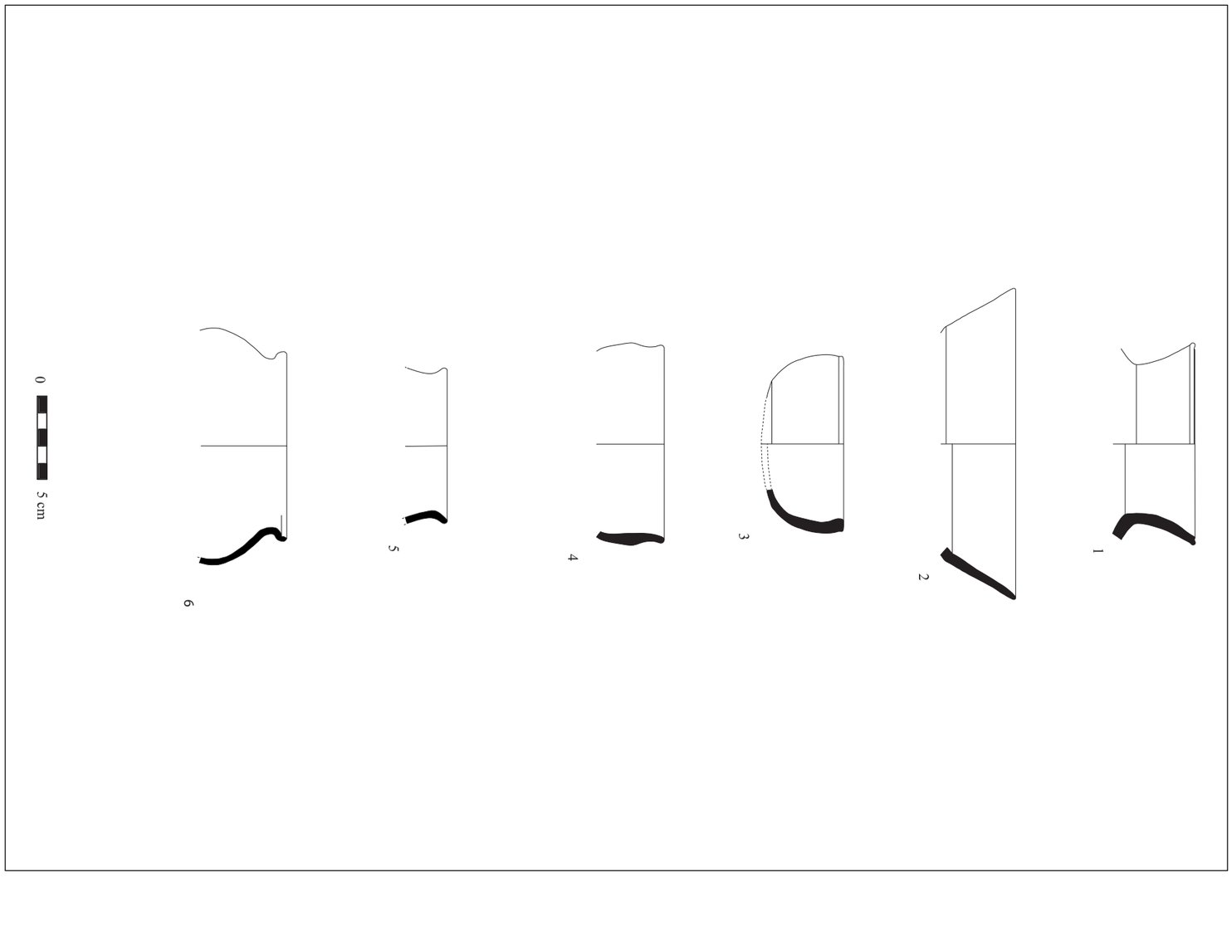


Plate 3.2: Middle Bronze Age bowls from Tall Zir'a Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 020939-026	AN 118	5641	WM C R2B (rim with red paintings)	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 7.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 216 Fig. 254, 5.
2	bowl	TZ 020939-029	AN 118	5641	WM C R2B (rim with red paintings)	MB	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 92 Pl. 25, 8.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 333 Pl. 9, 1. 2.
3	bowl	TZ 020957-013	AM 118	5658	HM Buff combed	EB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 20 Fig. 8 A 5, 1.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 177 Fig. 8, 9. 12.
4	bowl	TZ 020999-003	AL 118	5686	HM Buff (red polished: handle at the rim)	EB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 3.	Tall al-Qassis (Tēl Qāšīṣ) EB II/III: Zuckerman 2003, 144 Fig. 62, 7.
5	bowl	TZ 020940-011	AN 119	5646	WM (light green slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām)) MB: Livneh 2005, 97 Fig. II 17, 26.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 6.

Plate 3.2: Middle Bronze Age bowls from Tall Zirā'a Stratum 19—Excavations 2001–2011

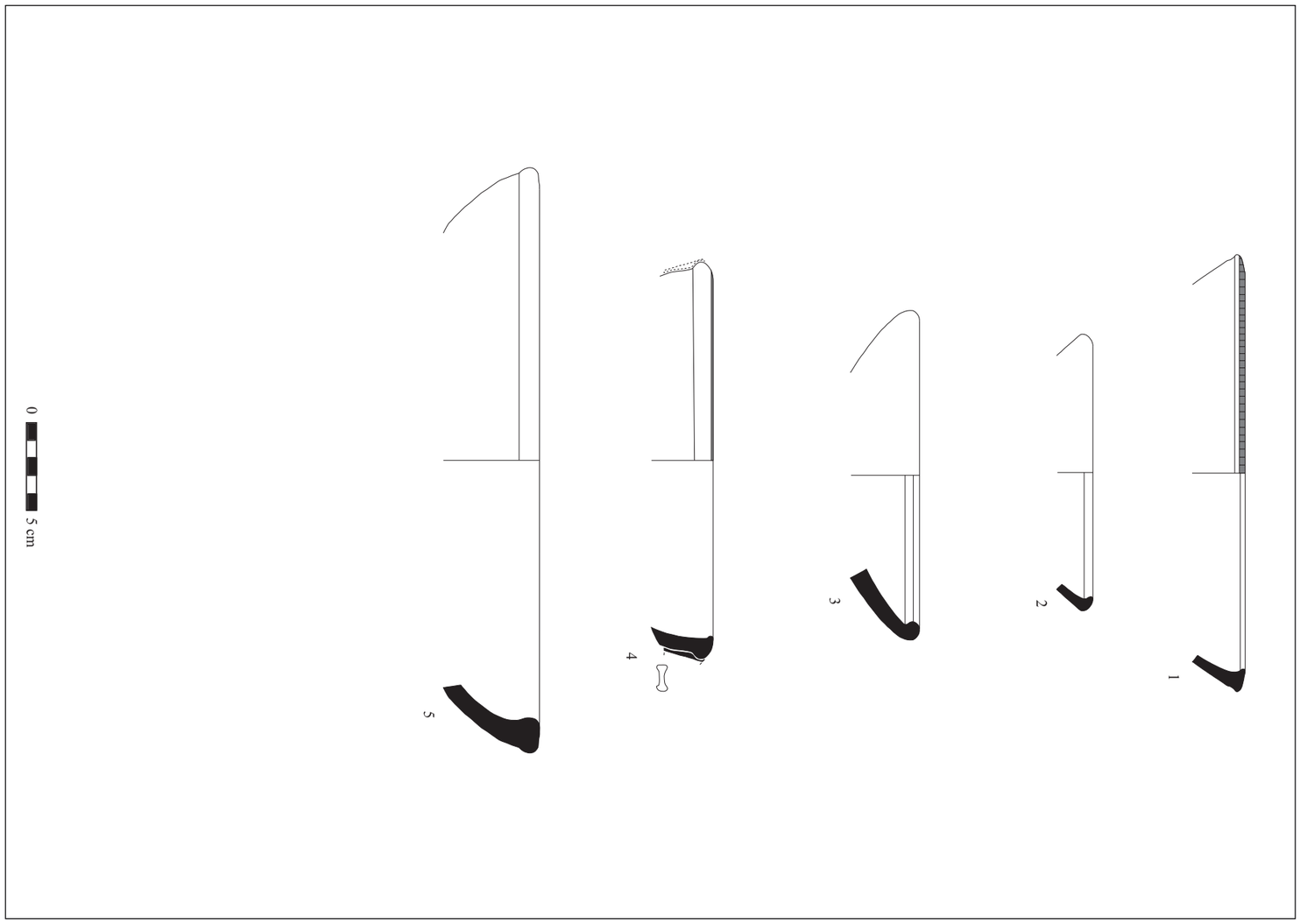


Plate 3.3: Middle Bronze Age kraters from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	krater	TZ 020969-019	AL 118	5671	HM Buff combed	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 C.	
2	krater	TZ 020986-004	AN 118	5681	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 8.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 351 Pl. 18, 18.
3	krater	TZ 020967-001	AM 118	5658	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 323 Pl. 4, 5.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 227 Fig. 261, 3.
4	krater	TZ 020993-021	AL 118	5694	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 341 Pl. 13, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 133 Fig. II 37, 6.
5	krater	TZ 020969-004	AL 118	5671	WM C R2B	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 93 Fig. II 15, 8.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 16.
6	krater	TZ 021000-002	AL 118	5695	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 15.	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 227 Fig. 261, 2.
7	krater	TZ 020958-020	AO 118	5659	WM C R2B (buff slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 18.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 1 and 2.
8	krater	TZ 020972-005	AP 119	5673	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 341 Pl. 13, 13; 373 Pl. 29, 1.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 206 Fig. 9, 8. 10.

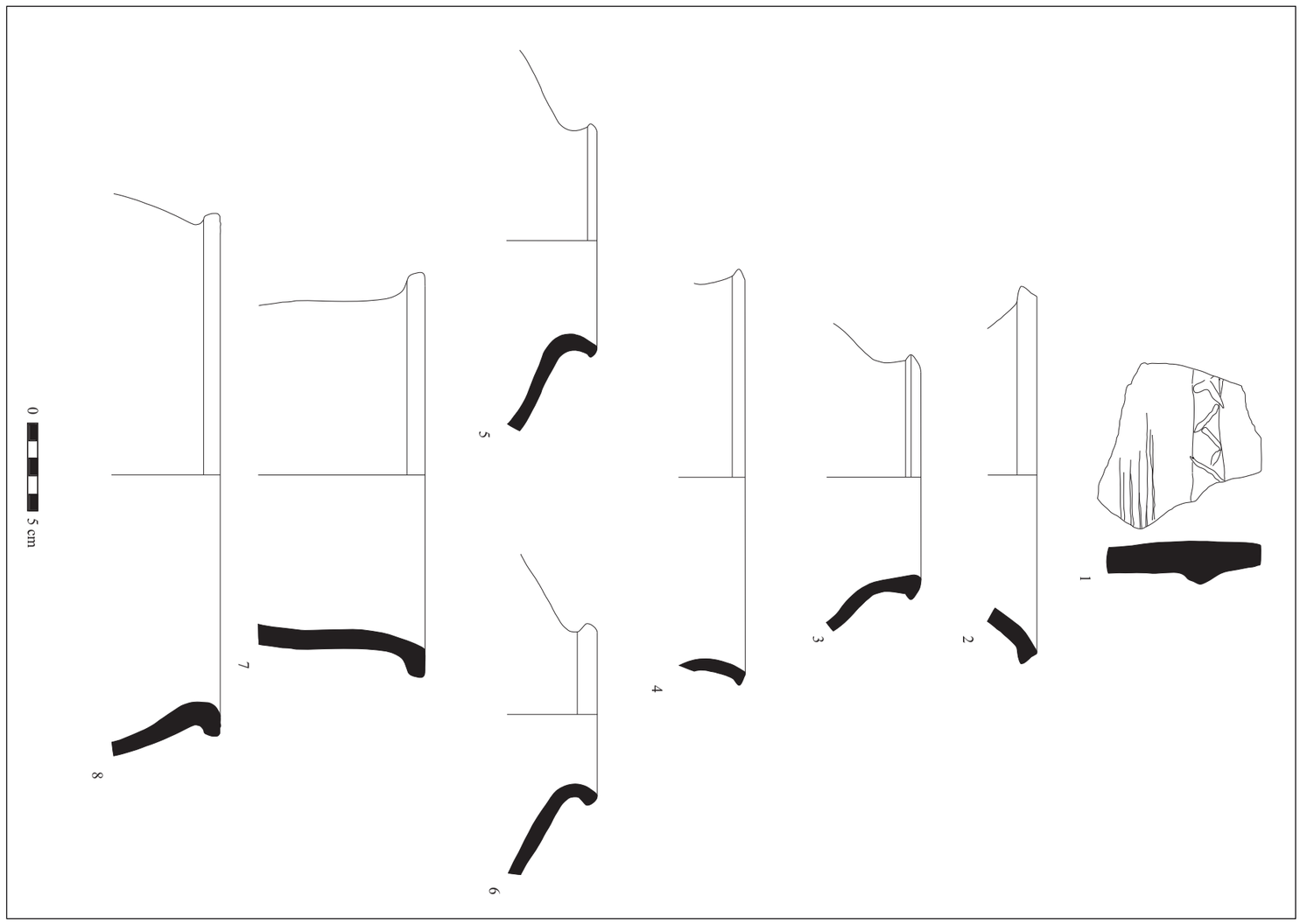


Plate 3.4: Middle Bronze Age kraters from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	krater	TZ 020952-012	AM 119	5647	WM C R2B (incised decoration below rim)	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 21.	Tall Qēmūn (Tēl Yoqneʿām) MB: Livneh 2005, 13 Fig. II 37, 10.
2	krater	TZ 020969-001	AL 118	5671	WM C R2B (incised lines)	MB	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 192, 14.	Ḫirbat Yarīḥā aš-Šamālīyah MB II: Kamlah 2000, Pl. 72, 4. 6.
3	krater	TZ 020858-019	AN 118	5442	WM C Buff	MB	Tall Qēmūn (Tēl Yoqneʿām) MB: Livneh 2005, 97 Fig. II 17, 29.	Tall al-Qassis (Tēl Qāšīš) MB: Ben-Tor – Bonfil 2003, 222 Fig. 89, 16.
4	krater	TZ 020962-006	AM 118	5663	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 15.	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 192, 14.
5	krater	TZ 020808-012	AN 118	5442	WM C R2B	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 271 Fig. 64, 5.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 383 Pl. 34, 10)
6	krater	TZ 020932-021	AN 118	5641	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqneʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
7	krater	TZ 020861-007	AN 119	5534	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqneʿām) MB: Livneh 2005, 91 Fig. II 14, 8.
8	krater	TZ 020959-032	AO 118	5659	WM C R2B (light green slip, incised lines)	MB	Tall al-Qassis (Tēl Qāšīš) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 17. 18.	Tall Qēmūn (Tēl Yoqneʿām) MB: Livneh 2005, 125 Fig. II 33, 14.
9	krater	TZ 020939-036	AN 118	5641	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 383 Pl. 34, 10.	Ḫirbat Yarīḥā aš-Šamālīyah MB II: Kamlah 2000, Pl. 72, 8.
10	krater	TZ 020861-005	AN 119	5534	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīš) MB: Ben-Tor – Bonfil 2003, 243 Fig. 98, 9.	Tall Qēmūn (Tēl Yoqneʿām) MB: Livneh 2005, 127 Fig. II 34, 5.
11	krater	TZ 020934-008	AN 119	5645	WM C R2B	MB	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 195, 9.	Tall Qēmūn (Tēl Yoqneʿām) MB: Livneh 2005, 97 Fig. II 17, 31: similar; 105 Fig. II 21, 22: rim identic.

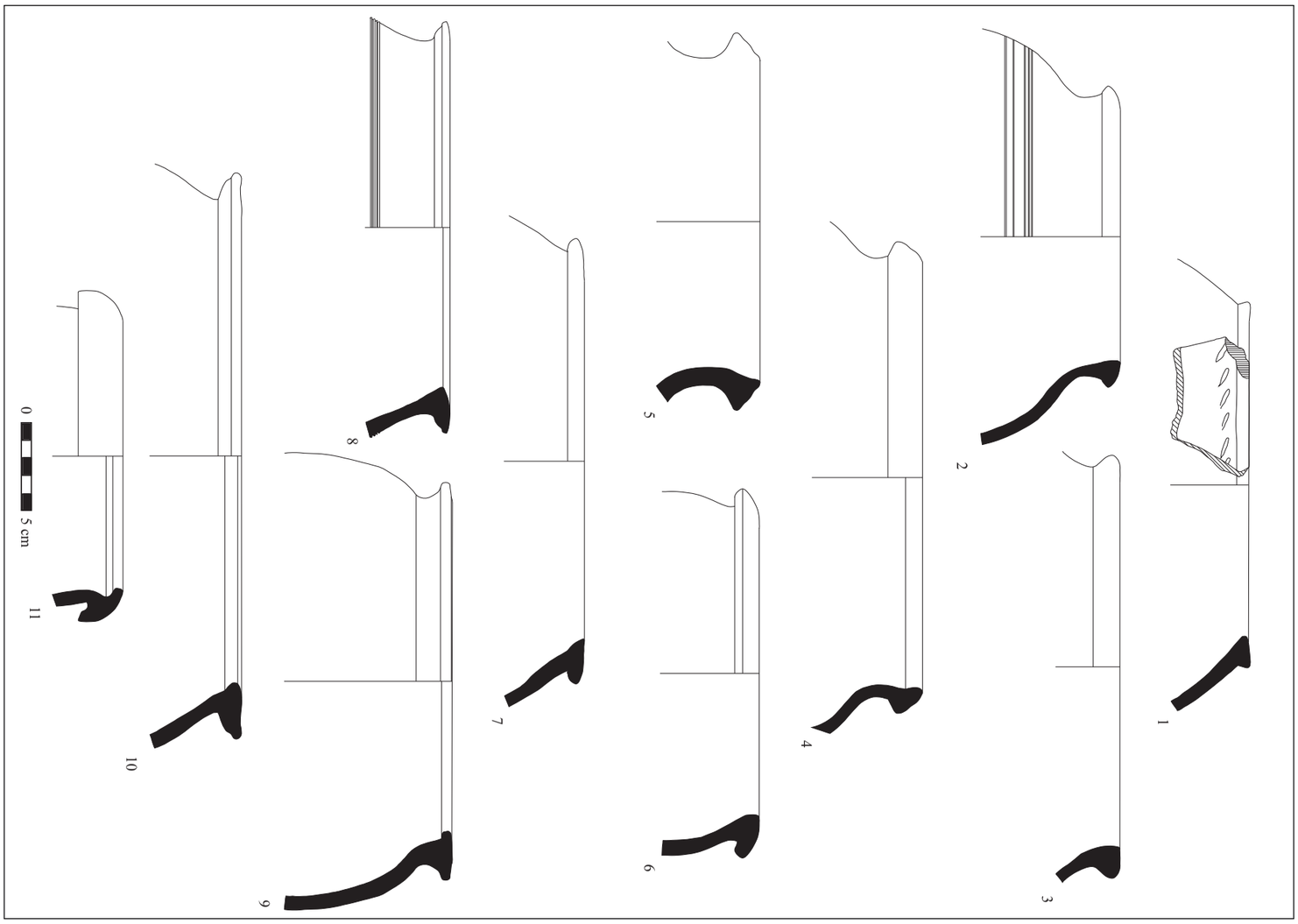


Plate 3.5: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020958-016	AO 118	5659	WM C R2B	MB	Tall Qēmūn ((Tēl Yoqnəʿām) MB: Livneh 2005, 99 Fig. II 18, 38.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 189 Fig. 77, 3.
2	jug/jar	TZ 020961-003	AO 118	5659	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 79 Fig. II 8, 6; 87 Fig. II 12, 3; 91 Fig. II 14, 23; 99 Fig. II 18, 37.	
3	jug/jar	TZ 020808-014	AN 118	5442	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4 and 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 26.
4	jug/jar	TZ 020972-011	AP 119	5673	WM C Buff (light green slip)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 196 Fig. 78, 14.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 30–32.
5	jug/jar	TZ 020988-002	AL 118	5685	WM C Buff (light green slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 28.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 81 Fig. II 9, 8: rim.
6	jug/jar	TZ 020960-006	AN 119	5646	WM C Buff (light green slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 30.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 81 Fig. II 9, 11.
7	storage jar	TZ 020972-007	AP 119	5673	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 73 Fig. II 5, 1; /77 Fig. II 7, 3.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 30.
8	storage jar	TZ 020968-003	AO 119	5667	WM C Buff (light green slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 30.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 79 Fig. II 8, 5: rim.

Plate 3.6: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020957-006	AM 118	5658	WM C Buff (pink and red painted)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 8 and 9.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 117 Fig. II 27, 16.
2	jug/jar	TZ 020967-002	AL 118	5660	WM C R2B (buff slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 8.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 81 Fig. II 9, 8: rim.
3	jug/jar	TZ 020968-001	AO 119	5667	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 357 Pl. 21, 9.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 4.
4	jug/jar	TZ 020969-003	AL 118	5671	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 3.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 1: rim.
5	jug/jar	TZ 020808-001	AN 118	5442	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II.2:40/99 Fig. II 18, 41.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 4.
6	jug/jar	TZ 020932-034	AN 118	5641	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 31.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4. 5.
7	jug/jar	TZ 020959-029	AO 118	5659	WM C R2B	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 69 Fig. II 3, 14; 99 Fig. II 18, 40.	Ḫirbat ar-Raḥūb MB I–II: Kamlah 2000, Pl. 42, 7.
8	jug/jar	TZ 020939-035	AN 118	5641	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 127 Fig. II 34, 10.	Qīre (Tall Qīrī) MB: Ben- Tor 1987, 267 Fig. 62, 11.
9	jug/jar	TZ 020932-025	AN 118	5641	WM C R2B	MB	Qīre (Tall Qīrī) MB: Ben- Tor 1987, 267 Fig. 62, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 40.
10	storage jar	TZ 020808-022	AN 118	5442	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 11.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 37.
11	storage jar	TZ 020932-032	AN 118	5641	WM C Buff (Metallic)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 365 Pl. 25, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 34.

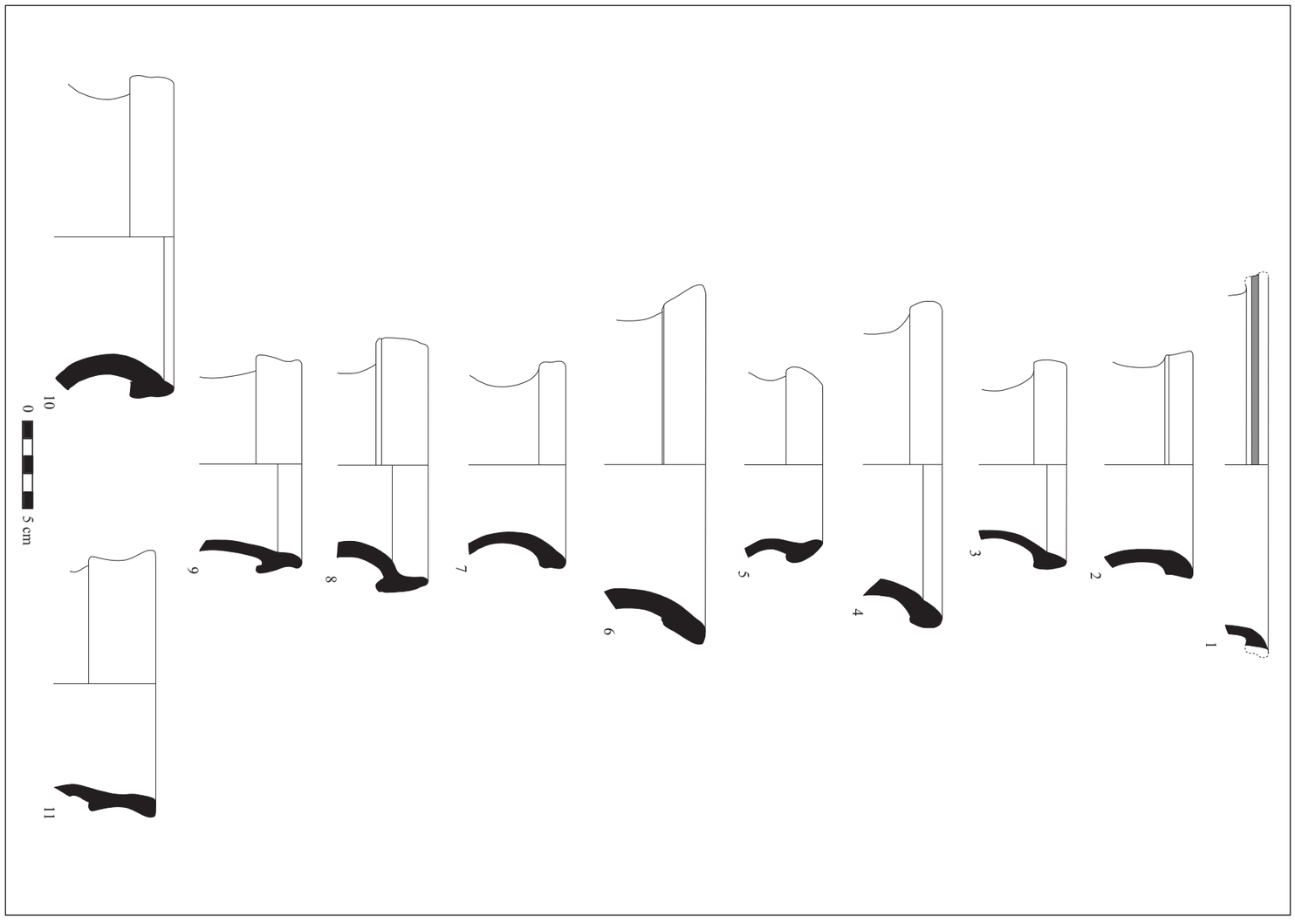


Plate 3.7: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020957-009	AM 118	5658	WM C R2B	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 101 Fig. II 16, 7.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 231 Fig. 264, 3.
2	jug/jar	TZ 020982-001	AM 118	5653	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 231 Fig. 264, 6.
3	jug/jar	TZ 020946-007	AM 119	5647	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 92 Fig. II 16, 7; 101 Fig. II 19, 8.	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 231 Fig. 264, 8: similar.
4	jug/jar	TZ 020939-030	AN 118	5641	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 92 Fig. II 16, 7; 101 Fig. II 19, 8.	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 231 Fig. 264, 8: similar.
5	jug/jar	TZ 020808-019	AN 118	5442	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 12.
6	jug/jar	TZ 020985-003	AN 119	5680	WM C Buff (light green slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II13, 12.
7	storage jar	TZ 020932-026	AN 118	5641	WM C Buff (light green slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 389 Pl. 37, 4.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 10.
8	storage jar	TZ 020946-001	AM 119	5647	WM C Buff (light green slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 93 Fig. II 15, 20.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 375 Pl. 30, 2.

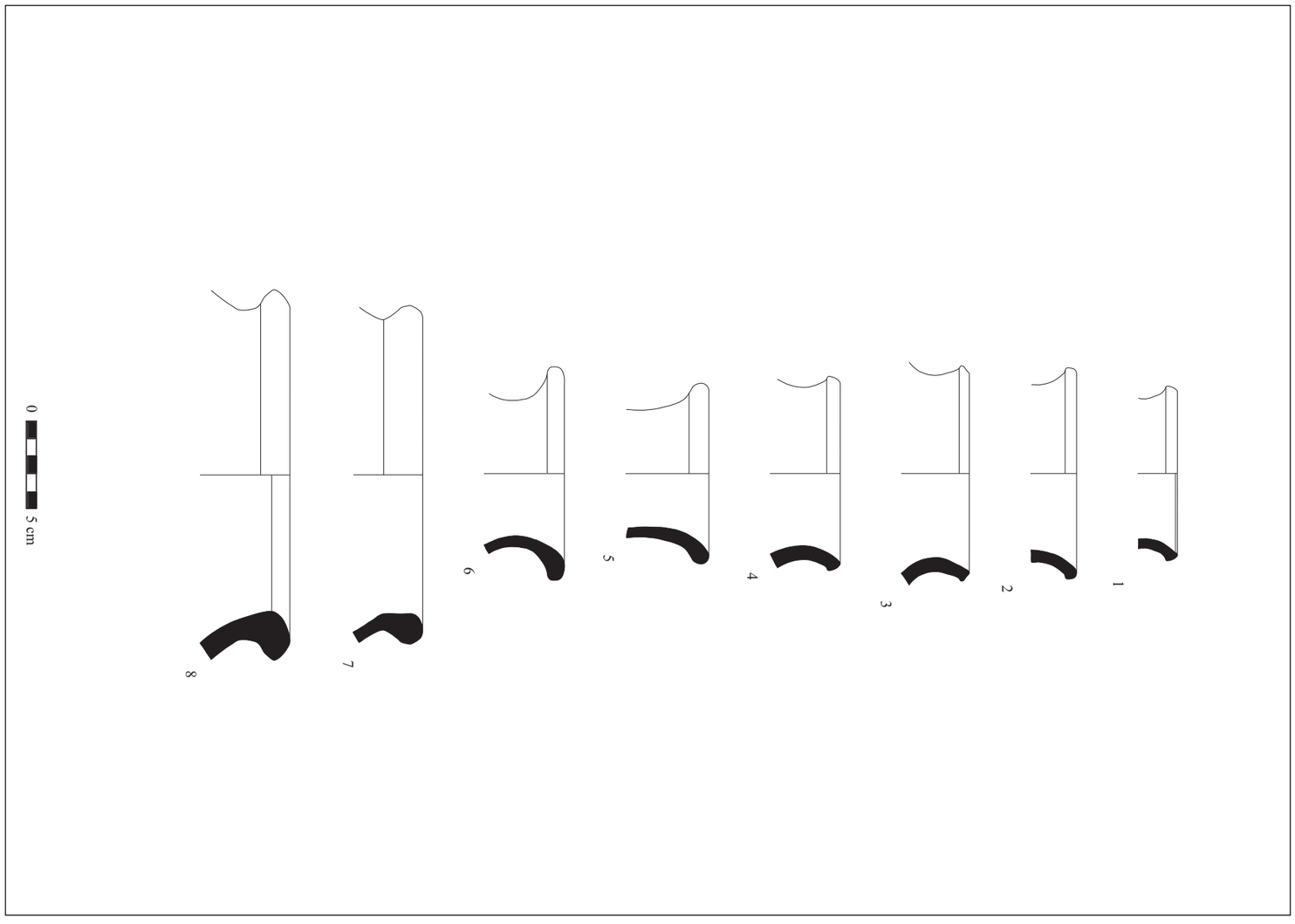


Plate 3.8: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	juglet (neck/spout ?)	TZ 020957-011	AM 118	5658	HM R2B	EB/MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 222 Fig. 8, 16: spout.	
2	jug/jar (spout)	TZ 020932-041	AN 118	5641	WM C R2B	MB		
3	oil lamp	TZ 020962-009	AM 118	5663	WM C Buff	MB		
4	jug/jar (base)	TZ 020962-015	AM 118	5663	HM Buff (red painted)	EB II/III		
5	jug/jar (base)	TZ 020379-002	AN 118	5216	WM C Buff	MB		

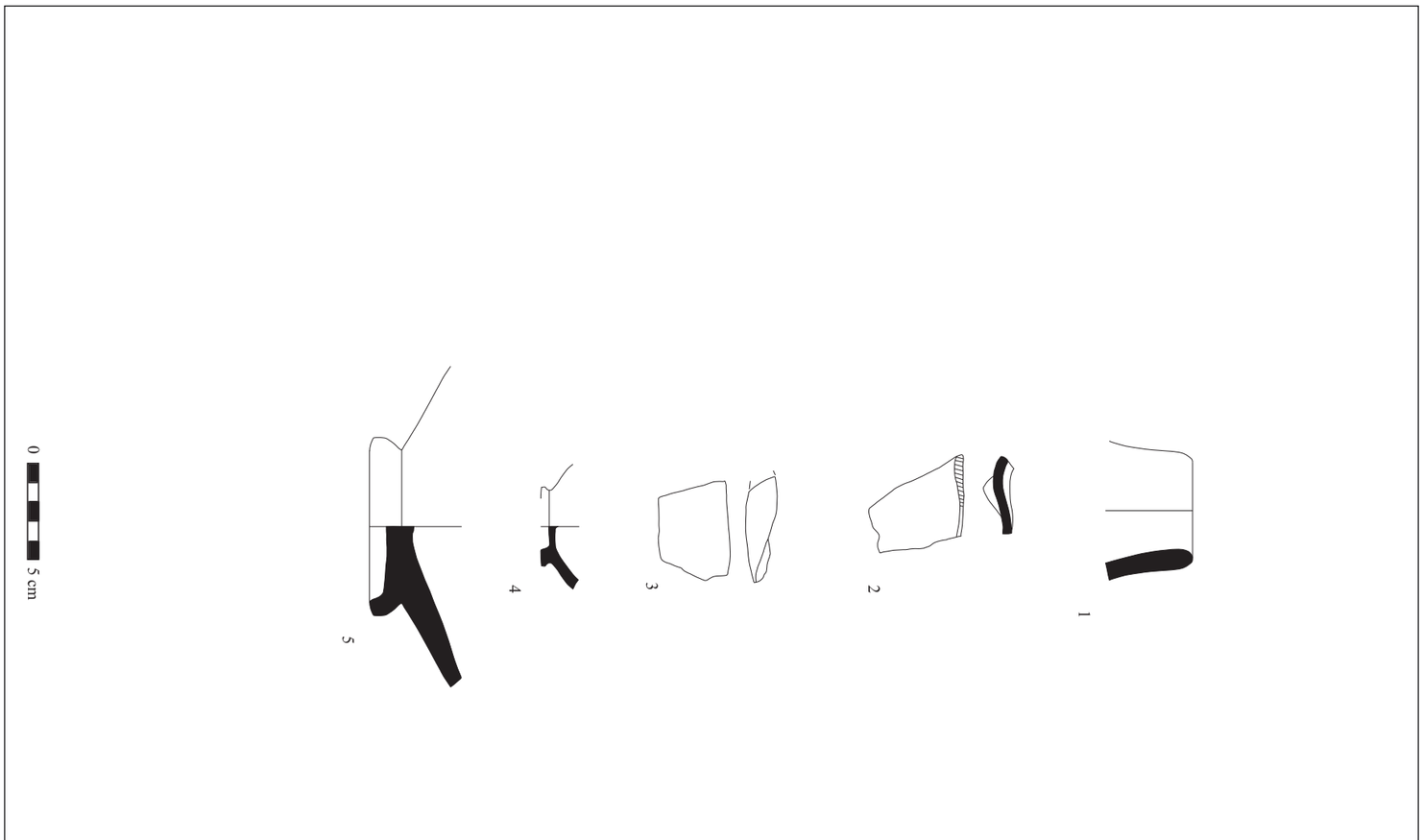


Plate 3.9: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (body sherd)	TZ 020957-018	AM 118	5658	WM C R2B (red and black painted/bichrome ?)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 25.	
2	jug/jar (body sherd)	TZ 020960-022	AN 119	5646	WM C Buff (incised linear and wavy lines)	MB	Tall ad-Duwēr (Lachish) MB I: Amiran 1969, 85 Pl. 22, 5: decoration.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 268 Fig. 4. 6, 21. 10.
3	juglet (handle)	TZ 020808-016	AN 118	5442	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 276 Fig. 4, 57.	
4	juglet (handle: piriform [?])	TZ 020962-019	AM 118	5663	WM C R2B (polished)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 228 Fig. 100: piriform juglet.	
5	juglet (twin handle)	TZ 020972-020	AP 119	5673	WM C Buff (light brown slip polished)	MB	Tall al-Ḥiṣn (Beth Shean) MB IIA/B: Maeir 2007, 277 Fig. 4, 61–64; 347 Pl. 16, 7–9.	
6	jug/jar/krater (handle)	TZ 020932-005	AN 118	5641	WM C Buff (red-brown painted and application: snake ?)	MB	Tall Abū al-Ḫaraz Phase IV/1: Fischer 2006, 42 Fig. 28, 10; 45 Fig 31: handle of a serpent jug.	

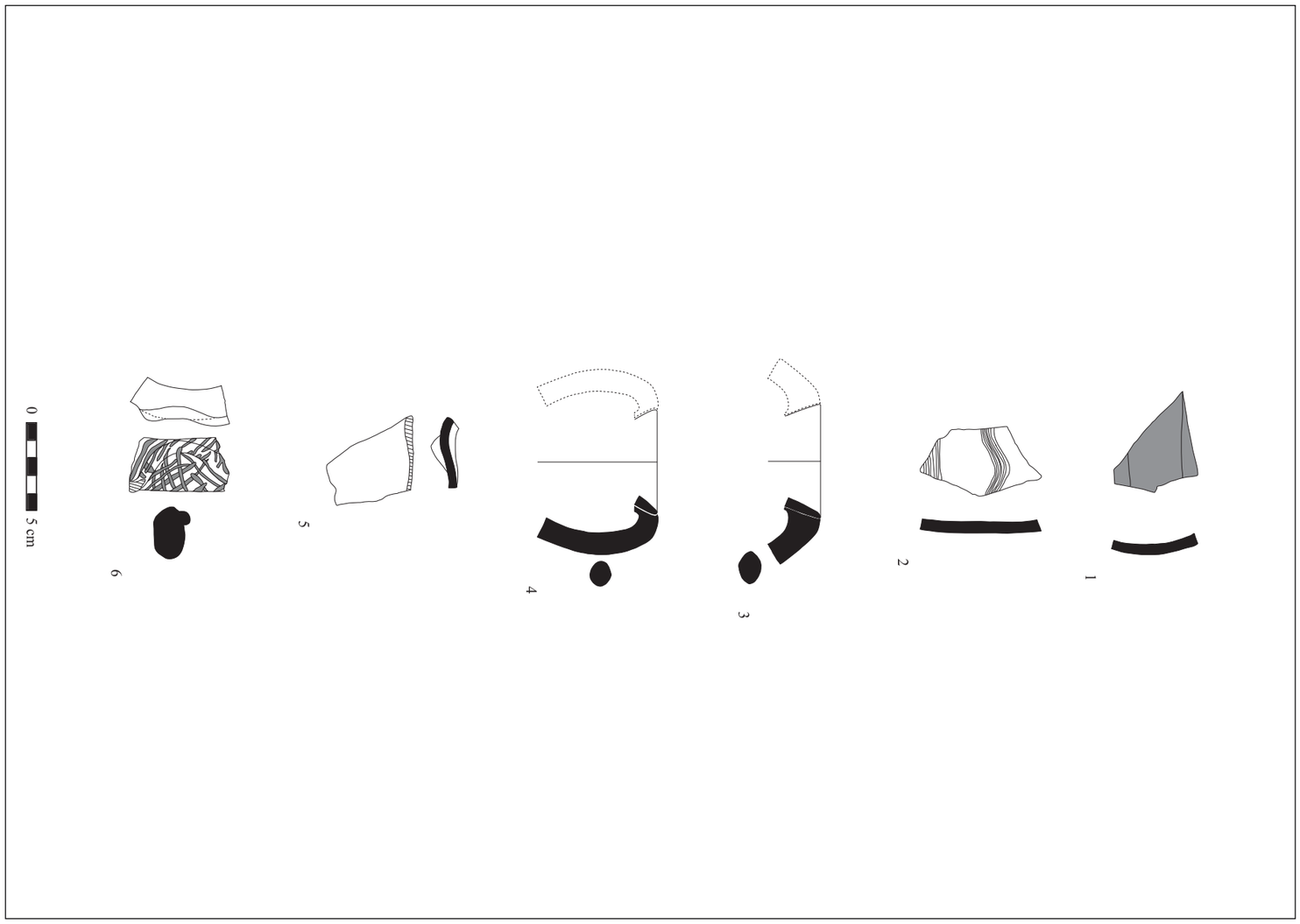


Plate 3.10: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 19—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	lid/stopper	TZ 020972-025	AP 119	5673	HM GW	EB II/III		
2	lid/stopper	TZ 020952-013	AM 119	5647	WM R2B	MB		
3	lid/stopper (?) (worked very fine)	TZ 020960-021	AN 119	5646	WM Buff	MB		
4	flywheel/ whorl (unfinished)	TZ 017367-001	AL 118	5671	WM R2B	MB		
5	lid/stopper (?) (worked very fine)	TZ 017366-001	AM 118	5676	WM R2B	MB		
6	unfinished scarab (?) (worked very fine)	TZ 017331-001	AO 118	5659	WM Buff	MB		

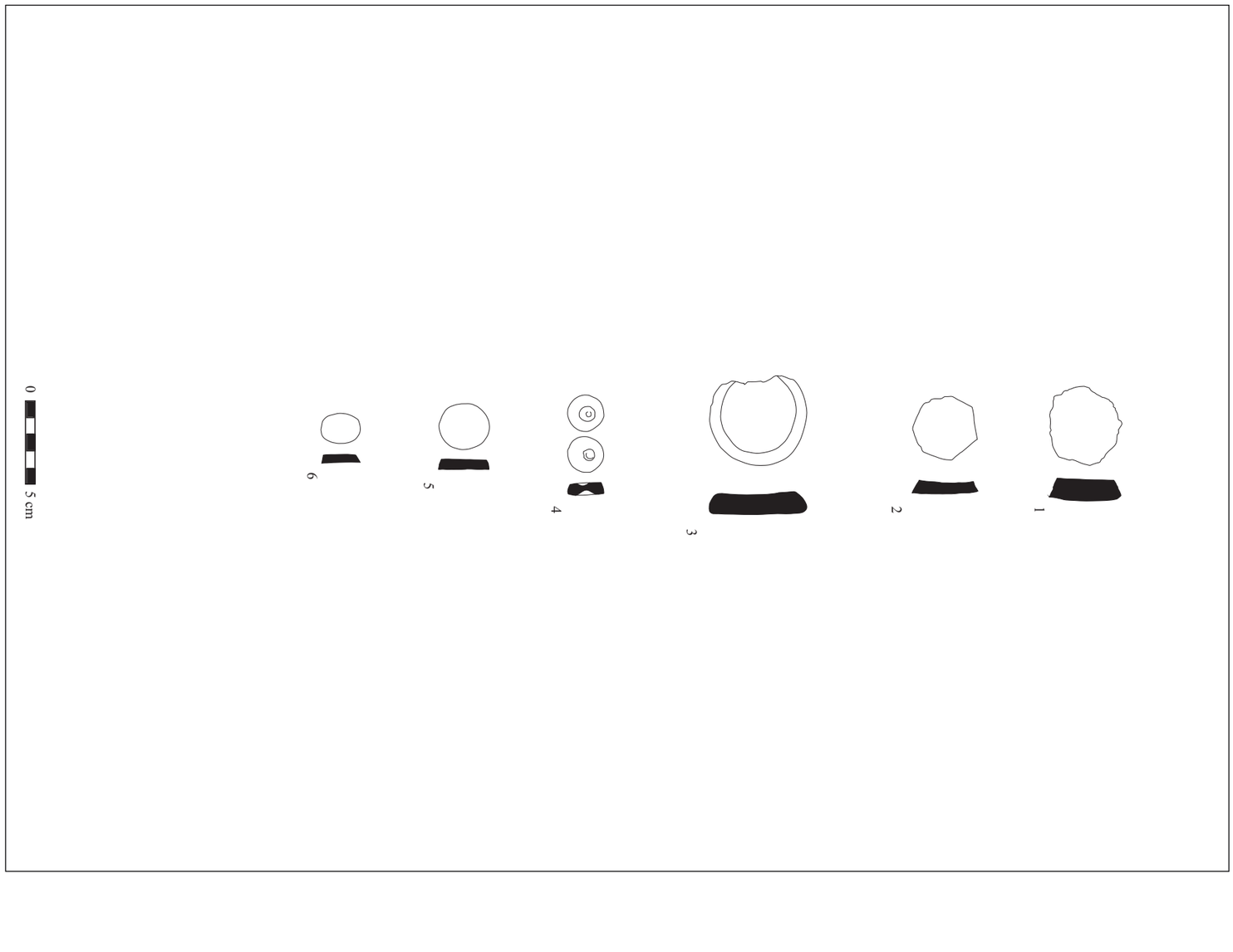


Plate 3.11a: Middle Bronze Age bowls from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 021134-012	AM 119	5532	WM C Buff (pink slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 246 Pl. 4, 1 BL 25.	Tall Abū al-Ḫaraz Phase IV/1: Fischer 2006, 220 Fig. 256, 4.
2	bowl	TZ 020361-006	AN 118	5136	WM C Buff (fine ware)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9. 5, 5.	Tabqāt Faḥl (Pella) MB early: Bourke et al. 2003, Pl. 341, 3.
3	bowl	TZ 020916-015	AL 118	5626	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.
4	bowl	TZ 020907-015	AN 118	5616	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 7.
5	bowl	TZ 020564-008	AN 118	5326	WM C R2B (red slip, fine ware)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 2.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 6.
6	bowl	TZ 020564-011	AN 118	5326	WM C Buff (fine ware)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 189 Fig. 77, 4; 100 Fig. 81, 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB (Livneh 2005, 73 Fig. II 5, 2.
7	bowl	TZ 020916-013	AL 118	5626	WM C Buff (painted: red and dark brown horizontal stripes)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 7.
8	bowl	TZ 020652-001	AN 118	5327	WM C R2B (painted: red and dark brown horizontal stripes)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 2.	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 97 Pl. 27, 1.
9	bowl	TZ 020114-005	AN 118	4955	WM C R2B	MB	Tabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 195, 14.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 246 Pl. 4, 1 BL 21: form.

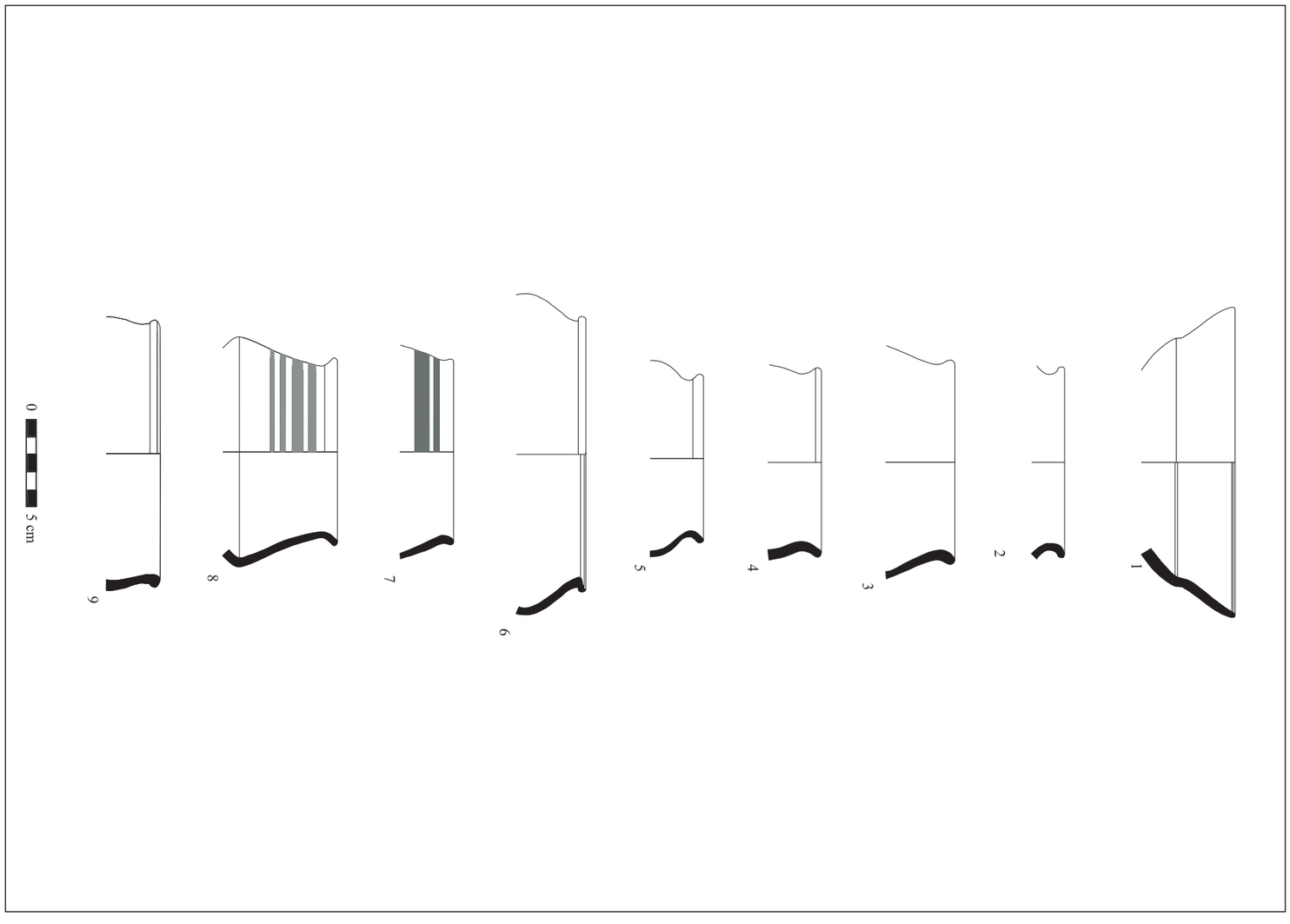


Plate 3.11b: Middle Bronze Age bowls from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
10	bowl	TZ 020916-017	AL 118	5626	WM C Buff (fine ware)	MB	Ṭabqāt Faḥl (Pella) MB II: Smith 1973, Pl. 35, 553. 556.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 341 Pl. 13, 20; 387 Pl. 36, 6.
11	bowl	TZ 020088-020	AN 118	4955	ChocWh	MB	Tall al-ʿAǧǧūl MB/LB: Amiran 1969, 160 Pl. 49, 6.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 56 Fig. 42, 3.

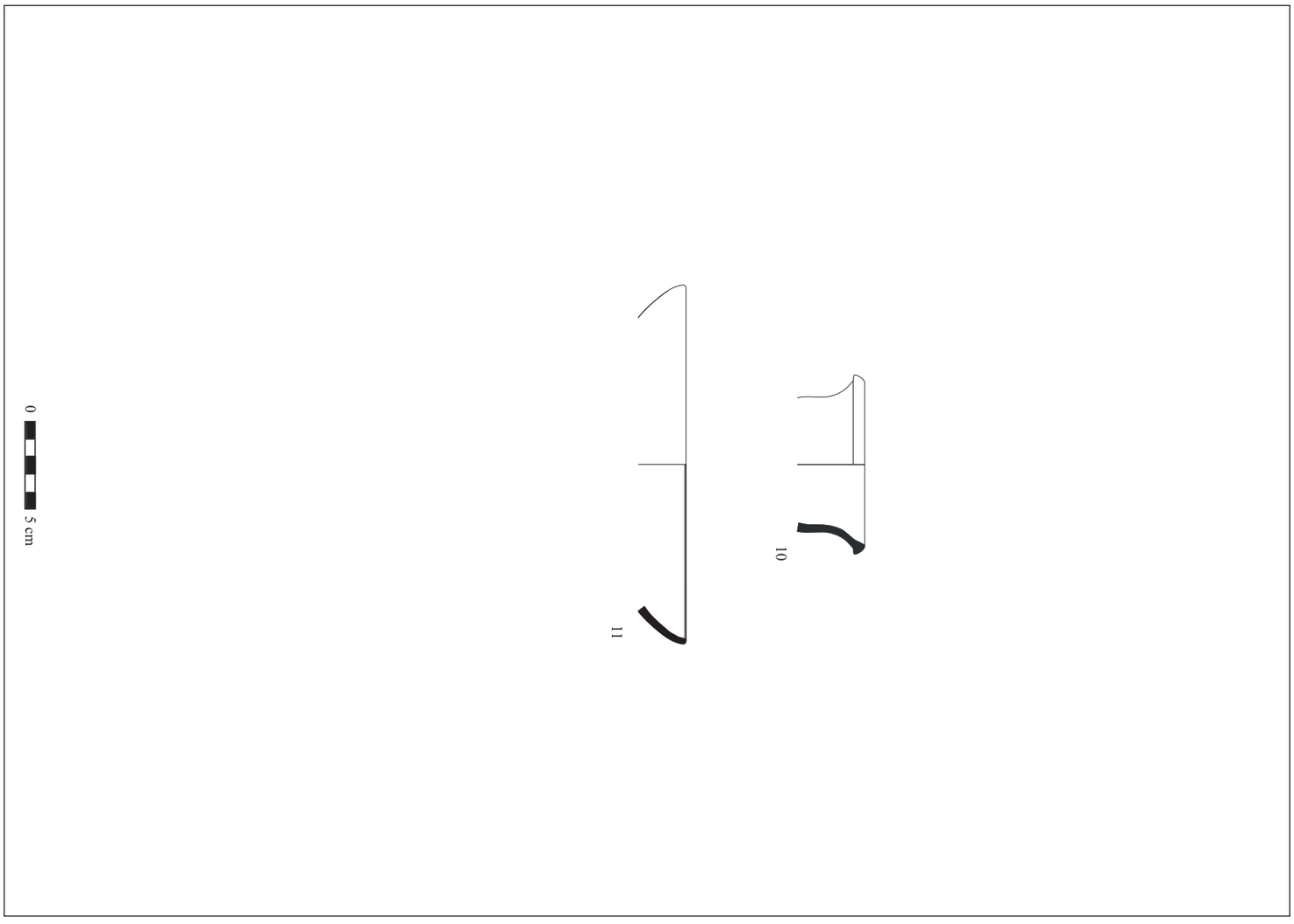


Plate 3.12: Middle Bronze Age bowls from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 020922-012	AL 118	5626	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 317 Pl. 1, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 97 Fig. II 17, 22).
2	bowl	TZ 021134-013	AM 119	5532	WM C Buff (pink slip polished)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 317 Pl. 1, 16.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9. 1, 1.
3	bowl	TZ 020178-006	AN 118	5057	WM BP	MB	Ṭabqāt Faḥl (Pella) MB II: Smith 1973, Pl. 35, 747: form.	
4	bowl	TZ 021134-028	AM 119	5532	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 371 Pl. 28, 13.	Ṭabqāt Faḥl (Pella) MB II: Smith 1973, Pl. 35, 533.
5	bowl	TZ 020686-033	AN 118	5250	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben- Tor 1987, 265 Fig. 61, 5.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 371 Pl. 28, 10.
6	bowl	TZ 020178-003	AN 118	5057	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 341 Pl. 13, 23.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 4.
7	bowl	TZ 020924-008	AL 118	5630	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 15.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 369 Pl. 27, 2.
8	bowl	TZ 020900-008	AL 118	5607	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben- Tor 1987, 265 Fig. 61, 15.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 341 Pl. 13, 5.
9	bowl	TZ 006067-001	AO 118	4301	WM C Buff (brown paintings on the rim)	MB	Qīre (Tall Qīrī) MB: Ben Tor 1987, 265 Fig. 61, 7.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 377 Pl. 31, 1: identic paintings; 365 Pl. 25, 3.
10	mug/bowl	TZ 020943-009	AO 118	5631	WM C R2B	MB/LB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 238 Fig. 94, 2: similar.	Tall al-Mutasallim (Megiddo) LB I: Amiran 1969, 127 Pl. 38, 3.— Tall al-Ḥiṣn (Beth Shean) LB: Mullins 2007, 448 Fig. 5, 15 JR 2: flowerpot (Egyptian form).

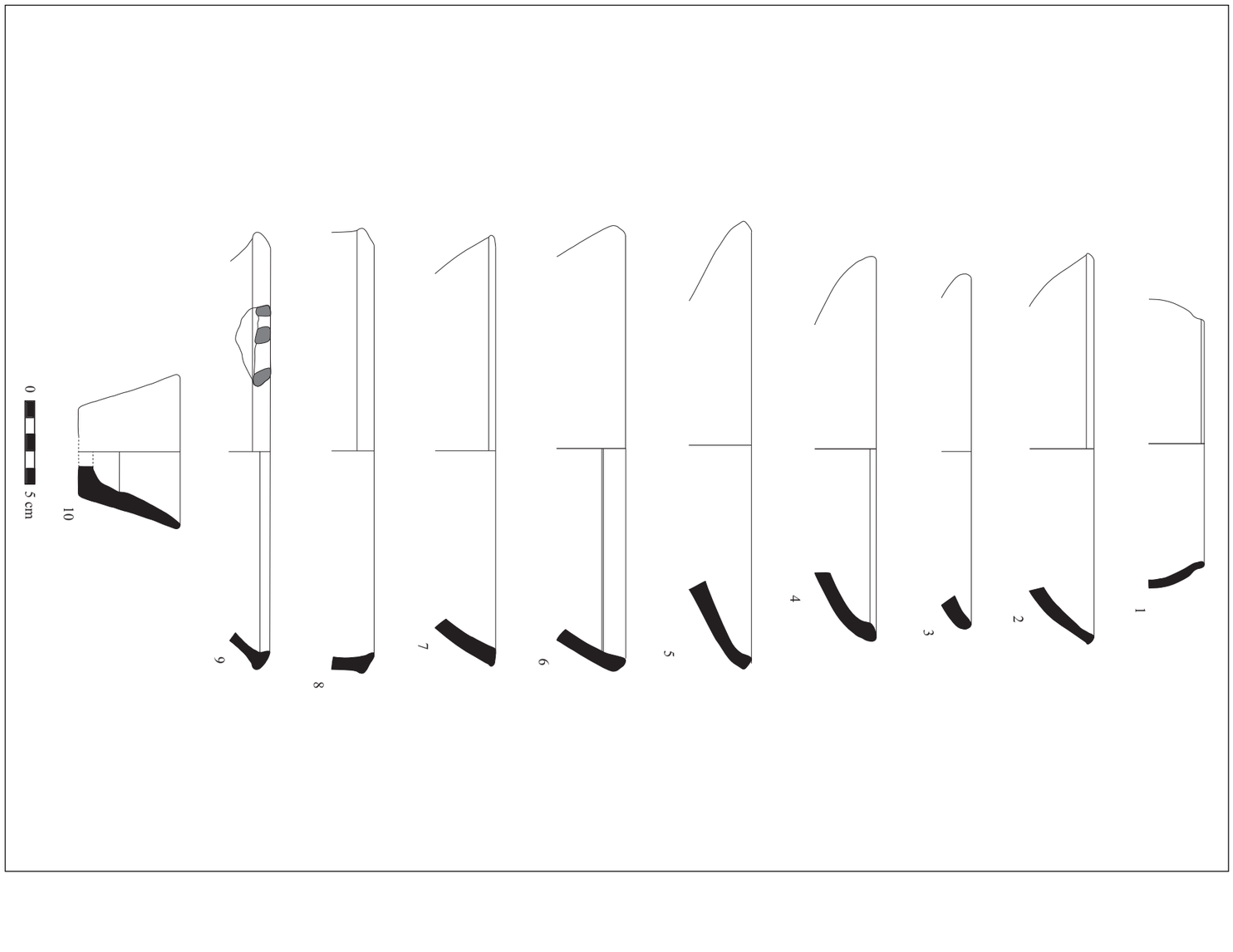


Plate 3.13: Middle Bronze Age bowls and kraters from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	chalice	TZ 006405-006	AO 118	4542	WM C Buff (brown paintings on the rim)	MB	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 66 Fig. 53, 4. 5.	Tall al-Mutasallim (Megiddo) MB II: Amiran 1969, 97 Pl. 27, 23. 24; 98 Pl. 28, 10.
2	bowl	TZ 020335-011	AN 118	5141	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 14.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 387 Pl. 36, 5.
3	bowl	TZ 020929-001	AL 118	5630	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 219 Fig. 86, 1: similar.	
4	bowl/krater	TZ 020904-002	AM 118	5609	WM C R2B	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 6.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 333 Pl. 9, 10.
5	krater	TZ 020596-001	AN 118	5247	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 8.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 351 Pl. 18, 18.
6	krater	TZ 020653-026	AN 118	5327	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 15.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 321 Pl. 3, 22.
7	krater	TZ 020922-005	AL 118	5626	WMC Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 15.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 10.
8	krater	TZ 020916-006	AL 118	5626	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 341 Pl. 13, 12.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 15.
9	krater	TZ 020088-001	AN 118	4955	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 373 Pl. 29, 1.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 121 Fig. II 29, 12.

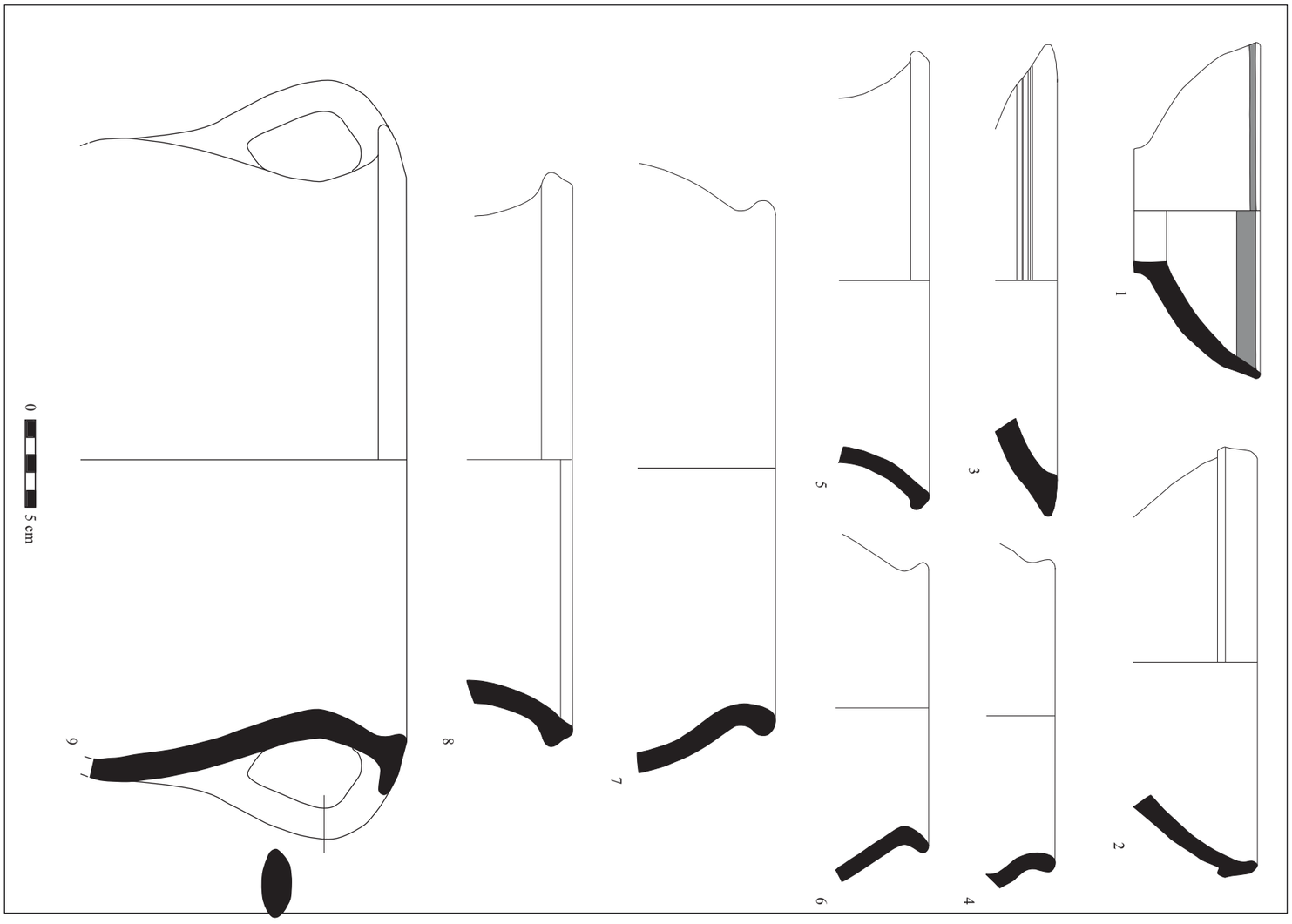


Plate 3.14: Middle Bronze Age kraters from Tall Zirāʿa Stratum 18—Excavations 2001–2011s

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	krater	TZ 020596-003	AN 118	5247	WM C Buff	MB	Tall Qēmūn ((Tēl Yoqnəʿām) MB: Livneh 2005, 97 Fig. II 17, 29.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 222 Fig. 89, 16.
2	krater	TZ 020929-013	AL 118	5630	WM C Buff	MB	Ḫirbat Yarīḥā aš-Šamālīyah MB II: Kamlah 2000, Pl. 72, 3. 7.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 21.
3	krater	TZ 020548-011	AN 118	5247	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 21.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 133 Fig. II 37, 10.
4	krater	TZ 020949-005	AO 118	5631	WM C R2B	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 21.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 13 Fig. II 37, 10.
5	krater	TZ 020845-007	AL 118	5475	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 323 Pl. 4, 5.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 227 Fig. 261, 3.
6	krater	TZ 020916-018	AL 118	5626	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 91 Fig. II 14, 8.
7	krater	TZ 020157-009	AN 118	4955	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 91 Fig. II 14, 8.
8	krater	TZ 020845-023	AL 118	5475	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 91 Fig. II 14, 8.
9	krater	TZ 020297-001	AN 118	5136	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
10	krater	TZ 020597-013	AM 119	5251	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 243 Fig. 98, 9.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 127 Fig. II 34, 5.
11	krater	TZ 020930-008	AO 118	5631	WM C R2B (red slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 339 Pl. 12, 7.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 97 Fig. II 17, 31.

Plate 3.14: Middle Bronze Age kraters from Tall Zirāʿa Stratum 18–Excavations 2001–2011

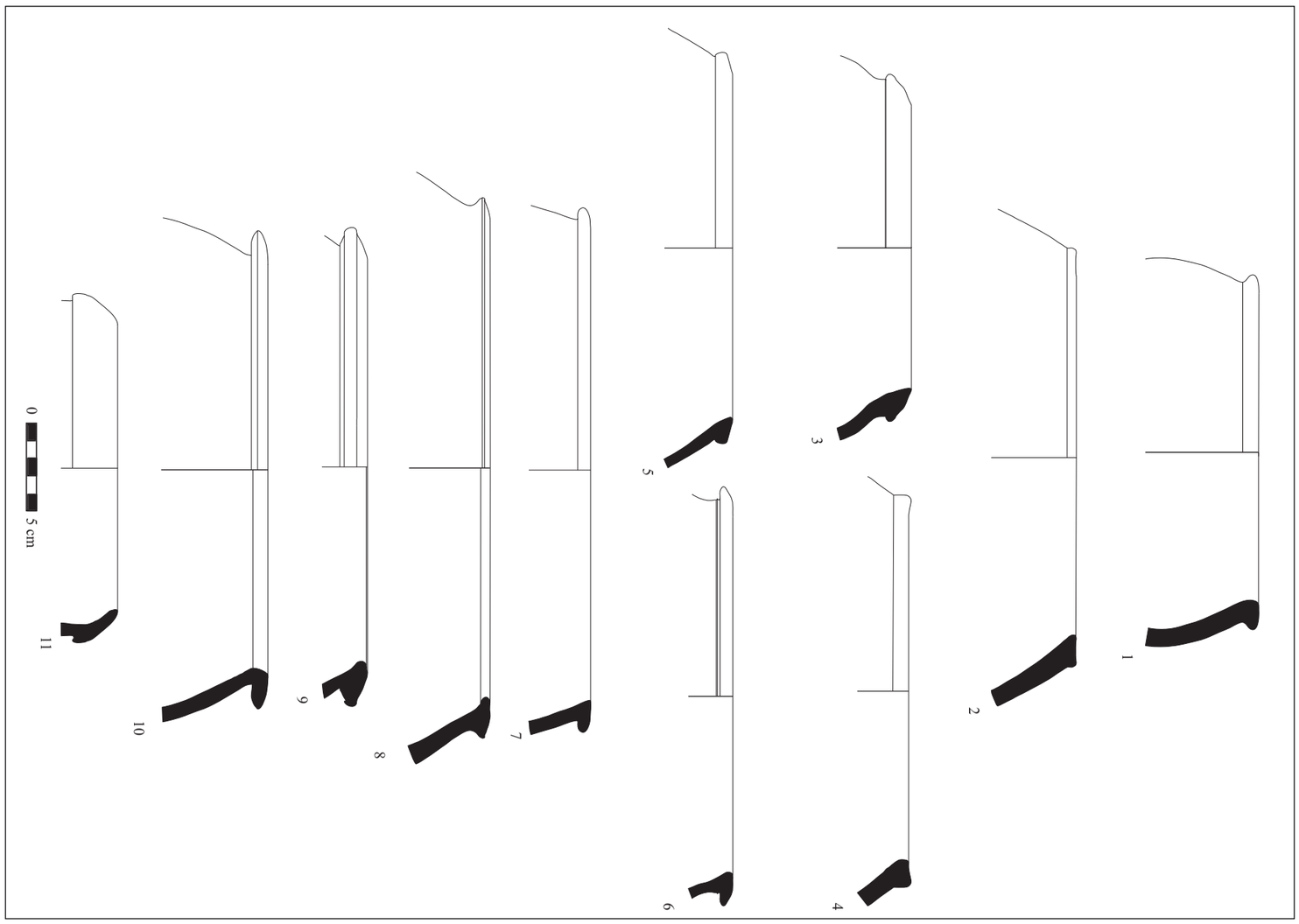


Plate 3.15: Middle Bronze Age kraters from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	krater	TZ 020157-017	AN 118	4955	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
2	krater	TZ 020906-003	AM 118	5613	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 17. 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
3	krater	TZ 020916-010	AL 118	5626	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
4	krater	TZ 020088-003	AN 118	4955	WM C Buff (white slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 91 Fig. II 14, 8.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 331 Pl. 8, 4.
5	krater	TZ 020652-006	AN 118	5327	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 271 Fig. 64, 7.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 379 Pl. 32, 22: similar.
6	krater	TZ 020907-009	AN 118	5616	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 321 Pl. 3, 12.	Ṭabqāt Faḥl (Pella) earliest MB: Bourke et al. 1988, Pl. 192, 113.
7	krater	TZ 020605-011	AN 118	5327	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 97 Fig. II 17, 29.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 222 Fig. 89, 16.
8	krater	TZ 020845-013	AL 118	5475	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 379 Pl. 32, 22.	Ṭabqāt Faḥl (Pella) MB II: Smith 1973, Pl. 36, 714.
9	krater	TZ 020845-008	AL 118	5475	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 271 Fig. 64, 22.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 222 Fig. 89, 7.
10	krater	TZ 020158-003	AN 118	4958	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 97 Fig. II 17, 30.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 321 Pl. 3, 11.

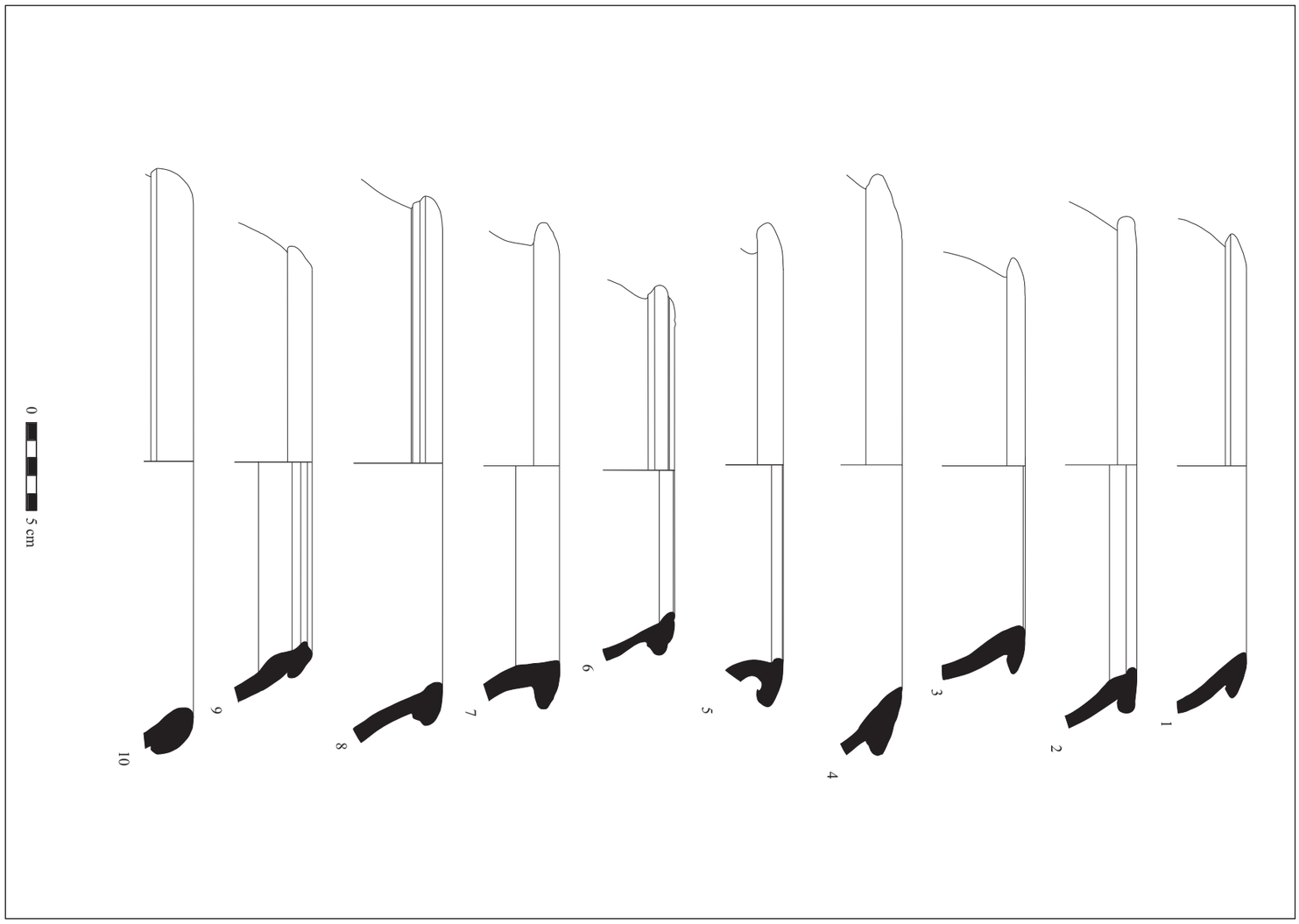


Plate 3.16: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020926-005	AL 118	5630	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 12.
2	jug/jar	TZ 020065-032	AN 118	4953	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 12.
3	jug/jar	TZ 020930-009	AO 118	5631	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 101 Fig. II 19, 4.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 20.
4	jug/jar	TZ 020930-004	AO 118	5631	WM C Buff	MB	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 192, 14.	Ḫirbat Yarīḥā aš-Šemālīye MB II: Kamlah 2000, Pl. 72, 4. 6.
5	jug/jar	TZ 020900-004	AL 118	5607	WM C Buff (light green slip)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 87 Fig. II 12, 3; 101 Fig. II 19, 9; 127 Pl. II 34, 10: similar.
6	jug/jar	TZ 020930-012	AO 118	5631	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 15.	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 192, 14.
7	jug/jar	TZ 020902-018	AO 118	5610	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 12.

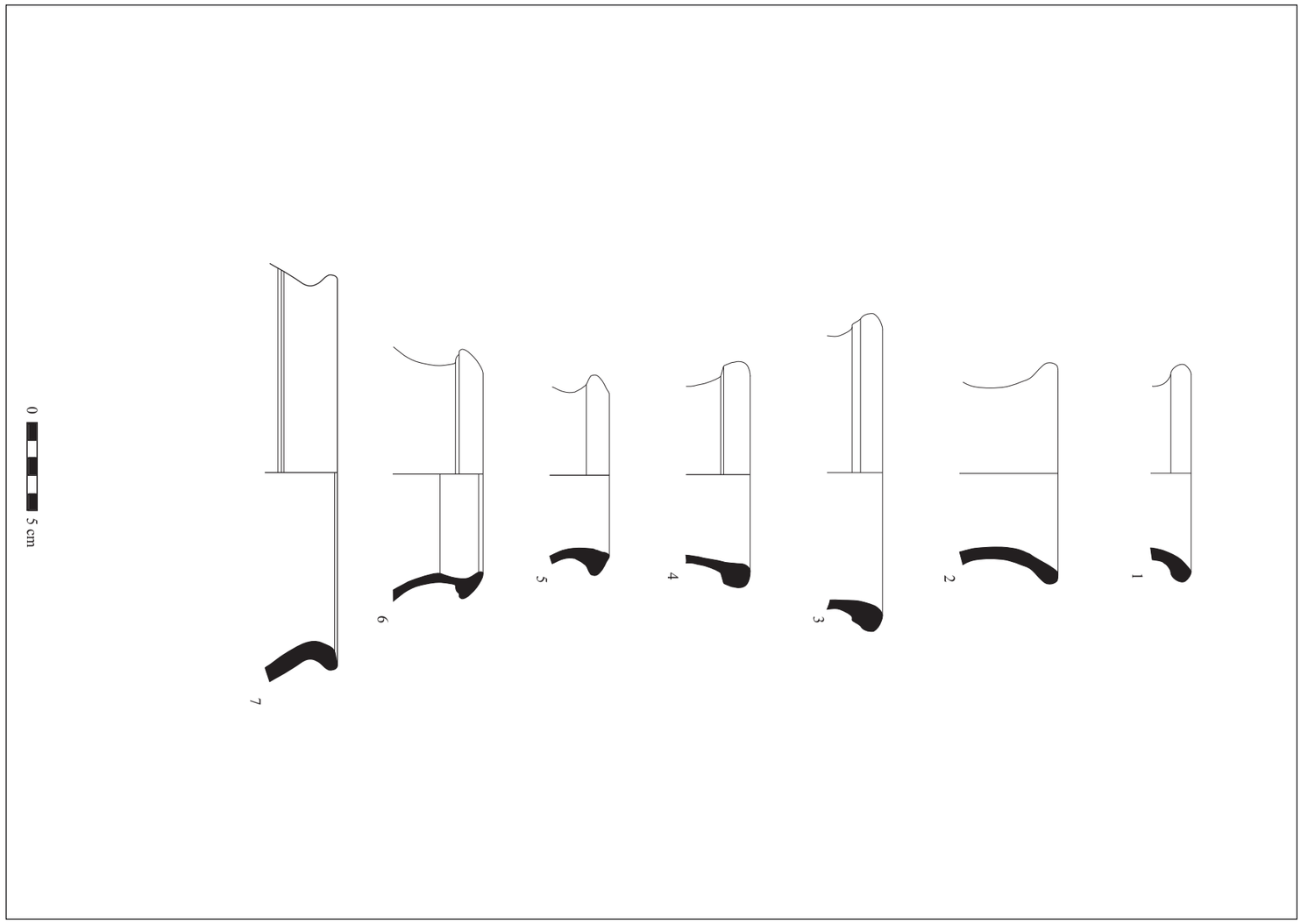


Plate 3.17a: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020931-002	AL 118	5639	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 30.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 87 Fig. II 12, 8.
2	jug/jar	TZ 020930-007	AO 118	5631	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 92 Fig. II 16, 7; 101 Fig. II 19, 8.	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 231 Fig. 264, 8: similar.
3	jug/jar	TZ 020927-002	AO 118	5631	WM C R2B (Buff slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām)) MB: Livneh 2005, 89 Fig. II 13, 12.
4	jug/jar	TZ 020646-002	AN 119	5252	WM C R2B (Buff slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 101 Fig. II 16, 7.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 231 Fig. 264, 3.
5	jug/jar	TZ 020653-020	AN 118	5329	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 8. 9.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 117 Fig. II 27, 16.
6	jug/jar	TZ 020801-013	AN 118	5247	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 222 Fig. 89, 20.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 87 Fig. II 12, 4. 6.
7	jug/jar	TZ 020900-005	AL 118	5607	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 31.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4. 5.
8	jug/jar	TZ 020088-006	AN 118	4955	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 69 Fig. II 3, 14; 99 Fig. II 18, 40.	Ḫirbat ar-Raḥūb MB I–II: Kamlah 2000, Pl. 42, 7.
9	jug/jar	TZ 020010-001	AN 118	4889	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4. 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 26.

Plate 3.17b: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 18—Excavations 2001–2011

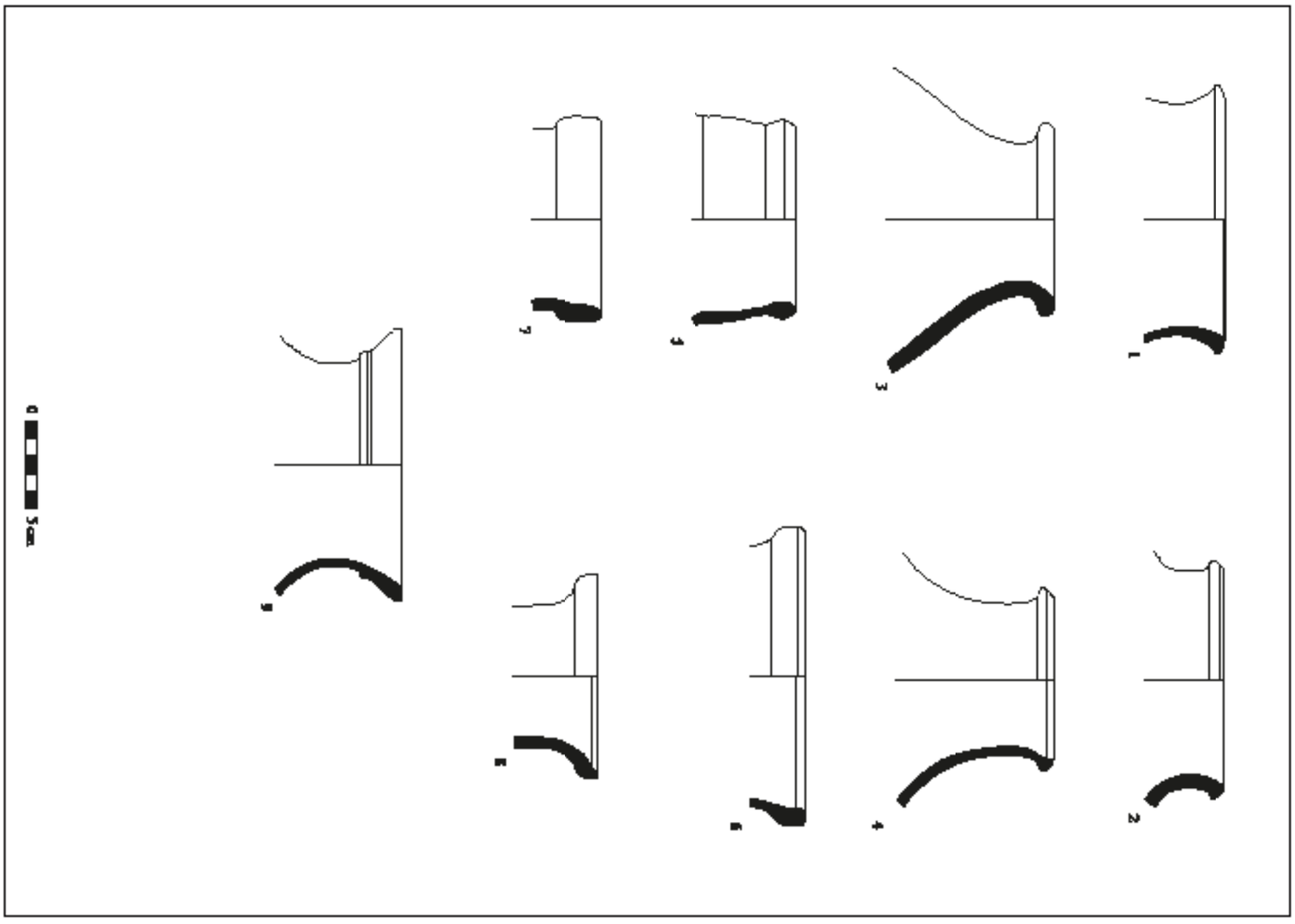


Plate 3.17b: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
10	jug/jar	TZ 020233-004	AN 119	4888	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4. 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 26.
11	jug/jar	TZ 020332-003	AM 119	5137	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿàm) MB: Livneh 2005, 99 Fig. II 18, 38.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 189 Fig. 77, 3.
12	jug/jar	TZ 020780-005	AN 118	5444	WM C Buff (pink slip)	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 13.	Tall Qēmūn (Tēl Yoqnəʿàm) MB: Livneh 2005, 67 Fig. II 2, 40.
13	jug/jar	TZ 020719-001	AN 119	4891	WM C Buff Metallic	MB	Qīre (Tall Qīrī) MB: Ben- Tor 1987, 267 Fig. 62, 13.	Tall Qēmūn (Tēl Yoqnəʿàm) MB: Livneh 2005, 67 Fig. II 2, 40.
14	jug/jar	TZ 020927-003	AO 118	5631	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 28.	Tall Qēmūn (Tēl Yoqnəʿàm) MB: Livneh 2005, 81 Fig. II 9, 8: rim.
15	storage jar	TZ 020907-007	AN 118	5616	WM C Buff Metallic (brown slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 365 Pl. 25, 12.	Tall Qēmūn (Tēl Yoqnəʿàm) MB: Livneh 2005, 67 Fig. II 2, 34.

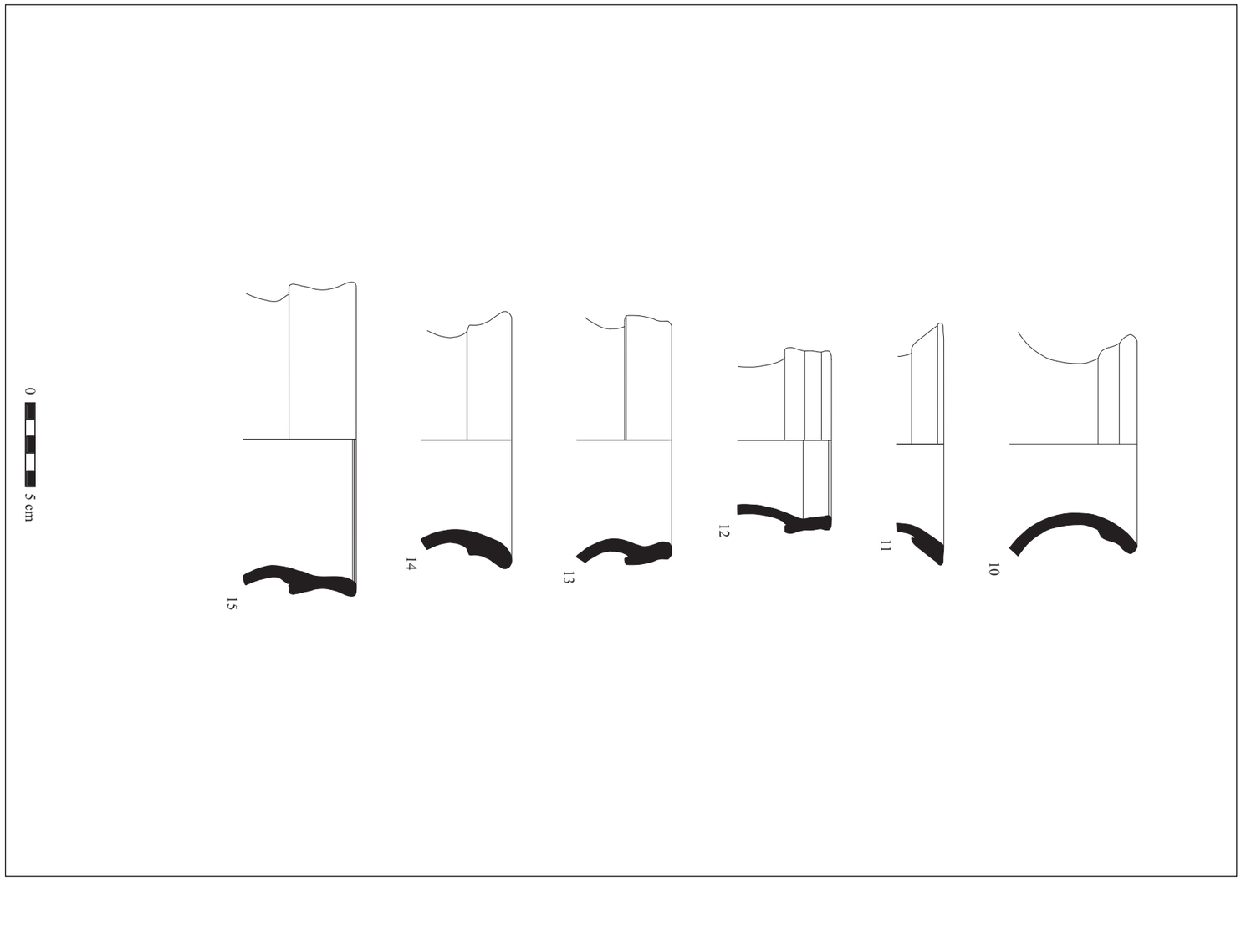


Plate 3.18: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020509-015	AN 119	5213	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 357 Pl. 21, 9.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 4.
2	jug/jar	TZ 020732-007	AN 118	5440	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 271 Fig. 64, 20.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 101 Fig. 9, 7. 25.
3	jug/jar	TZ 020010-008	AN 118	4889	WM C R2B (light green slip)	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 14.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 335 Pl. 10, 15.
4	jug/jar	TZ 020114-007	AN 118	4955	WM C R2B (Metallic)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 71 Fig. II 4, 24.
5	jug/jar	TZ 020905-005	AO 118	5610	WM C Buff (light green slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 335 Pl. 10, 8.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 269 Fig. 63, 16.
6	jug/jar	TZ 020564-005	AN 118	5326	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 101 Fig. 9, 7. 30.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 14.
7	jug/jar	TZ 006192-001	AO 119	4299	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 28.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 81 Fig. II 9, 8: rim.
8	jug/jar	TZ 020732-018	AN 118	5440	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 111 Fig. II 24, 14; 135 Fig. II 38, 33.	
9	jug/jar	TZ 020922-011	AL 118	5626	WM C R2B (buff slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 101 Fig. 9, 7. 35.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 13.

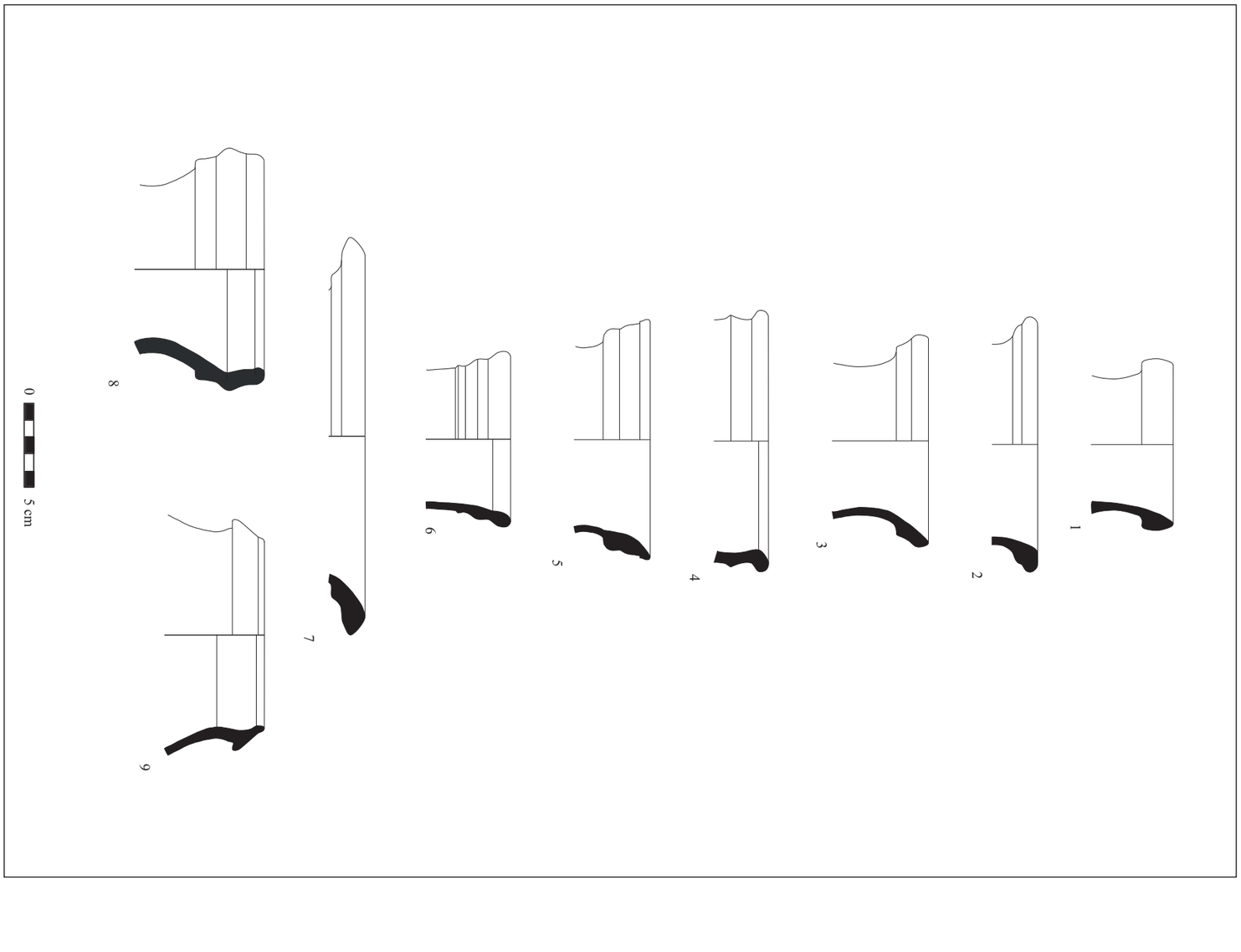


Plate 3.19: Middle Bronze Age storage jars/pithoi from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	storage jar	TZ 020509-018	AN 119	5213	WM C R2B (buff slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 121 Fig. II 29, 23.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 107 Fig. II 22, 10: similar.
2	storage jar	TZ 020732-012	AN 118	5440	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 73 Fig. II 5, 13; 77 Fig. II 7, 3.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 30.
3	storage jar	TZ 020926-006	AL 118	5630	WM C Buff (light green slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 30.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 79 Fig. II 8, 5: rim.
4	storage jar/ pithos	TZ 020732-013	AN 118	5440	WM C R2B (buff slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 93 Fig. II 15, 19; 107 Fig. II 22, 2; 135 Fig. II 38, 13.	Tall al-Qassis (Tēl Qāšīš) MB: Ben-Tor – Bonfil 2003, 220 Fig. 87, 1.
5	storage jar/ pithos	TZ 021134-043	AM 119	5532	WM C R2B Metallic (buff slip)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 85 Fig. II 11, 15.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 327 Pl. 6, 1. 9: similar.
6	storage jar	TZ 020928-005	AO 119	5637	WM C Buff (Metallic)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9; 12, 11.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 37.
7	storage jar/ pithos	TZ 020646-020	AN 119	5252	WM C Buff (impressions on the neck)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 327 Pl. 6, 11; 355 Pl. 20, 1; 385 Pl. 35, 5.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 93 Fig. II 15, 21.

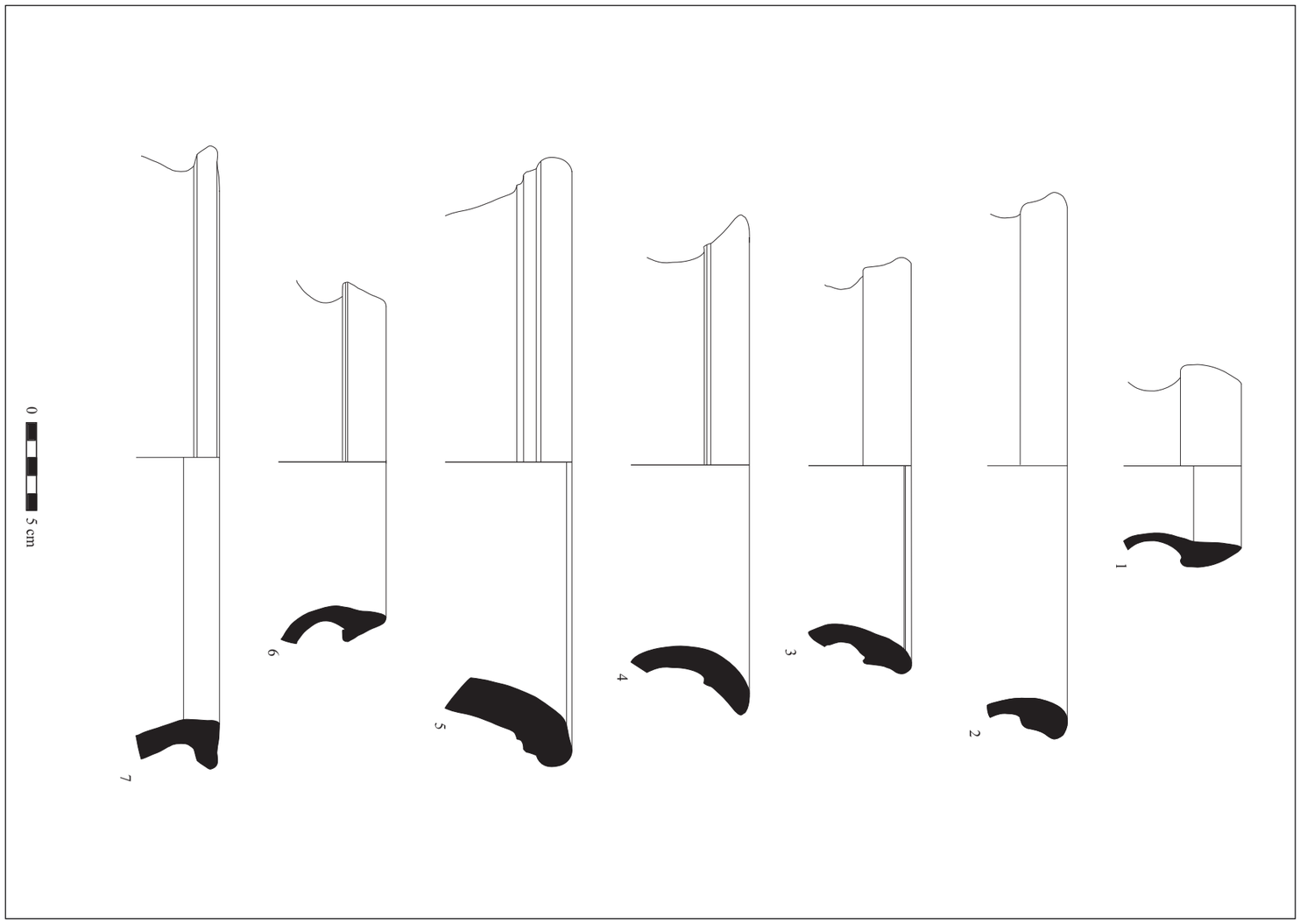


Plate 3.20: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	pilgrim flask (rim)	TZ 020509-004	AN 119	5213	WM C R2B (fine ware/brown paintings)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 107 Fig. II 22, 19.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 347 Pl. 16, 8.
2	juglet (rim)	TZ 020442-001	AO 119	4525	WM BP	MB	Tall al-Mutasallim (Megiddo): Wilson – Allen 1948, Pl. 26, 12; 123, 2 and 51, 1.	Tall Raʾs al-ʿĒn: Amiran 1969, 106 Fig. 107. 109 Pl. 33, 8.
3	juglet (rim)	TZ 020845-018	AL 118	5475	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 327 Pl. 6, 13 and 15.	
4	miniature vessel (from a kernos [?])	TZ 020297-008	AN 118	5136	HM/WM Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 283 Fig. 4, 71; 355 Pl. 20, 5: votiv vessel.	
5	dipper juglet (base)	TZ 020065-018	AN 118	4953	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 275 Fig. 4, 54–56.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 14; 206 Fig. 9, 8. 11.
6	juglet (base)	TZ 020087-006	AN 118	4953	WM C R2B (fine ware)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 94 Fig. II 16, 11.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 347 Pl. 16, 8.
7	juglet (base)	TZ 020604-001	AN 118	5326	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 347 Pl. 16, 5. 8; 359 Pl. 22, 1. 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 11. 12.
8	bowl (base)	TZ 020916-001	AL 118	5626	WM C R2B (fine ware)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 327 Pl. 6, 25; 353 Pl. 19, 27.	Tall al-Qassis (Tēl Qāšīš) MB: Ben-Tor – Bonfil 2003, 222 Fig. 89, 6.
9	carinated bowl (base)	TZ 021134-040	AM 119	5532	WM C Buff Metallic (pink slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 21; 206 Fig. 9, 8. 9.	
10	jug/jar (base)	TZ 020686-018	AN 118	5250	WM C R2B	MB		
11	jug/jar (base)	TZ 020065-017	AN 118	4953	WM C Buff	MB		

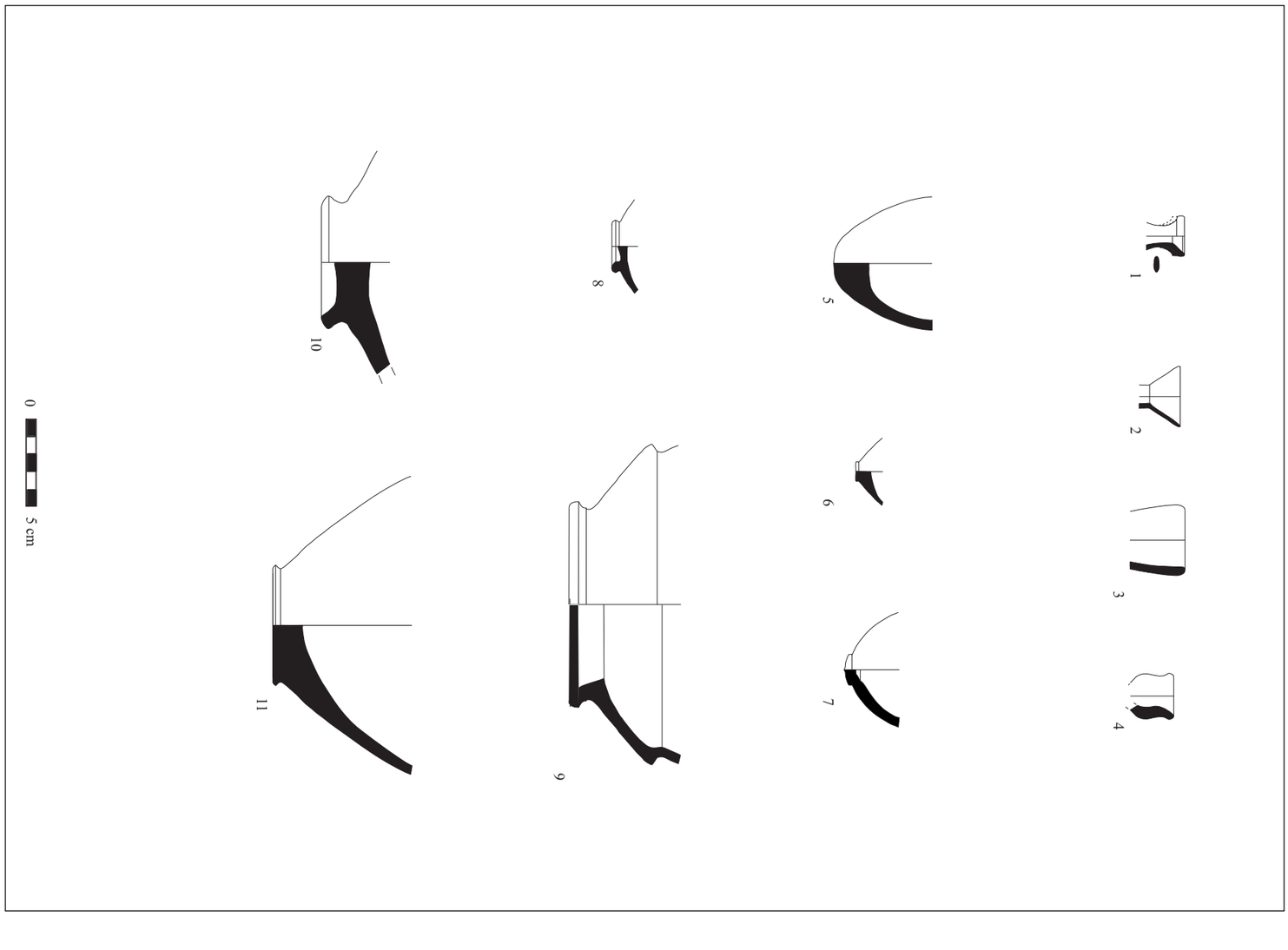


Plate 3.21: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (spout)	TZ 020646-021	AN 119	5252	WM C R2B (paintings: red and black horizontal lines)	MB		
2	krater (spout)	TZ 020900-017	AL 118	5607	WM C Buff	MB	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 108 Fig. 113, 5.	
3	jug/jar (handle)	TZ 020845-004	AL 118	5475	WM C Buff	MB		
4	jug/jar (handle)	TZ 020909-001	AL 118	5618	WM C R2B (paintings: red and black horizontal lines)	MB		
5	jug/jar (handle)	TZ 020813-012	AL 118	5475	WM C Buff	MB		
6	jug/jar (handle)	TZ 021134-034	AM 119	5532	WM C Buff	MB		
7	jug/jar (handle)	TZ 020363-001	AN 118	5141	WM C Buff	MB		
8	krater/bowl (base with leg)	TZ 020509-017	AN 119	5213	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 254 Fig. 4, 20; 335 Pl. 10, 5: similar.	see Stratum 22 TZ 021631-001
9	krater/bowl (base with leg)	TZ 020813-008	AL 118	5475	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 254 Fig. 4, 20; 335 Pl. 10, 5: similar.	see Stratum 22 TZ 021631-001

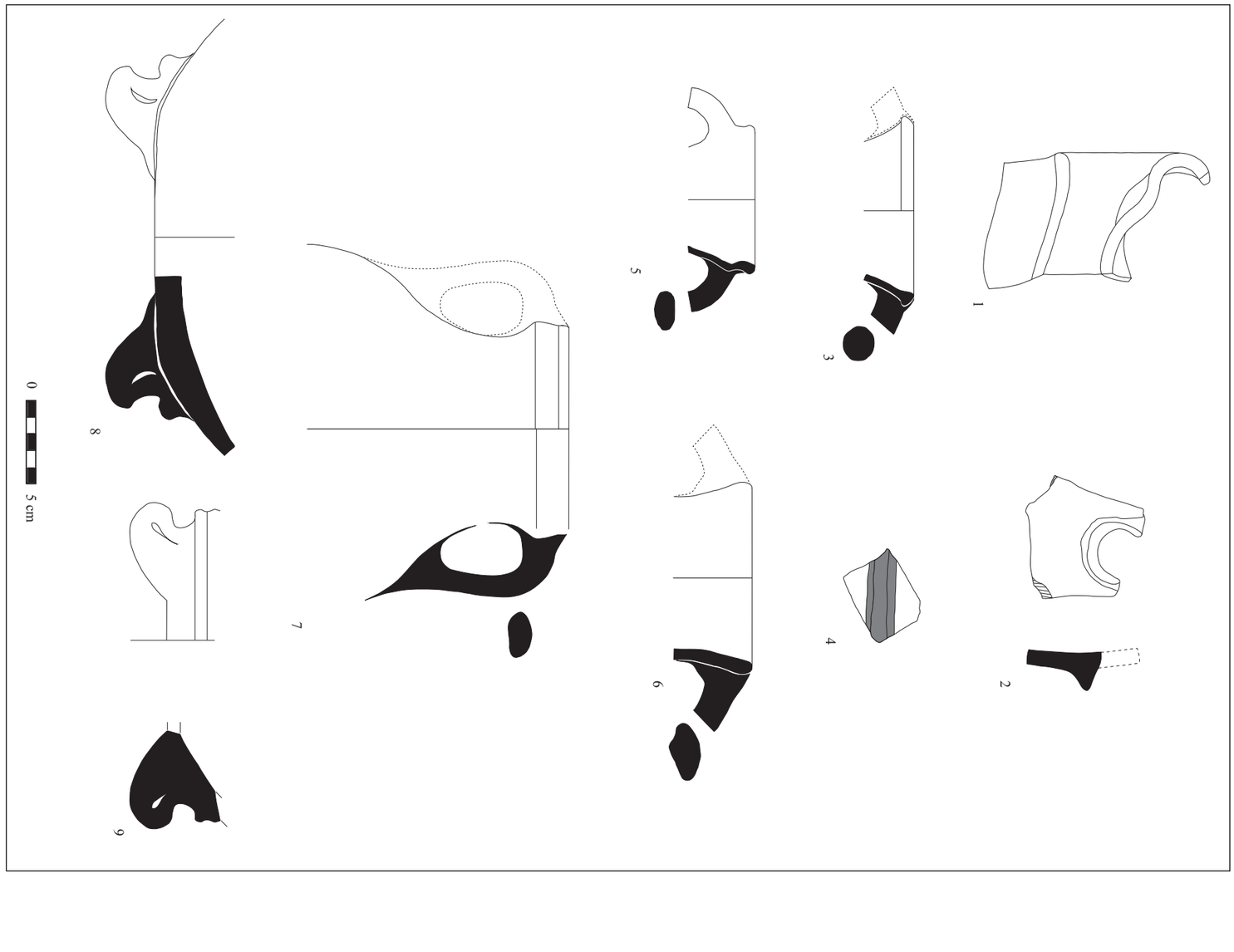


Plate 3.22a: Middle Bronze Age ceramic finds from Tall Zirā'a Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (body sherd)	TZ 020926-022	AL 118	5630	WM C Buff (incised wavy line)	MB	Ḫirbat Yarīḥā aš-Šemālīye MB early: Kamlah 2000, Pl. 74, 9.	
2	jug/jar (body sherd)	TZ 020900-040	AL 118	5607	WM C Buff (incised linear lines)	MB	Tall Bait Mirsīm MB I: Amiran 1969, 85 Pl. 22, 21–23: decoration.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 268 Fig. 4. 6, 25. 12.
3	jug/jar (body sherd)	TZ 020929-029	AL 118	5630	WM C Buff Metallic (incised linear lines)	MB	Tall Bait Mirsīm MB I: Amiran 1969, 85 Pl. 22, 21–23: decoration.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 268 Fig. 4. 6, 25. 12.
4	jug/jar (body sherd)	TZ 020653-030	AN 118	5327	WM C R2B (buff slip red paintings)	MB	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 2003, Pl. 341, 2.	
5	jug/jar (body sherd)	TZ 021134-007	AM 119	5532	WM C Buff (red and grey paintings) bichrome	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 329 Pl. 7, 1 and 2; 357 Pl. 21, 14.	
6	jug/jar (body sherd)	TZ 020689-002	AN 118	5326	WM C Buff (red and black paintings)	MB	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 2003, Pl. 341, 2.	
7	jug/jar (body sherd)	TZ 006139-001	AO 119	4333	WM C Buff (red and black paintings)	MB		
8	jug/jar (body sherd)	TZ 020233-008	AN 119	4888	WM C R2B (red paintings on white slip)	MB		
9	lid/stopper	TZ 020335-016	AN 118	5141	HM GW	EB II/III		

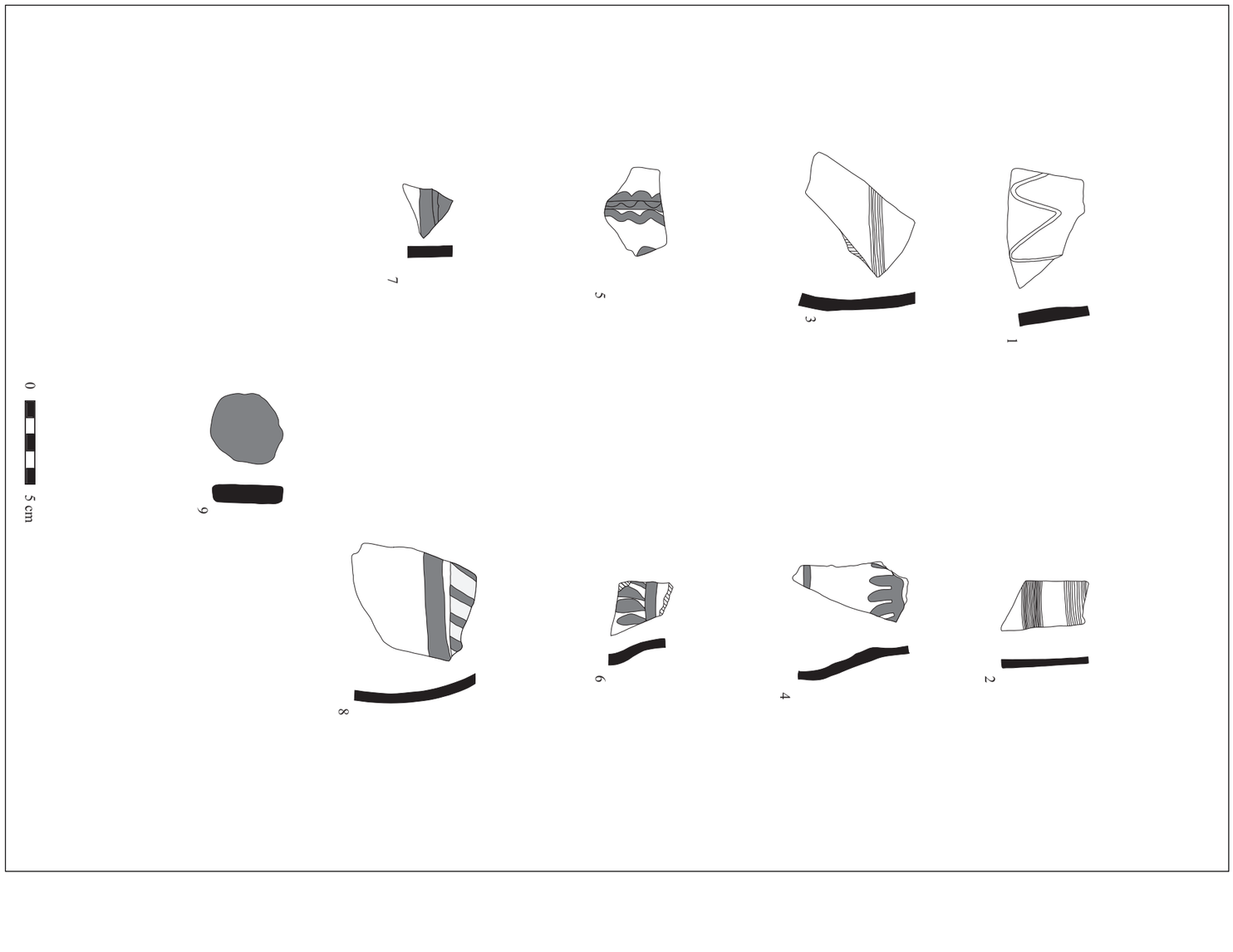


Plate 3.22b: Middle Bronze Age ceramic finds from Tall Zirā'a Stratum 18—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
10	lid/stopper (?)	TZ 020515-014	AN118	5247	WM C Buff	MB		
11	spindle whorl (unfinished)	TZ 020335-017	AN 118	5141	WM Grey	MB		
12	spindle whorl	TZ 020933-002	AM 118	5644	WM C R2B	MB		

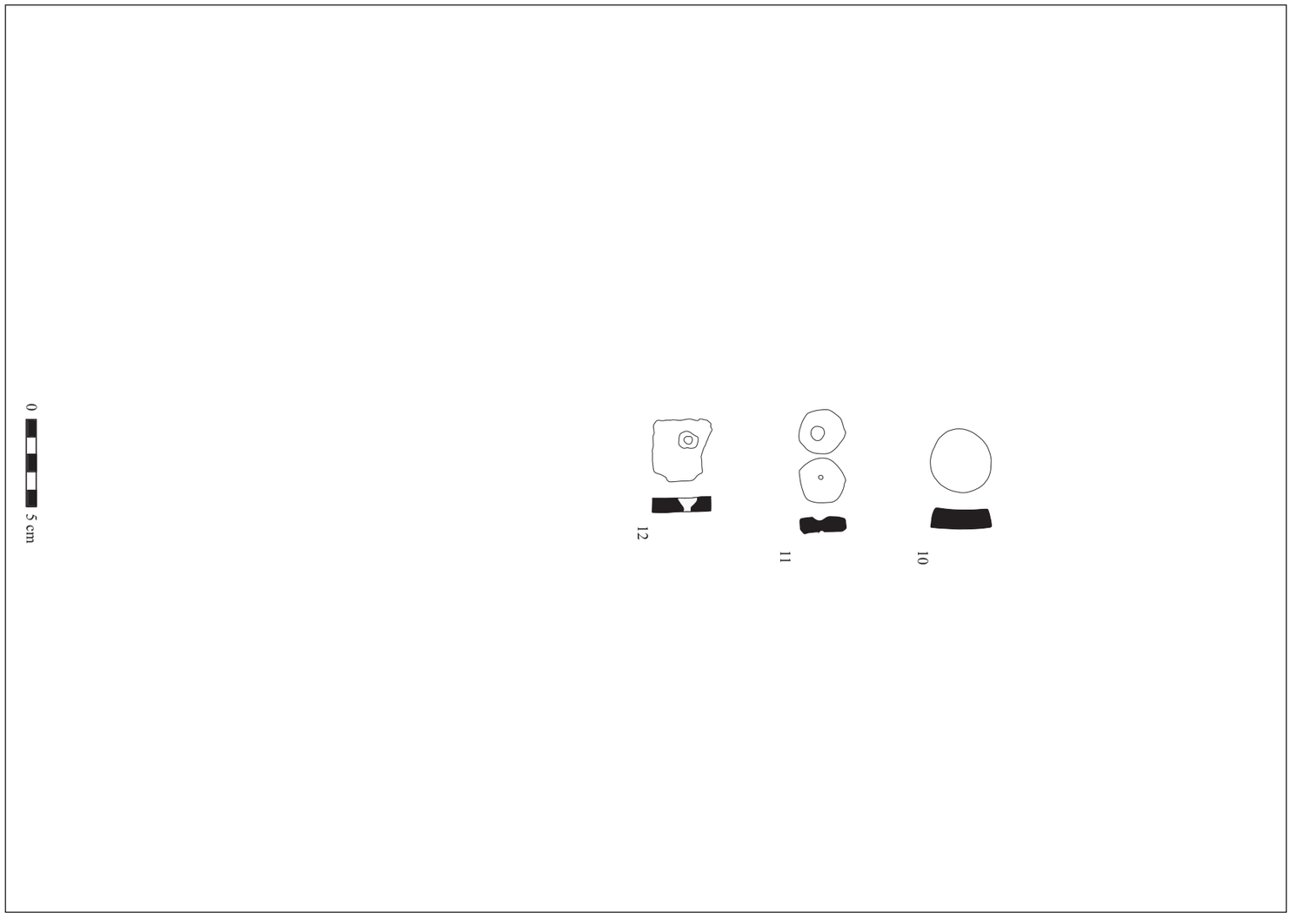


Plate 3.23a: Middle Bronze Age bowls from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	carinated bowl	TZ 005852-001	AO 119	4089	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 246 Pl. 4, 1 BL 25.	Tall Abū al-Ḫaraz Phase IV/1: Fischer 2006, 220 Fig. 256, 4.
2	carinated bowl	TZ 006377-003	AN 119	4524	WM C Buff (fine ware)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 321 Pl. 3, 6. 8.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 113 Pl. II 25, 5.
3	carinated bowl	TZ 006377-006	AN 119	4524	WM C R2B (red painted, linear and wavy lines)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 321 Pl. 3, 6. 8.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 113 Pl. II 25, 5.
4	bowl (two fitting sherds)	TZ 006313-002 TZ 006313-004	AN 119	4478	WM C Buff (pink slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 317 Pl. 1, 13.	Tall Qēmūn ((Tēl Yoqnəʿām) MB: Livneh 2005, 97 Fig. II 17, 22.
5	bowl	TZ 006693-002	AM 118	4729	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 7.
6	bowl	TZ 020824-001	AE 114	5546	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 7.
7	bowl	TZ 005829-008	AO 118	4075	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 199 Fig. 81, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9, 5. 7.
8	bowl	TZ 006715-010	AN 118	4695	WM C R2B (fine ware)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 2.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 6.

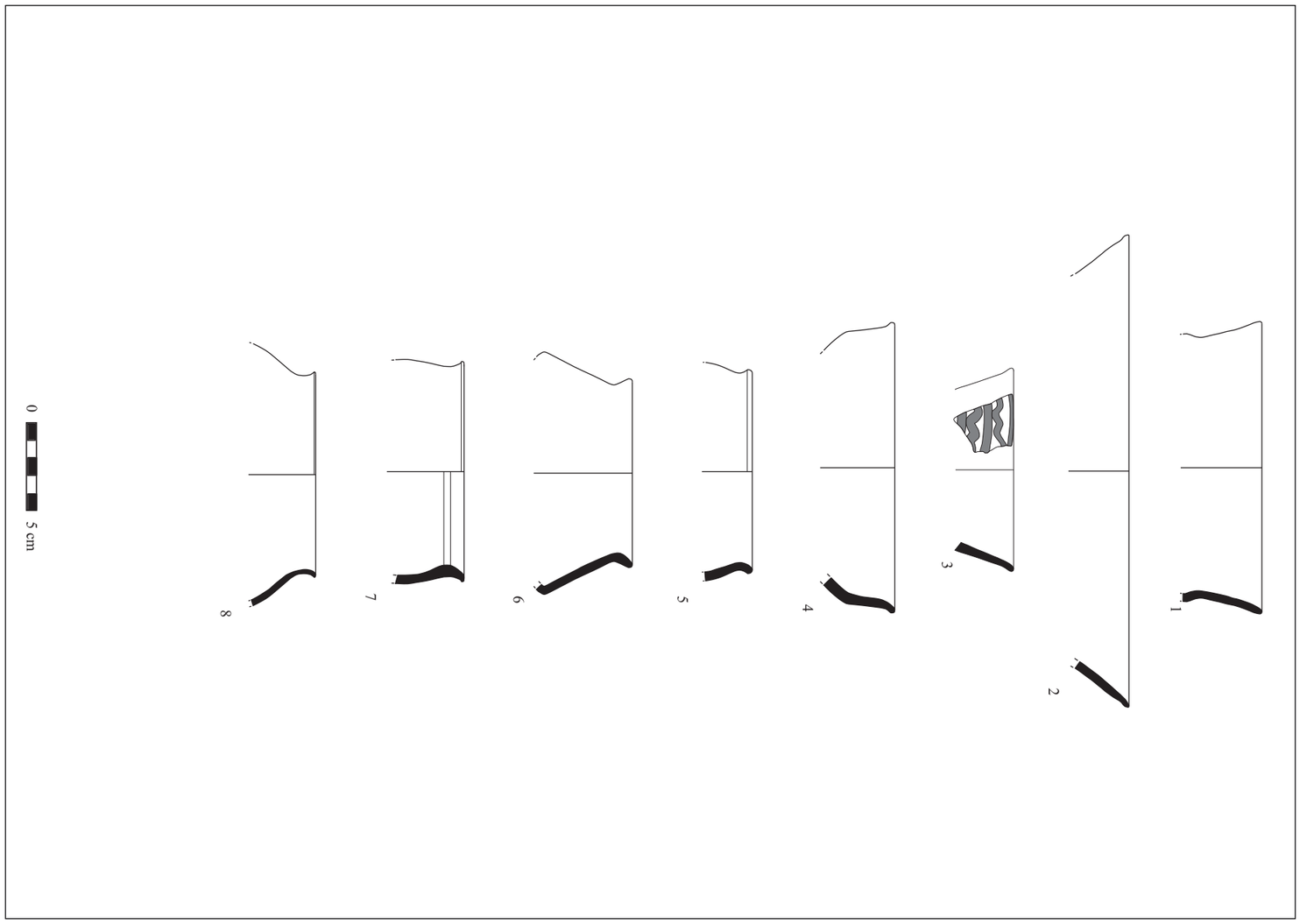


Plate 3.23b: Middle Bronze Age bowls from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
10	bowl	TZ 006800-054	AN 118	4798	WM C R2B (pink slip, fine ware)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 2.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 6.
11	bowl	TZ 020897-006	AE 114	5602	WM C R2B (fine ware)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 189 Fig. 77, 4; 100 Fig. 81, 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 73 Fig. II 5, 2.
12	bowl	TZ 006715-014	AN 118	4695	WM C Buff (fine ware)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 189 Fig. 77, 4; 100 Fig. 81, 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 73 Fig. II 5, 2.
13	bowl	TZ 006775-006	AN 118	4798	WM C R2B (fine ware)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 189 Fig. 77, 4; 100 Fig. 81, 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 73 Fig. II 5, 2.

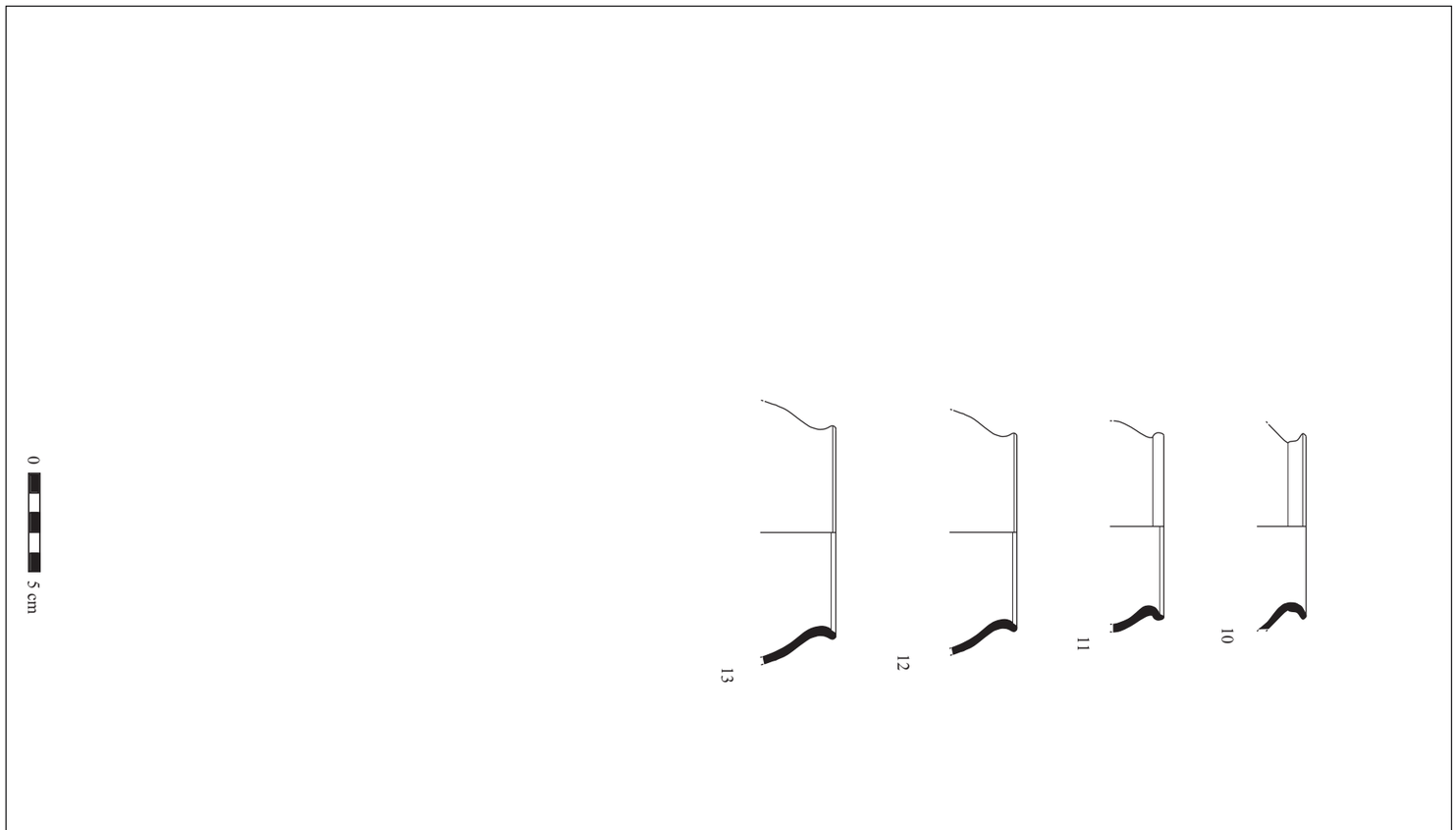


Plate 3.24: Middle Bronze Age bowls from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	carinated bowl	TZ 006693-005	AM 118	4729	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 246 Pl. 4, 1 BL 25.	Tall Abū al-Ḫaraz Phase IV/1: Fischer 2006, 220 Fig. 256, 4.
2	bowl	TZ 020229-004	AN 118	4727	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 317 Pl. 1, 9; 341 Pl. 13, 1.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9. 1, 1.
3	bowl	TZ 006892-001	AN 119	4719	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 195 Fig. 9. 5, 5.	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 2003, Pl. 341, 3.
4	bowl	TZ 006632-031	AM 118	4696	WM C R2B (fine ware)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4.8.	Tall al-Ḥiṣn (Beth Shean) MB: Mullins 2007, 467 Pl. 39, 7; 487 Pl. 49, 3.
5	bowl (three fitting sherds)	TZ 006298-001 TZ 006298-002 TZ 006244-001	AN 119	4444	WM C Buff (fine ware)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 71 Fig. II 4, 6. 7: without knob handle.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 319 Pl. 2, 6: without knob handle.
6	bowl	TZ 020229-006	AN 118	4727	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 319 Pl. 2, 6; 333 Pl. 9, 4.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 71 Fig. II 4, 8.
7	bowl	TZ 020482-018	AL 118	5291	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 319 Pl. 2, 6; 333 Pl. 9, 4.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 4.

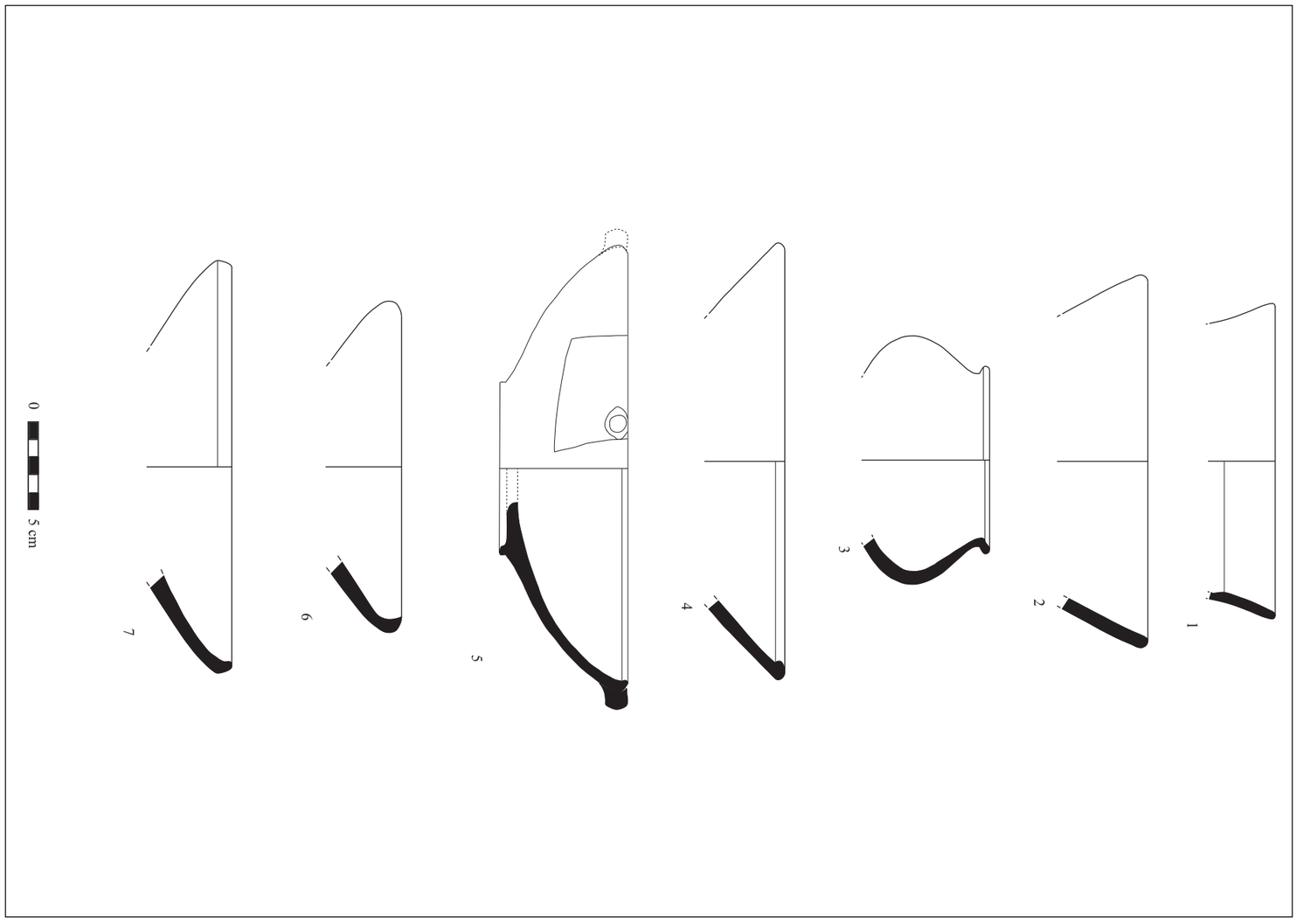


Plate 3.25a: Middle Bronze Age bowls from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 006313-001	AN 119	4478	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 371 Pl. 28, 10.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 7.
2	bowl	TZ 006661-009	AM 118	4696	WM C Buff (white slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 317 Pl. 1, 9; 371 Pl. 28, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 109 Fig. II 23, 14.
3	bowl	TZ 020918-006	AL 118	5378	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 351 Pl. 18, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 81 Fig. II 9, 20.
4	bowl (two fitting sherds)	TZ 006715-008 TZ 006715-011	AN 118	4695	WM C R2B	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 83 Fig. II 10, 25; 129 Pl. II 36, 42.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 343 Pl. 14, 3.
5	bowl	TZ 005848-002	AO 118	4079	WM C R2B	MB	Qīre (Tall Qīrī) MB: Ben Tor 1987, 265 Fig. 61, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 73 Fig. II 3, 1.
6	bowl	TZ 006895-001	AN 118	4784	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 97 Pl. II 17, 32.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 219 Fig. 86, 2.
7	bowl	TZ 020777-015	AL 118	5421	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 387 Pl. 36, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 14.

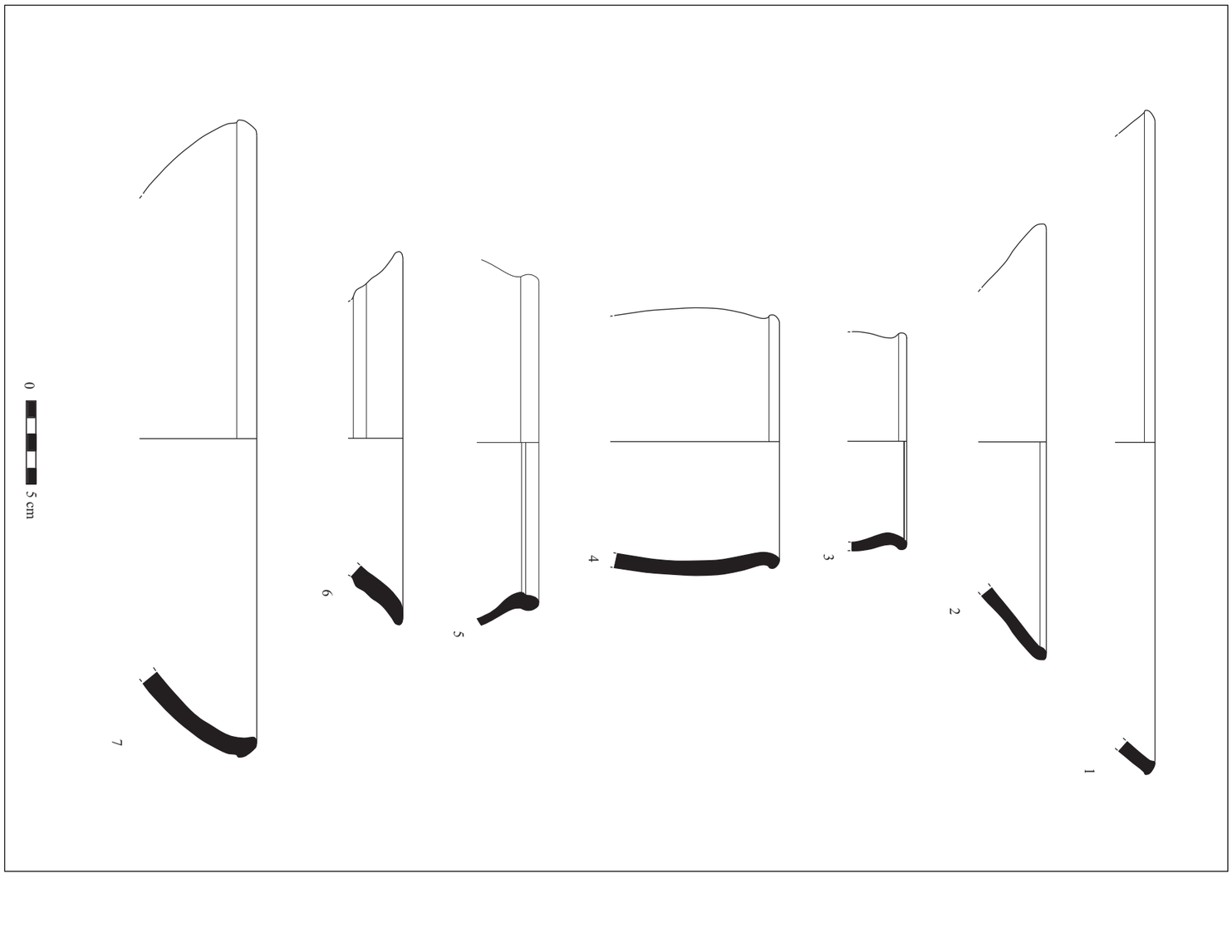


Plate 3.25b: Middle Bronze Age bowls from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
8	bowl	TZ 020714-020	AL 118	5421	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 387 Pl. 36, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 14.
9	bowl	TZ 005867-002	AO 118	4091	WM C Buff (pink slip)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 7.	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 106 Fig. 111, 2. 4.
10	bowl	TZ 006632-005	AM 118	4696	WM C Buff (rim red painted)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 4; 93 Pl. II 15, 6; 97 Pl. II 17, 26.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 93 Fig. 98, 2.
11	bowl	TZ 020668-007	AL 118	5421	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 317 Pl. 2, 10; 331 Pl. 8, 14.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 93 Pl. II 15, 6.
12	bowl	TZ 020741-006	AE 114	5478	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 387 Pl. 36, 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 5. 6.

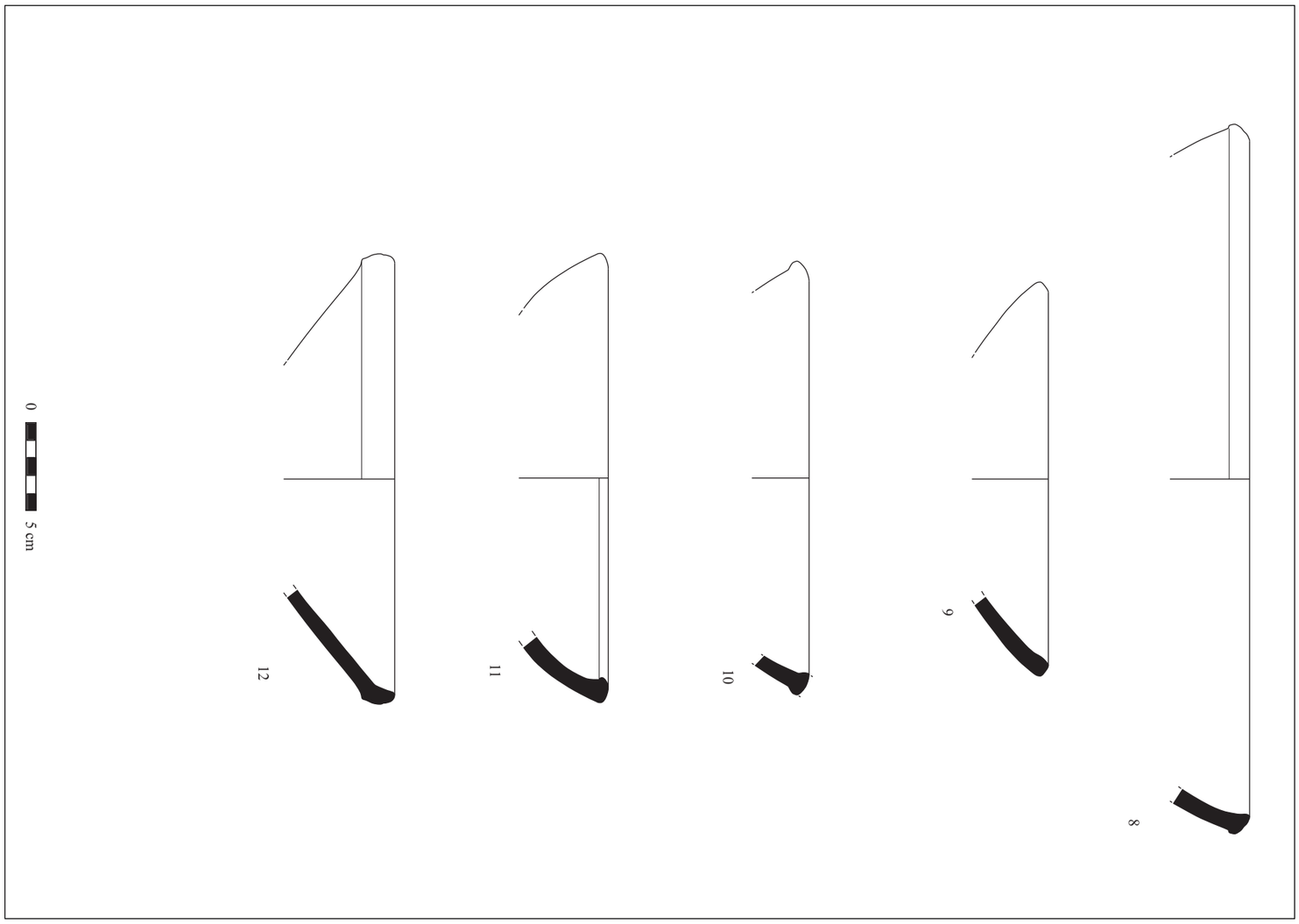


Plate 3.26: Middle Bronze Age bowls and platter from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	bowl	TZ 006693-030	AM 118	4729	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 83 Fig. II 10, 25.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 226 Fig. 260, 5.
2	bowl	TZ 020229-001	AN 118	4727	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 8.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 351 Pl. 18, 18.
3	bowl	TZ 020229-008	AN 118	4727	WM C R2B	MB	see TZ 020229-001	
4	bowl	TZ 005853-002	AO 118	4091	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 265 Fig. 61, 7.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 71 Fig. II 4, 10.
5	bowl	TZ 020777-001	AL 118	5421	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 323 Pl. 4, 5.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 85 Fig. II 11, 2.
6	bowl	TZ 020917-003	AN 118	4784	WM R2B Metallic (buff slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 323 Pl. 4, 1. 16.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 243 Fig. 98, 7.
7	bowl/krater	TZ 006620-001	AN 118	4677	HM C Buff (rim brown painted)	MB	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, 21 Fig. 9 B 3, 3.	Ḫirbat al-Karak (Bēt Yeraḥ) EB III: Amiran 1969, 71 Pl. 18, 4.
8	platter	TZ 006661-026	AM 118	4696	HM Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Zuckerman 2003, 84 Fig. 38, 2; 109 Fig. 53, 2: similar.	Ḫirbat al-Bayaz EB middle-late: Kamlah 2000, Pl. 89, 2.
9	small bowl/ oil lamp (?)	TZ 005829-032	AO 118	4075	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 189 Pl. 59, 4: oil lamp.	

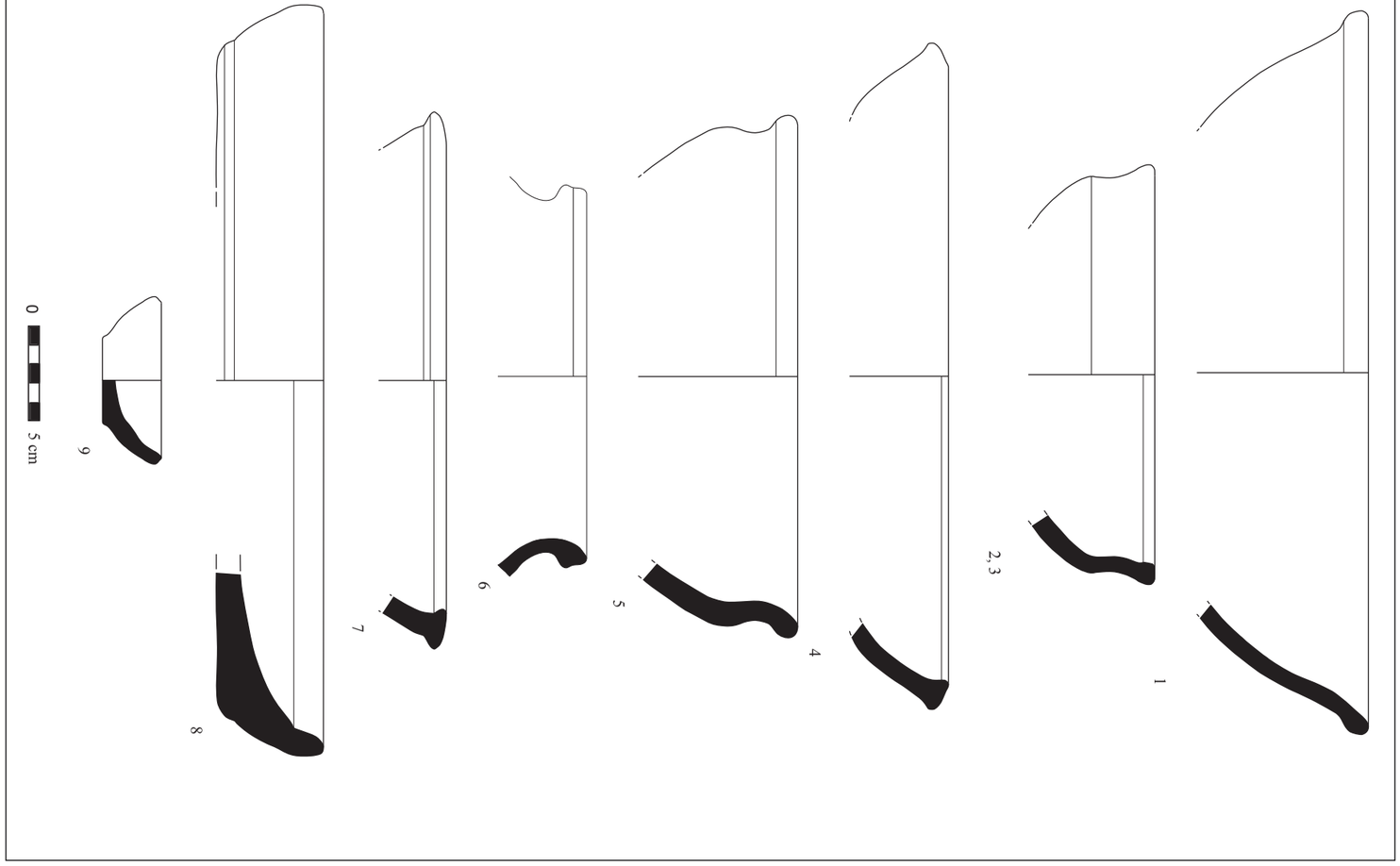


Plate 3.27: Middle Bronze Age kraters from Tall Zirā'a Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	krater	TZ 006693-033	AM 118	4729	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 133 Fig. II 37, 11.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 13.
2	krater	TZ 020917-003	AN 118	4844	WM C Buff	MB	Ḫirbat Yarīḥā aš-Šamālīyah MB II: Kamlah 2000, Pl. 72, 3. 7.	Qīre (Tall Qīrī) MB: Ben- Tor 1987, 265 Fig. 61, 21.
3	krater	TZ 020714-002	AL 118	5421	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 323 Pl. 4, 5.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 227 Fig. 261, 3.
4	krater	TZ 006632-002	AM 118	4696	WM C R2B	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 323 Pl. 4, 5.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 227 Fig. 261, 3.
5	krater	TZ 020777-023	AL 118	5421	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 17. 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 14.
6	krater	TZ 005848-010	AO 118	4079	WM C R2B (buff slip)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
7	krater	TZ 005829-004	AO 118	4075	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 325 Pl. 5, 12.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
8	krater	TZ 020777-026	AL 118	5421	WM C R2B (buff slip)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 17. 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 125 Fig. II 33, 15.
9	krater	TZ 020668-005	AL 118	5421	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 321 Pl. 3, 12.	Tabqāt Faḥl (Pella) earliest MB: Bourke et al. 1998, Pl. 192, 113.
10	krater	TZ 020714-027	AL 118	5421	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 339 Pl. 12, 7.	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 271 Fig. 64, 22: similar.
11	krater	TZ 020918-001	AL 118	5378	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 331 Pl. 8, 4.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 91 Fig. II 14, 8.

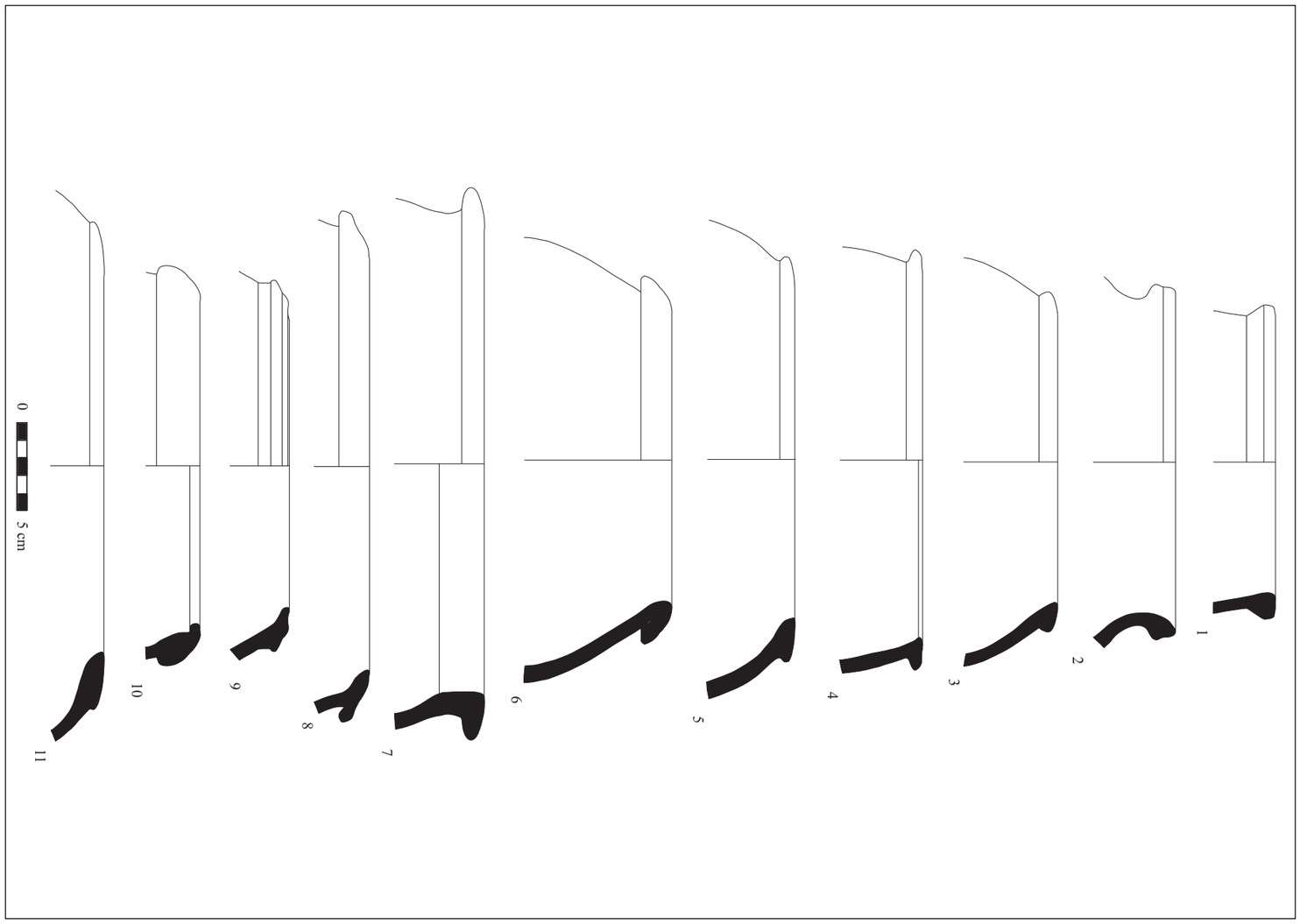


Plate 3.28a: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020777-014	AL 118	5421	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 87 Fig. II 12, 15; 94 Fig. II 16, 8.	
2	jug/jar	TZ 005864-001	AO 119	4057	WM C Buff (pink slip, red painted on the neck)	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 101 Fig. II 16, 7.	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 231 Fig. 264, 3.
3	jug/jar	TZ 006661-022	AM 118	4696	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 12.
4	jug/jar	TZ 006800-014	AN 118	4798	WM C R2B	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 188 Fig. 9, 1. 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 89 Fig. II 13, 12.
5	jug/jar	TZ 006377-001	AN 119	4524	WM C Buff	MB	Tall Qēmūn ((Tēl Yoqnəʿām) MB: Livneh 2005, 69 Fig. II 3, 14; 99 Fig. II 18, 40.	Ḫirbat ar-Raḥūb MB I–II: Kamlah 2000, Pl. 42, 7.
6	jug/jar	TZ 020530-001	AO 119	4088	WM C Buff (inside light green and outside light brown surface)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 15.	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 192, 14.
7	jug/jar	TZ 005829-005	AO 118	4075	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 361 Pl. 23, 15.	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 192, 14.
8	jug/jar	TZ 006275-001	AN 119	4444	WM C R2B	MB	Ṭabqāt Faḥl (Pella) MB early: Bourke et al. 1998, Pl. 192, 9.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 117 Fig. II 27, 25: similar.

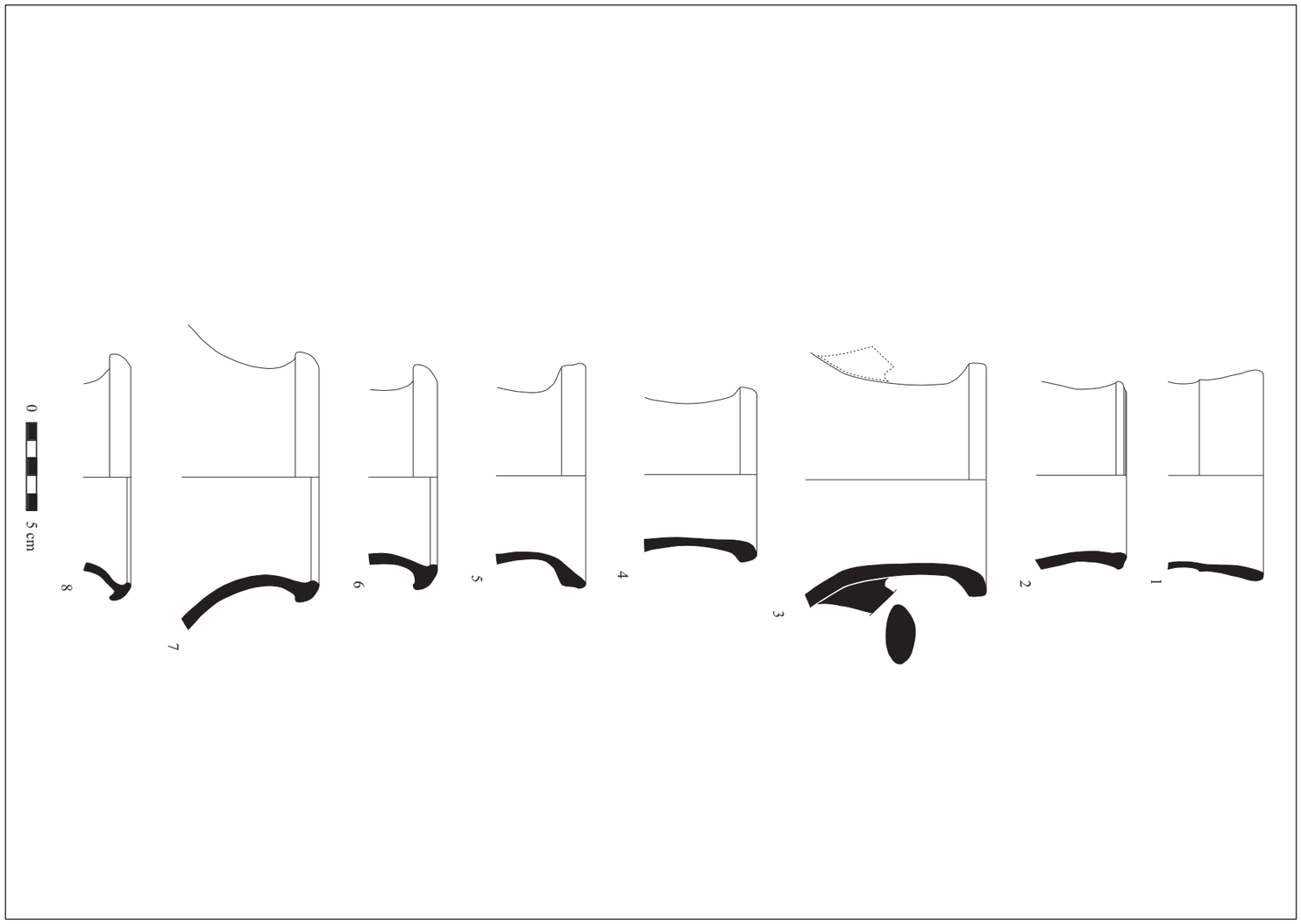


Plate 3.28b: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
9	jug/jar	TZ 006800-031	AN 118	4798	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 87 Fig. II 12, 3; 101 Fig. II 19, 9; 127 Pl. II 34, 10: similar.
10	jug/jar	TZ 020246-002	AO 118	5065	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 87 Fig. II 12, 3; 101 Fig. II 19, 9; 127 Pl. II 34, 10: similar.

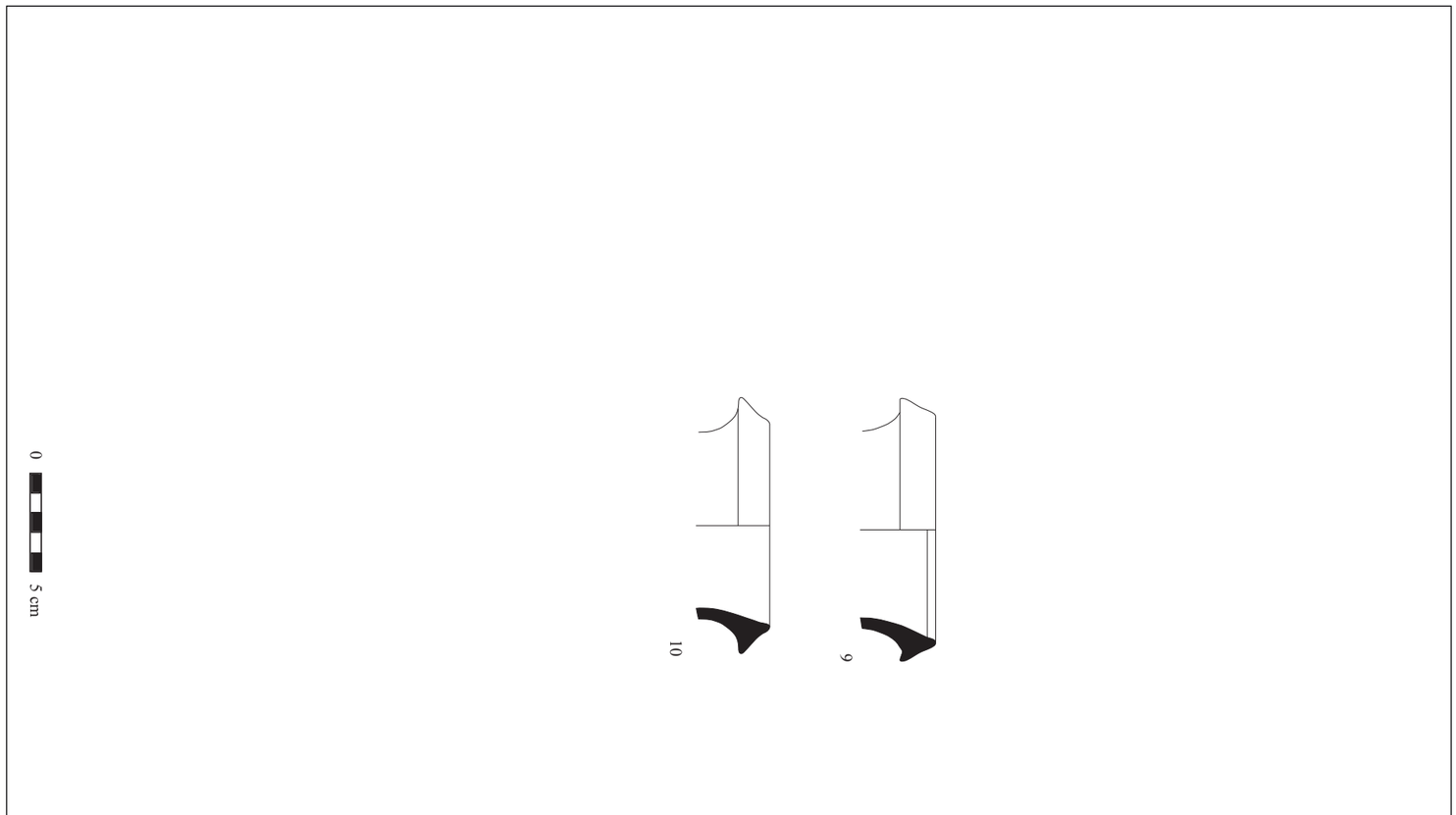


Plate 3.29a: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar	TZ 020668-016	AL 118	5421	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 64 Fig. II 1, 6; 67 Fig. II 2, 36.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 210 Fig. 83, 15: similar.
2	jug/jar	TZ 020714-026	AL 118	5421	WM C Buff	MB	Tall Qēmūn ((Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 40; 99 Fig. II 18, 41.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 215 Fig. 9. 12, 4.
3	jug/jar	TZ 020192-006	AN 119	4890	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 11.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4.
4	jug/jar	TZ 006275-009	AN 119	4444	WM C Buff (brown painted on rim and neck)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4. 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 26.
5	jug/jar	TZ 006891-016	AN 118	4718	WM C R2B (light green slip)	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 196 Fig. 78, 14.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 30–32.
6	jug/jar	TZ 020714-028	AL 118	5421	WM C Buff	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 188 Fig. 76, 4. 5.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 26.
7	jug/jar	TZ 005989-003	AO 119	4107	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 18.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 31.
8	jug/jar	TZ 020554-006	AL 118	5291	WM C Buff (light green slip)	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 14.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 335 Pl. 10, 15.
9	jug/jar (two fitting sherds)	TZ 006800-042 TZ 006800-044	AN 118	4798	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 339 Pl. 12, 18.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 107 Fig. II 22, 7; 111 Fig. II 24, 14.

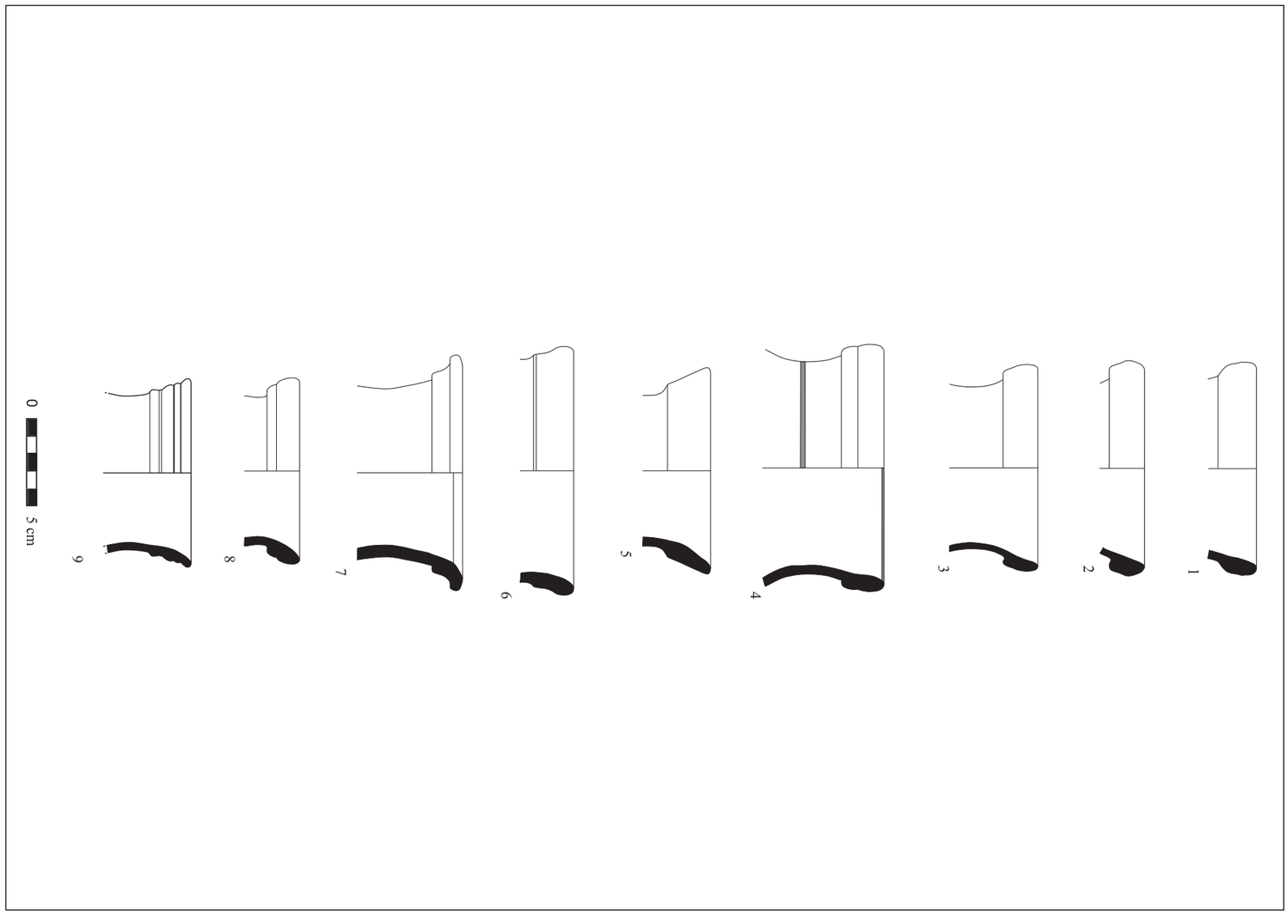


Plate 3.29b: Middle Bronze Age jugs and jars from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
10	jug/jar	TZ 006685-002	AN 118	4695	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 335 Pl. 10, 7.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 91 Fig. II 14, 23.
11	jug/jar	TZ 006866-001	AM 118	4849	WM C Buff	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB (Livneh 2005, 111 Fig. II 24, 16.	Ṭabqāt Faḥl (Pella) MB: Bourke et al. 2003, Pl. 340, 13.

Plate 3.30: Middle Bronze Age storage jars from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	storage jar	TZ 005829-003	AO 118	4075	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 35.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 37.
2	storage jar	TZ 006891-006	AN 118	4718	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 35.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 37.
3	storage jar	TZ 005848-009	AO 118	4079	WM C Buff	MB	Qīre (Tall Qīrī) MB: BenTor 1987, 267 Fig. 62, 17.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 99 Fig. II 18, 21.
4	storage jar	TZ 020786-004	AE 114	5478	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 353 Pl. 19, 9; 375 Pl. 30, 4. 6.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 79 Fig. II 8, 5; 81 Fig. II 9, 23; 85 Fig. II 11, 15.
5	storage jar	TZ 006337-001	AN 119	4480	WM C R2B	MB	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 224 Fig. 90, 13.	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 67 Fig. II 2, 37.
6	storage jar	TZ 005829-001	AO 118	4075	WM C R2B	MB	Tall Qēmūn (Tēl Yoqnəʿām) MB: Livneh 2005, 99 Fig. II 18, 26) similar.	
7	storage jar	TZ 020785-006	AE 114	5477	WM C Buff	MB	Qīre (Tall Qīrī) MB: Ben-Tor 1987, 267 Fig. 62, 22; 271 Fig. 64, 23.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 353 Pl. 19, 9; 375 Pl. 30, 5)
8	storage jar	TZ 006775-001	AN 118	4798	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 345 Pl. 15, 5.	Tall al-Qassis (Tēl Qāšīṣ)MB: Ben-Tor – Bonfil 2003, 219 Fig. 86:, 27.
9	storage jar/ pithos	TZ 005848-008	AO 118	4079	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 327 Pl. 6, 11; 355 Pl. 20, 1; 385 Pl. 35, 5.	Tall Qēmūn ((Tēl Yoqnəʿām) MB: Livneh 2005, 93 Fig. II 15, 21.
10	storage jar/ pithos	TZ 020897-001	AE 114	5602	WM C Buff (incised marks on the neck)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 345 Pl. 15, 4.	Tall al-Qassis (Tēl Qāšīṣ) MB: Ben-Tor – Bonfil 2003, 196 Fig. 78, 20; 220 Fig. 87, 2. 5.

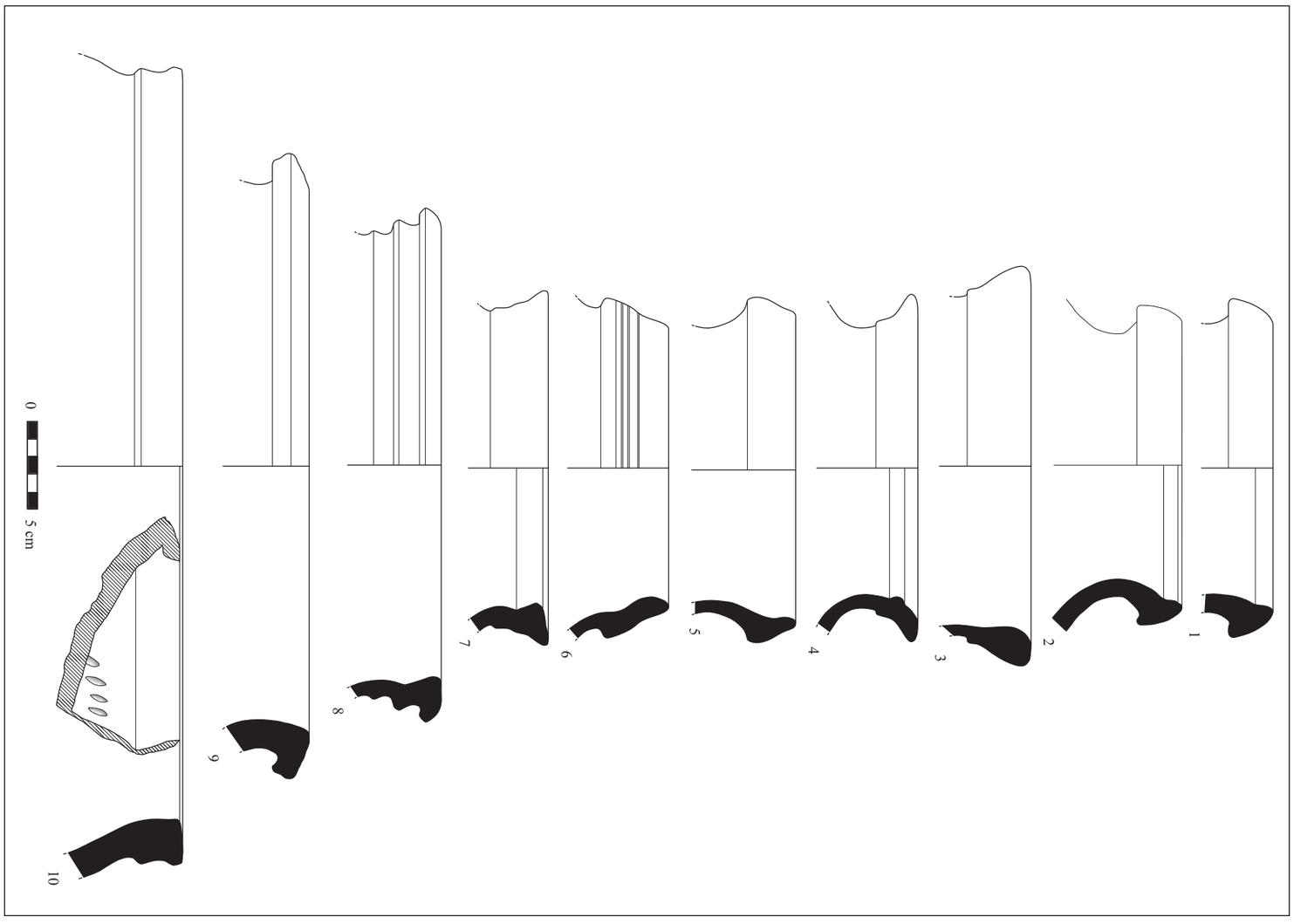


Plate 3.31: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	juglet (spout)	TZ 006715-009	AN 118	4695	WM R2B P	MB	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 111 Pl. 34, 16.	
2	pilgrim flask (handle)	TZ 020777-037	AL 118	5421	WM C Buff	MB	Tall Abū al-Ḫaraz Phase IV–V: Fischer 2006, 238 Fig. 271, 4. 7.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 206 Fig. 9, 8. 11.
3	juglet (triple handle)	TZ 020668-043	AL 118	5421	WM BP (or brown polished, fine ware)	MB	Tall al-Mutasallim (Megiddo) MB IIA: Amiran 1969, 107 Fig. 108; 109 Pl. 33, 6; 111 Pl. 34, 16.	Afula MB II: Amiran 1969, 118 Fig. 118.
4	jug/jar (handle)	TZ 006335-019	AN 119	4478	WM C Buff (white slip with brown paintings)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 206 Fig. 9, 8. 12.	Tall Abū al-Ḫaraz Phase VI: Fischer 2006, 234 Fig. 267, 6.
5	jug/jar (handle)	TZ 006399-003	AN 119	4524	WM C R2B (red paintings)	MB		
6	jug/jar (handle)	TZ 006693-044	AM 118	4729	WM C Buff	MB		
7	jug/jar (handle)	TZ 006693-003	AM 118	4729	WM C Buff (light brown paintings)	MB		

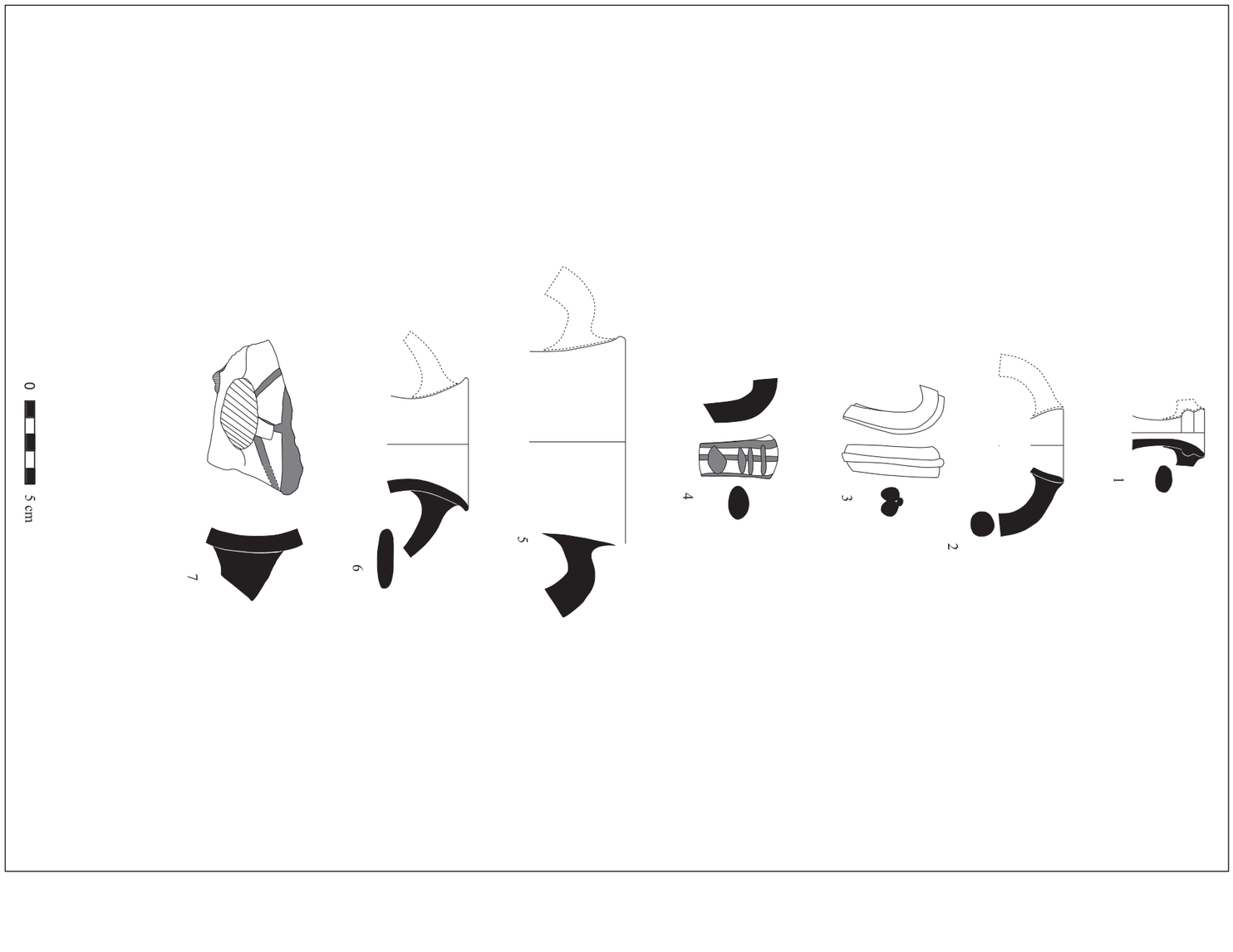


Plate 3.32: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	juglet (base)	TZ 006800-013	AN 118	4798	WM C Buff	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 327 Pl. 6, 19. 20.	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 201 Fig. 9, 7. 14; 206 Fig. 9, 8. 11.
2	bowl (?) (ring base)	TZ 020229-017	AN 118	4727	WM C Buff	MB		
3	bowl(?) (ring base)	TZ 006313-005	AN 119	4478	WM C Buff (white slip)	MB		
4	jug/jar (flat base)	TZ 020625-012	AL 118	5400	WM C Buff (red polished)	MB	Tall al-Mutasallim (Megiddo) MB: Finkelstein et al. 2000, 193 Fig. 9, 4. 22; 201 Fig. 9, 7. 19.	Tall al-Fārʿa North (Tirza) MB IIBC: Amiran 1969, 94 Fig. 97.
5	jug/jar (flat base)	TZ 020714-044	AL 118	5421	WM C Buff (fine ware)	MB	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 275 Fig. 4, 54–56.	Tall al-Mutasallim (Megiddo) MB II: Amiran 1969, 97 Pl. 27, 7.
6	chalice/goblet (stand/base)	TZ 006821-001	AM 118	4797	WM C Buff	MB	Tall al-Mutasallim (Megiddo) MB II: Amiran 1969, 97 Pl. 27, 21–24.	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 224 Fig. 259, 1. 2.
7	jug/jar (ring base)	TZ 006399-001	AN 119	4524	WM C R2B	MB		
8	bowl/ring base	TZ 006208-002	AM 119	4729	WM C Buff	MB		

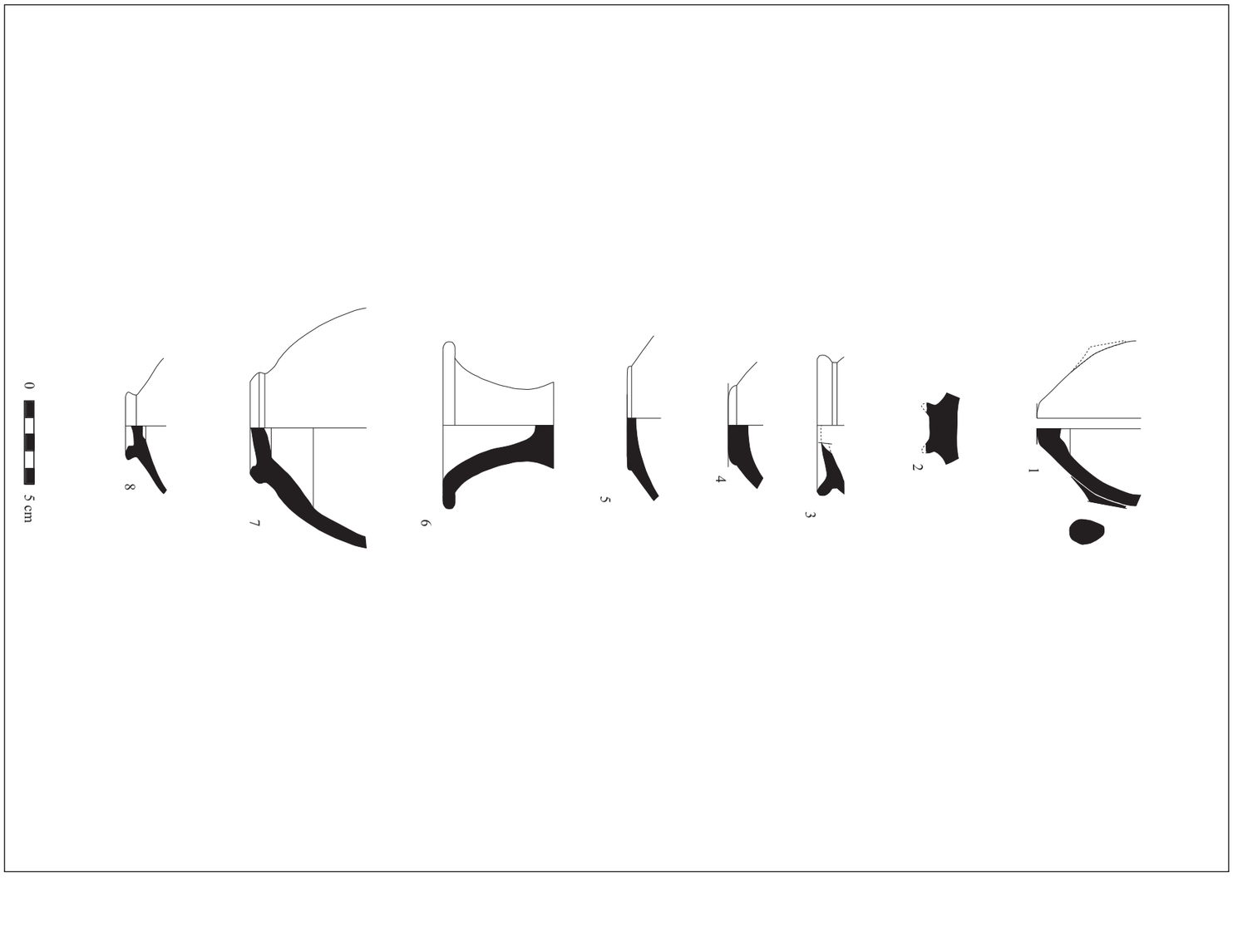


Plate 3.33a: Middle Bronze Age ceramic finds from Tall Zirā'a Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
1	jug/jar (body sherd)	TZ 005986-003	AO 119	4257	WM C Buff (incisions on the neck)	MB		
2	jug/jar (body sherd)	TZ 005853-006	AO 118	4091	WM C Buff (incised wavy line)	MB	Ḫirbat Yarīḥā aš-Šamālīyah MB early: Kamlah 2000, Pl. 74, 9.	Eḍ-Ḍanaba (Ruǧm Sa'ib) EB: Kamlah 2000, Pl. 103, 5.
3	jug/jar (body sherd)	TZ 006612-001	AN 119	4443	WM C R2B (incised linear lines)	MB	Tall Bēt Mirsīm MB I: Amiran 1969, 85 Pl. 22, 21–23: decoration.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 268 Fig. 4.6, 25. 12.
4	jug/jar (body sherd)	TZ 006800-006	AN 118	4798	WM C R2B (incised linear and wavy lines)	MB	Tall ad-Duwēr (Lachish) MB I: Amiran 85 Pl. 22, 5: decoration.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 268 Fig. 4. 6, 21. 10.
5	jug/jar (body sherd)	TZ 006693-010	AM 118	4729	HM Buff (brown slip, decoration on the neck)	EB II/III	Ḫirbat az-Zeraqōn EB II/III: Genz 2002, Pl. 26, 1.	
6	jug/jar (body sherd)	TZ 006821-008	AM 118	4797	WM C Buff (brown painted lines)	MB		
7	jug/jar (two fitting body sherds)	TZ 006693-011 TZ 006685-008	AM 118	4729	WM C Buff (pink slip, polished, brown linear and wavy lines)	MB	Tall Abū al-Ḫaraz Phase V: Fischer 2006, 119 Fig. 124, 2.	Tall al-'Aǧǧūl MB IIB–C: Amiran 1969, 102 Fig. 103.

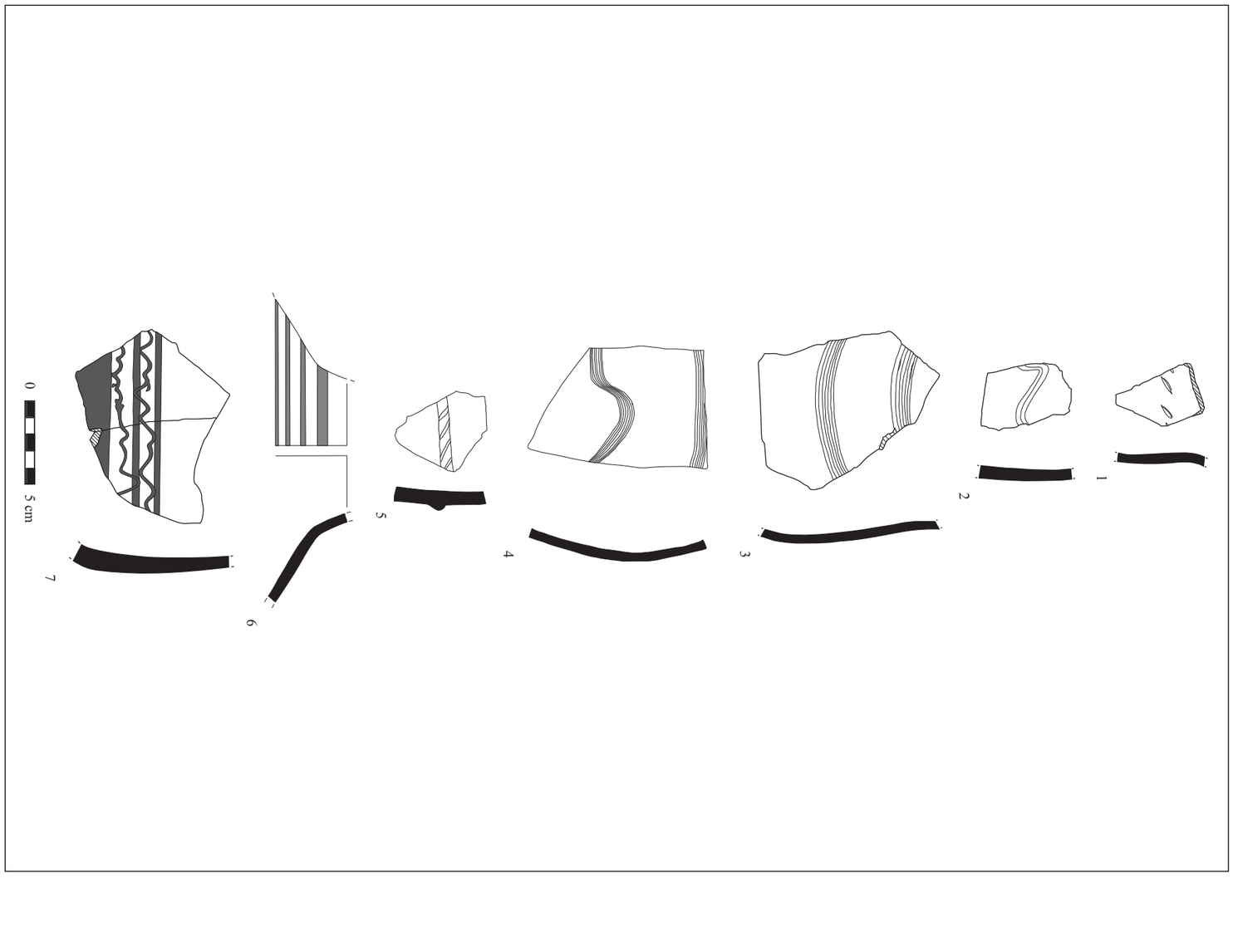
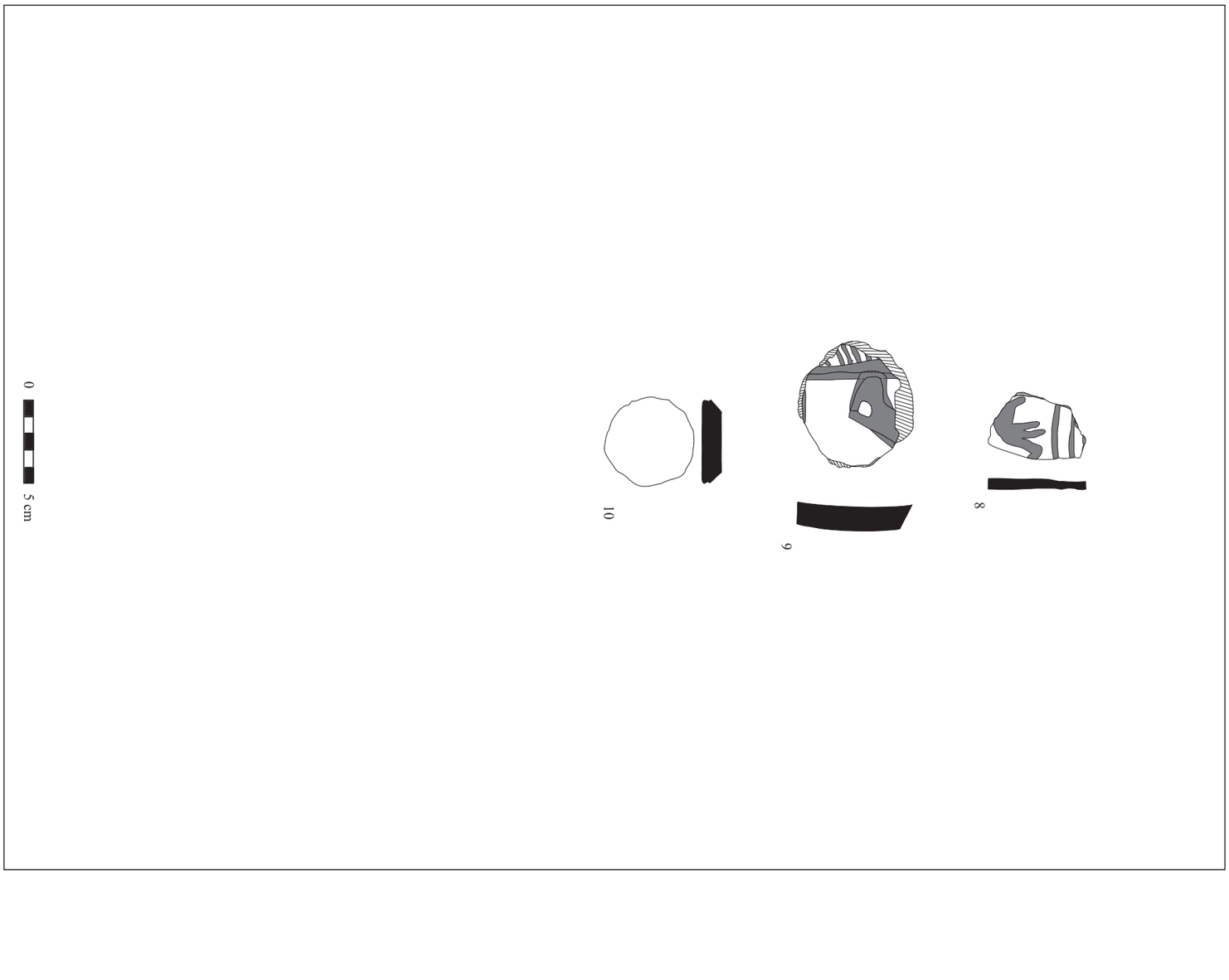


Plate 3.33b: Middle Bronze Age ceramic finds from Tall Zirāʿa Stratum 17—Excavations 2001–2011

No.	Type	Inv. No.	Square	Context	Ware category	Date	Reference	
8	jug/jar (body sherd)	TZ 006312-007	AM 119	4475	WM C R2B (red paintings)	MB	Tall Abū al-Ḫaraz Phase IV/2: Fischer 2006, 95 Fig. 100, 5.	Tall al-Ḥiṣn (Beth Shean) MB: Maeir 2007, 337 Pl. 11, 1 (?).
9	lid/stopper	TZ 006632-015	AM 118	4696	WM C R2B (white slip with yellow and brown paintings)	MB		
10	lid/stopper (from a base)	TZ 006775-003	AN 118	4798	WM C Buff (brown polished)	MB		



3.2.3. Conclusion

The Strata 19–17 give evidence of the Tall Zirā'a's colonization during the Middle Bronze Ages IIA (19–18) and IIB (17), respectively. Like the settlements of the Strata 19 –17, the city of Stratum 16, too, was already founded during the Middle Bronze Age IIC. The process of its population, however, lasted into the Late Bronze Age.

Large parts of this city in Stratum 16 were destroyed by a devastating landslide on the western slope of the tall. Presumably, caves of tufaceous limestone collapsed underneath the western city area—due to an earthquake, a torrential rain, the extensive weight of man-made building constructions on top, or one or several other causes—and swept the development along. Those living quarters in the eastern and northern sections of Area I in Stratum 16 that had survived the landslide could be excavated. The break line ran right across Area I and even cleft entire buildings.

Stratum 15 gives evidence of the reconstruction works that eventually allowed the repopulation of the demolished city area in Stratum 14. In the north, those areas of Stratum 16 that had survived the landslide unscathed were connected with the newly constructed buildings of Stratum 14 according to an urban development plan. There, both strata co-existed throughout the Late Bronze Age. East of the landslide, Stratum 16 was replaced by an independent Stratum 14. In view of this close, fateful connection of the Strata 16–14, these will be discussed jointly in the subsequent excavation volume III (see Soennecken, forthcoming).

The excavation areas in the Strata 19–17, each measuring approximately 120 m^2, belong to the areas in the central eastern part of Area I that were not affected by the landslide—just like the occupation layers 24–22 (Early Bronze Age) and 21–20 (Intermediate Period) that have already been discussed in this volume. Moreover, in AE 114 (located in the southern part of Area I), further sediments of the Stratum 17 that were not affected by the landslide of Stratum 16 are worth mentioning.

It is possible, even probable, that the Strata 19–17 were surrounded by a city wall and thus well protected. In Stratum 16, the foundations of a city wall including a tower could be verified in the sections AS-AU 119-120 (cf. Soennecken, forthcoming: Complex A; Contexts 6034, 6479, 6500 [wall]; 6391 [wall and tower] and 6388, 6387, 6516 6483, 5840 [tower in front of the wall]). The adjacent Complexes B and C in the northern part of Area I were living quarters.

The Complexes D and E of Stratum 16 in the eastern part of Area I must be regarded as work areas for the crafts and trades. This was no novelty on the tall. The bronze processing that had continuously taken place in this same topographical area from Stratum 19 up into Stratum 14 could be verified for the first time in the Middle Bronze Age IIA. The tall's western slope, where thermal updrafts provided ideal conditions, seems to have been the perfect location for installing and maintaining a furnace of this kind.

In Stratum 19, a smelting furnace along with buildings and storage areas (Complex C) attest to the artisanal utilization of this space. The artisanal function is corroborated by the findings of mineral raw materials, smelting residues, and metals. Still, the area was also used for domestic activities (tabuns in the Complexes B and C 4) and for storing goods.

A yard area with buildings (Complex B) and a water canal ([?]; Complex A) complement the excavation evidence. Usually, the supply of fresh water was a major issue in ancient oriental cities. In the case of the Tall Zirā'a, however, the drainage of the abundant water flowing from the artesian spring and of the heavy spring rainfalls was a matter of the highest priority. Water canals are therefore no rare finds on the Tall Zirā'a.

Stratum 18 had an accurately laid-out drainage canal made of set stones that was inclined towards the tall's edge. It was covered by capstones (Complex A). The entire rest of the excavated area must be regarded as a densely built-up artisanal production site. The yard of the building complex contained the smelting furnace next to which the work spaces (clay benches) were set up. Raw materials (also the iron nodules that also occurred in the Strata 19 and 17), metal finds, and precious single finds not only attest to the work that was carried out in this location but also to the good livelihood of the craftsmen who lived here.

The living quarters in this complex are denoted by domestic activities (i.a. verified by stone tools, storage vessels and domestic pottery, and loom weights). Tabuns in the Complexes B 2–6 and B 9–10 and the associated pottery give evidence of cooking and baking.

In Stratum 17, too, there is an artisanal complex. In the north, the premises included an elaborately constructed oven for preparing food along with additional buildings, while in the central area there was a smelting furnace with all the appliances necessary for the metal trade.

The oven installed in the northern section was a vaulted construction made of rather large stones that arched across a large, carefully set cavity. Several layers of clay, some of which were interspersed with pottery sherds, provided insulation against loss of heat.

The bronze-smelting furnace was in much better state of preservation than the ones in the Strata 19 and 18. The dome-shaped furnace with its double-row encircling wall had a diameter of 1.60 m and a clear height of 85 cm. The ground inside the furnace was ashen, discoloured with a greyish tinge, and clayey. There were sherds of an overturned crucible which contained bronze smelter.

Like in the older strata, raw materials could be found. In addition, there were many metal finds, excellently finished pottery, and numerous pieces of jewellery and prestigious goods—some of them made of glass or faience—as well as a game board complete with gaming pieces. Another noteworthy find is that of the completely extant bottom side of a potter's wheel with a centric depression. The most remarkable find, however, is that of a signet ring made of soapstone (TZ 014648-001, *Fig. 3.63*).

Confined as the excavated area of the Strata 19–17 may have had to be, it nevertheless provides an unusual insight into the Middle Bronze Age manner of metal processing as well as other artisanal and domestic activities.

3.3. Bibliography

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4. Typology of Cooking Pots from the Early to the Middle Bronze Age[1]

by Andrea Schwermer

Introduction[2]

Cooking pots are different from all other articles of daily use in that, in addition to the usual 'dangers' that breakable goods are exposed to, they are always subjected to particular stress.

The potters of former times were challenged with the task of developing the cooking pots' material and forming in such a manner as to make the products resistant to the heat of an open fire[3], heat conductive, and also able to tolerate extreme differences in temperature. They moreover had to be impervious to fluids. This put high requirements on their material properties. Furthermore, a cooking pot had to be modelled to comply with their users' nutritional habits and their specific cooking techniques in terms of size and shape and, last but not least, it preferably also had to be movable[4].

All this raises the interesting question as to how the people involved mastered that challenge. After all, a form had to be found that met the requirements of both the pot's material, its function, and all the other demands put to that type of vessel. As a consequence, cooking pots were a stronger motivation than any other type of common ware for potters to scrutinize and improve the technology they used. The material remains of cooking pots across the ages bear eloquent witness to this circumstance.

The specific characteristics of cooking pots and their impact on the history of the technology of pottery thus merits individual consideration.

General remarks

In the database, a total of 11,452 thickened rims of cooking vessels have been registered for Area I. Of these, more than 8,900, amounting to approximately 78 percent, have been typologised. The discrepancy results from, first, the small size and sometimes the place of fracture of an individual sherd that prevented an exact classification, and, second, the fact that of several matching sherds that were listed separately in the database[5] only one was typologised in order to preclude a biased result. In addition, there are 475 typologised cooking pot sherds from the Middle Bronze Age which, although they are 'only' body sherds, could still be exactly identified due to the specific characteristics of Middle Bronze Age cooking pots[6]. A few body sherds (49) of cooking pots from other epochs could also be typologised because the rim's shape was still recognizable. Of course the two more or less complete cooking pots could also be classed with a specific type.

A type designation is composed of the following specifications:

Example: **CP_{EB} 1a**

CP	vessel type, in this case cooking pot
EB	rough chronological placement (subscript)[7]
1	main type
a	subcategory of main type

If the main type's manifestation also features several distinctly different variations the small letter is succeeded by a dot and another figure, e.g. CP_{1A} 2c.2.

1 The text is based on Chapter 4 of the author's doctoral thesis (Schwermer 2014). The part about the Late Bronze Age and the Iron Age cooking pots is published in *Vol. 3* and *4* of the final Tall Zira'a Publication.

2 The Chapters „Introduction" and „General remarks" apply also to the Late Bronze Age and Iron Age cooking pots, published in *Vol. 3* and *4*.

3 Here, the cooking pot's outside is exposed to almost 1.000°C while on its inside the temperature only rises to 100°C. This leads to an extreme tension that the material has to endure. According to Vilders (1991/1992, 70), the porosity of clay reduces the thermal stress and moreover soaks up liquid, which makes it possible to heat up more rapidly.

4 „Vessels intended for cooking are expected to make efficient use of the heat, but also exhibit characteristics suited to particular cooking techniques." (Spagnoli 2010, 2).

5 Often, it was discovered only when identifying the sherds on the site that some pieces were parts of the same vessel. However, since they had already been tagged previously, in most cases by a different person, and re-tagging would often have been extremely complicated and time-consuming, the initial numbering was retained and only complemented by the information that the sherd matched one or several others.

6 On this, cf. *Chap. 4.2*.

7 The chronological classification that was initially implemented on the basis of the dating of comparative finds in the reference literature serves as an orientation when ty-

All the chapters dealing specially with cooking pots will show particularly representative examples of each type or type manifestation. Additionally, unique forms were included of which only very few specimens have been found. These could be cooking pots with a rim design that was 'borrowed' from different vessel types, or also vessels that may have been made of the same material as cooking pots but were possibly used for different purposes[8].

There is comprehensive statistical material on every cooking pot type, particularly on the individual subtypes' respective share in the total repertoire of cooking pot sherds of one specific time horizon, on the distribution of the various cooking pot types among the different strata, and on the allocation of all typologised cooking pot sherds among the different cooking pot types within the individual strata. On all of this, Part 3 of the Annexe[9] will give an overview. In the graphical representation of these numerical proportions, sometimes—wherever this seemed advisable—several individual data were grouped together. If statistical specifications on any finds from the reference sites were available, these were also included. It should be noted, though, that an immediate statistical comparison of the finds from the Tall Zirā'a with those from the reference sites is often made difficult by the different approaches with regard to typologisation and is sometimes only possible if the reference finds' statistical material is converted to our own methods. Unless otherwise noted, the statistical specifications on the cooking pot types from the reference sites always refer to the finds from verified contexts of the respective time horizon.

4.1. Early Bronze Age Cooking Pots

In respect to already published material it seems that during the Early Bronze Age, the cooking pots of the cultural region of the Tall Zirā'a did not have a specific shape of their own but rather that the round or oval handleless holemouth jars were also used for cooking *(Fig. 4.1)*[10]. According to H. Genz, however, this type of vessel indeed served no other purpose at all[11], and P. Fischer also regards the jars' use as cooking pots as their major function; only the larger forms would have been used as storage jars, primarily for liquids[12]. It is therefore possible that the so-called 'holemouth jars' were in fact the Early Bronze Age cooking pots, especially since there is hardly any other type of vessel that could have otherwise served this purpose.

This is consistent with the findings on the Tall Zirā'a: when identifying the sherds it was only when the excavations advanced into the early strata, and Early Bronze Age sherds were discovered in larger numbers that it became increasingly obvious that presumably the majority of the holemouth vessels used to serve as cooking pots. One distinguishing feature was the presence of scorch or burn traces[14]; these, however, could also have resulted from secondary fires, such as a conflagration. Furthermore, the majority of these vessels are made of clays that have been tempered with calcite, which prevented them from cracking when they were exposed to extreme temperatures[15]. R. Amiran mentions the shape of a vessel's bottom as another possible distinguishing feature: she suggests that those with a convex bottom were cooking pots while those with a flat basis were used for storage[16]. In fact, most of the cooking pots of later periods have a convex bottom. This made it easier to position them on uneven stones over an open fire[17]. A bulgy basis moreover ensured a good thermal conduction and a faster heating of the vessel's contents. On the other hand, cooking pots from the Middle Bronze Age[18] give evidence that a type with a flat bottom did exist at some time although this remained an exception.

All in all, based on the criteria of burn marks and clay tempering, 650 of the total of 980 Early Bronze Age sherds[19] belonging to a holemouth vessel (constituting 66.33 %) that were found on the Tall Zirā'a were identified as being parts of a cooking pot. This number could well be even higher, though.

pologising the sherds found on the Tall Zirā'a, which was continuously settled since the Early Bronze Age. In individual cases, the time span can go beyond the limits of the respective period—as will be shown below. One example is the cooking pot, Type 2 of the Early Bronze Age (cf. *Chap. 4.1.1.*).

8 Part I of the Annexe in Schwermer 2014 will list further examples of the different types and subtypes in order to make obvious the range of variations, and will also offer further references of comparative sites in the area. In Part II of the Annexe, the typologies of other excavation sites that were used as references are represented.

9 Schwermer 2014.

10 In her publications on the excavations of the Early Bronze Age city of Arad, located west of the Dead Sea on the edge of the Negev desert, R. Amiran talks about holemouth vessels that were used as cooking pots (Amiran et al. 1978, 42. 48 Pl. 43–45. 54; also see Amiran – Ilan 1992, 49 f. and 62). Even in her earlier—and still important—survey of 1963 she identifies only one single Early Bronze Age cooking pot (Amiran 1969, 67 and Pl. 18:11). This, however is a spouted jug with two ledge handles—a type of vessel that is otherwise not listed as a cooking pot in the reference literature but is rather associated with the production of olive oil (e.g. MacDonald 2001, 210 Fig. 6) or other manufacturing processes, such as the brewing of beer (e.g. likewise Genz 2002, 92). Neither do D. Homès-Fredericq and F. Franken 1986 cite one single example of an Early Bronze Age cooking pot.

11 Genz 2002, 16 f. 26.

12 Fischer 2008, 281.

13 The figure had the following legend referring to this type of vessels, again conveying a certain level of indecisiveness: "They were used mainly for storage but also for cooking."

14 H. Genz points out that the scorch marks and burn traces on the cooking pots he identified are consistent with the traces of use that have been evidenced by ethnological studies (Genz 2002, 92).

Fig. 4.1 Early Bronze Age holemouth jar[13], H 20 cm. (Source: http://apd.farli.org/the-southern-levant/the-early-bronze-age-1/hole-mouth-jars, 26.10.2017).

4.1.1. Typology

To date, no complete or at least reconstructable Early Bronze Age cooking pot has been found on the Tall Zirā'a, which may be due to the fact that the excavation has not yet reached Early Bronze Age strata everywhere and that, moreover, almost half of the sherds that have been examined so far were found in the constructional stratum (Stratum 15)[20]. The majority of the cooking pot sherds that have been assigned to the Early Bronze Age were parts of holemouth jars. There are variations marked by different rim shapes (see *Pl. 4.1*). A second type has a slightly splayed rim but otherwise retains the same vessel shape. This rim design allows the fastening of a lid (cloth, basket work, or leather) with a piece of string. As yet, isolated special shapes could not be detected among the relics of Early Bronze Age cooking pots.

The find material at hand can only provide indirect evidence regarding an answer to the question whether the Early Bronze Age cooking pots had a round or a flat bottom. Since only ten bottoms, four of them flat, on which a vessel could actually stand, could be assigned to Early Bronze Age cooking pots, a round bottom seems more likely in most of the cases. Sherds of round bottoms that are broad and tend to be only slightly curved, as is the case with most of the cooking pots from the Late Bronze Age and from the Iron Age, are hardly distinguishable from simple body sherds and can thus not be recognized as characterizing features. This would explain the small number of verifiable bottoms of Early Bronze Age cooking pots and also point against flat and level bottoms.

Among the Early Bronze Age cooking pots on the Tall Zirā'a, the following types can be distinguished:

CP_{EB} 1:	Early Bronze Age cooking pot with holemouth
CP_{EB} 1a:	rim rounded, slightly tapered
CP_{EB} 1b:	rim angular
CP_{EB} 1c:	rim pointed
CP_{EB} 1d:	rim notched
CP_{EB} 1e:	rim thickened
CP_{EB} 1f:	rim spherically thickened
CP_{EB} 2:	Early Bronze Age cooking pot with an everted rim

15 Cf. Schwermer 2014, Chap. 5.

16 Amiran et al. 1978, 48 f. According to H. Genz, all reconstructible specimens in Ḫirbat az-Zeraqōn have a round bottom. However, finds of single sherds also suggest the existence of flat bottoms (Genz 2002, 26). P. Fischer describes flat bottoms for the holemouth jars from the Tall Abū al-Ḫaraz (Fischer 2008, 281). According to A. Ziv-Esudri (2012, 245), round bottoms were characteristic of the south during the Early Bronze Age II while they were more or less exceptional in the north and might therefore be indicative of an immigrated population group.

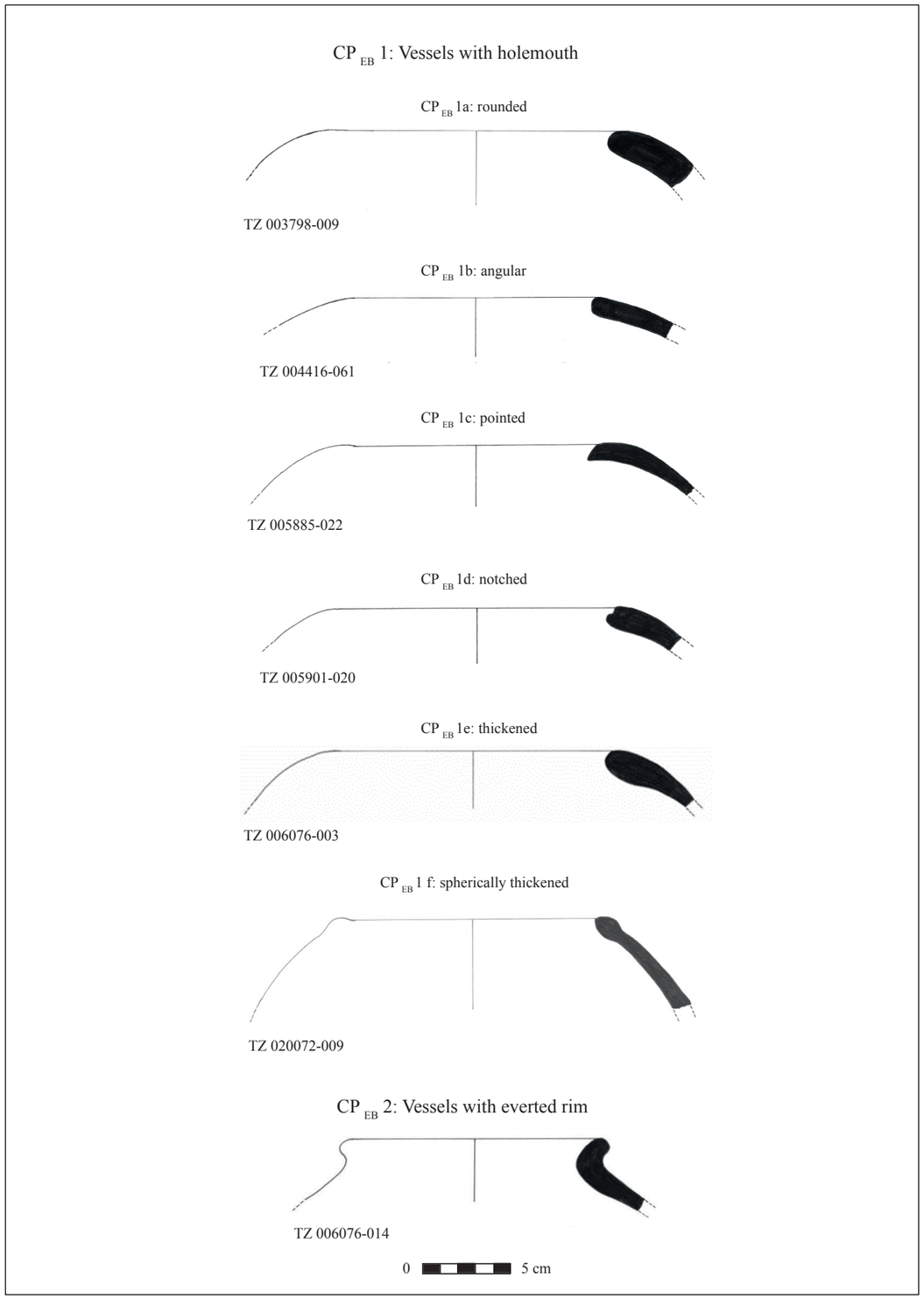
17 Cf. Schwermer 2014, Chap. 3.1.5 with Fig. 3, 4 and 3, 5, as well as Chap. 5.4.3 with Fig. 5, 7.

18 Cf. Schwermer 2014, Chap. 4.2.

19 This number refers to the Early Bronze Age cooking pot sherds found in all strata, irrespective of their individual chronological assignment.

20 Cf. Schwermer 2014, Chap. 1.3.1 f.

Plate 4.1: Typology of Early Bronze Age cooking pots



4.1.2. Ornaments

As a rule, only few cooking pots have any ornaments at all. They are manufactured with only functional aspects in mind, particular importance being placed on their resilience to the stress of constantly recurring and alternating periods of intense heating and of cooling down. Whenever they do have embellishments there is always the question whether these are merely ornamental or constitute the trademark of a specific pottery shop[21].

Among the Early Bronze Age cooking pots on the Tall Zirā‘a, there are fifteen specimens (approx. 2.5 %) with embellishments (*Tab. 4.1*)[22]. These ornaments are usually incised decorations or indentations that were mostly pressed into the clay with a finger or with a round object (*Pl. 4.2*). One vessel exhibits an impressed inverted ‘V’. Cord-patterned relief bands occurred three times. Some of these ornaments run around the entire top part of the vessel, others can only be found at one single spot. These latter could indicate that they were not applied for primarily aesthetic purposes but constitute a sort of identification of the vessel (so-called ‘pot marks’), just like the ones that can later be found on jar handles[23]. In all these cases, the embellishments were applied prior to the burning process, and they are completely irrelevant to the cooking pots’ functionality.

Embellishments of Early Bronze Age cooking pots and holemouth vessels—such as incisions/indentations or relief bands—have also been documented from other find spots in north Jordan[24]. For instance, an Early Bronze Age I cooking pot with vertical incisions below the rim was found on Ḫirbat aš-Šūna aš-Šamalīyah (North Shuna)[25]. Other examples have been verified for Ḫirbat az-Zeraqōn[26] and the settlements examined in the context of the Zeraqōn-Survey[27]. Vessels with circular indentations below the rim were also found here[28], as well as pots with a clay ridge with a cord-patterned incision[29]. A few of the Early Bronze Age cooking vessels found on the Tall Abū al-Ḫaraz have ornaments, too[30].

Similar to *Pl. 4.2*, in the characterisation of the Early Bronze Age pottery of the Tall al-Qassis (Tēl Qāšīṣ), the decorations are differentiated into ‘Incisions and potters’s marks’ (Type DC I), ‘Plastic decorations’ (Type DC II), and ‘Grain-wash’ (Type DC III)[31]. Without exception, the examples listed refer to holemouth vessels, but here, too, there are only very few vessels that have any ornament at all. Holemouth vessels with decorations or marks are also verified from Tall al-Ḥiṣn (Beth Shean)[32] and from Tall ‘Arād (Arad), which is located much further to the south[33].

21 An overview of the research discussion on the possible meanings of vessel embellishments not only on cooking pots is given by H. Genz 2002, 113–117. The following interpretations are listed: potters’ trademarks, potters’ working aids, capacity marks, content specifications, specifications regarding the content’s origin, specifications regarding the content’s quality, marks of proprietorship, mere ornaments. Also see P. Fischer on „Potmarks on Ceramic Containers from Early Bronze Age Tall Abū al-Ḫaraz“ (2008, 391–398). He considers most of the marks on storage vessels to be content specifications, as does P. Rotem (2012, 139) with regard to Tall al-Ḥiṣn (Beth Shean). However, this context can be ruled out in the case of cooking pots.

22 Among the 342 sherds of holemouth jars found on the Tall Zirā‘a that were not declared cooking pots, 18 (5.3 %) possess one of the embellishments mentioned above.

23 Also see Zuckerman, 2003a, 39 f.

24 On this, cf. Genz 2002, 109.

25 MacDonald et al. 2001, Pl. 203, 1.

26 Genz 2002, 109–113 as well as Pl. 20, 4. 40, 7. 50, 11. 53, 6. 69, 9.138, 2, and others.

27 Kamlah 2000, Pl. 96, 2 (‘Arqūb aẓ-Ẓahar). 104, 5 (Eḍ-Ḍanaba [Ruǧm Sa‘ib]). Of the app. 3,800 type E pots from Ḫirbat az-Zeraqōn (cf. *Chap. 4.1.4.*), only 16 (0.4 %) have embellishments (Genz 2002, 28 and 34).

28 Genz 2002, Pl. 64, 16; Kamlah 2000, Pl. 96, 3 (‘Arqūb aẓ-Ẓahar).

29 Kamlah 2000, Pl. 92, 6 (Ruǧm al-Qāḍi), Pl. 104, 1 and 2 (Eḍ-Ḍanaba [Ruǧm Sa‘ib]).

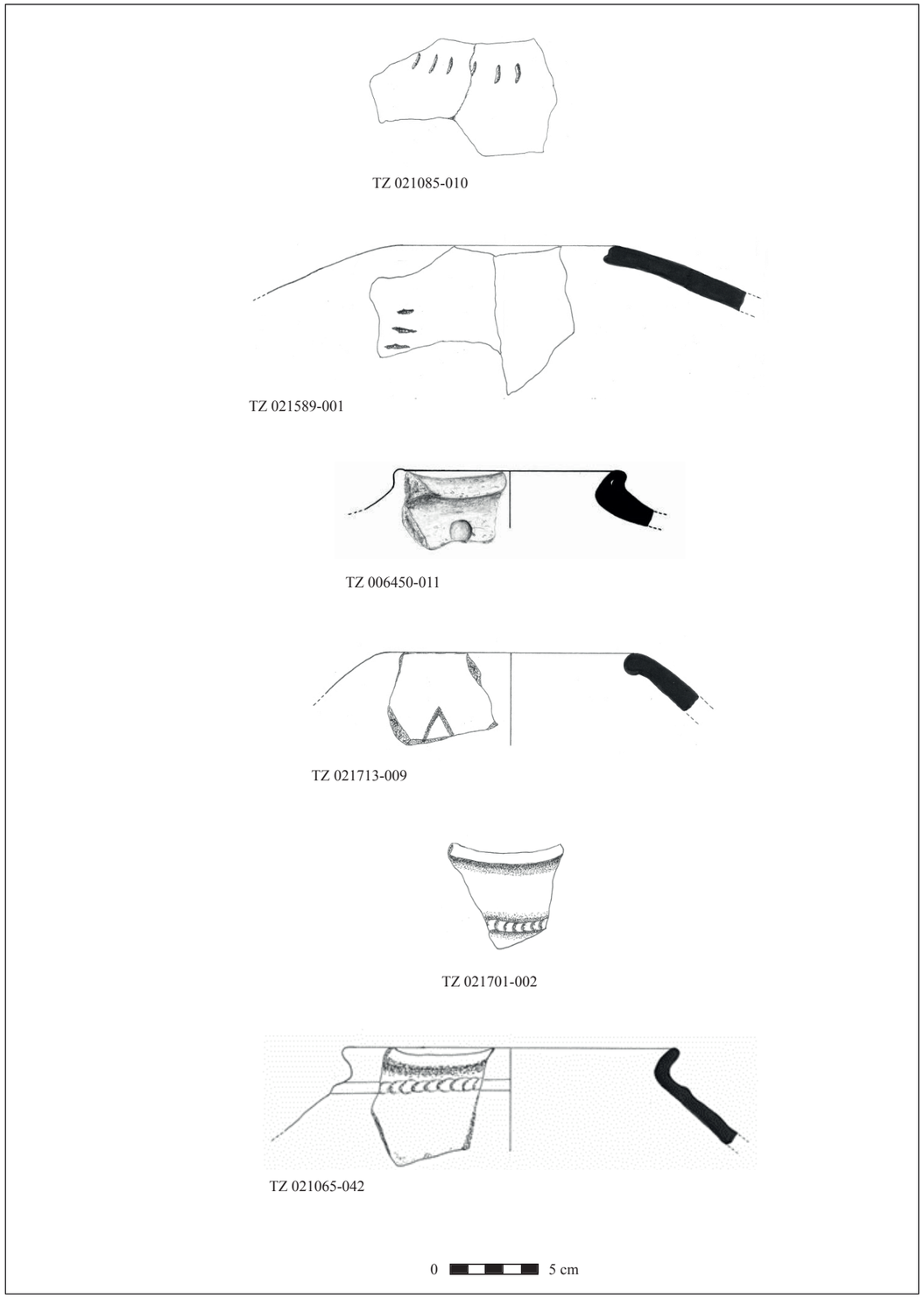
30 Of 2445 cooking pots, 26 (1.1 %) are embellished (Fischer 2008, 284 with Pl. 58).

31 Zuckerman 2003b, 39 f.

32 Here, 23 of 725 sherds (3.2 %) of Early Bronze Age I holemouth vessels have incisions (Rotem 2012, 156–160 with Fig. 4, 2; 175–235 with Pl. 1–30); of the 185 processed sherds of Early Bronze Age III holemouth vessels, 11 (5.9 %) have incisions (Ziv-Esudri 2012, 265 f. with Fig. 5, 1 and 273–311 with Pl. 31–49).

33 Amiran et al. 1978, 42 with Pl. 8, 12–24. Amiran positively identifies one holemouth vessel with incision as a cooking pot; the others she considers more likely to be jars.

Plate 4.2: Decorations and marks on Early Bronze Age cooking pots from Tall Zirāʿa



Decoration	Inv. No.	Type	Ornament
Incision	006039-010	1b	Vertical incision above horizontal line
	020211-010	1a	Parallel grooves, approx. 5 cm underneath the rim
	021085-010	1e	Vertical incisions underneath the thickened rim (circumferential)
	021589-001	1d	Horizontal incisions at a spot underneath the rim
	021608-011	1f	Elongate, vertical incisions 1.5 cm underneath the rim
	021713-009	1a	Incised, upside-down "V"
Indentations	006378-004	1a	Three finger indentations underneath the rim
	006396-006	1b	Slight indentations at the thickened rim
	006450-011	2	Finger indentation underneath the rim
	006469-004	1a	Circular indentations approx. 2.5 cm underneath the rim
	021377-003	1b	Indentations
	021300-006	1a	Elongate, horizontal indentations (circumferential)
Relief	005649-001	1b	Relief band: bulge with incision (circumferential)
	021065-042	2	Cord pattern (circumferential)
	021701-002	2	Cord pattern (circumferential)

Tab. 4.1 List of the decorated Early Bronze Age cooking pots from Tall Zirāʿa (Source: Schwermer 2014).

4.1.3. Statistical Evaluation

Of the 650 Early Bronze Age cooking pot sherds listed in the database, 602 (i.e. 92.62 %) can be assigned to one of the types described above.

4.1.3.1. Dimensions

As far as the ascertainable dimensions of the original vessels are concerned, the following specifications relating to the mouths' diameters, which usually correlate with the vessels' individual sizes and circumferences, and their respective wall thickness (*Tab. 4.2*) can be given. In order to give a more realistic impression and, if necessary, compensate for errors in measurement, the extreme values of wall thickness and mouth diameter were quoted, as well as the value resulting from the deduction of 10 % each of the vessels with the smallest and those with the largest diameter[34].

	Wall Thickness (in cm)		Opening diameter (in cm)	
Type	Extreme Values	80 % of the Vessels	Extreme Values	80 % of the Vessels
CP_{EB} 1a	0.5–1.80	0.9–1.40	8–28	10–18
CP_{EB} 1b	0.5–2.00	0.9–1.50	10–36	10–18
CP_{EB} 1c	0.5–1.70	0.8–1.30	10–36	12–18
CP_{EB} 1d	0.5–1.80	0.8–1.30	10–18	12–18
CP_{EB} 1e	0.7–1.70	0.7–1.25	10–20	10–16
CP_{EB} 1f	0.7–1.20	0.8–1.20	10–18	10–16
CP_{EB} 2	0.6–1.30	0.7–1.20	10–20	12–16

Tab. 4.2 Wall thickness and opening diameters in different types of pottery from Tall Zirāʿa (Source: Schwermer 2014).

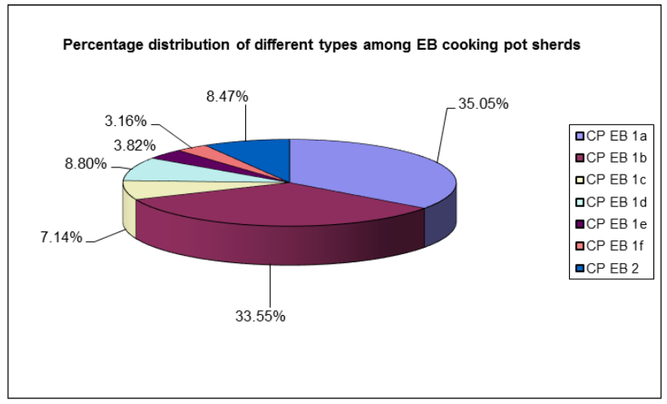
34 As, in the course of several years, many measurements were carried out by various colleagues, a certain amount of subjectivity must always be taken into account. Moreover, the measurements of the wall thickness of one single sherd can yield very different results, depending on the precise spots of measurement. In this context, too, it is to be assumed that the large number of specimens examined will more or less compensate for these statistical uncertainties. Regarding further inaccuracies and errors that can always occur in the course of excavations, cf. Hunt 1987, 140.

The Early Bronze Age cooking pots are almost identical with regard to their respective wall thickness and opening diameter. This result is not surprising since they all adhere to one and the same shape, with mere variations in the upper rim's design.

Since so far no complete, reconstructable Early Bronze Age cooking pots have been found on the Tall Zirā'a, no specifications that might be deductible from find material can be given as to their holding capacity. Calculations of the capacities of holemouth vessels from other sites show a large span ranging from 6 to 55 litres or even more, the large vessels being used for storage, not for food preparation[35]. The pots with an everted rim that were found in Ḫirbat az-Zeraqōn, however, only hold between 3.5 and 4.5 litres[36].

4.1.3.2. Allocation to the Different Types

To begin with, the detailed statistical overview reveals that the types 1a and 1b make up almost 70 % of all cooking pots; of these, more than 90 % have the 'pure' holemouth shape (Type 1) (*Graph 4.1*).



Graph 4.1 Percentage allocation of Early Bronze Age cooking pot sherds to the different types (Source: Schwermer 2014).

4.1.3.3. Distribution among the Separate Strata[37]

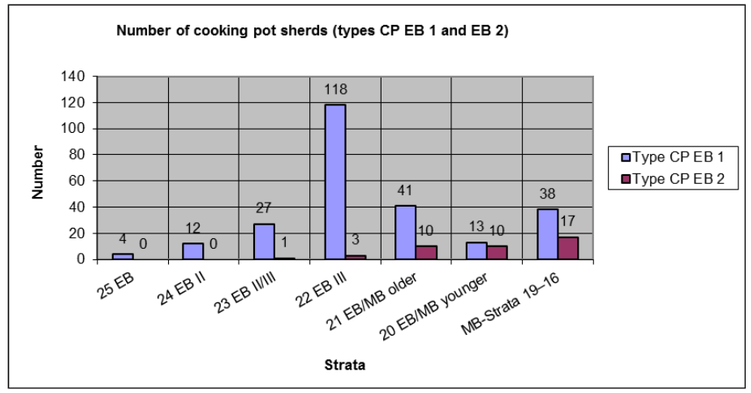
When analysing the numeric distribution of the Early Bronze Age cooking pot sherds among the different strata of the Tall Zirā'a (see *Graph 4.2*), it has to be taken into account as qualifying factors that the older strata (17 to 25) have yet only been excavated in significantly smaller parts than the younger ones (1 to 14), and that large context areas suffered extensive damage from a slope slide and its subsequent 'repair' during the Late Bronze Age. It is thus to be expected, for instance, that the overall share of Early Bronze Age cooking pot sherds will increase considerably once the respective strata will have been excavated area-wide. As a result, the separate strata and their respective shares of different cooking pot types (see *Graph 4.3*)[38] will also have to be examined in order to find out which cooking pot type prevailed at what time.

35 Genz 2002, 90 Pl. 58; Fischer 2008, 281–284. More details on this in Schwermer 2014, Chap. 5.4.3.

36 Genz 2002, 90 Pl. 58.

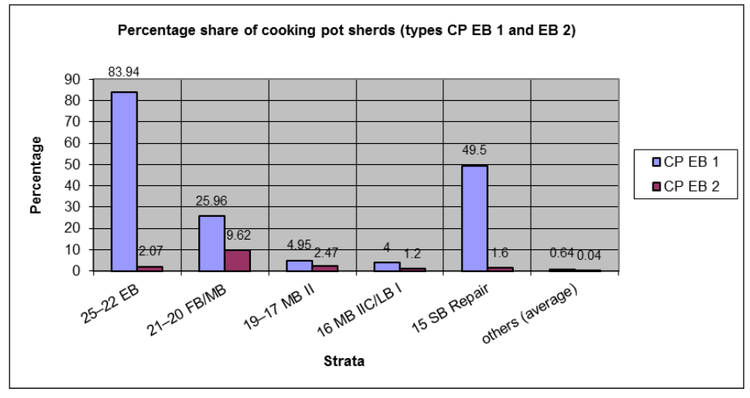
37 For a detailed analysis of the separate strata with regard to the cooking pot sherds found there as well as a summarising evaluation see Schwermer 2014, Chap. 4.8.

38 As a summary, see also Schwermer 2014, Chap. 4.8. The data referring to the percentages of the cooking pot sherds type EB 1 (EBA I) and type EB 2 (EBA II), respectively, among the total number of typologised cooking pot sherds found in the respective strata have also been taken from this chapter.



Graph 4.2 Number of cooking pot sherds of the types EB 1[39] and EB 2 found in the strata with the highest occurrence (except Stratum 15) (Source: Schwermer 2014).

42.52 % of the Early Bronze Age cooking pot sherds were found in the Late Bronze Age constructional stratum (Stratum 15) and therefore have to be factored out statistically when identifying the time frame in which vessels of this type were actually in use. 39.87 % of the sherds come from verified Early Bronze Age contexts (Strata 21 to 25) with a decided cumulation in the Strata 23 to 21; when disregarding the sherds from Stratum 15, they amount to almost 70 %. The cooking pots with an everted rim (type 2) form an exception. 70.59 % of these were found in Strata 18 to 22, cumulating in Strata 21 to 19. This circumstance suggests that this type of cooking pots was in use even beyond the Early Bronze Age, during the Intermediate Period to the Middle Bronze Age. However, ^{14}C samples from Strata 21 and 20 have been dated with a 95 % probability to 2460 to 2200 BC (sample TZ 017693, *Chap. 2.1.1.1.* Complex A) and 2880 to 2580 BC (sample TZ 018648, *Chap. 2.2.1.2.* Complex A). These time spans would fall within the Early Bronze Ages II and III, respectively. It must be taken into account, though, that wood may have been used for a longer period of time and that the layer where it was eventually found may be younger[40].



Graph 4.3 Percentage share of cooking pot sherds of the types EB 1 and EB 2 among all typologised cooking pot sherds found in the indicated strata (Source: Schwermer 2014).

39 As the different subtypes of the main type 1 were evenly distributed among the separate strata they can be regarded collectively in this context.

40 Regarding the problem of 'old wood' and other possible sources of error, see Vieweger 2012, 195 ff., and Genz 2002, 7 ff.

As one would expect, at almost 84 % the cooking pots type EB 1 constitute the by far largest group among all the typologised cooking pot sherds in the Early Bronze Age Strata 25 to 22, while they still make up 26 % during the Intermediate Period between the Early and the Middle Bronze Age, before they drop to a negligible amount in later periods, with the exception of the constructional stratum (*Graph 4.3*). The type EB 2 reaches its peak in the Intermediate Period between the Early and the Middle Bronze Age; however, as noted above, its overall share was low.

4.1.4. Comparison with Reference Sites

4.1.4.1. Transjordan

For comparing the types of Early Bronze Age cooking pots verified on Tall Zirā'a with those from reference sites, the publications by H. Genz and J. Kamlah on Early Bronze Age Ḫirbat az-Zeraqōn and those of P. Fischer on Tall Abū al-Ḫaraz are particularly suited since they also contain a typologisation. These two sites are also convenient because of their geographical position as the Tall Zirā'a is more or less located between Ḫirbat az-Zeraqōn in the northern Jordanian uplands and Tall Abū al-Ḫaraz, situated in the Jordan Valley. Due to the importance of their settlements during the Early Bronze Age, both sites can be considered to a certain extent representative of their respective regions.

H. Genz, too, considers burn traces to be the defining criterion for identifying a vessel as a cooking pot[41]. For Ḫirbat az-Zeraqōn, he distinguishes between two basic forms of 'pots'. The first basic form is that of vessels with a holemouth; they are being marked with the letter 'E' and offer five variations (E1.1–E1.5) of rim design[42]. As a second basic form of Early Bronze Age cooking pots, H. Genz specifies "Töpfe mit ausbiegendem Rand (F)" ('pots with an everted rim [F]')[43]. These do not split into variants; however, some of them have a loop handle. Both forms appear during the Early Bronze Ages II and III, being in use for a time span of 700 years between 2950 and 2250 BC[44]. Their distribution roughly corresponds to that on the Tall Zirā'a: 87.5 % of all cooking pot sherds belong to the vessel type E, 12.5 % to type F[45]. In his own Zeraqōn survey, J. Kamlah adopts H. Genz's typology of Early Bronze Age vessels. However, he dates the cooking pot type with an everted rim to the Intermediate Period between the Early and the Middle Bronze Age[46], in keeping with our own dating of cooking pot sherds from the Tall Zirā'a (see above).

As another possible cooking vessel, H. Genz names 'large bowls with vertical walls (C)' ("Große Schüsseln mit senkrechter Wandung")[47], provided that they bear burn traces[48]. These are vessels with a flat bottom, 'often with a circumferential sculpted band that may be non-continuous, and pierced holes' ([die] "häufig eine umlaufende Leiste, die auch unterbrochen sein kann, und eingestochene Löcher" [haben])[49] below the rim. This vessel type that was unexpectedly found in a verified Early Bronze Age context[50] in Ḫirbat az-Zeraqōn conforms to the cooking pot shape that is usually defined as typical of the Middle Bronze Age IIA[51], with a clay bulge with finger indentations below the rim as its main distinguishing feature[52]. While J. Kamlah explicitly dates sherds of this type to the transition between the Early Bronze Age and the Middle Bronze Age ("Intermediate Period", 2250–1900 BC) or to the Middle Bronze Age (1900–1550 BC)[53], the find at Ḫirbat az-Zeraqōn leaves no doubt that this kind of cooking vessel occurred here as early as the Early Bronze Age III[54]. The resulting matter of possibly extending the time span of this vessel type, that was also common on the Tall Zirā'a, will have to be looked into in *Chap. 4.2* that deals with cooking pots of the Middle Bronze Age.

41 Genz 2002, 90–92.

42 Genz 2002, 17 with Fig. 5, 23 with Fig. 10, 26. Fig. incl. in the annexe of Schwermer 2014 II, Chap. 1.1.

43 Genz 2002, 17 with Fig. 5, 23 with Fig. 10, 26. Fig. incl. in the annexe of Schwermer 2014 II, Chap. 1.1.

44 Genz 2002, 83 and 120. Regarding Type E, H. Genz notes that a more differentiated chronological evaluation of the types and variants did not yield any result (Genz 2002, 73).

45 This can be concluded indirectly from Genz 2002, 31 Pl. 7.

46 Kamlah 2000, Pl. 70, 1–4. Cf. also above, pp. 85 and 87.

47 Genz 2002, 17 with Fig. 5, 26

48 Genz 2002, 92.

49 Genz 2002, 26

50 Genz 2002, 73.

51 E.g. Amiran 1969, 101 f. and Pl. 30; Maeir 2007, 260.

52 A thick-walled cooking bowl with a relief band from Ṭabqāṭ Faḥl (Pella) has also been dated to the Early Bronze Age (Bourke et al. 1998, Pl. 200, 7).

53 Kamlah 2000, 6 and Pl. 70, 5. 7–11.

54 „Schüsseln des Typs C gelten allgemein als Leitform für die Mittelbronzezeit II (…). Einige Orte jedoch lieferten Funde dieses Typs aus offenbar frühbronzezeitlichen Kontexten. (…) Bislang wurden die betreffenden Fundkontexte als gestört betrachtet. Die neuen Entdeckungen von Schalen dieses Typs aus gesicherten frühbronzezeitlichen Kontexten in Ḫirbet az-Zeraqōn erfordern jedoch eine Neubewertung der Fundsituationen in Tell el-Mutesellim und Tell el-Ḥiṣn" ('Type C bowls are generally considered the index form of the Middle Bronze Age II (…). Some sites, however, have yielded finds of this type from obviously Early Bronze Age contexts, (…). Until now, the relevant find contexts have been regarded as disturbed. The recent discoveries of bowls of this type in verified Early Bronze Age contexts in Ḫirbet ez-Zeraqōn, however, necessitate a re-evaluation of the find circumstances at Tell el-Mutesellim and Tell el-Ḥiṣn.') (Genz 2002, 73; 82 f.).

55 Genz 2002, 21 f. with Fig. 9. 10, and 26 (Figure included in the annexe of Schwermer 2014 II, Chap. 1.1), 28 Pl. 4.5 (percentage distribution).

56 See *Chap. 4.2.1.*

57 Genz 2002, 26 with footnote 12.

58 Fischer 2008, 381. It should be kept in mind that, according to the usual chronology, the phases described here constitute the entire Early Bronze Age I (3200–2950 BC).

59 This probably also explains the lack of statistical specifications on the number and distribution of the separate forms.

60 Fischer 2008, 281–284 with Fig. 281–283 (Fig. included in the annexe of Schwermer 2014 II, Chap. 1.2).

61 The dimensions (opening diameter approx. 50 cm) suggest that this is no cooking pot but rather a storage vessel.

A detailed comparison of the typology created for the Tall Zirā'a with that of Ḫirbat az-Zeraqōn looks as follows:

Tall Zirā'a	Ḫirbat az-Zeraqōn[55]
CP_{MB} 1[56]	C (1.31)
CP_{EB} 1a (35.05)	E1.1 (22.82)
CP_{EB} 1b (33.55)	E1.2 (20.87)
CP_{EB} 1c (7.14)	E1. 3(15.66)
CP_{EB} 1d (8.80)	E1.5 (5.12)
CP_{EB} 1e (3.82)	E1.4 (23.48)
CP_{EB} 1f (3.16)	---
CP_{EB} 2 (8.47)	F (10.56)

Tab. 4.3 Comparison of the typologies of Early Bronze Age cooking pots from Tall Zirā'a with those from Ḫirbat az-Zeraqōn (percentage distribution in brackets) (Source: Schwermer 2014).

With the exception of type C, which, however, only accounts for approximately one percent of the processed ware of Ḫirbat az-Zeraqōn, there is a more or less identical repertoire of types. Slight deviations and the existence of one additional variant are due to the fact that typologisation is to a certain extent always a matter of the conducting person's subjective assessment. Even viewed objectively—, "the transitions from one variant to the next are fluent."[57]. At almost 90 %, the 'pure' holemouth forms constitute the largest group of cooking pots; among them, the types E1.1, E1.2, and E1.4 account for more than two-thirds in more or less equal shares. The pots with an everted rim make up approximately a tenth, similar to their percentage on the Tall Zirā'a. The biggest difference between the two sites in this respect is the relatively high representation of the type E1.4 in Ḫirbat az-Zeraqōn, whereas the corresponding type 1e on the Tall Zirā'a only accounts for barely 4 %, which is almost the lowest overall share.

P. Fischer regards cooking meals as the main function of the holemouth vessels and distinguishes them according to the three phases of the Early Bronze Age as they were indentified on the Tall Abū al-Ḫaraz, and which he dates as follows:

Early Bronze Age IA and B: 3150–3050 BC

Early Bronze Age IIA and B: 3050–3000 BC

Early Bronze Age IIIA and B: 3000–2950/2900 BC[58]

Strictly speaking, P. Fischer does not provide a typology but rather a compilation of the various forms that were typical of the respective phases of the Early Bronze Age[59]. These can be correlated with the types identified on the Tall Zirā'a. For Phase I of the Early Bronze Age he identifies thirteen, for Phase II, ten, and for Phase III, seven variants. The cooking pot with an everted rim (type 2) does not appear on the Tall Abū al-Ḫaraz, which is not surprising since it must be dated to some time during the late Early Bronze Age and the Intermediate Period to the Middle Bronze Age, whereas the three Early Bronze Age phases represented on the Tall Abū al-Ḫaraz were all part of the Early Bronze Age I.

This leads to the following comparison, in which, because of the lack of reconstructable vessels on Tall Zirā'a, only the rim shapes can be compared:

Tall Zirā'a	Tall Abū al-Ḫaraz[60]		
	Phase I	Phase II	Phase III
CP_{EB} 1a	7, 11	4	3, 4
CP_{EB} 1b	2, 10, 13	3, 10	2, 6
CP_{EB} 1c	9	5, 8	–
CP_{EB} 1d	–	6, 7, 9	5
CP_{EB} 1e	3, 6, 8, 12	1 (with handle), 2	7
CP_{EB} 1f	1, 4	–	1
CP_{EB} 2	similar 5[61]	–	–

Tab. 4.4 Comparison of the typologies of Early Bronze Age cooking pots from Tall Zirā'a and from Tall Abū al-Ḫaraz (Source: Schwermer 2014).

4.1.4.2. Cisjordan

In S. Zuckerman's typologisation of the Early Bronze Age pottery of Tall al-Qassis (Tēl Qāšīṣ)[62], there is no division of the 'holemouth jars = H' into cooking vessels and storage vessels. This is attributed to the fact that mostly only rim sherds were found, which rendered this kind of distinction impossible[63]. For the Early Bronze Age I, six types (H I—H VI) are distinguished, H I and H II having two subtypes each (H Ia/H Ib and H IIa/H IIb). For the Early Bronze Ages II–III, there are five types (H I–H V)[64]. S. Zuckerman admits, though, that a differentiation or positive placing of the types with either the Early Bronze Age I or II–III can prove difficult and often even impossible[65].

Figures concerning the respective shares of the individual types are only available for the Early Bronze Age I: at 73 percent, Type H II is the most prevalent, followed by Type H I (22 %). At altogether slightly more than 5 %, the Types H III, IV, V, and VI make up only a very small share.

A comparison with the typology created for the Tall Zirā'a shows the following correlations:

Tall al-Qassis (Tēl Qāšīṣ) EB I[66]	Tall Zirā'a
H I: Simple Rim H Ia: Rounded Rim (11,5) H Ib: Sharpened Rim (10,5)	CP_{EB} 1a CP_{EB} 1c
H II: Thickened Rim H IIa: Rounded Rim H IIb: Sharpened Rim	CP_{EB} 1e
H III: Up-turned Rim	
H IV: Ridged Rim	Possible in all types
H V: Squared-off Rim	CP_{EB} 1b
H VI: Spouted Holemouth Jar	
	CP_{EB} 1d
	CP_{EB} 1f
	CP_{EB} 2

Tall al-Qassis (Tēl Qāšīṣ) EB II–III[67]	Tall Zirā'a
H I: Simple Rim	CP_{EB} 1a CP_{EB} 1b (?)
H II: Rectangular Rim	CP_{EB} 1b (?) CP_{EB} 1d
H III: Thickened Rim	CP_{EB} 1e
H IV: Sharpened Rim	CP_{EB} 1c
H V: Varia	
	CP_{EB} 1f
	CP_{EB} 2

Tab. 4.5 a.b Comparison of the typologies of Early Bronze Age cooking pots from Tall Zirā'a with the holemouth vessels from Tall al-Qassis (Tēl Qāšīṣ) (Source: Schwermer 2014)[68].

The Tall Zirā'a types 1f and 2 do not have any equivalent in the Tall al-Qassis (Tēl Qāšīṣ) typology, not even for the later phase, although type 1f would probably be correlated to H II or H III, respectively (EB II–III of Tall al-Qassis [Tēl Qāšīṣ]). The cooking pot type with an everted rim, however, does not appear at all, which may allow the conclusion that the Tall al-Qassis (Tēl Qāšīṣ) strata under examination may have to be dated earlier than the Early Bronze Age strata that have so far been excavated on Tall Zirā'a. Inversely, some types from Tall al-Qassis (Tēl Qāšīṣ) have so far not been found on Tall Zirā'a; the type H VI (Spouted Holemouth Jar), however, cannot be positively identified as a cooking pot[69], and the few available specimens were excavated in the Early Bronze Age I strata, which to date have not been reached on Tall Zirā'a.

Neither do the representations of the Early Bronze Age pottery of Tall al-Ḥiṣn (Beth Shean)[70] make a distinction between different types of holemouth vessels based on their functions; instead, they are all termed "multi-functional vessels"[71]. Even though the rather coarse vessels, made of clay with a high percentage of calcite, were presumably used as cooking pots they are also supposed to have served other purposes such as storage[72]. For the Early Bronze Age IB[73], six types (HJ 90–95), some of them with two or three subtypes, are distinguished. Especially the vessels type HJ 90 are considered to have been cooking pots, due to their clay composition and their comparably small size, while type HJ 91, with a rim diameter of more than 35 cm and a capacity of more than 30 litres, is identified as a storage jar that was not meant to be carried around[74]. Three types (HJ 45–47) are distinguished for the Early Bronze Age III[75], added by a vessel type with splayed rim, which is positively attributed the function of a cooking pot (CP 45). This vessel is considered to be the predecessor of a corresponding cooking pot[76], which is dated to the Intermediate Period between the Early and the Middle Bronze Age, is characteristic of northern Israel and supposedly does not appear farther south than Tall al-Ḥiṣn (Beth Shean)[77]. Since, with the exception of HJ 47, most of the holemouth vessels bear burn traces and moreover have a relatively low wall thickness, they are also regarded as having mainly served as cooking pots[78]. While all reconstructable holemouth vessels of the Early Bronze Age I are flat-bottomed[79], the six specimens from the Early Bronze Age III have a round bottom[80].

During both phases of the Early Bronze Age, the holemouth vessels with a thickened rim make up the biggest share, more or less closely followed by types with a simple rim (together more than 80 %); all other types are comparatively rare.

A comparison of the cooking pot types from Tall al-Ḥiṣn (Beth Shean) with those defined for Tall Zirā'a *(Tab. 4.6)* reveals that they are largely identical; however, the classifications and boundaries differ sometimes. The spouted form (HJ 95), of which also only a single specimen was excavated at Tall al-Ḥiṣn (Beth Shean), has as yet not been found on Tall Zirā'a for the reasons mentioned above. Instead, the type with an everted rim (CP 45/ CP_{EB} 2) that could not be verified at Tall al-Qassis (Tēl Qāšīṣ) and has to be dated to a comparatively late phase, is present at both locations with a similar incidence (12 and 8.5 %, resp.). The types with a thickened rim, that account for more than 40 % at Tall al-Ḥiṣn (Beth Shean), however, make up only 7 % on Tall Zirā'a.

Tall al-Ḥiṣn (Beth Shean) EB IB[81]	Tall Zirā'a
HJ 90: Simple Rim HJ 90a: Rounded Rim (18.21) HJ 90b: Tapering Rim 14.34)	CP_{EB} 1a CP_{EB} 1c
HJ 91:Thickened Rim HJ 91a: Thickened, Rounded Rim (27.59) HJ 91b: Thickened, Tapering Rim (14.07) HJ 90c: Thickened, Squared Rim (5.80)	CP_{EB} 1e Partly similar CP_{EB} 1d Partly similar CP_{EB} 1b
HJ 92: Inverted Rim (5.10)	Possible in all types
HJ 93: Ridged or Folded Rim HJ 93a: Ridged Rim (4.55) HJ 93b: Folded Rim (1.10)	Possible in all types CP_{EB} 1f/MB 2
HJ 94: Squared Rim (10.48)	CP_{EB} 1b
HJ 95: Spout (0.14)	
	CP_{EB} 2

Tall al-Ḥiṣn (Beth Shean) EB IIIB[82]	Tall Zirā'a
HJ 45: Slightly Squared Rim (40.00)	CP_{EB} 1b
HJ 46: Thickened Rim HJ 46a: Thickened Rim (31.90) HJ 46b: Thickened, Inward-Protruding Rim (13.81)	CP_{EB} 1e
HJ 47: Thickened Rim and Exterior Ridge (2.38)	No separate category
CP 45: Short Everted Rim (11.90)	CP_{EB} 2
	CP_{EB} 1a
	CP_{EB} 1d
	CP_{EB} 1f

Tall al-Ḥiṣn (Beth Shean) IB[83]	Tall Zirā'a
Cooking Vessel	CP_{EB} 2

Tab.4.6 a.b.c Comparison of the typologies of Early Bronze Age cooking pots from Tall Zirā'a and from Tall al-Ḥiṣn (Beth Shean) (percentage distribution in brackets) (Source: Schwermer 2014)[84].

62 Zuckerman 2003a, 35–56 with Fig. 19; Zuckerman 2003b, 130–160 with Fig. 66. (Fig. included in the annexe of Schwermer 2014 II, Chap. 1.3).

63 In this context, S. Zuckerman (2003a, 37) points to R. Amiran's distinction between cooking pots and jars on the basis of their bottom shapes *(Chap. 4.1.)*.

64 Unfortunately, the types' respective code designations are not identical with the two Early Bronze Age phases. For example, an Early Bronze Age I vessel with 'sharpened rim' is given the type reference H Ib, while a corresponding specimen from a later phase receives the type reference H IV.

65 Zuckerman 2003b, 132.

66 Zuckerman 2003a, 44 with Fig. 19 (Fig. included in the annexe of Schwermer 2014 II, Chap. 1.3). Statistical specifications Zuckerman 2003a, 38 with Pl. 3.

67 Zuckerman 2003b, 147 with Fig. 66 (Fig. included in the annexe of Schwermer 2014 II, Chap. 1.3)

68 Regarding the percentage distribution of types on the Tall Zirā'a, cf. *Graph 4.1*.

69 Zuckerman 2003a, 37. A spouted holemouth cooking pot from the Early Bronze Ages II–III has also been verified for the Jordanian settlement of Bāb aḏ-Ḏrā' (Hendrix et al. 1996/1997, Pl. 114, 94).

70 Rotem 2012, 138–142, Pl. 1–30 (for EB Ib); Ziv-Esudri 2012, 245–248, Pl. 31–49 (for EB III). Y. Rotem and A. Ziv-Esudri do not have a survey plate of their typologisations but refer to examples in the annexe when describing the individual types (Pottery Pl. 1–49). In Part II, Chap. 1.4 of the annexe of Schwermer 2014, a separate typlology is included that refers to the respective plates

71 Rotem 2012, 138; Ziv-Esudri 2012, 245.

72 Rotem 2012, 138 f.

73 The late phase of the Early Bronze Age I in Beth Shean has been dated to the time between the 33rd and the 31st century BC, the Intermediate Period to the Early Bronze Age II to the late 31st until early 30th century BC (Mazar 2012a, 14 with Pl. 1. 2, 20).

74 Rotem 139 f.

75 Due to lacking evidence, an axiomatic chronology of the five Early Bronze Age III strata is not being established (Mazar 2012a, 27).

76 Mazar 2012b, 346.

77 Mazar 2012b, 346.

78 Ziv-Esudri 2012, 245 f.

79 Rotem 2012, 139.

80 Ziv-Esudri 2012, 245.

81 Rotem 2012, 138–142 (Fig. included in the annexe of Schwermer 2014, Part II, 1.4). Statistical specifications ibid., 138 with Tab. 4.9.

82 Ziv-Esudri 2012, 245–248 (Fig. included in the annexe of Schwermer 2014, Part II, 1.4). Statistical specifications Ziv-Esudri 2012, 238 with Tab. 5, 1, and 246 with Tab. 5, 11.

83 Mazar 2012b, 345 with Fig. 8. 4, 4–6; 346 with Photo 8, 8 (Fig. included in the annexe of Schwermer 2014, Part II, 1.4).

84 Regarding the percentage distribution of types on the Tall Zirā'a, cf. *Graph. 4.1*.

4.1.5. Conclusion

On the whole, all typologies depicted in this chapter are alike in that they apply the same criteria for distinguishing the different forms of Early Bronze Age cooking pots from each other. Due to the few varieties of rim design, however, the boundaries are sometimes blurred. The sites do not differ fundamentally with respect to their type repertoires. With the exception of the straight-walled cooking pot from Ḫirbat az-Zeraqōn[85] that is commonly dated to the Middle Bronze Age II, neither the Tall Zirāʿa nor the other sites seem to have yielded any extraordinary finds. This also applies to the vessels' decorations or marks, which were anyway relatively rare.

As far as the chronology is concerned, there is agreement that the Early Bronze Age holemouth vessels and thus also the cooking pots (type 1) have only little informative value. H. Genz even abstains from citing references since, for holemouth vessels, "eine chronologische Auswertung der Typen und Varianten zu keinem Ergebnis führt" ('a chronological evaluation of the types and variants will fail to produce any result')[86]. S. Zuckerman states: "Their simple forms and variety of rim shapes make the holemouth jars poor chronological indicators (Nodet 1988). Contrary to other vessels, the differences in the rim shapes of the holemouth jars are usually insignificant"[87]. Elsewhere she says: "The attribution of a given type of holemouth jar to either the EB I or EB II–III repertoire is difficult."[88] This, however, does not apply to the cooking pot with an everted rim (Tall Zirāʿa type 2), which can be regarded as an indicator of the late phase of the Early Bronze Age III and of the Intermediate Period between the Early and the Middle Bronze Age. It was not found in the older strata of the Tall Abū al-Ḫaraz and of the Tall al-Qassis (Tēl Qāšīṣ), while in Ḫirbat az-Zeraqōn, Tall al-Ḥiṣn (Beth Shean), and on the Tall Zirāʿa its share among the cooking pot finds universally amounts to approx. 10 %, thus possibly indicating a contemporaneous settlement of these sites.

The shares of Early Bronze Age cooking pot sherds among the total numbers of sherds found on the separate sites are difficult to compare since the figures available often refer to the entirety of holemouth vessels excavated and moreover have different stratigraphical reference bases. Still, after factoring out these uncertainties, all sites show more or less similar results. On Tall Zirāʿa, the Early Bronze Age cooking pot sherds account for approx. 20 %; when adding the other holemouth jars, this number increases to 30 %. In Ḫirbat az-Zeraqōn, the type E and type F pots make up 40 %[89]. In Tall al-Ḥiṣn (Beth Shean), during the Early Bronze Age III, their share is 18 %; however, the five identified strata differ widely (between 11 and 50 %)[90]. In the two strata of the Early Bronze Age IB, their overall percentage of 45 is much higher[91]. On the Tall Abū al-Ḫaraz, it amounts to 25[92]. For the Tall al-Qassis (Tēl Qāšīṣ), no corresponding figures are available.

85 See *Chap. 4.1.4*.
86 Genz 2002, 73.
87 Zuckerman 2003a, 37
88 Zuckerman 2003b, 132.
89 Genz 2002, 28 with Pl. 4.
90 Ziv-Esudri 2012, 245.
91 Rotem 2012, 138.
92 Fischer 2008, 245 with Pl. 45 (holemouth); among the intact or reconstructable vessels: 15 % (246, Pl. 46, and 281).
93 Such a three-dimensional decoration has a long tradition and was already used on Chalcolithic vessels: e.g. Amiran 1969, Tab. 3, 4 (pithos) and Tab. 4, 8 (bowl); McNicoll et al. 1982, Tab. 105, 1 (bowl); McNicoll et al. 1992, Tab. 14, 8 (straight-walled bowl) and Tab. 17, 1. 3. 5. 8. 10 (jars).

4.2. Middle Bronze Age Cooking Pots

The predominant Middle Bronze Age cooking pot type, commonly dated to the Middle Bronze Age II (1950–1550 BC), is a usually rather crude, handcrafted, straight-walled vessel with a flat bottom, a large diameter, and of a relatively low height. Below its rim, sometimes even situated directly at its rim, there is a clay bulge that is decorated with either finger indentations[93] or, less frequently, incisions *(Fig. 4.9)*. These embellishments can be executed in a very meticulous manner but are sometimes also applied downright carelessly.

The Middle Bronze Age cooking pot—possibly with the exception of some Early Bronze Age specimens[94]—is almost the only one in the diachronic line of cooking pots that is equipped with a flat bottom[95]. This characteristic places it near the category of baking trays[96]. Due to the pot's mostly vertical wall, its bases's diameter is usually not shorter than that of its mouth. Because of this distinctive feature, it is possible to identify a Middle Bronze Age cooking pot solely with the help of a bottom sherd.

So far, one almost complete cooking pot of this type and two half-preserved specimens have been found on the Tall Zirāʿa. Five sherds cover the whole distance from the thickened rim to the bottom, so that here, too, reconstructions of the vessels' original shapes and dimensions are possible *(Fig. 4.3)*.

Fig. 4.2 Cooking pot type usually dated to the Middle Bronze Age II (re-kilned in spring 2012) (Source: Schwermer 2014).

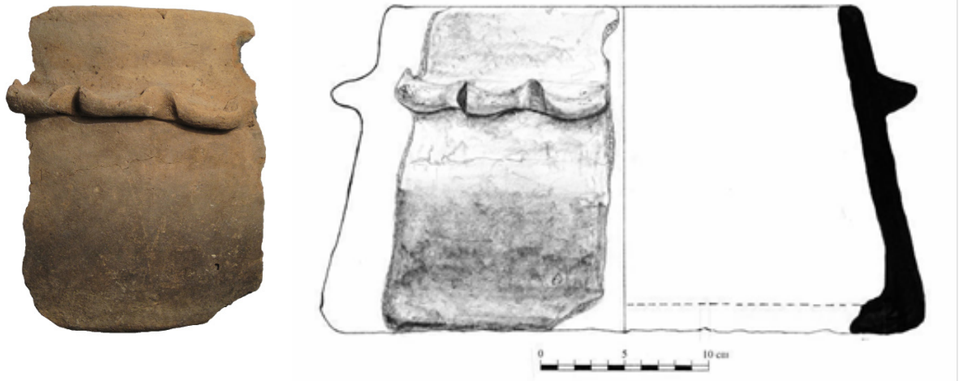


Fig. 4.3 Reconstructable Middle Bronze Age cooking pot, TZ 020233-016 (Source: Schwermer 2014).

The production method and the shape of these cooking pots give rise to several questions. In view of the Middle Bronze Age pottery assemblage and its sometimes very finely and meticulously crafted vessels, they appear almost archaic and seem to fall short of the technological possibilities of their times[97]. For example, this pot is handcrafted although the fast-spinning pottery wheel had been in use for a long time in Palestine. Even though, to all intents and purposes, the production process of cooking pots differed from that of other vessels[98], at least vessel parts were fashioned on a pottery wheel, with the exception of the Early Bronze Age. It is possibly due to this type's coarse material that it could not be used.

The finds of Ḫirbat az-Zeraqōn, where this type of cooking pot was found in verified Early Bronze Age contexts[99], finally raise the issue of its chronological placement.

94 Cf. *Chap. 1*.
95 Also see Maeir 2007, 260.
96 See Schwermer 2014, Chap. 4.6.
97 Also see Maeir, 270; Livneh 2005, 42.
98 On production processes, see a detailed account in Schwermer 2014, Chap. 5.
99 See *Chap. 4.1.4*.

4.2.1. Typology

The following typology only includes those forms that are commonly placed unambiguously with the Middle Bronze Age. The forms that the available excavation publications date to the Middle to Late Bronze Age and thus to an Intermediate Period, will be dealt with separately in the next chapter.

For the purpose of typologisation, the straight-walled cooking pots with relief band described above were at first differentiated based on whether their indentations are tilted to the right or to the left. However, as this feature was barely discernible in many specimens and is moreover typologically irrelevant this approach was abandoned. Likewise, the pots were not typologised according to the position of their relief bands *(Fig. 4.4 and 4.5)*. However, a relief band that sits directly at the rim occurs much less frequently than one that is applied in a lower position[100]. Since the relief band can be considered a 'trademark' of this type of cooking pots it is often possible to conduct a typologisation solely on the bases of a body sherd. More than 50 % (476 of 922) of the sherds that have been typologised are no rim sherds.

A second, much rarer cooking pot type (CP_{MB} 2) has a round or globular body, an everted or thickened rim, and seems to take up the Early Bronze Age cooking pot type 1f.

The following types can be distinguished (Pl. 4.3):

CP_{MB} 1:	Middle Bronze Age cooking pot with straight wall and three-dimensional band
CP_{MB} 1a:	relief band undecorated
CP_{MB} 1b:	relief band indented
CP_{MB} 1c:	relief band notched
CP_{MB} 2:	Middle Bronze Age globular cooking pot with everted rim

4.2.1.1. Single Types

A small number of rim sherds (altogether 6) possess neither a bulge nor any other kind of ornament; due to the straightness of their walls and the characteristics of the clay they are made of, however, they are undoubtedly parts of Middle Bronze Age cooking pots. Possibly this type of cooking pot also existed bare of any three-dimensional band. If so, it was still not included in the typology but is listed as the single form S 1 because, due to the rim sherds' small size, it cannot be completely ruled out that there had indeed originally been a bulge underneath the breaking point[101].

Likewise, the form of a possible cooking bowl (single form S 2) was not included in the typology since there are only three specimens.

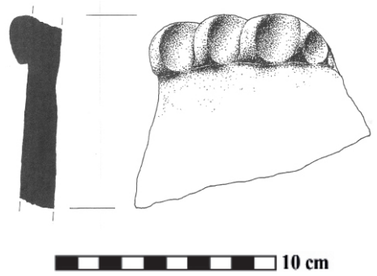


Fig. 4.4 Middle Bronze Age cooking pot sherd from the survey, TZ 000270-004 (Drawing: Ernst Brückelmann).

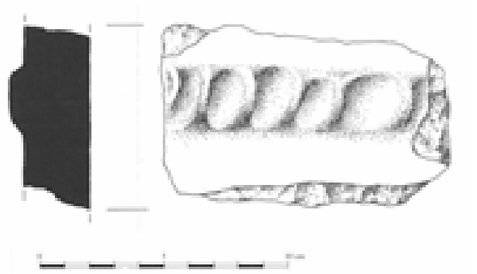
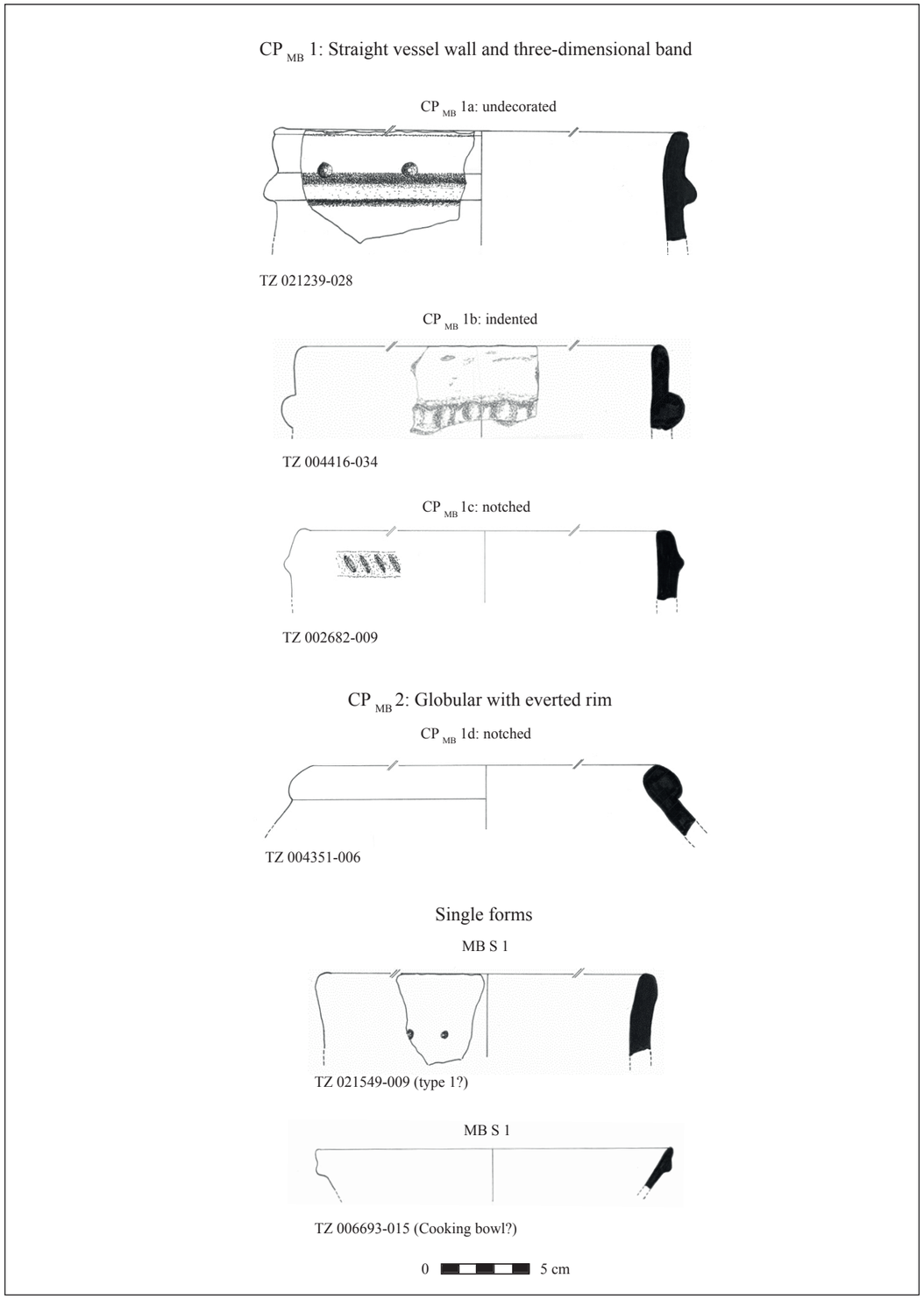


Fig. 4.5 Middle Bronze Age cooking pot sherd from the survey, TZ 000493-011 (Drawing: Ernst Brückelmann).

100 Cf. also Tall al-Qassis (Tēl Qāšīṣ) (Ben-Tor – Bonfil 2003a, 284) and Tall al-Ḥiṣn (Beth Shean) (Maeir 2007, 260): It had been assumed for a long time (Albright, Cole) that the cooking pots with a relief band that is positioned relatively low, with a perforation above (cf. *Chap. 4.2.2.*) would have to be dated earlier than those with the three-dimensional ornament located more to the top. There was also the theory (Kempinski 1983) that at the end of the Middle Bronze Age II, the latter were only characteristic of southern Israel. According to Maeir (2007, 261), both suppositions at least have to be qualified with a view to Tall al-Ḥiṣn (Beth Shean) and other sites.

101 For Ṭabqāṭ Faḥl (Pella), similar specimens—also with a perforated line below the rim—have been verified for the early Middle Bronze Age (Bourke et al. 2003, Pl. 347, 1 and 8), but here, too, the size of the sherds suggests that further below there had originally been a bulge. The same applies to Tall Waqqāṣ (Hazor) for the Middle Bronze Age II (Bonfil 1997, 47 with Fig. II 17, 7).

Plate 4.3: Typology of Middle Bronze Age cooking pots



4.2.2. Decorations and Handles

Just like the Early Bronze Age cooking pots, those of the Middle Bronze Age also occasionally possess decorative elements, albeit no pot marks. In this respect, the bulge of the type MB 1, either indented or incised, is not treated here as a decoration since it is a characteristic feature and, as such, was a standard element[102]. The question whether the bulge's design is chronologically relevant shall be looked into later[103].

The most common decoration is probably a row of circular holes that have been pierced into the wall above the clay bulge by means of a little stick *(Fig. 4.6)*. 43 of the 870 cooking pots types MB 1a and MB 1b possess this kind of ornament. It is possible, though, that these holes do not constitute a decorative element but are in fact steam holes[104]—this would however imply that the pot was covered during the process of cooking. A. Kempinsky's assumption that the cooking pots with a clay bulge and without a row of holes were only characteristic of the southern part of Israel during the Middle Bronze Age II[105] cannot be verified by the finds on Tall Zirā'a, even though it is located east of the river Jordan[106].

Fig. 4.6 Holes above the clay bulge, TZ 006076-002 (Source: Schwermer 2014).

Two specimens found on the Tall Zirā'a have a sort of herring-bone pattern incised on the clay bulge (*Fig. 4.7* and *4.8*). Similar examples of cooking pots from the Middle Bronze Ages IIA and B have been evidenced in Ṭabqāt Faḥl (Pella)[107], Tall al-Ḥiṣn (Beth Shean)[108], and Tall al-Qassis (Tēl Qāšīṣ)[109].

Fig. 4.7 Cooking pot sherd with herring bone pattern, TZ 020563-011 (Source: Schwermer 2014).

Fig. 4.8 Cooking pot sherd with herring bone pattern, TZ 021592-008 (Source: Schwermer 2014).

102 Regarding the possible function of this kind of bulge, see Schwermer 2014, Chap. 5.5.3.

103 According to R. H. Smith, for instance, relief bands with tilted indentations are indicative of an older tradition (Smith 1973, 200).

104 Maeir 2007, 260.

105 Kempinski 1983, 175.

106 Also cf. Maeir 2007, 261.

107 Smith 1973, 200 and Tab. 37, 541. Due to its specific clay, this specimen is listed among cooking pots from the Middle Bronze Age II, but R. H. Smith points out that this kind of embellishment was also applied to other vessel types, e.g. kraters and large jars or pithoi (e.g. see Amiran 1969, 99 Photo 101 [MB IIB–C]).

108 Maeir 2007, 339 with Tab. 12, 25 (in this case, positively identified as a cooking pot)

109 Ben-Tor – Bonfil 2003, 197 with Fig. 79, 3; 198 with Fig. 80, 4; 232 with Photo 107, 239 with Fig. 95, 3 and Photo 111.

In contrast to the Early Bronze Age cooking pots, there are a few Middle Bronze Age examples (9) with handles. Where present, the handles usually are attached to the bulge[110]; if the cooking pot is very small the relief band passes through little loop handles which are more ornamental than intended for actual lifting or carrying *(Fig. 4.10)*.

Fig. 4.9 Cooking pot sherd with point of handle attachment at its bulge, TZ 006632-029 (Source: Schwermer 2014).

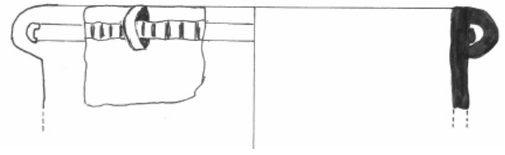


Fig. 4.10 Cooking pot sherd with little circumferential loop handles, TZ 020813-007, TZ 020813-011 (Source: Schwermer 2014).

4.2.3. Statistical Evaluation

Of the 1,476 Middle Bronze Age cooking pot sherds in the database, 969 (65.65 %) can be allocated to one of the types described above. This number is much smaller than the corresponding one of the Early Bronze Age because 275 bottoms were included in the statistics: Although these are indicative of Middle Bronze Age cooking pots they cannot be typologised.

4.2.3.1. Dimensions

The cooking pots belonging to type 1 as described above usually have very thick walls and a large diameter *(Tab. 4.7)*. Nevertheless there are some few smaller sizes, such as the specimen with the loop handles shown in *Fig. 4.10*. The base diameters are mostly equivalent to the ones from the openings and range between the extreme values of 14 and 60 cm (80 % between 24 and 40 cm). The few reconstructable vessels have a height of between 7.5 and 19 cm. In accordance with its completely different shape, type 2 has lower values in terms of wall thickness and opening diameter.

	Wall Thickness (in cm)		Opening Diameter (in cm)	
Type	**Extreme Values**	**80 % of the Vessels**	**Extreme Values**	**80 % of the Vessels**
CP_{MB} 1a	0.7–2.0	0.90–1.7	16–50	24–40
CP_{MB} 1b	0.5–2.5	0.90–1.7	16–60	20–40
CP_{MB} 1c	0.6–1.6	0.75–1.5	12–50	16–40
CP_{MB} 2	0.5–1.1	0.50–0.9	10–35	12–26

Tab. 4.7 Wall thickness and opening diameters of Middle Bronze Age cooking pots from Tall Zirā'a (Source: Schwermer 2014).

110 For Tall al-Ḥiṣn (Beth Shean) similar specimens have also been proven (Maeir 2007, 259 f. with Photo 4, 28, and 333 with Tab. 9, 18).

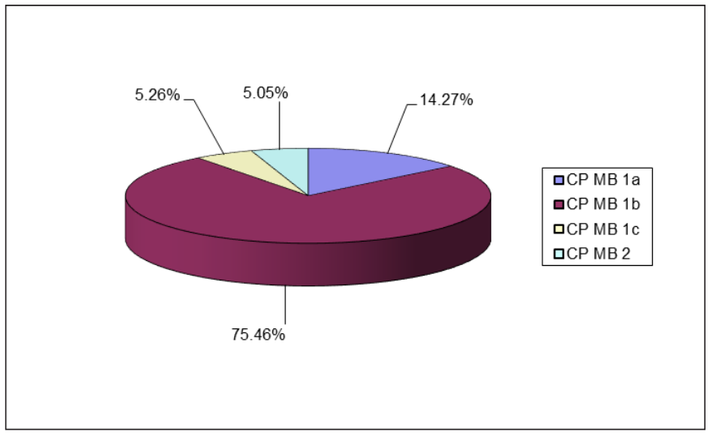
For the straight-walled Middle Bronze Age cooking pots, the volume can be easily determined with the help of the mathematical formulas for calculating the volumes of cylinders and frustums, provided the fragment reaches from the vessel's rim to its base. This way, the volumes of seven specimens could be determined among the finds from the Tall Zirā'a. The capacities calculated for a maximum base diameter of 36 cm already ranged between 1.5 and more than 15 litres *(Tab. 4.8)*. Pots with a rim diameter of 40 or even 50 cm and an assumed height of 20 cm would have actually had a volume of 25 or 39.3 litres, respectively.

Find No.	Ø Base (in cm)	Ø Opening (in cm)	Height (in cm)	Volume up to rim (in litres)
TZ 003007-015	20	24	16	6.1
TZ 020233-016	36	28	19	15.2
TZ 020482-003	30	30	8	5.7
TZ 020509-001	20	20	16	5.0
TZ 020948-001	30	36	14	12.0
TZ 020961-011	16	16	7.5	1.5
TZ 021024-011	20	24	7.5	2.9

Tab. 4.8 Calculated volume of Middle Bronze Age type 1 cooking pots from Tall Zirā'a (Source: Schwermer 2014).

4.2.3.2. Allocation to the Different Types

The straight-walled cooking pots (type 1) account for a total of 95 % of the Middle Bronze Age cooking pots, the type with a clay bulge and (finger) indentations (CP $_{MB}$ 1b) alone for more than 75 %. The globular cooking pots make up only slightly less than 5 % *(Graph. 4.4)*.



Graph 4.4 Percentage allocation of Middle Bronze Age cooking pot sherds to the different types (Source: Schwermer 2014).

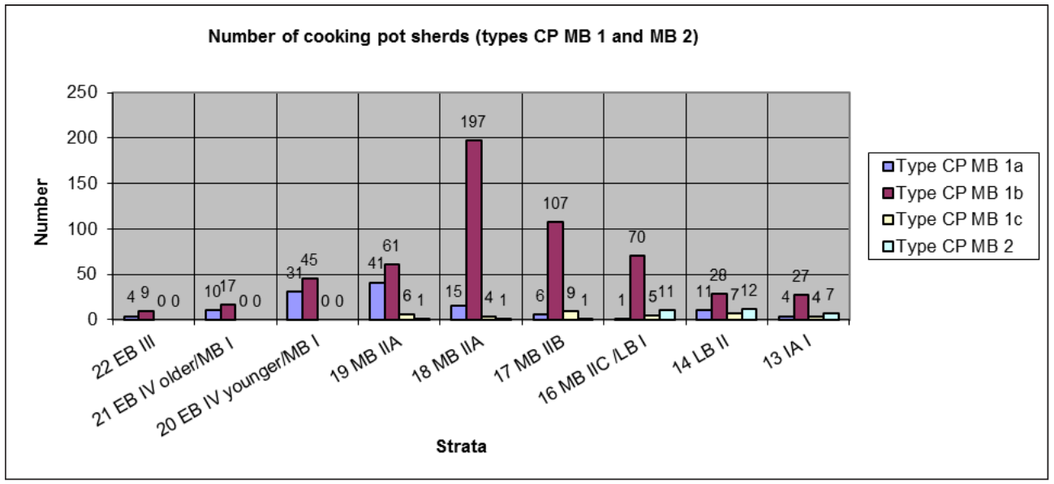
4.2.3.3. Distribution among the Separate Strata

If one again disregards the filling layers of Stratum 15, the shapes of type 1 mainly appear in the Strata 16 to 20 (73.37 % when factoring out the sherds from Stratum 15). The few type 2 sherds have their core areas in younger strata *(Graph 4.5)*.

With regard to the question of dating[111], unlike the findings in Ḫirbat az-Zeraqōn, the straight-walled cooking pot with relief band (type 1) hardly occurs in the Strata 22 to 24 that have been positively identified as Early Bronze Age. This, however, might change when a broader expanse of this time horizon has been excavated. After all, even the Strata 20 and 21 that have as yet been dated to the transitional period from the Early to the Middle Bronze Age[112] have yielded a larger number of this type of vessel so that with all due caution a life span starting during the later Early Bronze Age can be assumed. ^{14}C samples taken from the Strata 17 and 18 were dated to the Middle Bronze Age II A (1950–1750 BC) or to the transitional period between the Middle Bronze Age I (Intermediate Period) (2150–1950 BC) and the Middle Bronze Age, respectively.[113]

Stratigraphical evaluation of the Middle Bronze Age Strata 19 to 17 has revealed that the circular Middle Bronze Age cooking pot (here type 2) was a rare exception on the Tall Zirā'a whereas it was much more common on other sites, as will be shown below. However—without taking into account the sherds found in the filling layers (Stratum 15)—it occurs in more or less equal shares in Stratum 16 and Stratum 14 and thus seems to mark a transition from the Middle to the Late Bronze Age.

An examination of the overall number of cooking pot sherds in the individual strata *(Graph. 4.5)* reveals that the Middle Bronze Age type 1 cooking pots account for almost 80 % in the Strata 19–17 (Middle Bronze Age II); in the transitonal strata between the Early Bronze Age and the Middle Bronze Age (21 and 20) their share is still close to 50 %. In Stratum 16, they are also quite well represented (about 30 %); another circumstance that gives support to an early dating of this stratum. Here, the cooking pot type MB 2 also reaches its peak percentage.

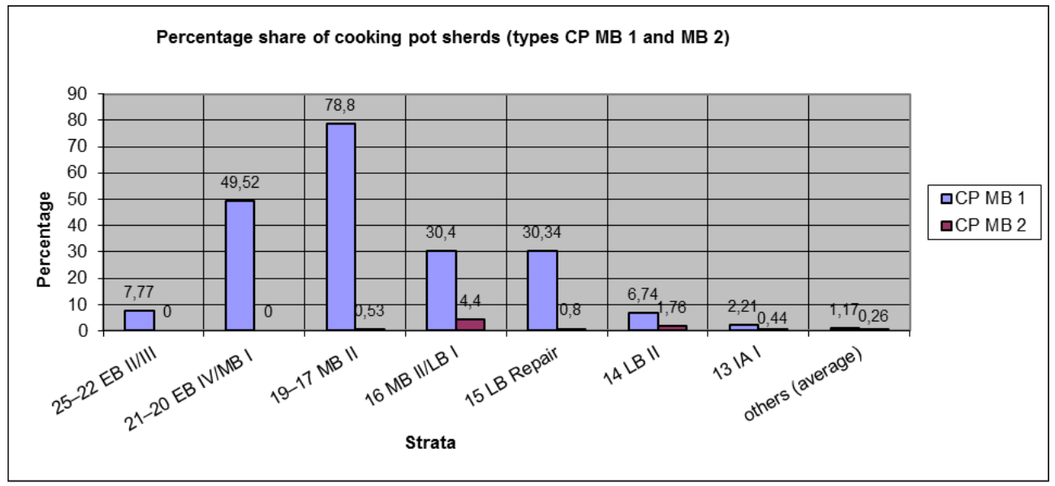


Graph 4.5 Number of cooking pot sherds types MB 1 and MB 2 in the strata with the highest incidence (Stratum 15 excepted) (Source: Schwermer 2014).

111 Cf. *Chap. 4.1.4.*

112 The ^{14}C samples from these strata can be dated to the Early Bronze Age II or III, respectively, to the dawn of the Middle Bronze Age I (cf. Schwermer 2014, Chap. 1.3.2).

113 Cf. *Chap. 3.2.1.2.* for Stratum 18 and *Chap. 3.2.1.3.* for Stratum 17.



Graph 4.6 Percentage of type MB 1 and type MB 2 cooking pot sherds among the total of typologised cooking pot sherds in the specified strata (in the Strata 9 to 0, the cooking vessels of the Classical and Post-classical periods have been included) (Source: Schwermer 2014).

4.2.4. Comparison with Reference Sites

4.2.4.1. Transjordan

In the literature, too, the straight-walled type of cooking pot with a three-dimensional band has been established as the standard form of the Middle Bronze Age. It occurs in each of the sites that were colonized in those times. In the publications on Ṭabaqāt Faḥl (Pella), these cooking pots are being dated to all phases of the Middle Bronze Age; at first, in 1982, to the Late Bronze Age II[114], then, in 1992, to the Middle Bronze Age IIA[115], and, finally, the more recent publications preponderantly place them with the early and earliest phases of the Middle Bronze Age, which could also indicate that the appearance of this type of cooking pot can be dated earlier than assumed so far[116].

As already mentioned in *Chap. 4.1.4.,* H. Genz, although classifying this form as typical of the Middle Bronze Age, also instances it as a ‘large bowl with straight wall’ (type C) for the Early Bronze Age Ḫirbat az-Zeraqōn *(Fig. 4.11)*, and characterizes the vessel’s clay composition as cooking pot ware[117]. Measured against the total number of sherds examined, however, these fragments only account for a rather small share (1.3 % of the cooking pots)[118]. The examples given by H. Genz often have a clay bulge without any ornamentation (corresponds to CP_{MB} 1a); instead there are circular indentations above it[119]. However, there are also specimens with finger indentations and scratches[120]. In proportion to their diameter, which usually measures more than 40 cm (up to 64.5 cm)[121], the pots are comparatively flat with a wall height of 15 to 20 cm.

114 Mc Nicoll et al. 1982, Tab. 118, 4 and 5.
115 Mc Nicoll et al. 1992, 36 f. with Tab. 26, 15 and Table 30:4. The Middle Bronze Age is dated at the time span from 1900–1750 BC.
116 Bourke et al. 1998, Pl. 192, 2. 12 and 13; 195, 15; Bourke et al. 2003, Pl. 347, 2 and 7. There is no more detailed information on the dating.
117 Genz 2002, 31.
118 See above, *Tab. 4.3.* In this respect, the number found in the Early Bronze Age strata of the Tall Zirā‘a is a little larger at 7.77 % *(Graph. 4.6),* however, in contrast to Ḫirbat az-Zeraqōn, subsequent disturbances of the contexts cannot be ruled out here.
119 Genz 2002, Tab. 54, 4–6.
120 Genz 2002, Tab. 117, 6 and 122, 3, resp.
121 Genz 2002, Tab. 54, 6.

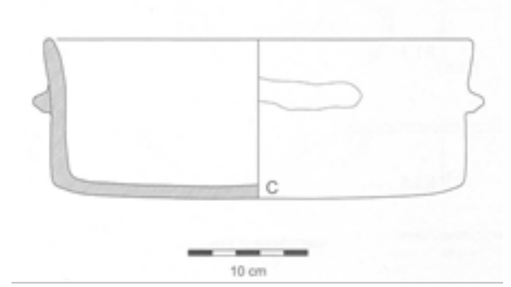


Fig. 4.11 Large bowl with straight wall from Ḫirbat az-Zeraqōn[122] (Source: Genz 2002).

In his Ḫirbat az-Zeraqōn survey, J. Kamlah dates the straight-walled cooking pots with a relief band to the transitional phase from the Early Bronze Age to the Middle Bronze Age or to the Middle Bronze Age[123] and thus names a longer time span than the one usually given in the literature. However, it matches the evidence established above for the Tall Zirā‘a.

In his typology of Middle and Late Bronze Age cooking pots from the Tall Abū al-Ḫaraz, P. Fischer almost exclusively specifies those types that, for the Tall Zirā‘a, can be dated to the transitional period between the Middle and the Late Bronze Age at the earliest. They will therefore be discussed in *Chap. 4.3*. Except for one single specimen that is moreover only similar and reportedly part of an older tradition[124], the straight-walled cooking pot type MB 1 does not seem to occur at all on the Tall Abū al-Ḫaraz. This can be explained by the fact that the Tall Abū al-Ḫaraz was obviously only populated during the late Middle Bronze Age. The three Middle Bronze Age phases IV/1, IV/2, and V are dated to the seventeenth, to the first half of the sixteenth, and approx. to the middle of the sixteenth century BC[125]. By that time, however, the straight-walled cooking pot with a relief band seems to have been out of use.

Similarly, the few Middle Bronze Age sherds from the Tall Dēr ‘Allā cannot be dated in accordance with those from the Tall Zirā‘a. G. van der Kooij distinguishes four types of cooking pots, with types 1 and 2 *(Fig. 4.12)* corresponding to the Zirā‘a type 2, and types 3 and 4 corresponding to the Tall Zirā‘a cooking pots of the transitional period, which will only be introduced in *Chap. 4.3*[126].

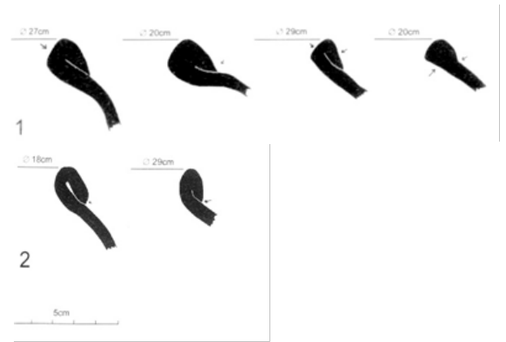


Fig. 4.12 Types 1 and 2 of the Middle Bronze Age cooking pots from Tall Dēr ‘Allā[127] (Source: van der Kooij 2006).

The globular cooking pot with the inverted and thus thickened rim (type MB 2) is otherwise scarcely evidenced in the northern Jordanian region or, more specifically, is not mentioned in any publication except for one short report on the excavations on the Tall al-Ḥamma, located in the Jordan Valley, that features two photographs of this type of cooking pot sherds and dates them to the Middle Bronze Age IIB–C[128].

Middle Bronze Age cooking bowls (Single Form E 2) from the surroundings of the Tall Zirā‘a have been evidenced for Ṭabqāt Faḥl (Pella) (early Middle Bronze Age)[129] and Sāl (Middle Bronze Age II)[130]; the former has the usual bulge with finger indentations while the latter is not ornamented at all apart from a slightly profiled rim.

4.2.4.2. Cisjordan

R. Amiran defines the straight-walled cooking pot with a relief band and finger indentations below its rim, which is also the most prevalent type on the Tall Zirā‘a, as the most common cooking pot during the Middle Bronze Age II A[131]; however, she names an additional row of dots above the relief band as a characteristic feature. For the Middle Bronze Age IIB–C, she specifies a similar type (here, the relief band is attached right below the rim), which she, however, regards as no longer dominant during this phase[132]. The other examples she lists all have a circular

122 Genz 2002, 21 Fig. 9.
123 Kamlah 2000, Tab. 70, 5. 7–11 (Ḫirbat Yarīḥā aš-Šamālīyah).
124 Fischer 2006a, 246 Fig. 277, 3; 247 and 252.
125 Fischer 2006a, 374 with Tab. 70.
126 van der Kooij 2006, 210 with Fig. 8. All four types are represented in the annexe to Schwermer 2014, II, 2.6.
127 van der Kooij 2006, 210 f. with Fig. 8.
128 van der Steen 2001, 231 Photos 1 and 2.
129 Bourke et al. 1998, 192, 2.
130 Kafafi – Vieweger 2001, 32, 3.
131 Amiran 1969, 102. A. M. Maeir also considers this type as indicative of the Middle Bronze Age II in Tall al-Ḥiṣn (Beth Shean) (Maeir 2007, 260). For Tall Qēmūn (Tēl Yoqnə‘ām), also cf. Ben-Ami – Livneh 2005, 271.
132 Amiran 1969, 101 f. und Tab. 30.

shape and are considered the precursors of the cooking pots of subsequent periods. R. Amiran also describes the cooking pot that is designated the second main form on the Tall Zirā'a (globular with a folded rim); however, she characterises it as very rare[133].

Another glance at the reference excavations in Tall al-Ḥiṣn (Beth Shean) *(Tab. 4.9)*, Tall al-Qassis (Tēl Qāšīṣ), and Tall Qēmūn (Tēl Yoqnəʿām) *(Tab. 4.10)* reveals that here the handmade coarse cooking pot with a straight wall and a relief band only plays a minor role—contrary to the common view, also held by R. Amiran, that it is the most prevalent type during the Middle Bronze Age II[134]. Instead, a globular cooking pot that was either wheel-thrown or shaped in a mould[135] and corresponds to the type MB 2 described above, in Beth Shean particularly one with a rolled-back rim[136], is declared the clearly dominant type. These findings may be surprising with respect to the evidence on the Tall Zirā'a but they also point to an already established regional difference: "The regional distribution of the globular cooking pot with rolled-back rim (…) is of interest, as it is limited to specific regions. The northern limits are the northern coastal plain (…) and the Jezreel/Beth-Shean Valleys (…). It is not reported at Hazor (…) and is apparently lacking from Tel Dan as well (…). Moving southwards, it appears in the lower Jordan valley at Jericho."[137]. Apparently this type of cooking pot—as could be seen above—was neither prevalent east of the Jordan. It seems even more likely, though, that these findings bear testimony to different phases of settlement: The straight-walled cooking pot seems to be an indicator of an early phase of the Middle Bronze Age II and to have fallen into desuetude in the course of that period[138]. This is confirmed by the excavation evidence of Qīre (Tall Qīrī) *(Tab. 4.10)*, which is the only findspot in the Jezreel Valley where it was noted that this form was "quite frequent … (which may perhaps indicate a relatively early date within MB II)"[139]. The cooking pots from Tall al-Ḥiṣn (Beth Shean) that were examined, however, only occurred in three strata that were dated to the late eighteenth to sixteenth century BC[140].

Tall al-Ḥiṣn (Beth Shean) EB IIIB[141]	Tall Zirāʿa
Group A: Open Cooking Pots	**CP $_{MB}$ 1**
CP 21: Open, rounded cooking pots[142] (1)	Single form E 2
CP 22: Open, straight-sided cooking pots (6) **CP 22a:** with appliqué at rim **CP 22b**: with appliqué below rim	**CP $_{MB}$ 1** CP $_{MB}$ 1a CP $_{MB}$ 1b CP $_{MB}$ 1c
Group B: Closed Globular Cooking Pots	**CP $_{MB}$ 2** CP $_{MB/LB}$ (see *Ch. 4.3*)
CP 24: Globular cooking pots with a short everted rim (40)	*see Chap. 4.3*
CP 25: Globular cooking pots with a profiled rim (5)	*see Chap. 4.3*
CP 26: Globular cooking pots with a rolled-back rim (48)	CP $_{MB}$ 2

Tab. 4.9 Comparison of the typologies of Middle Bronze Age cooking pots from Beth Shean (percentage in parentheses) and from Tall Zirāʿa[143] (Source: Schwermer 2014).

Cooking bowls, a type that is scarcely represented on the Tall Zirāʿa during the Middle Bronze Age, have been verified in Tall al-Ḥiṣn (Beth Shean)[144] and—although only in Late Bronze Age contexts—in Tall Qēmūn (Tēl Yoqnəʿām)[145].

The reference typologies of Middle Bronze Age cooking pots that are depicted in *Tab. 4.9* and *4.10* reveal the widely different approaches that are possible when tackling a task such as this, particularly with respect to defining the (sub)types, distinguishing the individual forms from each other, deciding on the order in which to represent them, and, last but not least, their labelling. Moreover, the typologies from Tall al-Qassis (Tēl Qāšīṣ) and Qīre (Tall Qīrī) present the Middle Bronze Age and the Late Bronze Age forms in conjunction[146]. A uniform typology would make it much easier to compare separate find sites[147]; however, due to the different (find) conditions this seems next to impossible.

1334Amiran 1969, 102 and Tab. 30, 7.

136 For instance, in Tall Qēmūn (Tēl Yoqnəʿām) only 6 % of altogether 173 Middle Bronze Age cooking pots represent this type (Ben-Ami – Livneh 2005, 271), in Tall al-Ḥiṣn (Beth Shean) this form accounts for close to 7 % (Maeir 2007, 258 f.), likewise on the Tall al-Qassis (Tēl Qāšīṣ) (cf. Bonfil 2003, 284, and 315). This also seems to apply to Tall al-Mutasallim (Megiddo) (Ilan et al. 2000, 198).

135 On this, see Maeir 2007, 261.

136 Maeir 2007, 261.

137 Maeir 2007, 262 f. and 294.

138 In this context, A. M. Maeir states "that the overall evidence indicates that the straight-sided cooking pot becomes progressively less common towards the end of the MB II (…)" (Maeir 2007, 261).

139 Ben-Tor 1987, 266. A. Ben-Tor 1997, 272, concludes that the MB II material from Tall Qēmūn (Tēl Yoqnəʿām) has to be dated to a later period than that from the Qīre (Tall Qīrī).

140 Maeir 2007, 258; Mazar 2008, 1616.

141 Maeir 2007, 259, Fig. 4.4 (see Fig. in Schwermer 2014, II, 2.1). Statistical data 258 with Tab. 4.4.

142 This type, which is shaped like a cooking bowl, is only represented by a few specimens and may simply constitute a variation of 22; Maeir 2007, 258 f.

143 With respect to the percentage distribution of the types found on the Tall Zirāʿa, cf. *Graph 4.6*.

144 Maeir 2007, 259 Tab. 29, 8.

145 Livneh 2005, Fig. 85, 12; Ben-Ami – Livneh 2005, 281 Fig. IV.8–10.

146 See Schwermer 2014, II, 2.4 and 2.5.

147 On this question, also refer to Bonfil 2003, 277.

Tall Qēmūn (Tēl Yoqnəʿām)[148]	Tall al-Qassis (Tēl Qāšīṣ)[149]	Qīre (Tall Qīrī)[150]	Tall Zirāʿa
CP A: Straight-walled cooking pots (6)	**UCP I: Upright-walled cooking pot (5.5)**	**Cooking pots with upright walls**	**CP $_{MB}$ 1**
CP AI: Simple rim CP AII: Thickened rim	UCP Ia: Decorated with a plastic band UCP Ib: Decorated with a plastic band below a row of non perforating holes		CP $_{MB}$ 1a CP $_{MB}$ 1b CP $_{MB}$ 1c
	UCP II: Upright slightly inslanting walls, undecorated (1.5)		Single form E 1
CP B: Globular Cooking Pots (94)	**GCP: Globular cooking pot (93)**		**CP $_{MB}$ 2** CP $_{MB/LB}$ (see *Chap. 4.3*)
CP BI: Cut rim CP BII: Gutter rim (with CP BIIa–g)	GCP I: Gutter rim (mit GCP 1a–b) GCP IV: Everted triangular rim GCP V: Vertical rim	**CP with gutter rim** **CP with triangular rim**	(see *Chap. 4.3)*
CP BIII: Folded rim (with CP BIIIa–c)	GCP II: Square rim GCP III: Inverted triangular rim		**CP $_{MB}$ 2**
CP BIV: Grooved Rim			

Tab. 4.10 Comparison of the typologies of Middle Bronze Age cooking pots from Tall Qēmūn (Tēl Yoqnəʿām), Tall al-Qassis (Tēl Qāšīṣ), Qīre (Tall Qīrī) (percentage in parentheses), and Tall Zirāʿa[151] (Source: Schwermer 2014).

4.2.5. Conclusion

With respect to the cooking pots, the find situation in those areas of the Middle Bronze Age strata on the Tall Zirāʿa that have as yet been excavated seems to differ from that of most of the chosen reference sites. While here the straight-walled coarse cooking pot with relief band (type MB 1) is by far the most prevalent one[152], it does not occur at all on the Tall Abū al-Ḫaraz and only accounts for less than 10 % on the find sites in Cisjordan of Tall al-Ḥiṣn (Beth Shean), Tall Qēmūn (Tēl Yoqnʿām), and Tall al-Qassis (Tēl Qāšīṣ)[153]. Apart from the possibility of regional differences this evidence mainly seems to suggest that the Tall Zirāʿa was already populated at a much earlier phase of the Middle Bronze Age than these reference sites, namely during the Intermediate Period/ Middle Bronze Age I (2150–1950 BC) and also during the early Middle Bronze Age II (1950–1550 BC). For one thing, this is supported by the fact that about 50 % of the cooking pots found in the Strata 21 and 20 that mark the transition from the Early to the Middle Bronze Age belong to type MB 1[154], and secondly, that the ^{14}C

148 Ben-Ami – Livneh 2005, 275–281, Fig. IV 8–10 (see Fig. in Schwermer 2014, Part II, 2.3). D. Ben-Ami and A. Livneh present the Middle and Late Bronze Age pottery in correlated typologies: „to define the transition between the periods on the basis of the distribution of pottery types without beeing prejudiced by the pottery´s stratigraphic origin" (Ben-Ami – Livneh 2005, 247). For comparison the table shows the only in the Middle Bronze Age strata appearing types (275, Fig. IV 8). The other types are considered in their specific chronolgical context. For statistical data see p. 271 with Tab. IV 6.

149 Bonfil 2003, 300–302, Fig. 117–119 (see Fig. in Schwermer 2014, Part II, 2.4). Also Bonfil analysed the Middle and Late Bronze Age pottery in correlated typologies for examining the development of vessel types (p. 277). For statistical data see ibid. p. 315 with Tab. 22. Data basis are 75 sherds.

150 Ben-Tor 1987, 267, Fig. 62 (see Fig. in Schwermer 2014, Part II, 2.5). No strict typology but different types are illustrated and described.

151 On the percentage distribution of the types found on the Tall Zirāʿa, cf. *Graph 4.4*.

152 Cf. also tables and figures in Schwermer 2014, Chap. 4.8. Even when counting in the cooking pots of the transitional type MB/LB, which will be described in *Chap. 4.3*, the type MB 1 still makes up more than 60 %.

153 During the Early Bronze Age III or also the transitional period to the Middle Bronze Age in Tall Qēmūn (Tēl Yoqnəʿām) alone, this type accounted for just over 20 % of the cooking pots—albeit among a sample of only nine cooking pot sherds (Ben-Ami – Livneh 2005, 273 with Graph IV 4).

154 Cf. Schwermer 2014, Chap. 4.8.2 with Fig. 4.82.

data from Stratum 18 in which this type of cooking pot was the most prevalent, point at an early Middle Bronze Age II: two out of three samples dated to the time between 2030 and 1870/60 BC with a probability of almost 80 %[155]. The exact opposite applies to the globular cooking pot (type MB 2) which overall has to be dated to a later period and accounts for only 5 % on the Tall Zirā‘a[156] whereas it amounts to more than 90 % on the find sites mentioned above. At present, the number of sherds of this type of cooking pot found in the Late Bronze Age strata exceeds that of those from the Middle Bronze Age strata. This also applies to the forms that will be dated to a transitional period from the Middle to the Late Bronze Age in the subsequent chapter (types MB/LB). This relation may still change, though, after all strata have been excavated on a comparable area—as far as possible[157].

The average overall share of cooking pot sherds among the total sherd assemblage (only rim sherds) on the Tall Zirā‘a in the three Middle Bronze Age strata 19–17 is just under 25 %[158]. The reference values for the Tall Abū al-Ḫaraz (Strata IV, V, and VI) are 19 % on average[159], in Ṭabaqāt Faḥl (Pella) they are close to 10 %[160], and in Tall al-Ḥiṣn (Beth Shean) 11 %[161]. These diverging numbers, too, can indicate that the heyday of settlement on the Tall Zirā‘a during the Middle Bronze Age must be assumed much earlier than on these reference sites. It is also possible that the share of cooking pots was larger in an earlier phase of the Middle Bronze Age than during its decline.

4.3. Middle to Late Bronze Age Cooking Pots

For the following type of cooking pots, which can have one of four different rim designs, a clear temporal allocation is deliberately avoided, due to the find contexts as well as the sometimes disparate chronological classification in the literature. For instance, R. Amiran on the one hand lists this type that is defined here as $CP_{MB/LB}$ 1d among the Middle Bronze Age IIA cooking pots but also points out that it only became very popular in the subsequent periods[162] This type comprises closed vessels with round or even slightly carinated walls und a circular bottom[163], a short neck and an everted rim. The rim diameter exceeds that of the Early Bronze Age pots with hole-mouth. Because of this design, its thermal properties are much more advantageous than those of the type that had been prevalent on the Tall Zirā‘a during the Middle Bronze Age[164]. Unlike the very massive Middle Bronze Age cooking pot, these pots were either wheel-thrown or shaped in a mould[165]. With respect to their clay composition, the pots found on the Tall Zirā‘a already clearly point towards the Late Bronze Age[166].

4.3.1. Typology

In terms of typology, the following rim forms are distinguished in the cooking pot type described above, which already point forwards towards the rim design of the Late Bronze Age cooking pots:

$CP_{MB/LB}$ 1: Middle to Late Bronze Age cooking pot with circular or slightly carinated wall and everted rim
- $CP_{MB/LB}$ 1a: rim rounded
- $CP_{MB/LB}$ 1b: rim canted
- $CP_{MB/LB}$ 1c: rim indented
- $CP_{MB/LB}$ 1d: rim impressed/grooved

155 TZ 014129 and TZ 015540. Cf. *Chap. 3.2.1.2.*

156 This number would increase if those forms of the transitional period MB/LB were counted in that can be positively dated to the Middle Bronze Age strata (on this, see Schwermer 2014, Chap. 4.3).

157 Several strata in this area have been completely destroyed, especially by the landslide and the subsequent repair measures (see Introduction to this volume).

158 Cf. Schwermer 2014, Chap. 2.3.4 with Tab. 2.6 and Fig. 2.9. Sherds that were displaced due to disturbances were not subtracted out of the numbers underlying this table. However, this should be negligible with respect to the share of cooking pot sherds among the total number of sherds as this equally applies to all sherd finds.

159 Fischer 2006a, 253 with Tab. 51A.

160 Bourke et al. 2006, 32 with Fig. 27.

161 Maeir 2007, 245 with Tab. 4.1.

162 Amiran 1969, 102 with Plate 30, 2.

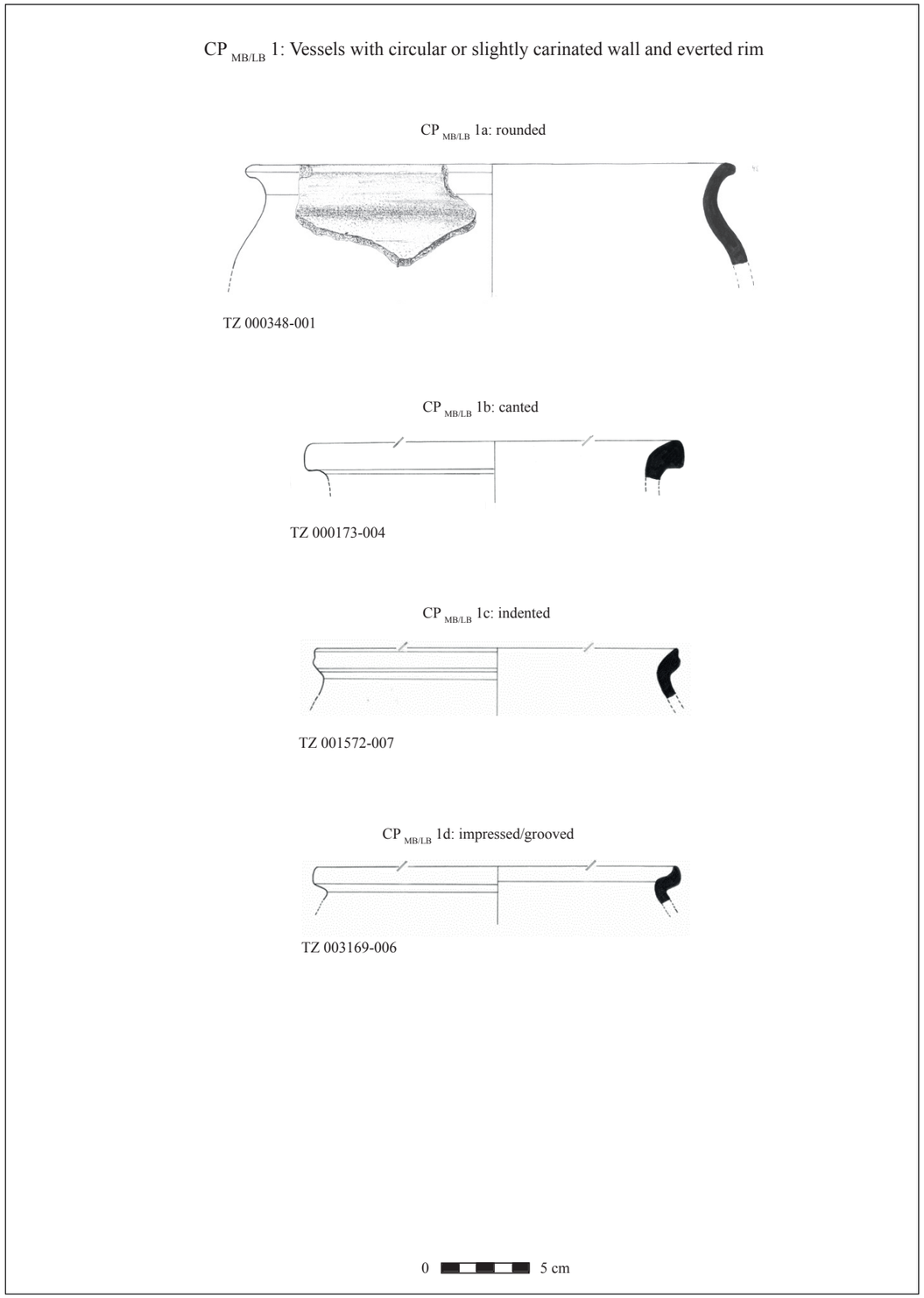
163 Chronologically, the cooking pots with circular walls might be dated to the late Middle Bronze Age and those with slightly carinated walls to the early Late Bronze Age (accordingly Ben-Ami – Livneh 2005, 272, for Tall Qēmūn (Tēl Yoqnə‘ām). However, the small size of the rim sherds at hand often makes any statement concerning the shape of a vessel’s body impossible.

164 More details on this in Schwermer 2014, Chap. 5.5 and 5.6.

165 Cf. Schwermer 2014, Chap. 5.5.2 and 5.6.2.

166 Cf. Schwermer 2014, Chap. 5.2.2.

Plate 4.4: Typology of Middle to Late Bronze Age cooking pots



4.3.2. Statistical Evaluation

553 of the sherds found on the Tall Zirā'a can be assigned to one of the four subtypes of Middle to Late Bronze Age cooking pots described above. None of them is ornamented and only three sherds have the rudiment of a handle. As yet, only one almost complete vessel has been found (TZ 005393-001).

4.3.2.1. Dimensions

The measurements of the opening diameter and particularly the wall thickness are significantly below those of the straight-walled Middle Bronze Age cooking pot (*Tab. 4.11*). In this respect, too, this type is more a precursor of the periods to come than a relic of the past. On average, however, this type of cooking pot does not yet reach the dimensions of the Late Bronze Age cooking pot that will be the subject in *Vol. III.*

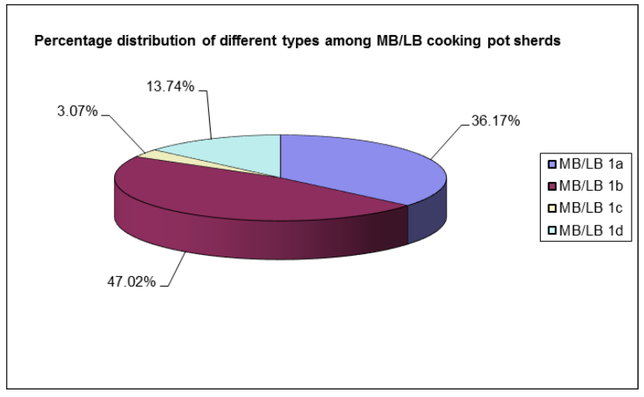
Type	Wall thickness (in cm) Extreme values	Wall thickness (in cm) 80 % of the vessels	Opening (in cm) Extreme values	Opening (in cm) 80 % of the vessels
$CP_{MB/LB}$ 1a	0.4–1.4	0.5–1.00	10–40	14–30
$CP_{MB/LB}$ 1b	0.4–1.4	0.5–1.00	10–41	18–32
$CP_{MB/LB}$ 1c	0.4–1.3	0.5–1.00	16–34	16–32
$CP_{MB/LB}$ 1d	0.4–1.1	0.4–0.85	14–40	14–30

Tab. 4.11 Wall thickness and opening of the Middle to Late Bronze Age cooking pots from Tall Zirā'a (Source: Schwermer 2014).

Since so far no cooking pot of this type could be reconstructed it is also impossible to make any statement with respect to these vessels' volume. The specimens that have been reconstructed on the Tall Abū al-Ḫaraz hold between 0.3 and 14.1 litres, on average 4.4 litres. In this context, P. Fischer distinguishes between three groups of cooking pots: those with a capacity of more than 10 litres, those that contain about 5 litres, and those that hold less than 2 litres[167].

4.3.2.2. Allocation to the Different Types

Among the four different manifestations of this type of cooking pot, the forms with the simple rim design (1a and 1b) predominate; they account for 83.18 % of all sherds *(Graph 4.7)*.

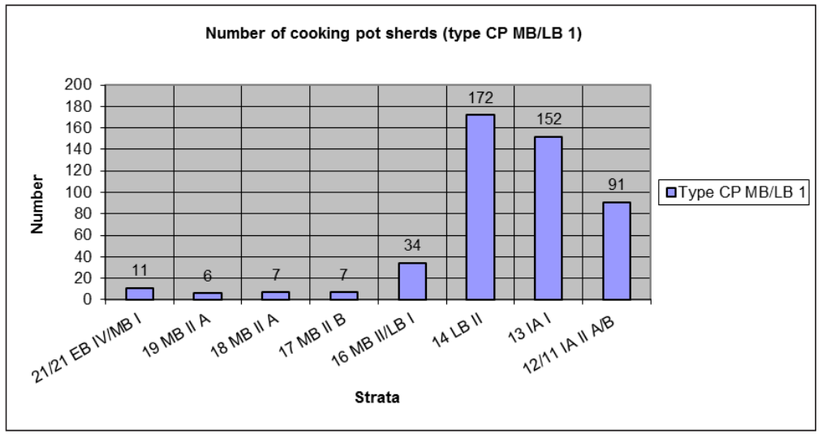


Graph 4.7 Percentage allocation of MB/LB cooking pot sherds to the different types (Source: Schwermer 2014).

167 Fischer 2006a, 348 with Tab. 63 and 349.

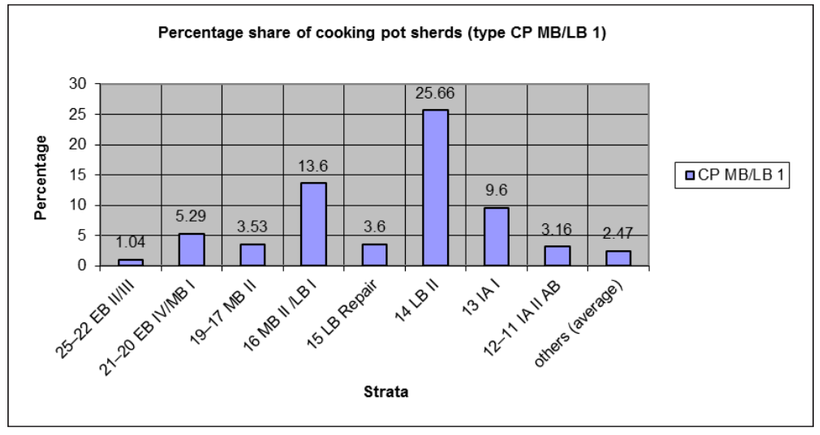
4.3.2.3. Distribution among the Separate Strata

The fact that the repair layers of Stratum 15, which preponderantly contained Early and Middle Bronze Age pottery[168], yielded only isolated sherds of this type of cooking pot already indicates that it has to be dated rather to the Late Bronze Age on the Tall Zirā'a. A closer look at this type's distribution among the different strata confirms this assumption: The largest number of sherds was found in Stratum 14, closely followed by Stratum 13, which is already dated to the Early Iron Age *(Graph. 4.8)*.



Graph 4.8 Number of type MB/LB cooking pot sherds in the strata with the highest prevalence (Stratum 15 not included) (Source: Schwermer 2014).

An examination of the percentage share of this type of cooking pot sherds among the separate strata reveals that it amounts to less than 5 % in the three Middle Bronze Age strata, just below 14 % in Stratum 16 which, as has been shown above, is to be dated to the transitional period from the Middle to the Late Bronze Age, and almost 26 % in Stratum 14. During the Iron Age I, this type still accounted for approximately 10 % of all cooking pot sherds but afterwards slumped to 3 % and less *(Graph. 4.9)*.



Graph 4.9 Percentage distribution of type MB/LB cooking pot sherds among all cooking pot sherds that were typologised in the specified strata (Source: Schwermer 2014).

168 Cf. Schwermer 2014, Chap. 1.3.2. 93 % of the cooking pot sherds found in the repair layers that can be typologised date to the Early and Middle Bronze Age (57.69 % and 35.29 %). The share of Middle to Late Bronze Age cooking pots only amounts to 4.07 % and that of the Late Bronze Age cooking pots to 2.04 %.

4.3.3. Comparison with Reference Sites

4.3.3.1. References in the North Jordanian Region

In his publication on the Ḫirbat az-Zeraqōn Survey, Kamlah describes four specimens of this type of cooking pot which are more or less equivalent to the forms 1a[169], 1b[170], and 1c[171]. With reference to Tall Waqqāṣ (Hazor), Qīre (Tall Qīrī), and Tall as-Sulṭān (Jericho) he dates three of them to the Middle Bronze Age II, and the type 1c to the seventeenth/sixteenth century BC (reference Tall Waqqāṣ [Hazor]) or to the Late Bronze Age (reference Tall Dēr ʻAllā). Specimens from Ṭabqāṭ Faḥl (Pella) that correspond to the forms 1a[172], 1b[173], and 1c[174] are dated to the Middle Bronze Age, to the Middle/Late Bronze Age, and to the Late Bronze Age I. For al-Hawāriğ, located only a few kilometres from Ṭabqāṭ Faḥl (Pella), one type 1a cooking pot has been verified which is dated to the Late Bronze Age with reference to Ṭabqāṭ Faḥl (Pella)[175].

P. Fischer's assignment of the different forms from the Tall Abū al-Ḫaraz shows similar results[176]: He dates forms corresponding to type 1a to the Phases V, VI, and VII[177] (Late Bronze Age), those corresponding to type 1b to the Phases IV/2, V, and VI[178] (Middle Bronze Age III or Late Bronze Age I, resp.), those corresponding to type 1c to the Phases IV/1 and V[179] (Middle Bronze Age III or Late Bronze Age II, resp.), and those corresponding to type 1d to the Phase V[180] (Late Bronze Age I)[181]. In contrast to the finds from Tall Qēmūn (Tēl Yoqnəʻām) and Tall al-Qassis (Tēl Qāšīš), P. Fischer does not consider the design of a vessel's wall—carinated or convex—as an indicator of chronology[182].

The cooking pot types 3 and 4 as defined by G. van der Kooij that occurred in those strata of Tall Dēr ʻAllā *(Fig. 4.13)* that must be dated to the latest phase of the Middle Bronze Age correspond to the Zirāʻa types MB/LB 1a to 1c[183].For one thing, the publications cited above on excavations on Jordanian territory make it clear that the cooking pot type MB/LB was not very common east of the river Jordan and, secondly, that it is dated both to the Middle and to the Late Bronze Age. An occurrence in Iron Age strata has as yet not been documented in the literature.

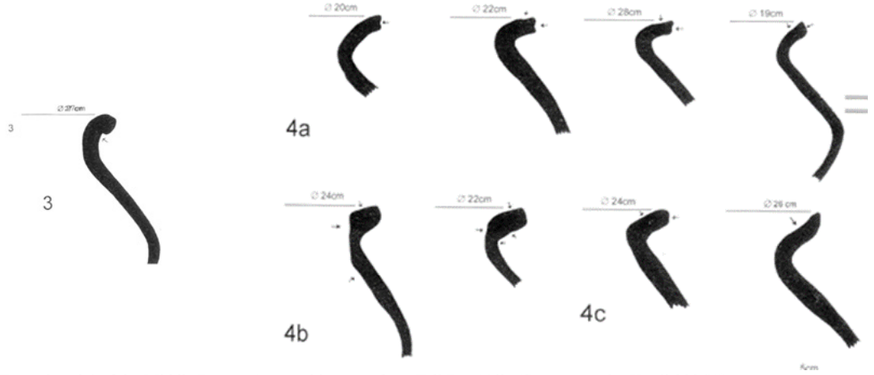


Fig. 4.13 a.b Types 3 and 4 of the Middle Bronze Age cooking pots from Tall Dēr ʻAllā (Souce: van der Kooji 2006)[184].

169 Kamlah 2000, Pl. 19, 6.
170 Kamlah 2000, Pl. 19, 2 and 3.
171 Kamlah 2000, Pl. 57, 7.
172 Smith 1973, Pl. 36, 839 (MB II).
173 Smith 1973, Pl. 36, 838 and 853 (MB II); McNicoll et al. 1992, Pl. 34, 21 and 45, 7.
174 Bourke et al. 1992, 111, 1 (MB/LB) and McNicoll et al. 1992, Pl. 45, 6.
175 Lovell et al. 2007, 116–120 with Fig. 13, 5.
176 For each phase—equivalent to one stratum—of the Tall Abū al-Ḫaraz, P. Fischer compiles a separate typology (Fig. in Schwermer 2014, II, 2.7). As a consequence, some individual forms appear repeatedly, sometimes with only very minor discrepancies.
177 Fischer 2006a, 248 Fig. 279, 3; 250 Fig. 281, 4; 251 Fig. 282, 2.
178 Fischer 2006a, 246, Fig. 277, 5–7; 248 Fig. 279, 1 and 2; 250 Fig. 281, 5; 251 Fig. 282, 1 and 2; 251 Fig. 282, 10 (here with handle).
179 Fischer 2006a, 246 Fig. 277, 1; 248 Fig. 279, 9 and 10.
180 Fischer 2006a, 249 Fig. 280, 5.
181 Fischer 2006a, 374 with Tab. 70 (key to chronology).
182 Fischer 2006a, 252.
183 van der Kooij 2006, 210 f. with Fig. 8; cf. above *Chap. 4.2.4*. Figures of all four types in Schwermer 2014, II, 2.6.
184 van der Kooij 2006, 210 with Fig. 8.

4.3.3.2. Cisjordan

In Tall al-Ḥiṣn (Beth Shean), all four variations of the type of cooking pot described above have been dated to the Middle Bronze Age and account for a respectable 40 % of all cooking pots from this period *(Tab. 4.12)*[185]. It should be noted, though, that here they are not distinguished by their rim design alone but are rather subsumed under the form of 'globular cooking pots with a short splayed rim'[186]. The form of the 'casserole rim' is described in more detail *(Fig. 4.14)*.

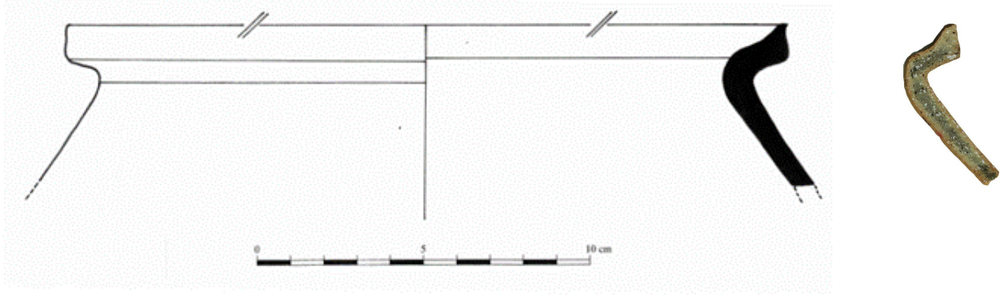


Fig. 4.14 a.b Type 1d cooking pot with 'casserole rim', TZ 003778-083 – drawing and thin section (Source: BAI/GPIA).

On Tall al-Ḥiṣn (Beth Shean), the Middle Bronze Age type of cooking pot described in this chapter continues to be in use during the Late Bronze Age: It can now be distinguished between a type with a basic rim that can be either rounded or canted and thus corresponds to the types 1a and 1b in our typology, and the form with a 'casserole rim'[187]. These two types make up about 46 % of all Late Bronze Age cooking pots in Tall al-Ḥiṣn (Beth Shean), the type with a simple everted rim being clearly predominant at 43 %[188].

In Tall Qēmūn (Tēl Yoqnəʻām), the Middle and Late Bronze Age cooking pots were roughly categorised according to the shapes of their walls: straight (CP A), globular (CP B), and carinated (CP C). Here, the carinated cooking pot is considered a clear indicator of the Late Bronze Age notwithstanding that it has its first appearance as early as the transitional phase from the Middle Bronze Age IIC to the Late Bronze Age I[189]. For the Tall Zirāʻa, it is hardly possible to differentiate between the globular and the carinated shape on the basis of eligible rim sherds because usually the sherds available are too small. The type with a simple rim (CP 1a) corresponding to our types 1a and 1b has its first appearance in Tall Qēmūn (Tēl Yoqnəʻām) during the transition from the late Middle Bronze Age to the Late Bronze Age I and peters out at the onset of the Late Bronze Age II[190]. As on the Tall Zirāʻa, type 1c (in Tall Qēmūn [Tēl Yoqnəʻām], CP 1d) is only represented by a few specimens and solely in the strata of the Late Bronze Age[191]. The forms CP BII a, b, and c that resemble our type 1d, however, are declared characteristic of the Middle Bronze Age, although they occasionally still turn up in the Late Bronze Age strata. Altogether, D. Ben-Ami and A. Livneh assume that the globular type of vessel was superseded by the carinated one in the course of the Late Bronze Age[192]. The

185 Maeir 2007, 258 with Tab. 4.4.
186 Maeir 2007, 259 with Fig. 4.4 (CP 24) and 261.
187 Mullins 2007, 422–424 with Fig. 5.7, CP 1a and CP 1d. The forms CP 1b and CP 1c that are characteristic of the Late Bronze Age I and IIA will be described in Vol. III relating to the Late Bronze Age cooking pots.
188 Mullins 2007, 423 with Tab. 5.11.
189 Ben-Ami – Livneh, 2005, 276. On the whole, researchers are divided over the question to what extent the shape of a vessel's body can constitute an indicator of chronology. In this respect, R. A. Mullins (2007, 422) regards the "basic LB cooking pot (…) (in) typological continuity with those of the Middle Bronze Age in the carinated body and everted triangular rim." Here, too, there will have been no clear cut between the periods but rather a transitional phase must be assumed.
190 Ben-Ami – Livneh 2005, 276. For Tall al-Mutasallim (Megiddo), too, this form has been evidenced for as late as the Late Bronze Age II (Ilan et al. 2000, 211 ff. with Fig. 9. 11, 8. 12. 18 and 218 f. with Fig. 9. 14, 11. 13).
191 Ben-Ami – Livneh 2005, 278.
192 Ben-Ami – Livneh 2005, 272. In contrast, see Fischer 2006a, 252.

question regarding the technological progress that arises in this context will be discussed in Vol. III[193].

For Tall al-Qassis (Tēl Qāšīṣ), only types corresponding to type 1d have been listed in the typology *(Tab. 4.12)*. Here, the form GCP I[194] appears in Stratum IXC that is to attributed to the Middle Bronze Age II. The open form CP I occurs in the Strata IXA to VIIB, i.e. during the Middle Bronze Age II up to the Late Bronze Age I, only to disappear afterwards[195]. According to R. Bonfil, these forms mark the transition from closed to open vessels[196].

Without exception, the examples cited for Qīre (Tall Qīrī) are dated to the Middle Bronze Age II; here, however, the total assemblage appears to be only small[197].

	Tall al-Ḥiṣn (Beth Shean)[198]		Tall Qēmūn (Tēl Yoqnəʿām)[199]		Tall al-Qassis (Tēl Qāšīṣ)[200]		Qīre (Tall Qīrī)[201]
Zirāʾa	**MB Strata**	**LB Strata**	**MB Strata**	**LB Strata**	**MB Strata**	**LB Strata**	**MB II**
$CP_{MB/LB}$ 1a	CP 24/25 (45)	CP 1a (43)		CP CIa (10)			
$CP_{MB/LB}$ 1b							CP 4 CP 8
$CP_{MB/LB}$ 1c				CP CId (2)			
$CP_{MB/LB}$ 1d		CP 1d (3)	CP BII (62) (subtypes)	CP CIe (11) (subtypes)	GCP I (30) (subtypes) CP I (5)	CP I (11)	CP 5

Tab. 4.12 Comparison of the typologies of Middle/Late Bronze Age cooking pots from Tall Qēmūn (Tēl Yoqnəʿām), Tall al-Qassis (Tēl Qāšīṣ), Qīre (Tall Qīrī) (percentage shares in brackets) and those from Tall Zirāʿa[202] (Source: Schwermer 2014).

4.3.4. Conclusion

As both the publications cited above and the excavation evidence on the Tall Zirāʿa document, the chronological and statistical ascertainment of the globular or slightly carinated cooking pots with everted rim poses some difficulties and the data gathered on one site cannot necessarily be transferred to another one, all the more so as some publications do not consider the Middle Bronze Age cooking pots and those from the Late Bronze Age separately. Firstly, this type of cooking pot seems to occur in varying abundances, based on the respective region: "(…) it appears that this type is quite common in the hill country and the Jordan valley, while only isolated examples are found elsewhere."[203]. Then, differences are also caused by the changing specific settlement structures over the course of such a long time span. At least it is beyond dispute that the type of cooking pot in question was used from the late Middle Bronze Age II to the Late Bronze Age I or even II. This is also evidenced by the various statistical data even though, for the reasons stated above, they can only be compared with all due caution.

On the Tall Zirāʿa, more than 500 sherds of this type of cooking pot have been found. Only comparatively few of them occurred in the Middle Bronze Age strata, though it must be noted that the latter have not yet been excavated on a very large scale. They are the most prevalent in the Late Bronze Age strata and still extend into the early Iron Age.

193 Also see Schwermer 2014, Chap. 5.

194 'G' stands for 'globular' and refers to the shape of the vessel's wall.

195 Bonfil 2003, 285 with Fig. 11 and 119.

196 Bonfil 2007, 285.

197 Ben-Tor 1987, 266–268.

198 Maeir 2007, 259 with Fig. 4, 4. 24; Mullins 2007 with 422, Fig. 5, 7 (Figure is included in Schwermer 2014, II, 2.1 f.). Statistical data ibid., 423 with Tab. 5.11

199 Ben-Ami – Livneh 2005, 275–281 Fig. IV 8–10 (Fig. is included in Schwermer 2014, II, 2.3). Statistical data ibid., 271 f. with Tab. IV 6.

200 Bonfil 2003, 300–302 Fig. 117–119 (Fig. is included in Schwermer 2014, II, 2.4). Statistical data ibid., 315 with Tab. 22.

201 Ben-Tor 1987, 266 f. with Fig. 62 (Fig. is included in Schwermer 2014, II, 2.5).

202 On the percentage distribution of the types on the Tall Zirāʿa, cf. *Graph 4.7.*

203 Maeir 2007, 261; E. J. van der Steen (2002, 230) notes that this type "is generally rare on the east side of the Jordan, but is well attested on sites like (…) Beth Shean, Megiddo (…)".

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5. Faunal Remains from Tall Zirāʿa

by Norbert Benecke

5.1. Introduction

The excavations on the settlement mound Tall Zirāʿa have produced large samples of animal remains spanning at least five millennia of nearly continuously occupation, the earliest being the Early Bronze Age and the latest the Ottoman period.[1] They provide some insight into the subsistence economy of this site throughout its long occupation and they have yielded some data for reconstructing the ancient environment of the surroundings. This report presents initial results of archaeozoological studies on the faunal remains which have been excavated in the years (campaigns) between 2003 und 2011. The main focus here is on general trends in animal economy during the different periods of occupation at Tall Zirāʿa providing a framework for further more detailed investigations, for example at the level of individual households.

The faunal collection available from Tall Zirāʿa consists of about 74,000 finds. The great majority of the animal bone finds represents part of the day-to-day refuse of human populations and originates from the settlement of the mound during prehistoric and historical times. Most of the remains are those of animals slaughtered in the settlement or nearby, of animals killed and/or collected in the surrounding area, or of animals brought to the settlement in the course of trade. A very small part presents a different kind of refuse found in any settlement; for example, buried carcasses of animals. It is the actual domestic refuse, consisting largely of the bones of domestic animals, but also of those of game animals and fish, which provides the most important information from a cultural-historical point of view; namely, which species of animals were kept by the former inhabitants of the settlement and in what relative numbers; how these animals were exploited and what products were obtained from them; and what additional animals were hunted and collected. However, it is only in exceptional cases, and then only where wild fauna are concerned, that one can offer an opinion as to whether animals were also purchased or imported. Last, but not least, animal bone finds help to reconstruct the former character of the landscape.

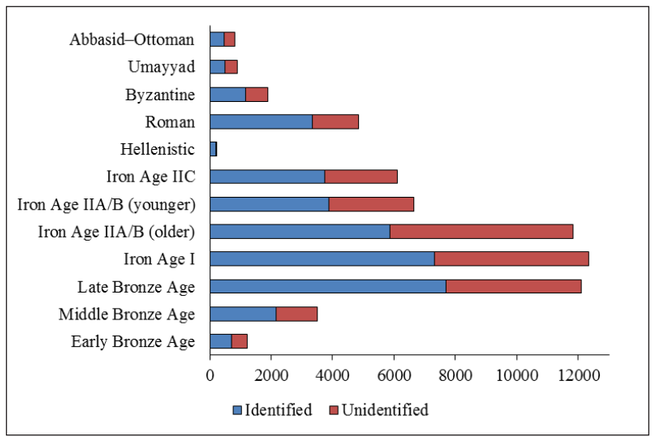
On the whole, animal bone preservation is good at Tall Zirāʿa. In addition to mammals, various species of birds, fish, reptiles, molluscs and crayfish are represented in the faunal assemblages in varying numbers. The faunal remains from Tall Zirāʿa were hand-collected in the course of the excavation without employing systematic dry screening or wet sieving. For this reason, small animals or smaller skeletal elements might be under-represented in the collections.

The animal remains from the excavations (2003–2011) are distributed very unevenly over the periods represented on the site *(Tab. 5.1, Graph 5.1)*.

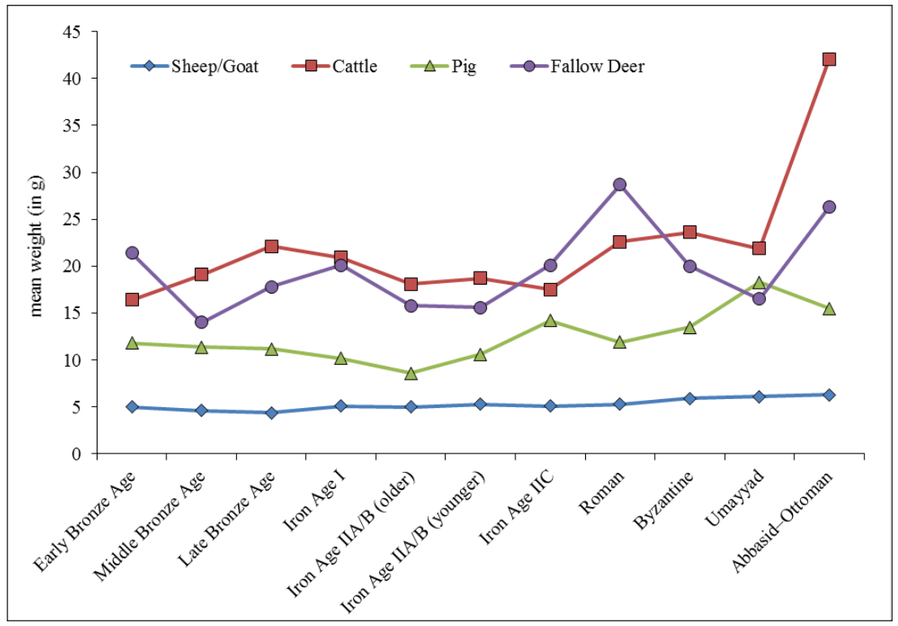
1 cf. Vieweger – Häser 2017.

Periods							
	Mammals	Birds	Fish	Reptiles	Molluscs	Crayfish	Sum
Abbasid–Ottoman	808	17	–	–	–	–	825
Umayyad	868	9	–	–	8	–	885
Byzantine/Umayyad	822	9	1	–	67	–	899
Byzantine	1863	14	1	–	8	–	1886
Roman/Byzantine	1805	29	–	–	1	2	1837
Roman	4333	90	9	–	409	1	4842
Hellenistic/Roman	235	7	–	–	37	–	279
Hellenistic	187	5	1	–	6	8	207
Iron Age IIC	6083	20	6	–	10	–	6119
Iron Age IIA/B (younger)	6605	12	11	–	22	–	6650
Iron Age IIA/B (older)	11803	17	8	–	11	–	11839
Iron Age II, total	28755	54	29	3	144	7	28992
Iron Age I	12194	32	16	1	100	1	12344
Late Bronze Age	11882	17	17	_	174	_	12090
Middle Bronze Age	3479	–	1	–	27	–	3507
Early Bronze Age	1205	–	1	–	12	–	1218

Tab. 5.1 Composition of the faunal assemblages according to periods, quantified by number of specimens (Source: Benecke).



Graph 5.1 Sample size (number of specimens) according to periods (Source: Benecke).



Graph 5.2 Mean fragment weights (in gram) of sheep/goat, cattle, pig and fallow deer according to periods (Source: Benecke).

The distribution probably reflects in part the density of the settlements during the individual phases, and is also influenced by the length of time for which each phase lasted. Quite large collections come from occupation layers of the Late Bronze Age and the various phases of the Iron Age. By far the smallest number of finds originates in the Hellenistic, Umayyad and Abbasid–Ottoman periods. As the mean bone weights of the most important mammal species show, most collections have a fairly homogenous pattern of bone fragmentation *(Graph 5.2)*. An exception is the material of the most recent period (Abbasid–Ottoman) with a low fragmentation especially of the cattle bones.

The species identified from the animal remains of Tall Zirā'a are listed in several tables *(Tab. 5.2–5.6, 5.18, 5.22, 5.23)*. The species can be grouped as follows: domestic mammals, 10 species, domestic poultry, at least one species, wild mammals, 18 species, wild birds, 10 species, fish, at least five species, reptiles, one species, crayfish, one species, molluscs, at least 17 species. The finds give us a complete record of the domestic animals kept, or occurring, on Tall Zirā'a and in the surrounding area. The record of wild mammals is not complete, but probably presents the most frequent and/or economically most important species in the vicinity of the site. The spectrum of wild birds presented by the finds would seem to be more or less a matter of chance. While it is likely, that we have a complete record of all species of sea fish which were brought in, this is not the case as far as freshwater fish is concerned. The mollusc shells represent local terrestrial gastropods, local freshwater shells as well as marine gastropods and bivalves.

Subsequently, selected aspects of the exploitation of animal resources in the different periods of Tall Zirā'a like animal keeping, hunting, fowling, fishing and collecting animals will be discussed.

5.2. Animal Keeping

Remains of domestic animals form the bulk of the bone finds recovered from the different occupation phases at Tall Zirā‘a (Tab. 5.2–5.6). Numerically, species of this group count for more than 90 % of the identified bones in any of the collections. This clearly points to a significant role of animal keeping in the economy of these settlements, especially for providing food and raw materials as well as for rearing working animals and animals for transportation. Eleven species have been identified, i.e. sheep, goat, cattle, pig, ass, horse, mule, camel, dog, cat and chicken. Subsequently, data on general frequency, skeletal representation, fragmentation, butchery, age structure, sex ratio and size will be presented for each of these species.

Species	EBA		MBA		LBA	
	NISP	Weight	NISP	Weight	NISP	Weight
Domestic Mammals						
Sheep/Goat	381	1906	1339	6188	6083	26702
(Sheep)	(25)	(248)	(139)	(989)	(502)	(3827)
(Goat)	(22)	(156)	(46)	(292)	(380)	(2797)
Cattle	153	2511	285	5442	972	21499
Pig	76	896	462	5268	298	3328
Horse	–	–	2	66	1	5
Ass	1	19	4	68	9	187
Mule	3	86	4	147	3	381
Camel	–	–	–	–	4	292
Dog	5	26	3	28	16	107
Domestic/Wild Mammals						
Equids	10	266	4	75	13	232
Cattle/Aurochs	1	25	1	34	–	–
Domestic/Wild Pig	–	–	–	–	1	10
Wild Mammals						
Fallow Deer	39	835	7	98	32	570
Fallow Deer, Antler	–	–	–	–	12	202
Gazelle	8	67	13	66	43	398
Aurochs	–	–	1	68	–	–
Wild Pig	3	40	1	16	5	82
Red Fox	4	8	2	3	5	18
Weasel	–	–	1	1	1	1
Hedgehog	–	–	–	–	1	1
Unidentified Specimens	521	1816	1350	4066	4383	10136

Tab. 5.2 Bronze Age periods. Mammals. Identified species quantified in terms of the number of identified specimens (NISP) and bone weight (in gram) (Source: Benecke).

Species	IA I		IA II	
	NISP	Weight	NISP	Weight
Domestic Mammals				
Sheep/Goat	5422	27621	11831	59689
(Sheep)	(481)	(4272)	(960)	(8012)
(Goat)	(387)	(3055)	(787)	(6136)
Cattle	1490	31212	3152	57444
Pig	82	841	119	1284
Horse	1	24	7	244
Ass	4	181	25	646
Mule	–	–	1	24
Camel	2	19	3	70
Dog	21	124	17	127
Domestic/Wild Mammals				
Equids	25	563	43	920
Cattle/Aurochs	–	–	2	69
Wild Mammals				
Fallow Deer	56	1128	81	1323
Fallow Deer, Antler	13	118	29	458
Gazelle	38	369	66	526
Wild Pig	11	223	17	310
Wild Sheep	4	116	6	107
Wild Goat	1	21	1	10
Lion	–	–	1	24
Leopard	–	–	1	21
Brown Bear	2	354	3	23
Wolf	–	–	1	26
Red Fox	7	25	14	43
Weasel	1	1	1	1
Mongoose	–	–	7	9
Hare	1	1	–	–
Hedgehog	–	–	1	1
Unidentified Specimens	5013	12793	13326	32893

Tab. 5.3 Iron Age periods. Mammals. Identified species quantified in terms of the number of identified specimens (NISP) and bone weight (in gram) (Source: Benecke).

Species	IA IIA/B (older)		IA IIA/B (younger)		IA IIC	
	NISP	Weight	NISP	Weight	NISP	Weight
Domestic Mammals						
Sheep/Goat	4383	21935	2939	15565	2918	14754
(Sheep)	(402)	(3016)	(245)	(2429)	(209)	(1810)
(Goat)	(316)	(2280)	(215)	(1841)	(162)	(1279)
Cattle	1243	22509	793	14908	697	12195
Pig	53	455	32	340	27	383
Horse	1	12	4	131	2	101
Ass	13	240	3	173	7	192
Mule	1	24	–	–	–	–
Camel	–	–	3	70	–	–
Dog	7	59	4	32	3	27
Domestic/Wild Mammals						
Equids	23	440	10	221	7	193
Cattle/Aur-ochs	1	43	1	26	–	–
Wild Mammals						
Fallow Deer	35	552	24	374	9	181
Fallow Deer, Antler	17	272	6	120	3	97
Gazelle	22	109	10	87	14	186
Wild Pig	10	197	2	31	3	42
Wild Sheep	3	46	–	–	4	75
Wild Goat	–	–	1	10	–	–
Lion	–	–	–	–	1	24
Leopard	1	21	–	–	–	–
Brown Bear	1	3	–	–	2	20
Wolf	–	–	1	26	–	–
Red Fox	6	16	5	11	2	9
Weasel	–	–	–	–	1	1
Mongoose	7	9	–	–	–	–
Hedgehog	1	1	–	–	–	–
Unidentified Specimens	5975	13561	2767	7789	2383	6790

Tab. 5.4 Iron Age II periods. Mammals. Identified species quantified in terms of the number of identified specimens (NISP) and bone weight (in gram) (Source: Benecke).

Species	Hellenistic		Hellenist./Roman		Roman		Roman/Byzantine		Byzantine	
	NISP	Weight	NISP	Weight	NISP	Weight	NISP	Weight	NISP	Weight
Domestic Mammals										
Sheep/Goat	143	983	116	637	2272	11944	1022	6168	856	5010
(Sheep)	(13)	(157)	(8)	(73)	(157)	(1763)	(75)	(731)	(49)	(511)
(Goat)	(3)	(60)	(8)	(66)	(83)	(975)	(53)	(390)	(53)	(604)
Cattle	27	696	24	404	478	10794	189	4470	226	5325
Pig	–	–	7	96	40	474	17	151	15	203
Horse	–	–	–	–	5	235	–	–	4	477
Ass	–	–	–	–	3	80	–	–	1	20
Mule	–	–	–	–	1	250	1	42	–	–
Camel	–	–	–	–	2	272	2	145	10	410
Dog	–	–	–	–	7	53	3	16	1	27
Cat	–	–	–	–	1	2	–	–	–	–
Domestic/Wild mammals										
Equids	–	–	3	75	6	93	5	123	7	435
Wild Mammals										
Fallow Deer	–	–	1	2	14	402	6	118	5	101
Fallow Deer, Antler	–	–	–	–	4	68	5	86	2	29
Gazelle	–	–	2	19	8	75	5	54	4	129
Wild Pig	–	–	–	–	5	104	2	32	–	–
Red Fox	–	–	–	–	–	–	1	3	1	5
Unidentified Specimens	17	82	82	284	1487	4125	547	1573	731	1960

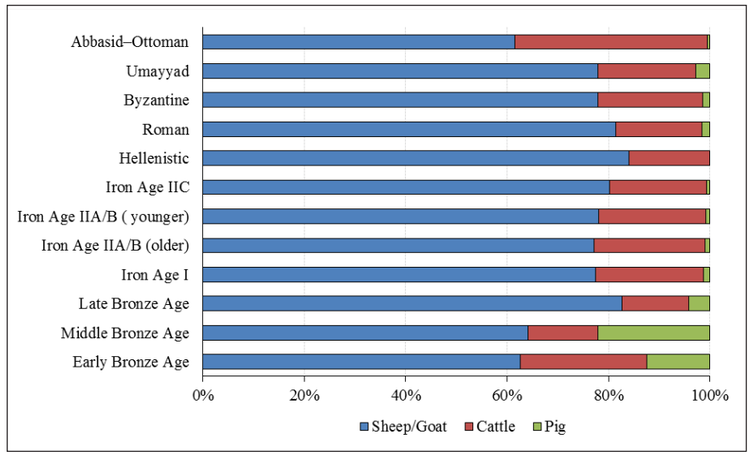
Tab. 5.5 Hellenistic, Roman and Byzantine periods. Mammals. Identified species quantified in terms of the number of identified specimens (NISP) and bone weight (in gram) (Source: Benecke).

Species	Byzantine/Umayyad		Umayyad		Abbasid–Ottoman	
	NISP	Weight	NISP	Weight	NISP	Weight
Domestic Mammals						
Sheep/Goat	368	2476	353	2162	268	1691
(Sheep)	(27)	(276)	(27)	(345)	(19)	(163)
(Goat)	(20)	(279)	(20)	(191)	(24)	(244)
Cattle	116	3646	87	1907	166	6967
Pig	6	89	13	238	2	31
Horse	–	–	–	–	1	43
Ass	–	–	–	–	–	–
Mule	–	–	–	–	–	–
Camel	6	348	1	65	11	597
Dog	2	11	2	20	2	15
Domestic/Wild Mammals						
Equids	8	1005	4	59	7	220
Wild Mammals						
Fallow Deer	4	113	2	33	3	79
Fallow Deer, Antler	1	7	1	3	–	–
Gazelle	3	29	–	–	2	13
Wild Pig	2	174	–	–	1	15
Hyena	–	–	1	65	–	–
Red Fox	–	–	1	1	1	2
Stone Marten	1	1	–	–	–	–
Unidentified Specimens	305	948	403	892	344	1422

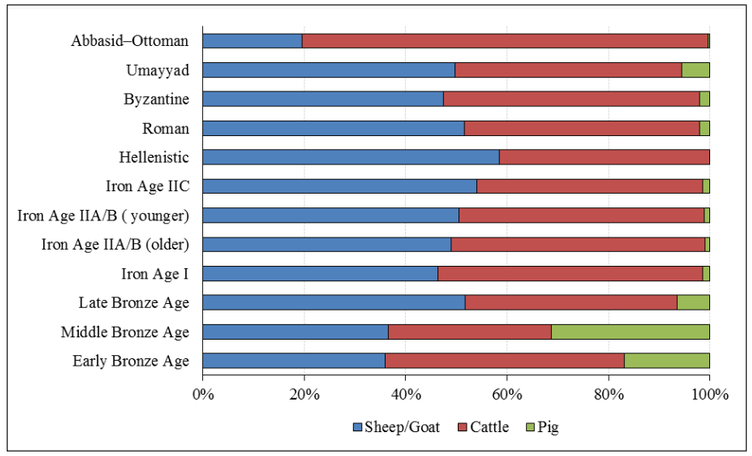
Tab. 5.6 Byzantine, Umayyad, Abbasid and Ottoman periods. Mammals. Identified species quantified in terms of the number of identified specimens (NISP) and bone weight (in gram). (Source: Benecke)

5.2.1. Sheep/Goat

Sheep and goats occupy the first place among the domestic animals in the bone collections from Tall Zirā'a. According to NISP the percentage of both species among the main food animals ranges between 60 and 85 % *(Graph 5.3)*. Low values occur in the Early and Middle Bronze Age as well as in the Abbasid–Ottoman period. On the basis of bone weight sheep/goat reach percentages between 36 and 58 % in most of the assemblages studied *(Graph 5.4)*. The low value of only 20 % for the collection of the Abbasid–Ottoman period must be questioned as the mean bone weight for cattle is exceptionally high in this assemblage *(Graph 5.2)* overestimating cattle with regard to this parameter.



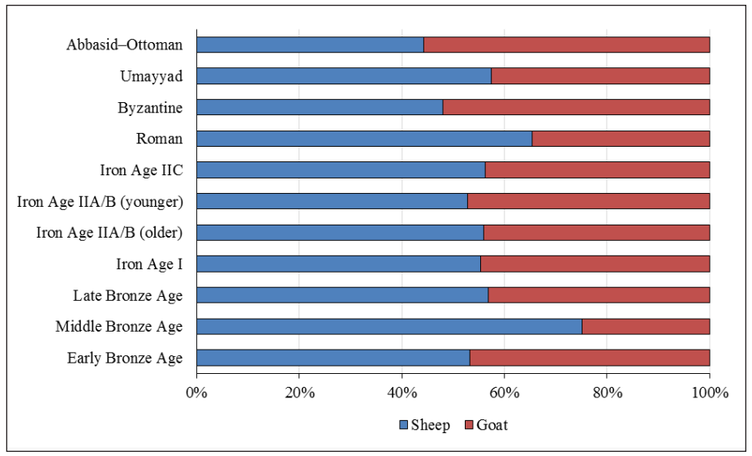
Graph 5.3 Relative frequencies of sheep/goat, cattle and pig in the collections of the individual periods, based on fragment counts (NISP) (Source: Benecke).



Graph 5.4 Relative frequencies of sheep/goat, cattle and pig in the collections of the individual periods, based on bone weight (Source: Benecke).

The difficulty in distinguishing bones of sheep and goat from archaeological sites is well known and this problem was also met with in the material studied. Therefore, distinction between sheep and goat could only be made for a limited number of bone finds.[2] At Tall Zirā'a, altogether 4,368 or about 14 % out of 30,454 bones/teeth could be separated into 2,482 remains of sheep and 1,886 remains of goats. The overall sheep/goat ratio is therefore about 3:2. *Graph 5.5* shows the range of variation in the sheep/goat ratio for the single periods. Relatively high proportions of sheep could be observed in the collections of the Middle Bronze Age (75 %) and Roman period (65 %). Most of the other periods show a slight predominance of sheep over goats.

2 Separation of sheep and goats was based on morphological criteria given in Boessneck et al. 1964, Halstaed et al. 2002, Zeder – Pilaar 2010.



Graph 5.5 Ratio of sheep and goat in the collections of the individual periods, based on fragment counts (NISP) (Source: Benecke).

In general, the remains of sheep/goat are highly fragmented with several bones showing traces of butchering. They undoubtedly represent discarded refuse originating from slaughtering animals and preparing food. Dismembering the carcasses left traces of cut marks mainly on the basis of the skull, on the ventral side of the pubis and on the medial side of the trochanter major of the femur. In this case the head of the femur was loosened up by cutting the ligaments and not by chopping. A similar method has been used for the forelimb: cut marks have been observed on the neck of the scapula and less frequently on the proximal humerus. Further partition of the limbs has occurred at the elbow and the knee. Cut marks related to the removal of meat have been observed along the spina and the ventral ridge of the scapula. Ribs and vertebrae also present cut marks for the same purpose. Evidence of skinning is present on some distal metapodials and a few phalanges in various collections. Heavy chop marks at the basis of some horn cores can be related to the exploitation of horn sheaths from sheep as well as from goats.

The distribution of the remains of sheep/goat over the different parts and elements of the skeleton is documented in *Tab. 5.7*. Overall, skeletal representation does not show any great differences between the periods. All regions of the skeleton are represented more or less evenly in the assemblages.

Body Part Element	**Early Bronze Age**	**Middle Bronze Age**	**Late Bronze Age**	**Iron Age I**	**Iron Age IIA/B (older)**	**Iron Age IIA/B (younger)**	**Iron Age IIC**	**Helle-nistic**	**Roman**	**Byzan-tine**	**Umayy-ad**	**Abbasid–Ottoman**
Head												
Cranium	20	63	322	284	235	151	154	8	118	39	19	15
Dentes supe-riores	18	52	245	228	181	119	125	6	98	36	14	9
Mandibula	38	131	599	541	425	321	299	12	235	85	32	28
Dentes infe-riores	12	44	211	187	149	96	101	4	75	27	16	11
Hyoid	–	2	7	6	3	2	2	–	3	–	–	–
Trunk												
Vertebrae cervicales	10	29	121	111	87	61	53	6	44	16	8	9
Vertebrae thoracales	8	33	157	132	110	75	81	2	55	19	9	3
Vertebrae lumbales	5	13	65	59	54	33	34	2	24	13	6	4
Os sacrum	–	1	2	5	2	4	2	–	3	–	–	1
Vertebrae caudales	1	1	4	2	1	–	1	–	1	–	–	–
Costae	35	139	598	525	442	285	294	15	218	78	36	25
Sternum	–	1	3	2	1	–	1	–	–	–	–	–
Forelimb												
Scapula	26	95	425	384	305	191	203	8	155	53	23	18
Humerus	31	111	512	445	356	241	245	10	191	71	29	21
Radius/Ulna	42	141	611	586	475	317	304	17	245	93	40	33
Carpalia	–	–	3	1	2	–	1	1	1	–	–	–
Metacarpus	18	65	291	251	206	133	137	7	104	45	18	17
Hindlimb												
Pelvis	14	51	231	216	165	117	121	7	86	35	13	10
Femur	22	79	361	321	256	173	181	8	139	53	19	14
Patella	–	2	6	4	4	3	2	–	1	–	–	–
Tibia	46	152	721	638	525	346	321	14	268	107	39	25
Fibula	–	1	3	3	2	1	2	–	–	–	–	–
Tarsalia	7	27	131	99	84	56	48	2	41	16	4	6
Metatarsus	22	75	324	281	225	157	148	10	124	51	23	15
Phalanges												
Phalanx 1	5	24	104	87	70	43	45	2	33	15	5	3
Phalanx 2	1	5	18	20	12	9	11	2	7	4	–	1
Phalanx 3	–	2	7	4	6	5	2	–	3	–	–	–
Ossa sesamo-idea	–	–	1	–	–	–	–	–	–	–	–	–
Sum	**381**	**1339**	**6083**	**5422**	**4383**	**2939**	**2918**	**143**	**2272**	**856**	**353**	**268**

Tab. 5.7 Sheep/Goat. Frequency of skeletal elements according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

Sheep and goats are multi-purpose animals, sources of meat, milk, and wool or hair. Analysis of both mortality pattern and sex ratio may shed light on the relative importance of dairying, meat production, and wool production in the animal husbandry practice at Tall Zirā'a. The ageing evidence of sheep and goats must be evaluated for the two species together, because the portion of finds which could not be identified to species would conceal important information. This is mainly due to the fact that bones of young animals are more difficult to identify beyond the sheep-or-goat level than adult bones. Therefore, evaluation of only the specifically identified bones generally over-emphasizes the older individuals.

The kill-off pattern of sheep/goat has been evaluated on the basis of dental eruption and wear as well as on epiphyseal fusion.[3] The results of age determination on the mandibles are summarized in *Tab. 5.8*. About 25 % of the animals were killed as juvenile individuals, i.e. in the first year of life. There was a less significant kill-off in the second year of life (about 16 %). Nearly two third of the animals were slaughtered at an older age. As the data for the mandibles with permanent dentition show, adult goats were kept to older ages than those normally reached by sheep. There are differences in the age structure of sheep/goat between the individual periods. In the collections of the Middle Bronze Age and the Roman and Byzantine periods, the proportion of young animals (younger than two years) is much higher than in the other periods.

3 Habermehl 1975, 110 ff.; Zietzschmann – Krölling 1955, 363.

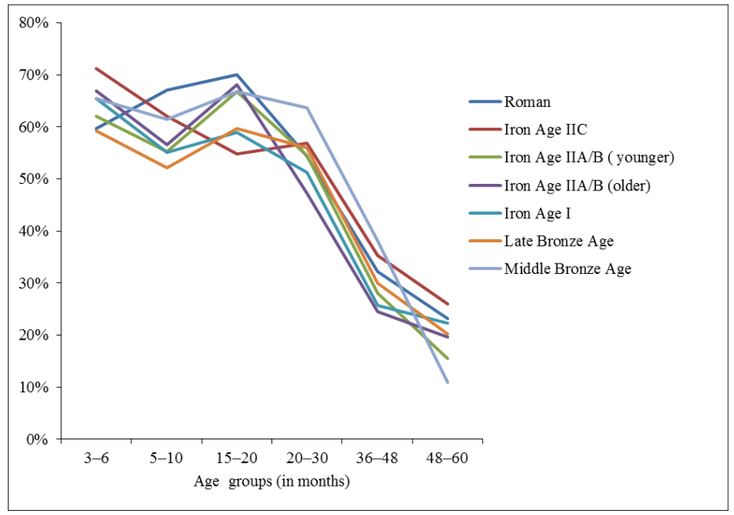
Developmental stage	Age	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Roman	Byzantine	Umayyad	Abbasid–Ottoman
Pd erupting	older than 4 weeks	–	–	2	–	2	–	–	2	–	–	–
Pd in wear	1–2 months	–	2	3	2	7	4	2	5	1	–	1
M1 erupting	3–4 months	1	2	5	8	2	3	2	3	2	–	–
M1 in wear	5–8 months	1	4	18	8	7	7	8	3	5	–	1
M2 erupting	9–11 months	–	4	2	8	1	2	–	3	1	–	1
M2 in wear	12–17 months	1	3	9	12	6	3	5	8	–	–	–
M3 and P erupting	18–24 months	2	6	7	8	6	7	6	6	3	–	–
Permanent dentition												
M3 without wear	older than two years											
Sheep/Goat		1	–	10	10	13	7	7	2	1	–	1
(Sheep)		–	–	(4)	(3)	(4)	(5)	(3)	(2)	–	–	–
(Goat)		–	–	(4)	(7)	(6)	(2)	(3)	–	–	–	(1)
M3 slightly worn												
Sheep/Goat		9	19	49	56	49	28	21	20	7	4	2
(Sheep)		(5)	(12)	(21)	(30)	(27)	(15)	(14)	(13)	(3)	(3)	–
(Goat)		(4)	(6)	(24)	(24)	(20)	(11)	(7)	(6)	(4)	(1)	(2)
M3 medium worn												
Sheep/Goat		–	–	5	10	12	5	7	2	–	1	–
(Sheep)		–	–	(3)	(3)	(5)	(3)	(3)	–	–	(1)	–
(Goat)		–	–	(2)	(7)	(7)	(2)	(4)	(2)	–	–	–
M3 heavily worn												
Sheep/Goat		–	–	2	3	1	1	–	1	1	–	–
(Sheep)		–	–	–	(1)	(1)	–	–	–	–	–	–
(Goat)		–	–	(2)	(2)	–	(1)	–	(1)	(1)	–	–
Sum		**15**	**40**	**112**	**125**	**106**	**67**	**58**	**55**	**21**	**5**	**6**

Tab. 5.8 Sheep/Goat. Age determination on the mandibles (Source: Benecke).

The data on epiphysial fusion are summarized in *Tab. 5.9*. They suggest that there was a significant kill-off at an age between 1.5 and 4 years. Many of these sheep and goats were animals which had reached bodily maturity. Nearly 20 % were even older than 4 to 5 years when slaughtered *(Graph 5.6)*. The ageing evidence on epiphysial fusion roughly corresponds to that established on the basis of dental eruption and wear.

Age of fusion Epiphysis	**Early Bronze Age**	**Middle Bronze Age**	**Late Bronze Age**	**Iron Age I**	**Iron Age IIA/B (older)**	**Iron Age IIA/B (younger)**	**Iron Age IIC**	**Roman**	**Byzan-tine**	**Umayy-ad**	**Abbasid–Ottoman**
3–6 months											
Humerus, distal	4/9	10/19	60/87	57/108	43/87	33/54	19/47	23/34	3/12	2/5	–/1
5–10 months											
Scapula-Cora-coid	1/2	2/7	20/33	25/28	31/35	21/21	15/20	12/19	2/3	4/2	–/–
Ilium-Ischium	2/1	8/9	26/17	28/37	19/30	18/27	7/16	5/15	3/6	2/1	–/–
15–20 months											
Tibia, distal	1/4	6/12	40/59	43/62	23/49	16/32	19/23	9/21	3/11	–/1	2/–
20–30 months											
Calcaneus (Tuber)	1/1	3/3	20/34	31/35	33/26	13/21	18/21	9/10	4/7	1/–	–/–
Metapodium, distal	4/5	13/25	87/102	67/68	61/58	33/34	26/37	17/21	15/11	2/–	–/–
36–48 months											
Humerus, pro-ximal	3/–	8/3	48/10	48/12	35/1	19/5	19/10	17/5	7/1	2/1	–/–
Radius, distal	7/2	9/4	60/19	43/10	48/19	26/7	29/11	18/9	8/4	1/–	1/–
Ulna, proximal	2/1	8/2	13/10	17/7	18/9	11/4	8/6	3/4	–/1	2/–	–/–
Femur, proximal	8/2	8/9	60/35	67/31	41/33	18/15	22/13	16/8	8/3	1/1	–/1
Femur, distal	5/2	7/5	71/21	62/10	38/21	32/8	16/10	13/8	8/2	2/1	1/–
Tibia, proximal	2/1	4/4	30/26	20/19	27/11	14/8	14/9	11/3	3/3	–/1	1/2
48–60 months											
Vertebra (Cor-pus)	12/4	41/5	249/63	287/82	185/45	109/20	89/27	86/26	27/4	14/3	15/3

Tab. 5.9 Sheep/Goat. Age determination on epiphyseal fusion (left number – unfused or in fusion / right number – fused) (Source: Benecke).



Graph 5.6 Mortality pattern of sheep/goat in the collections of the individual periods according to epiphyseal fusion data (see *Tab. 5.9*, percentages of fused epiphyses) (Source: Benecke).

The determination of sex for bones of sheep and goats was carried out on isolated horn-cores, cranial fragments and pelvic bones *(Tab. 5.10)*. The results show that among both sub-adult or adult sheep and goats, female individuals outnumber male individuals. In sheep 66 % of the bones which could be determined according to sex belong to females and in goat 75 %. A preponderance of female animals in both species is evident in all larger collections (Middle and Late Bronze Age, Iron Age and Roman periods).

Species Criteria	**Early Bronze Age**	**Middle Bronze Age**	**Late Bronze Age**	**Iron Age I**	**Iron Age IIA/B (oder)**	**Iron Age IIA/B (younger)**	**Iron Age IIC**	**Roman**	**Byzan-tine**	**Umayy-ad**	**Abba-sid–Otto-man**
Sheep, Pel-vic bone											
female	2	8	12	14	13	18	12	12	–	–	–
male	–	1	7	10	6	7	7	4	3	1	–
Goat, Horn-core											
female	1	6	10	14	16	11	4	4	–	2	–
male	1	–	5	12	6	2	1	3	1	1	1
Goat, Pel-vic bone											
female	1	2	7	16	13	13	5	3	3	1	1
male	–	–	1	5	1	3	–	2	–	–	–

Tab. 5.10 Sheep/Goat. Results of sex determinationb (Source: Benecke).

S. Payne[4] has outlined models for the types of kill-patterns one might expect from meat-, milk-, and wool-producing flocks. When sheep and goats are kept primarily for meat, most of the animals will be killed by approximately 2–3 years of age. It is at this age that the sheep and goats approach bodily maturity, and continuing to feed them beyond this will not substantially increase meat output. A relatively small number of adults will be kept for breeding purposes. Shepherds emphasizing milk production will eliminate excess lambs and kids, especially

4 Payne 1973.

males, early in the first year of life. Wool-production strategies in sheep lead to very different age distributions, since adult animals, and especially wethers, are primary wool-producers. One might therefore expect to find a high proportion of adult animals in the kill-off from a wool-producing flock.

As might be expected, the age distributions and sex ratios of sheep/goat in the different occupation phases of Tall Zirā'a do not match exactly any of S. Payne's idealized strategies. They are most likely comparable to a mode of exploitation where meat and milk were the main products, to a lesser extent supplemented by the production of wool in sheep. The comparatively high proportion of male sheep in the material of the Iron Age I may indicate a greater focus on wool production in sheep husbandry during this period.

A fairly large number of measurements could be taken on the bones of sheep and goat. They are documented as single data in the appendix of this contribution and provide some information about the body size of both species. Length measurements of 25 completely preserved long bones allowed the calculation of withers heights in sheep.[5] The corresponding values vary between 61 and 76 cm. The mean values for the individual periods are as follows: Middle/Late Bronze Age – 68 cm (N=9), Iron Age I – 64 cm (N=4), Iron Age II – 66 cm (N=7), younger periods (Hellenistic, Roman, Byzantine) – 64 cm (N=5). Due to the low number of finds per period, they are difficult to assess. A comparison of selected skeletal measurements *(Tab. 5.11)* seems to indicate an increase in the mean body size of sheep from the Bronze Age to the younger periods.

Withers height in goats could be calculated for 34 complete long bones[6] yielding the following mean values for the individual periods: Middle/Late Bronze Age – 62 cm (N=11), Iron Age I – 63 cm (N=6), Iron Age II – 64 cm (N=12), younger periods (Hellenistic, Roman, Byzantine) – 63 cm (N=5). Similar to sheep, skeletal measurements seem to indicate an increase in the mean body size of goats from the Bronze Age to the younger periods *(Tab. 5.11)*.

	Number	Minimum	Maximum	Mean	Sd
Sheep					
Humerus, BT					
Bronze Age	19	27,0	35,7	29,9	2,75
Iron Age	86	26,5	36,0	31,2	2,25
Younger periods	13	28,9	35,3	31,9	1,93
Tibia, Bd					
Bronze Age	26	24,7	30,2	27,6	1,55
Iron Age	54	25,0	32,2	28,1	1,71
Younger periods	24	25,0	31,8	28,5	1,57
Talus, GLl					
Bronze Age	59	26,7	34,8	30,6	1,81
Iron Age	111	26,3	35,4	30,7	1,84
Younger periods	22	28,5	33,8	30,7	1,43
Goat					
Humerus, BT					
Bronze Age	22	27,3	34,6	30,9	1,75
Iron Age	68	28,4	38,2	31,9	2,33
Younger periods	16	30,1	37,7	32,3	2,22
Tibia, Bd					
Bronze Age	11	25,5	27,5	26,1	0,66
Iron Age	36	23,1	32,2	26,9	2,10
Younger periods	10	25,2	29,1	27,0	1,65
Talus, GLl					
Bronze Age	33	25,6	32,5	29,0	1,83
Iron Age	72	26,8	35,6	30,0	1,77
Younger periods	12	28,1	33,2	30,4	1,90

Tab. 5.11 Sheep/Goat. Statistical parameters for selected measurements (Sd – standard deviation) (Source: Benecke).

5 Calculation according to Teichert 1975.

6 Calculation according to Schramm 1967

5.2.2. Cattle

Most of the Bos remains could be securely assigned to the domestic form (cattle) on the basis of their metrical characters or general size without any difficulties. There are only a very few specimens from collections of the Bronze and Iron Age where a definite identification as domestic or wild (aurochs) was impossible. They are listed under the term 'Cattle/Aurochs' in the corresponding tables *(Tab. 5.2–5.4)*.

In general, cattle are the second most frequent domestic species in the bone collections from Tall Zirā'a. The percentage of this species among the main food animals ranges from 13 % in the Middle and Late Bronze Age to 38 % in the Abbasid–Ottoman period *(Graph 5.3)*. On the basis of bone weight cattle reach even higher percentages *(Graph 5.4)*, i.e. from 32 to 52 % indicating that a great part of the meat consumed by the inhabitants of the different periods was beef. The value of even 80 % for the collection of the Abbasid–Ottoman period must be questioned as the mean bone weight for cattle is exceptionally high in this assemblage *(Graph 5.2)* overestimating cattle.

The distribution of cattle remains over the different parts and elements of the skeleton is documented in *Tab. 5.12*. Overall, skeletal representation does not show any great differences between the periods. All regions of the skeleton are represented more or less evenly in the assemblages studied.

Body Part Element	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Helle-nistic	Roman	Byzan-tine	Um-ayyad	Abba-sid–Ot-toman
Head												
Cranium	12	19	27	78	42	33	31	1	16	6	4	8
Dentes supe-riores	11	19	34	65	57	44	41	1	24	6	5	3
Mandibula	8	23	42	68	72	29	31	–	20	11	5	7
Dentes infe-riores	13	20	36	71	74	25	33	1	15	9	7	2
Hyoid	–	–	3	6	3	–	–	–	–	–	–	–
Trunk												
Vertebrae cervicales	4	9	27	52	42	34	15	1	21	14	–	7
Vertebrae thoracales	2	11	36	63	50	31	26	1	14	9	5	4
Vertebrae lumbales	2	6	33	53	43	17	23	3	21	8	3	8
Os sacrum	–	2	7	13	4	4	2	1	1	2	1	–
Vertebrae caudales	–	2	20	13	10	13	8	–	6	1	–	1
Costae	13	25	139	187	196	128	108	10	101	53	15	45
Sternum	–		2	5	1	–	1		–	–	–	–
Forelimb												
Scapula	11	15	38	59	46	33	20	–	20	6	4	5
Humerus	9	13	44	73	61	38	36	1	23	7	5	7
Radius/Ulna	8	10	49	63	71	51	31	1	33	17	6	8
Carpalia	5	1	17	45	22	16	21	–	6	2	–	6
Metacarpus	7	8	38	57	36	28	31	–	17	8	3	4
Hindlimb												
Pelvis	4	9	26	48	44	29	29	1	15	12	1	2
Femur	8	14	63	74	48	41	39	1	13	16	2	16
Patella	–	–	3	9	6	3	2	2	1	–	1	–
Tibia	9	11	54	48	39	28	30	–	23	7	6	12
Fibula	–		1	3	2	1	2	–	–	–	–	–
Tarsalia	7	21	69	87	66	37	28	–	19	5	1	6
Metatarsus	6	11	48	63	58	48	33	1	24	9	4	7
Phalanges												
Phalanx 1	6	8	53	80	70	38	36	–	20	9	4	3
Phalanx 2	3	17	37	63	43	35	27	–	18	6	4	5
Phalanx 3	5	11	22	42	32	9	11	1	7	3	–	–
Ossa sesamo-idea	–	–	4	2	5	–	2	–	–	–	1	–
Sum	**153**	**285**	**972**	**1490**	**1243**	**793**	**697**	**27**	**478**	**226**	**87**	**166**

Tab. 5.12 Cattle. Frequency of skeletal elements according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

The butchery marks visible on 205 bones are mainly concentrated on the articulated parts of the limbs. The dismembering of the limbs occurred by cutting the head of the humerus and of the femur out of the glenoid cavity and of the acetabulum respectively. Disarticulation of the jaws is attested by the presence of cut marks on the ramus mandibulae and several cut marks or small chop marks on the hyoid. The distal parts of the humeri frequently present cut marks on the lateral side that result from the separation of the joint. The same action has left cut marks that have been observed on the olecranon of the ulna. A concentration of butchery marks is present on the bones of the tarsal joint (astragalus, calcaneum). Cut marks on several phalanges are most likely related to the skinning of animals.

The kill-off pattern of cattle has been evaluated on the basis of dental eruption and wear as well as on epiphyseal fusion.[7] The results are compiled in *Tab. 5.13* and *5.14*. Due to small sample size for many periods, the age structure based on the mandibles is difficult to assess. In the larger samples (Late Bronze Age, Iron Age periods) there is a clear predominance of animals being older than three years among the cattle slaughtered. The ageing evidence for epiphyseal fusion seems to confirm that in general, but less clearly.

Develop-mental stage	Age	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Roman	Byzan-tine	Umayy-ad	Abba-sid–Ot-toman
Pd erupting	up to 3 weeks	–	–	–	–	1	–	–	1	–	–	–
Pd in wear	2–3 months	–	–	–	–	1	2	1	–	–	–	–
M1 erupting	4–6 months	–	–	–	–	–	–	2	–	1	–	–
M1 in wear	7–14 months	–	–	1	1	–	1	–	–	–	–	–
M2 erupting	15–18 months	–	–	–	–	–	–	–	–	–	–	1
M2 in wear	19–24 months	–	–	–	–	–	–	–	1	–	–	1
M3 and P erupting	25–34 months	–	–	1	–	–	1	1	–	–	–	–
Permanent dentition												
M3 without wear	older than 3 years	–	1	–	2	4	–	2	–	–	1	–
M3 slightly worn		–	1	8	9	4	3	2	1	1	1	1
M3 medium worn		–	–	1	1	4	3	3	1	–	–	–
M3 heavily worn		–	–	–	3	1	–	–	1	1	–	–
Sum		**–**	**1**	**11**	**16**	**15**	**10**	**11**	**5**	**3**	**2**	**3**

Tab. 5.13 Cattle. Age determination on the mandibles (Source: Benecke).

7 Habermehl 1975, 69 ff.; Zietzschmann – Krölling 1955, 363

Age of fusion Epiphysis	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Roman	Byzantine	Umayyad	Abassid–Ottoman
10–20 months											
Humerus, distal	–/2	–/4	2/6	7/13	10/18	2/6	1/13	5/5	2/1	1/1	1/3
20–24 months											
Phalanx 1, proximal	–/4	1/3	8/36	14/60	5/55	4/27	5/24	9/9	1/7	–/3	–/2
24–36 months											
Tibia, distal	2/–	2/2	6/7	5/10	2/10	4/8	3/6	7/4	2/–	–/1	5/2
Calcaneus (Tuber)	2/1	4/1	8/3	11/12	9/6	5/4	4/4	4/3	–/1	–/–	–/1
Metapodium, distal	4/–	1/6	13/22	25/32	10/19	13/16	12/12	5/10	2/3	–/1	1/1
42–48 months											
Humerus, proximal	–/1	1/1	3/4	4/4	2/3	2/2	4/–	–/1	1/–	–/–	–/–
Radius, distal	–/1	2/2	6/3	6/5	6/5	4/5	6/–	3/–	2/–	–/–	1/1
Ulna, proximal	–/–	–/1	1/1	2/1	4/2	1/2	2/–	4/–	–/–	–/–	–/–
Ulna, distal	–/–	–/–	3/–	–/–	1/1	–/1	2/–	–/–	2/–	–/–	–/–
Femur, proximal	1/–	3/2	9/2	11/9	4/4	5/3	7/2	2/2	3/1	–/–	3/1
Femur, distal	2/–	1/1	4/3	3/8	3/2	4/–	–/1	2/–	3/1	–/–	3/1
Tibia, proximal	2/–	–/–	8/1	7/4	9/1	3/–	7/1	4/2	–/–	1/–	4/–
48–60 months											
Vertebra (Corpus)	3/–	8/3	36/20	70/24	49/13	23/15	24/5	31/8	5/5	2/1	10/2

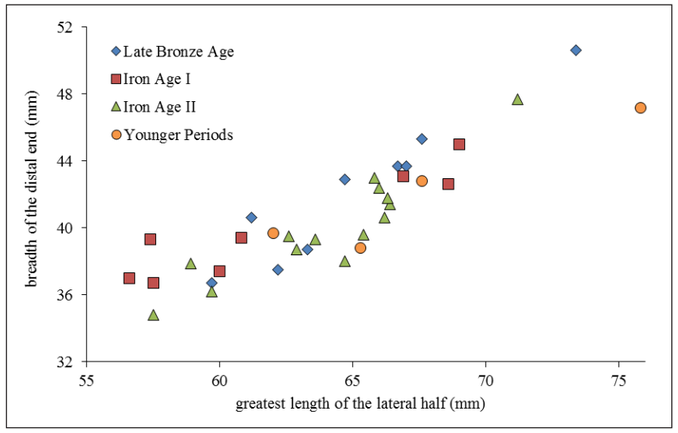
Tab. 5.14 Cattle. Age determination on epiphyseal fusion (left number – unfused or in fusion / right number – fused) (Source: Benecke).

Sex determination was carried out on isolated horn cores and pelvic bones giving the following results: Middle Bronze Age – four females, Late Bronze Age – four females and one male, Iron Age I – seven females and five males, Iron Age IIA/B (older) – four females, Iron Age IIA/B (younger) – two females and one male, Iron Age IIC – four females, Roman – one female and two males, Byzantine – one female and one male. In the collections of many periods, female individuals outnumber male.

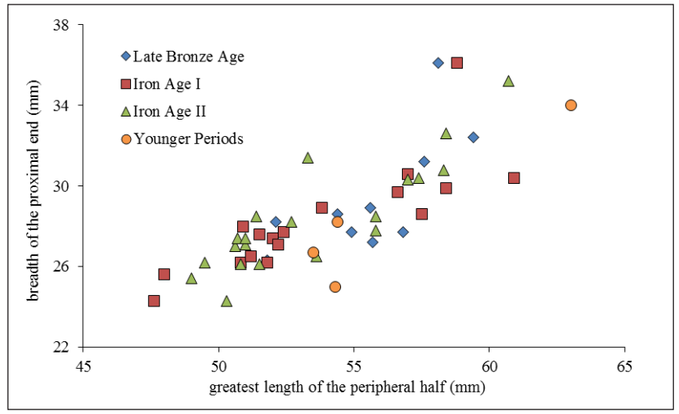
Cattle may be raised for a variety of economic purposes such as meat, milk and traction. In a cattle husbandry mainly orientated towards dairying, we would expect to see a high proportion of young calves (primarily males) killed early in the first year of life. Most of the adult cattle will be females, with only a very small number of males kept for breeding purposes. Older females will be slaughtered when their milk production declines or when they fail to produce calves. In a herd mainly raised for beef we would expect a smaller portion of the herd to be killed during the first two years of life. Most animals will be slaughtered in late adolescence or early adulthood (approximately 42–48 months), when they have reached bodily maturity. Only a small number of adults will be kept for breeding purposes.

The age structure of cattle in nearly all periods exhibits great similarities with the beef model. Obviously, cattle husbandry was mainly orientated towards meat production in these settlements. The preponderance of females among adult animals suggests that cattle were also exploited for their milk. But compared to meat production, dairying appears to have been of limited importance. Otherwise, a much higher proportion of young calves should have to be found in the collections. Cattle were probably also used for traction. The presence of oxen could be an indication for this kind of exploitation as well as the occurrence of specific bone deformations like coxarthrosis and exostosis (phalanges) on some bone finds from Tall Zirā'a.

The measurements taken on the cattle bones are documented as single data in the appendix of this contribution. Unfortunately, there are only two complete long bones which allow the calculation of the withers height of the animals.[8] The corresponding values are 120 cm for an animal of the period Iron Age IIC and 133 cm for an individual dating to the Iron Age I period. A size comparison on the basis of selected measurements shows that there was a decline in size of cattle at the transition from the Bronze to the Iron Age and an increase in the younger periods (*Graphs 5.7* and *5.8*). This is also confirmed by a size comparison based on LSI-values *(Graph 5.9)*.

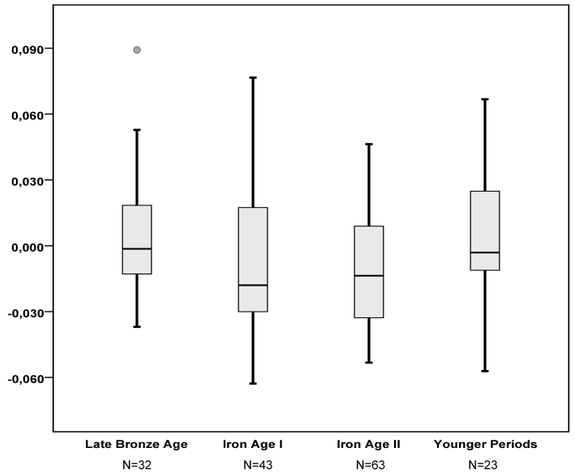


Graph 5.7 Cattle, Talus. Plot of breadth of the distal end against greatest length of the lateral half (Source: Benecke).



Graph 5.8 Cattle, Phalanx 1 anterior. Plot of breadth of the proximal end against greatest length of the peripheral half (Source: Benecke).

8 Calculation according to Matolcsi 1970.



Graph 5.9 Development of size in cattle presented as Box-plots of LSI-values. Box = distance 25th–75th quartile with mean, whiskers = distance 10th–90th percentile, small circle = outlier (Standard individual: female domestic cattle, Manhart 1998, Tab. 103) (Source: Benecke).

5.2.3. Pig

Pig remains were identified in the bone collections of nearly all periods at Tall Zirā'a (except the small Hellenistic sample), but there are remarkable diachronic differences in the frequency of this species (*Graphs 5.3* and *5.4*). High percentages of pig were found in the faunal assemblages of the Early and Middle Bronze Age. According to NISP they constitute 12 or 22 % respectively of the main food animals here and according to bone weight even 17 or 31 % respectively. Pig-keeping apparently achieved its greatest economic importance during these periods, in particular in the Middle Bronze Age. Similar observations have been reported from other sites in the Levant.[9] In the subsequent time periods the percentage of pig is consistently below 5 %. In the material of the youngest periods (Abbasid–Ottoman) pig is represented by only two bones documenting a very low proportion of this species.

Due to the high degree of fragmentation, the skull, in particular its cranial bones, is the best represented part among the pig remains *(Tab. 5.15)*. Axial elements—vertebrae and ribs—seem to be largely under-represented, while elements of the fore- and hindlimb are well represented (except the phalanges). In spite of the numerical bias in the presence of the various skeletal elements resulting from different taphonomic variables (structural density of bones etc.), it is obvious, however, that all regions of the skeleton are present in the assemblages studied.

9 Hesse 1990.

Body Part Element	**Early Bronze Age**	**Middle Bronze Age**	**Late Bronze Age**	**Iron Age I**	**Iron Age IIA/B (older)**	**Iron Age IIA/B (younger)**	**Iron Age IIC**	**Roman**	**Byzantine**	**Umayyad**	**Abbasid–Ottoman**
Head											
Cranium	14	112	65	16	7	6	5	9	3	–	–
Dentes superiores	3	6	7	3	–	–	1	–	–	–	–
Mandibula	10	69	38	7	5	2	5	3	3	2	1
Dentes inferiores	1	9	7	4	2	1	–	2	–	–	–
Hyoid	–	–	–	–	–	–	–	–	–	–	–
Trunk											
Vertebrae cervicales	3	12	8	2	2	3	1	–	–	–	–
Vertebrae thoracales	3	17	10	2	1	–	–	2	–	–	–
Vertebrae lumbales	1	21	7	4	2	4	1	1	–	–	–
Os sacrum	–	–	–	1	–	–	–	–	–	–	–
Vertebrae caudales	–	–	–	–	–	–	–	–	–	–	–
Costae	6	22	10	7	1	2	–	5	–	2	–
Sternum	–	–	–	–	–	–	–	–	–	–	–
Forelimb											
Scapula	9	38	25	6	3	4	–	2	–	1	–
Humerus	4	22	15	3	8	1	2	2	1	–	–
Radius/Ulna	4	21	25	9	4	1	5	4	–	–	–
Carpalia	–	–	–	–	–	–	–	–	–	–	–
Metacarpus	2	15	10	3	3	–	1	2	3	1	1
Hindlimb											
Pelvis	3	20	14	2	5	1	2	2	–	2	–
Femur	2	11	12	2	3	2	–	–	2	1	–
Patella	–	1	–	–	–	–	–	–	–	–	–
Tibia	5	18	13	1	1	1	2	2	1	2	–
Fibula	1	4	4	–	–	–	–	–	–	1	–
Tarsalia	–	26	11	1	2	1	2	2	–	–	–
Metatarsus	2	9	10	3	3	1	–	1	1	1	–
Phalanges											
Phalanx 1	3	8	7	4	1	2	–	–	–	–	–
Phalanx 2	–	1	–	2	–	–	–	1	–	–	–
Phalanx 3	–	–	–	–	–	–	–	–	1	–	–
Ossa sesamoidea	–	–	–	–	–	–	–	–	–	–	–
Sum	**76**	**462**	**298**	**82**	**53**	**32**	**27**	**40**	**15**	**13**	**2**

Tab. 5.15 Pig. Frequency of skeletal elements according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

Butchering marks were observed on a few elements (N=52). On the skull, small repeated cut marks on the zygomaticus and chop marks on the ramus verticalis of the mandibula are related to the disarticulation of the lower jaw from the rest of the skull. Other traces of cut marks which might be attributed to a process of disarticulation are those noted on the proximal humerus, the proximal ulna, the acetabulum of the pelvis, the proximal metapodials and the condyli of the astragalus. Small chop marks on the diaphysis of the femur might be the result of opening the diaphysis in order to extract the marrow.

The kill-off pattern of pigs has been evaluated on the basis of dental eruption and wear as well as on epiphyseal fusion.[10] Sex determination was carried out on maxilla and mandible finds as well as on loose canines. As the data for dentition show *(Tab. 5.16)*, the majority of pigs were consistently killed at the juvenile or sub-adult age as it is common for animals kept for meat production alone. The ageing evidence on epiphyseal fusion corresponds to that established on the basis of dental eruption and wear. According to these data, about 60 % of pigs were slaughtered in the first and another 20 % in the second year of life *(Tab. 5.17)*. Only a few animals were older than three years at the time of slaughter. They probably represent the necessary breeding animals. The occasional occurrence of bones from newborn animals documents the practice of pig breeding in the settlements at Tall Zirā'a. The few data on the sex of the animals point to a balanced ratio between males and females among older pigs.

Developmental stage	Age	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Roman	Byzantine	Umayyad	Abbasid–Ottoman
Pd erupting	1–2 months	–	–	1	–	–	–	–	–	–	–	–
Pd in wear	3–4 months	–	1	1	–	–	–	–	1	–	–	–
M1 erupting	5–6 months	1	3	2	–	–	1	–	4	–	–	–
M1 in wear	7–10 months	1	9	14	2	–	2	2	1	2	1	–
M2 erupting	11–12 months	–	3	2	2	–	–	1	–	–	–	–
M2 in wear	13–16 months	–	8	1	1	–	–	–	1	–	–	–
M3 and P erupting	17–24 months	–	1	2	–	–	–	–	–	1	1	–
Permanent dentition												
M3 without wear	older than two years	1	2	2	1	–	–	–	–	–	–	–
M3 slightly worn		1	5	1	–	1	1	–	–	–	–	–
M3 medium worn		–	–	–	–	–	–	–	–	–	–	–
M3 heavily worn		–	–	–	–	–	–	–	–	–	–	–
Sum		4	32	26	6	1	4	3	7	3	2	–
Male		1	12	3	–	–	–	–	1	–	–	–
Female		1	8	1	2	1	–	–	–	–	1	–
Sum		**2**	**20**	**4**	**2**	**1**	**–**	**–**	**1**	**–**	**1**	**–**

Tab. 5.16 Pig. Age and sex determination on maxilla and mandible finds (Source: Benecke).

10 Habermehl 1975, 141 ff.; Zietzschmann – Krölling 1955, 363.

Age of fusion Epiphysis	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Roman	Byzantine	Umayyad	Abassid–Ottoman
10–12 months											
Scapula, distal	2/1	8/11	9/4	–/1	–/–	1/–	–/–	–/1	–/–	–/–	–/–
Humerus, distal	2/–	10/5	8/1	2/–	2/2	–/1	–/1	1/–	1/–	–/–	–/–
Radius, proximal	–/–	3/4	6/5	–/1	1/1	–/–	2/1	1/2	–/–	–/–	–/–
Pelvis, Acetabulum	–/1	9/2	5/2	1/1	2/1	–/–	1/1	–/–	–/–	–/2	–/–
Phalanx 2, proximal	–/–	1/–	–/–	–/1	–/–	–/–	–/–	–/1	–/–	–/–	–/–
24–30 months											
Tibia, distal	1/3	4/2	8/2	–/1	1/–	–/–	1/–	2/–	–/–	–/–	–/–
Calcaneus (Tuber)	–/–	5/–	3/–	–/–	1/–	–/–	2/–	–/–	–/–	–/–	–/–
Metapodium, distal	1/–	17/2	17/1	3/1	1/2	1/–	1/–	2/–	2/1	1/–	–/–
Phalanx 1, proximal	2/1	3/5	4/3	2/2	1/–	2/–	–/–	–/–	–/–	–/–	–/–
36–42 months											
Humerus, proximal	2/–	7/–	8/–	1/–	1/–	–/–	–/–	1/–	1/–	–/–	–/–
Radius, distal	–/–	1/–	5/–	–/2	–/–	–/–	2/–	1/–	–/–	–/–	–/–
Ulna, proximal	1/–	4/–	4/–	1/–	–/–	1/–	1/–	1/–	–/–	–/–	–/–
Ulna, distal	1/–	1/–	1/–	–/–	–/–	–/–	1/–	–/–	–/–	–/–	–/–
Femur, proximal	–/–	4/–	7/–	1/–	2/–	2/–	–/–	–/–	–/–	–/–	–/–
Femur, distal	–/–	3/–	4/–	–/–	1/–	1/–	–/–	–/–	–/–	–/–	–/–
Tibia, proximal	1/–	12/–	4/–	–/–	1/–	1/–	2/–	1/–	–/–	–/–	–/–
48–72 months											
Vertebra (Corpus)	3/–	33/–	17/–	8/–	1/–	5/–	–/1	1/–	–/–	–/–	–/–

Tab. 5.17 Pig. Age determination on epiphyseal fusion (left number – unfused or in fusion / right number – fused) (Source: Benecke).

Unfortunately, only a few measurements could be taken on the pig bones from Tall Zirā'a (see appendix). According to these data, the pigs seem to have been rather uniform in terms of body size throughout all periods of occupation with withers heights varying between 70 and 90 cm.

5.2.4. Equids

Equid remains were recovered from collections of all periods at Tall Zirā‘a. As is well known, species identification on tooth and bone remains of the genus *Equus* can be difficult in assemblages where more than one species occur. In the region and period under consideration the presence of four equids may be expected among the faunal remains, i.e. onager *(Equus hemionus)* as well as horse, ass and mule. Teeth and bones which can safely be assigned to onager have not been found at all. Therefore, the majority of equid remains from Tall Zirā‘a most likely belong to domestic species.[11] Bones and teeth where a definite identification as horse, donkey or mule was not possible are summarized and listed under the term ‘Equids’ *(Tab. 5.2–5.6)*. Out of a total of 216 equid remains, 21 were assigned to horse, 47 to ass and 13 to mule. There is a numerical predominance of ass remains over horse and mule remains, the ass possibly being of greater economic importance. Interestingly, both ass and mule occur already in deposits of the Early Bronze Age III period roughly dating to the second half of the 3rd millennium BC[12], while the oldest secure record of horse comes from layers of the Middle Bronze Age.

Due to small sample size, skeletal representation is difficult to evaluate. Except for several loose teeth, fragments from the skull are scanty. Axial elements (vertebrae and costae), too, seem to be under-represented. The best presented elements are those from the limb bones, especially the distal parts (phalanges). A very few equid remains (N=6) show butchery marks, especially cut marks. These were observed on the following elements: rib, pelvis, tibia, and phalanges. The cut marks on two first phalanges are clearly related to the removal of the skin. The other cut marks can be attributed to the process of disarticulation.

The age at death of the equids has been evaluated on the basis of epiphyseal fusion[13] as well as on dental eruption and wear[14]. Individual finds of ass, horse and mule whose age could be assessed are listed below.

Ass: Early Bronze Age – distal radius (fused epiphysis); Middle Bronze Age – distal metacarpus (fused epiphysis), phalanx 2 (fused epiphysis); Late Bronze Age – incisivus inferior (heavily worn), three permanent cheek teeth (medium worn), vertebra (fused terminal plates); Iron Age I – permanent cheek tooth (medium worn), distal humerus (fused epiphysis), phalanx 2 (fused epiphysis); Iron Age IIA/B (older) – one incisor (medium worn) and three permanent cheek teeth (medium and heavily worn), distal scapula (fused epiphysis), distal humerus (fused epiphysis), proximal radius (fused epiphysis), calcaneus (unfused epiphysis), phalanx 1 (fused epiphysis), phalanx 2 (fused epiphysis); Iron Age IIA/B (younger) – permanent cheek tooth (medium worn), distal femur (fused epiphysis), phalanx 2 (fused epiphysis); Iron Age IIC – three permanent cheek teeth (medium worn), phalanx 1 (fused epiphysis); Roman – permanent cheek tooth (medium worn).

Horse: Middle Bronze Age – two permanent cheek teeth (medium worn, age: c. 8–10 and 12–14 years); Late Bronze Age – milk premolar (medium worn, age: c. 2–3 years); Iron Age I – permanent cheek tooth (medium worn); Iron Age IIA/B (younger) – one incisor (medium worn, age: c. 6–8 years) and two permanent cheek teeth (medium worn, age: c. 8–10 years); Iron Age IIC – distal radius (fused epiphysis); Roman – two permanent cheek teeth (medium worn), phalanx 2 (fused epiphysis); Byzantine – two distal tibiae (fused epiphysis), distal metatarsus (fused epiphysis).

Mule: Early Bronze Age – permanent cheek tooth, distal metacarpus (fused epiphysis), distal radius (fused epiphysis); Middle Bronze Age – two permanent cheek teeth (slightly and medium worn, age: c. 4–6 and 8–10 years), distal radius (fused epiphysis), distal tibia (fused epiphysis); Late Bronze Age – two permanent cheek teeth (slightly/medium worn), maxilla with permanent dentition (teeth medium worn, age: c. 6–8 years); Iron Age IIA/B (older) – permanent cheek tooth (medium worn); Roman/Byzantine – distal radius (fused epiphysis).

Summarizing these data it becomes clear that most of the asses, horses and mules encountered in the faunal assemblages from Tall Zirā‘a were full grown at the time of death.

5.2.5. Camel

A total number of 41 bones and teeth in the assemblages from Tall Zirā‘a have been identified as camel. Out of these 12 well-preserved postcranial bones allowed a closer determination of the species in question (dromedary or Bactrian camel). According to the criteria described by C. Steiger[15], all determinable bones could be assigned to the dromedary. There is no evidence for the presence of Bactrian camel. Dromedary, therefore, seems to represent the only camel species kept and exploited at the site and its surrounding. Compared to sheep/goat and cattle the number of camel remains is generally low in the respective collections.

According to the current state of knowledge, the domestication of the wild dromedary occurred in the desert regions of the Arabian Peninsula, probably in the second half of the 2nd millennium BC[16], i.e. the appearance of domestic dromedaries can be expected from the Late Bronze Age onwards. At Tall Zirā‘a, the oldest finds of camels come from layers dating to that period *(Tab. 5.2)*. As the area in the vicinity of the site probably did not belong to the natural range of the wild dromedary, the four bones of this horizon should belong to domestic animals. In the subsequent periods, dromedary is more or less consistently present among the faunal remains. Most finds of this species have been encountered in collections of the youngest periods (Byzantine, Abbasid–Ottoman).

The finds represent different parts of the skeleton and come from animals of varying individual age: Late Bronze Age – phalanx 1 (unfused epiphysis), phalanx 2 (unfused epiphysis), two vertebrae (unfused und fused terminal plates); Iron Age I – incisivus inf. (medium worn), metatarsus; Iron Age IIA/B (younger) – phalanx 1, phalanx 3, rib; Roman – scapula, femur; Roman/Byzantine – metatarsus, vertebra; Byzantine – os malleolare, talus, calcaneus (unfused epiphysis), phalanx 1 (fused epiphysis), four vertebrae (unfused terminal plates on two vertebrae), two ribs; Byzantine/Umayyad – cranium, distal humerus (fused epiphysis), calcaneus (unfused epiphysis), phalanx 1, two phalanx 2 (fused epiphysis); Umayyad – talus; Abbasid–Ottoman – humerus, distal metacarpus (fused epiphysis), tibia, distal metatarsus (fused epiphysis), metapodium, phalanx 1 (fused epiphysis), three vertebrae (unfused terminal plates on one vertebra), two ribs.

In contrast to sheep/goat, cattle and pig, the camel bones of the collections studied do not exhibit typical butchering marks. This seems to indicate that camels have generally not been exploited for their meat. The primary use of the dromedary must have been as an animal for transport.

5.2.6. Dog

Domestic dog is represented by 79 bones and teeth in the assemblages from Tall Zirā‘a. Except for the Hellenistic period, this species is present in the collections of all other periods, but in low numbers counting for less than 1 % of the domestic mammals. Butchery marks have been found on 13 dog bones (Middle Bronze Age – 1, Late Bronze Age – 3, Iron Age I – 2, Iron Age II – 6, Roman – 1 bone) occurring on different elements (scapula – 1, humerus – 3, pelvis – 2, femur – 1, tibia – 1, talus – 2, calcaneus – 1, vertebra – 1, sacrum – 1). They seem to indicate that dogs were occasionally exploited for their meat. But there is no clear evidence for skinning these animals. The rarity of dog remains corresponds well with the observation that gnawing-marks on bones are not common at Tall Zirā‘a. Apparently, the number of dogs kept at the site was rather limited in all periods.

The finds represent different parts of the skeleton and come from animals of varying individual age: Late Bronze Age – incisivus sup., mandibula (fragment), mandibula (permanent dentition without wear), distal metapodium (fused epiphysis), phalanx 1 (fused epiphysis); Middle Bronze Age – maxilla (fragment), partial skeleton (mandibula with milk dentition), sacrum (fused terminal plates); Late Bronze Age – cranium (fragment), scapula (fragment), humerus (diaphysis), proximal humerus (fused epiphysis), distal humerus (fused epiphysis), pelvis (two fragments), proximal femur (fused epiphysis), distal tibia (fused epiphysis), two calcanei (fused epiphysis), metatarsus V (fused epiphysis), metapodium (fused epiphysis), three vertebrae (fused terminal plates); Iron Age I – cranium (two fragments), maxilla (milk dentition), mandibular (permanent dentition, slight wear), humerus (diaphysis), complete humerus (unfused epiphyses), distal humerus (fused epiphysis), proximal tibia (fused epiphysis), distal tibia (fused epiphysis), talus, calcaneus (fused epiphysis), metatarsus (diaphysis), two metatarsi (fused epiphysis), phalanx 1 (fused epiphysis), five vertebrae (fused terminal plates), rib; Iron Age IIA/B (older) – distal scapula (unfused epiphysis), proximal humerus (fused epiphysis), proximal radius (fused epiphysis), distal tibia (fused epiphysis), talus, metapodium (two fragments); Iron Age IIA/B (younger) – proximal radius (fused epiphysis), metacarpus III (fused epiphysis), pelvis, vertebra (fused terminal plates); Iron Age IIC – pelvis, sacrum (fused terminal plates), vertebra (fused terminal plates); Roman – mandibula (fragment), proximal humerus (unfused epiphysis), complete humerus (unfused epiphyses), pelvis (two fragments), metatarsus III (fused epiphysis), distal metapodium (fused epiphysis); Roman/Byzantine – complete femur (unfused epiphyses), tibia (diaphysis), phalanx 2 (fused epiphysis); Byzantine – distal humerus (fused epiphysis); Byzantine/Umayyad – two vertebrae; Umayyad – scapula, distal femur (fused epiphysis); Abbasid–Ottoman – two vertebrae (fused terminal plates).

As the data show, most of the dogs represented in the collections were full grown at the time of death. Only seven bones document puppies and sub-adult animals. Unfortunately, only a few measurements could be taken on the dog remains (see appendix). They point to the presence of medium to large size animals with estimated shoulder heights between 40 and 60 cm.

11 Separation of horse and mule was based on morphological criteria given in Uerpmann – Uerpmann 1994 and Peters 1997.

12 cf. Vieweger – Häser 2017, 260.

13 Zietzschmann – Krölling 1955, 363.

14 Habermehl 1975, 49ff.; Levine 1982, 249.

15 Steiger 1990.

16 Uerpmann – Uerpmann 2012, 119.

5.2.7. Cat

The domestic cat is only proven for the Roman period. The find is the partial skeleton of a young animal consisting of a mandible, a few long bones and vertebrae. Obviously, the keeping of this pet was of marginal significance.

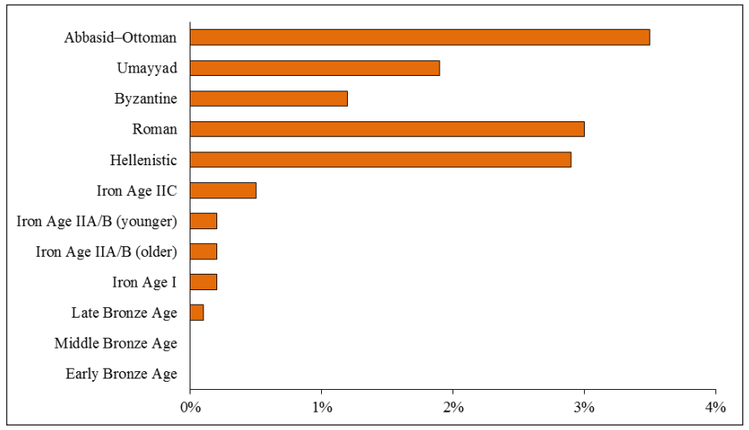
5.2.8. Poultry

Domestic fowl is represented by at least one species in the bone collections from Tall Zirāʻa, namely by chicken. In addition, there are some goose and pigeon bones, where it was not possible to decide whether they belong to wild or domestic animals *(Tab. 5.18)*.

Species	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age II, total	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Hellenistic	Hellenistic/ Roman	Roman	Roman/Byzantine	Byzantine	Byzantine/ Umayyad	Umayyad	Abbasid–Ottoman
Domestic Birds																
Chicken	–	–	8	17	38	11	9	17	5	7	85	28	13	9	8	16
Domestic/Wild Birds																
Domestic Goose/Greylag Goose	–	–	–	–	1	1	–	–	–	–	1	–	–	–	–	–
Domestic Pigeon/Rock Dove	–	–	5	6	4	2	1	–	–	–	–	–	–	–	–	–
Wild Birds																
Great Crested Grebe	–	–	–	–	1	–	–	1	–	–	1	–	–	–	–	–
Coot	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
Mallard	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Golden Eagle	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
Long-Legged Buzzard	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Black Kite	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Chukar Partridge	–	–	4	3	3	2	1	–	–	–	2	1	1	–	–	1
Laughing Dove	–	–	–	1	1	–	1	–	–	–	–	–	–	–	–	–
Common Raven	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	–
Desert Raven	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Unidentified Specimens	–	–	–	1	3	1	–	1	–	–	1	–	–	–	–	–
Sum	**–**	**–**	**17**	**32**	**54**	**17**	**12**	**20**	**5**	**7**	**90**	**29**	**14**	**9**	**9**	**17**

Tab. 5.18 Birds. Identified species according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

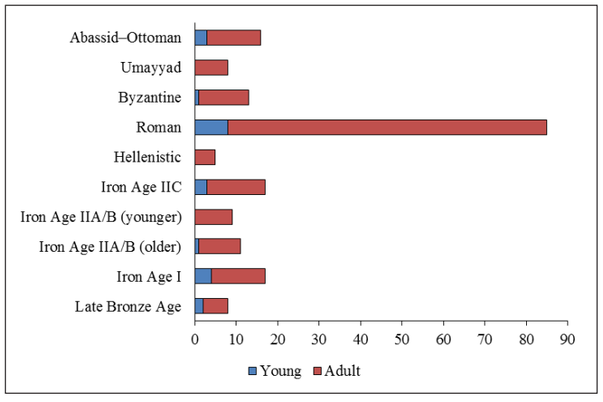
Domestic chicken is by far the most frequent species in the bird bone collection from Tall Zirāʻa. Altogether 234 bones, i.e. 83 % of the identified bird remains, were assigned to this species. Domestic chicken is missing in features of the Early and Middle Bronze Ages, but consistently present in all subsequent periods. The bone finds indicate an increasing economic importance of chicken as a food resource from the Iron Age IIC period onwards *(Graph 5.10)*. The highest percentages of domestic chicken were found in bone collections of the Hellenistic, Roman and Abbasid–Ottoman periods. *Tab. 5.19* presents data on the skeletal element distribution according to periods. Head bones of chicken are completely missing, and elements of the trunk only occur in low numbers. The majority of the bones belong to the large elements of the fore- and hindlimb. This distribution pattern applies to all periods. Concerning age structure, most of the chicken bones belong to full-grown (adult) animals and only a few to juvenile individuals *(Graph 5.11)*. The sex of chicken could be identified on 22 bones (tarsometatarsus). 12 bones belong to hens and 10 to cocks indicating a balanced sex ratio. This applies in particular to the large collection of the Roman period. The measurements of the chicken bones are documented in the appendix of this contribution. The data point to a small to medium-sized breed of chicken.



Graph 5.10 Percentages of chicken in the collections of the individual periods, based on fragment counts (NISP; sheep/goat + cattle + pig + chicken=100 %) (Source: Benecke).

Body Part Element	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Hellenistic	Roman	Byzantine	Umayyad	Abbasid–Ottoman
Trunk										
Vertebrae	–	–	–	–	–	–	1	–	–	–
Synsacrum	1	1	–	–	–	–	4	–	1	–
Sternum	–	–	–	2	1	–	3	–	1	–
Forelimb										
Scapula	1	–	–	–	–	–	3	–	–	–
Coracoid	–	1	–	1	1	1	10	2	–	3
Humerus	1	1	2	–	3	–	13	2	1	1
Radius	–	1	–	–	–	–	6	1	–	–
Ulna	–	2	1	–	1	–	6	1	–	1
Carpometacarpus	–	1	–	1	–	–	1	–	–	–
Hindlimb										
Pelvis	1	–	–	–	–	–	3	–	–	–
Femur	1	6	3	1	5	1	11	5	4	2
Tibiotarsus	3	2	2	2	3	1	15	–	1	7
Tarsometatarsus	–	2	3	2	3	2	9	2	–	2
Sum	**8**	**17**	**11**	**9**	**17**	**5**	**85**	**13**	**8**	**16**

Tab. 5.19 Chicken. Frequency of skeletal elements according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).



Graph 5.11 Ratio of chicken bones classified as young or adult in the collections of the individual periods (Source: Benecke).

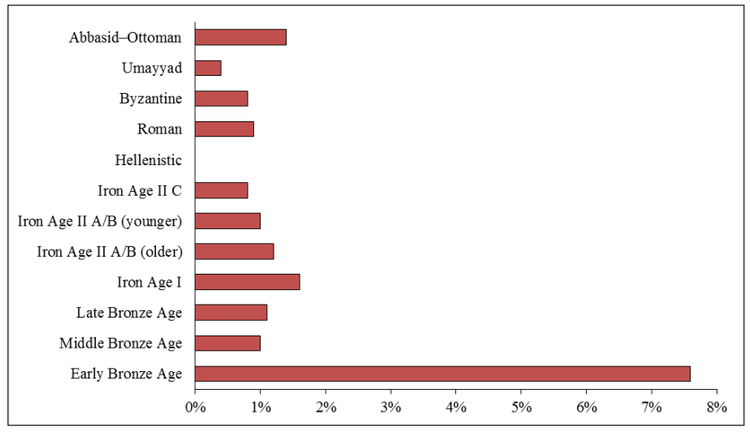
Two bones of geese—a proximal humerus and a furcula fragment—were found in features of the Iron Age IIA/B (older) and Roman periods. In both cases, it was not possible to decide whether they belong to domestic or greylag goose. A similar problem also exists in the determination of 15 pigeon bones from features of the Late Bronze Age (ulna 2, carpometacarpus 2, tibitoarsus 1), Iron Age I (sternum 1, humerus 1, ulna 2, femur 2) and Iron Age II (humerus 1, femur 3) periods. They could belong either to domestic pigeon or its wild progenitor, rock dove *(Columba livia)* which is widely distributed in the region today. Unfortunately, it was not possible to distinguish between this species and domestic pigeon on the basis of size and shape of the bones.

5.3. Hunting

Compared to domestic species bone remains of hunted animals are less frequent in the faunal assemblages recovered from the different occupation phases at Tall Zirā'a. On average, hunted animals account for less than 2 % of the identified bones indicating that species of this group have contributed little to the diet of the former inhabitants and, obviously, only rarely were exploited as a resource for raw materials. The game animals include both wild mammals and wild birds.

5.3.1. Wild Mammals

The list of wild mammals includes a total of 18 species. As far as the larger species are concerned, the wild fauna of ancient times which lived in the immediate or more distant surroundings of the settlement mound during the course of it settlement is probably almost completely represented in the bone collections. By far the most bones of wild mammals belong to ungulate species. The hunting of these species seems to have been particularly pronounced in the Early Bronze Age *(Graph 5.12)*. For this period, the percentage of wild ungulates is 8 %. In the subsequent period, this proportion varies only between 2 and 1 %.



Graph 5.12 Percentages of wild ungulates in the collections of the individual periods, based on fragment counts (NISP; sheep/goat + cattle + pig + wild ungulates=100 %) (Source: Benecke).

Fallow deer *(Cervus dama)* is by far the most frequent wild ungulate species. Altogether, there are 227 bones and teeth as well as 57 antler fragments. Remains of this species are present in the collections of all periods. Fallow deer would have been killed for their meat and hides, whilst their antlers were an important resource of raw material. The element distribution analysis revealed that all major elements of the skeleton are present in the assemblage *(Tab. 5.20)*. Age determination was possible on a few mandibles and on numerous postcranial bones. According to the aging evidence, most of the fallow deer were adult when they were killed. Out of 107 bones of the postcranial skeleton available for age determination 97 exhibit completely fused epiphyses, only ten bones belong to immature individuals. Sex determination was possible on four finds. They represent one female und three male individuals. Fallow deer is an inhabitant of open xeric woodland, although areas of cultivation may also attract them.[17] The relatively high percentage of this species in the bone collections is an indication for the presence of vital populations of fallow deer in the vicinity of the site.

17 Heidemann 1986, 144.

Body Part Element	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Roman	Byzantine	Umayyad	Abbasid–Ottoman
Head											
Antler	–	–	12	13	16	6	3	4	2	1	–
Cranium	3	–	1	1	1	–	1	1	–	–	–
Dentes superiores	1	–	–	–	–	–	1	–	–	–	–
Mandibula	–	–	–	5	1	–	–	–	1	–	–
Dentes inferiores	–	–	–	2	–	–	–	–	–	–	–
Hyoid	–	–	–	–	–	–	–	–	–	–	–
Trunk											
Vertebrae cervicales	4	–	2	2	4	–	–	–	–	1	–
Vertebrae thoracales	3	1	1	2	–	1	–	–	–	1	–
Vertebrae lumbales	1	1	–	2	5	1	2	1	–	–	–
Os sacrum	–	–	–	–	1	1	–	–	–	–	–
Vertebrae caudales	–	–	–	–	–	–	–	–	–	–	–
Costae	3	–	1	2	–	2	–	1	–	–	–
Sternum	–	–	–	–	–	–	–	–	–	–	–
Forelimb											
Scapula	2	1	1	3	–	1	–	1	–	–	–
Humerus	5	–	1	6	2	1	–	2	1	–	–
Radius/Ulna	2	1	3	2	3	3	1	–	–	–	–
Carpalia	–	–	1	–	2	–	–	–	–	–	–
Metacarpus	2	–	2	1	1	1	–	–	–	–	–
Hindlimb											
Pelvis	1	–	2	3	1	–	1	3	1	–	–
Femur	–	–	1	3	2	1	–	1	–	–	–
Patella	–	–	–	–	–	–	1	–	–	–	–
Tibia	1	–	1	2	1	–	–	–	–	–	1
Fibula	–	–	–	–	–	–	–	–	–	–	–
Tarsalia	6	1	8	8	8	4	1	2	–	–	2
Metatarsus	1	1	3	3	–	3	1	2	–	–	–
Phalanges											
Phalanx 1	1	1	2	5	3	2	–	–	1	–	–
Phalanx 2	2	–	2	3	1	3	–	–	1	–	–
Phalanx 3	1	–	–	1	–	–	–	–	–	–	–
Ossa sesamoidea	–	–	–	–	–	–	–	–	–	–	–
Sum	**39**	**7**	**44**	**69**	**52**	**30**	**12**	**18**	**7**	**3**	**3**

Tab. 5.20 Fallow Deer. Frequency of skeletal elements according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

A large part of the sample of wild mammals is made up of remains of gazelles. A total number of 162 bones and teeth have been identified as belonging to this group of wild ungulates. With the exception of the Umayyad period, remains of gazelles are represented in all periods. In the area around Tall Zirāʿa, the presence of two species of gazelles may be expected, i.e. Dorcas gazelle (*Gazella dorcas)* and mountain gazelle *(Gazella gazella)*. The osteological distinction between both species is difficult to make. With gazelles, it is differences in the form and size of the horns which are of great importance in species differentiation. Identification on the available horn-cores shows that both Dorcas gazelle and mountain gazelle are present within the faunal collection of Tall Zirāʿa. The distinction between both species on the bones of the postcranial skeleton has not been carried out here.

The gazelle bones are characterized by a high degree of fragmentation with only a few horn-cores and mandibles being unbroken. They represent discarded refuse originating from slaughtering animals and preparing food. Several bones exhibit traces of butchering. *Tab. 5.21* shows the distribution of the finds by skeletal elements. In spite of the numerical bias in the presence of the various skeletal elements resulting from different taphonomic variables it is obvious, however, that all regions of the skeleton are represented in the assemblage studied. The age of the gazelles has been evaluated on the basis of dental eruption and wear in the mandibles as well as on epiphyseal fusion.[18] All ten mandibles for which an age assessment was possible have a permanent dentition with various stages of wear. They come from animals older than 18 months when killed. Out of 132 bones of the postcranial skeleton available for age determination 128 exhibit completely fused epiphyses, while only five bones belong to immature individuals. Hunting seems to have been concentrated on gazelles which had reached bodily maturity.

Dorcas gazelle is the best equipped member of the genus Gazella to inhabit dry areas. They are found in a variety of habitats: savannahs, semi-deserts, small sand dune fields and wadis, and are associated with a number of different plant species.[19] Mountain gazelles inhabit mountainous and hilly habitats consisting of light forests, fields, or desert plateaus. In Arabia, this species lives mainly on the foliage of wadi beds and gorges.[20]

18 Davis 1980.
19 Lawes – Nanni 1993.
20 Mendelssohn et al. 1995.

Body Part Element	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Roman	Byzantine	Umayyad	Abbasid–Ottoman
Head											
Cranium	1	–	5	4	1	1	3	–	2	–	–
Dentes superiores	–	–	–	–	–	–	–	–	–	–	–
Mandibula	–	1	2	1	2	–	–	1	–	–	1
Dentes inferiores	–	–	–	–	–	–	–	–	–	–	–
Hyoid	–	–	–	–	–	–	–	–	–	–	–
Trunk											
Vertebrae cervicales	–	–	1	4	–	1	2	2	2	–	–
Vertebrae thoracales	–	1	5	4	4	–	–	–	–	–	–
Vertebrae lumbales	–	2	1	1	–	–	–	1	–	–	–
Os sacrum	–	–	–	–	–	–	–	1	–	–	–
Vertebrae caudales	–	–	–	–	–	–	–	–	–	–	–
Costae	–	–	1	2	2	–	–	–	–	–	–
Sternum	–	–	–	–	–	–	–	–	–	–	–
Forelimb											
Scapula	–	2	2	1	1	1	2	–	–	–	–
Humerus	1	1	3	–	–	–	–	–	–	–	–
Radius/Ulna	2	1	1	4	1	1	2	–	–	–	–
Carpalia	–	–	–	–	–	–	–	–	–	–	–
Metacarpus	–	1	3	1	–	–	–	1	–	–	–
Hindlimb											
Pelvis	1	–	1	–	–	1	1	–	–	–	–
Femur	–	2	–	–	–	1	1	–	–	–	–
Patella	–	–	–	–	–	–	–	–	–	–	–
Tibia	–	–	4	4	1	–	1	1	–	–	–
Fibula	–	–	–	–	–	–	–	–	–	–	–
Tarsalia	–	1	2	2	1	1	–	–	–	–	–
Metatarsus	2	–	3	2	1	1	1	–	–	–	–
Phalanges											
Phalanx 1	1	1	5	4	3	1	1	1	–	–	1
Phalanx 2	–	–	3	3	2	1	–	–	–	–	–
Phalanx 3	–	–	1	1	3	–	–	–	–	–	–
Ossa sesamoidea	–	–	–	–	–	–	–	–	–	–	–
Sum	**8**	**13**	**43**	**38**	**22**	**10**	**14**	**8**	**4**	**–**	**2**

Tab. 5.21 Gazelle. Frequency of skeletal elements according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

A total of 47 teeth and bones have been identified as wild pig *(Sus scrofa)*. Almost all parts of the skeleton are represented in the collection and some of the bones had been butchered. Most of the remains come from adult animals. Generally, wild pig is an inhabitant of deciduous and mixed forests, but reed and bush thickets along river banks are also suitable habitats for these animals.[21] The almost continuous occurrence of Sus scrofa in the bone collections seems to indicate that wild pig was a frequent game in the vicinity of the site.

A complete phalanx 2 anterior from occupation layers of the Middle Bronze Age was identified as belonging to aurochs *(Bos primigenius)*. The bone comes from an adult animal. The measurements of this specimen are documented in the appendix. Aurochs is generally considered to have been an inhabitant of open woodland as well as park-like landscapes and steppes.[22]

Wild sheep *(Ovis orientalis)* is represented by ten bones exclusively coming from layers of the Iron Age I and II periods: distal humerus (fused epiphysis, Iron Age I), proximal radius (fused epiphysis, Iron Age IIA/B (older)), proximal radius (fused epiphysis, Iron Age IIC), proximal tibia (unfused epiphysis, Iron Age I), distal tibia (unfused epiphysis, Iron Age IIC), distal tibia (epiphysis in fusion, Iron Age I), distal tibia (fused epiphysis, Iron Age I), talus (Iron Age IIC), calcaneus (unfused epiphysis; Iron Age IIC), phalanx 1 (fused epiphysis, Iron Age IIA/B (older)). The distinction between wild and domestic sheep has been made mainly according to bone size. The measurements are documented in the appendix. Of the 10 bones of wild sheep, six bones belong to adult and four to sub-adult animals. Wild sheep are able to live in very rough country as well as in relatively flat areas that are sufficiently dissected by valleys and gullies to provide shelter.[23] They prefer all sorts of semi-desert, steppe or dwarf brush vegetation, but dislike denser stands of high brush or woods. This species should have been accessible as game in the surroundings of Tall Zirāʿa.

Two bones were assigned to wild goat *(Capra aegagrus)*. These are a distal humerus (fused epiphysis) in the collection of the Iron Age I and another distal humerus (fused epiphysis) in the collection of the Iron Age IIA/B (younger) period. Similar to wild sheep, a distinction between wild and domestic goat has been made according to bone size. In the mountains of the near and far surroundings of the site, wild goats should have found sufficient living conditions.

In addition to the ungulates, carnivores form a fairly large group of the wild mammals in the bone collections from Tall Zirāʿa. A total of nine species could be identified.

Two large felids, lion *(Panthera leo)* and leopard *(Panthera pardus)*, are each represented by a single bone find in the faunal assemblages. A right distal humerus (fused epiphysis) from an Iron Age IIC context was assigned to lion *(Fig. 5.1)* and a right proximal ulna (fused epiphysis) from the Iron Age IIA/B (older) period to leopard *(Fig. 5.2)*. Both specimens belong to adult animals. Lion as well as leopard are today considered extinct species in Jordan.[24] The hunt for the two large cats probably aimed at the protection of livestock herds or the humans themselves. Sportive or ritual motifs, however, cannot be ruled out.

Fig. 5.1 Lion, right distal humerus (TZ 013417, scale 2 cm), author: M. Hochmuth, Berlin.

Fig. 5.2 Leopard, right proximal ulna (TZ 017071, scale 2 cm), author: M. Hochmuth, Berlin.

21 Herre 1986, 39.
22 Requate 1957, 325.
23 Uerpmann 1987, 127.
24 Amr et al. 2004.

Another large carnivore, brown bear *(Ursus arctos)*, is represented by five bones in the collections of the Iron Age periods: distal humerus (fused epiphysis, Iron Age I), proximal ulna (fused epiphysis, Iron Age I), proximal radius (fused epiphysis, Iron Age IIA/B (older)), femur (diaphysis, Iron Age IIC), phalanx 1 (fused epiphysis, Iron Age IIC, Fig. 3). All five bones come from full-grown animal. Currently, the brown bear is no longer present in Jordan.[25] Mountain areas with caves in the near or further surroundings of the site could have been habitats for bears.

Fig. 5.3 Brown Bear, Phalanx 1 (TZ 015076, scale 2 cm), author: M. Hochmuth, Berlin.

Wolf *(Canis lupus)* is documented by a left maxilla with permanent dentition in the collection of the Iron Age IIA/B (younger) period and hyena (Hyaena hyaena) by a right mandible with permanent dentition in the bone material of the Umayyad period. Both species should have been regularly occurring predators in the vicinity of the settlement mound. They belong to the recent mammal fauna in Jordan.[26]

Red fox *(Vulpes vulpes)* is by far the most frequent carnivore in the faunal collections from Tall Zirā'a. A total of 36 finds could be assigned to this species. The bones represent different parts of the skeleton: Early Bronze Age – proximal radius (fused epiphysis), ulna (diaphysis), two distal tibiae (fused epiphysis); Middle Bronze Age – maxilla (permanent dentition), distal tibia (fused epiphysis); Late Bronze Age – scapula (fragment), distal humerus (fused epiphysis), pelvis (fragment), distal tibia (fused epiphysis), vertebra (fused terminal plates); Iron Age I – proximal humerus (fused epiphysis), two distal humeri (fused epiphysis), complete radius (fused epiphyses), proximal ulna (fused epiphysis), complete tibia (fused epiphyses), metatarsus V (fused epiphysis); Iron Age IIA/B (older) – proximal humerus (fused epiphysis), complete radius (fused epiphysis), two pelvis (fragments), distal femur (fused epiphysis), proximal tibia (fused epiphysis); Iron Age IIA/B (younger) – mandibula (permanent dentition), distal scapula (fused epiphysis), two distal radii (fused epiphysis), calcaneus (fused epiphysis); Iron Age IIC – mandibula (permanent dentition), metatarsus V (fused epiphysis); Roman/Byzantine – humerus (diaphysis); Byzantine – mandibula (permanent dentition); Umayyad – distal tibia (fused epiphysis); Abbasid–Ottoman – proximal humerus (fused epiphysis). All bones seem to belong to full-grown animals. Three of them show cut marks probably resulting from butchering the animals. Judging from the numerous finds, foxes must have been frequent in the vicinity of the site. At present, red fox is considered by far the most common wild canid in Jordan inhabiting all types of habitats.[27]

Seven bones in the collection from the Iron Age IIA/B (older) period were identified as coming from mongoose *(Herpestes ichneumon)*. These are a cranium fragment, a right distal humerus (fused epiphysis, *Fig. 5.4*), a left complete ulna (unfused epiphyses), a right metacarpus IV (fused epiphysis), a right proximal femur (unfused epiphysis), a right distal tibia (unfused epiphysis), and a right metatarsus V (fused epiphysis). The specimens belong to sub-adult and adult animals. Currently, the mongoose lives in close proximity to farms and cultivated areas in the Jordan Valley and Northern Jordan.[28]

Fig. 5.4 Mongoose, right distal humerus (TZ 009674, scale 2 cm), author: M. Hochmuth, Berlin.

Four bones in the faunal collections from Tall Zirā'a could be assigned to weasel (Mustela nivalis). These are a left mandible with permanent dentition (Middle Bronze Age), a left complete humerus (fused epiphyses, Late Bronze Age), a left mandible with permanent dentition (Iron Age I), and a right complete humerus (fused epiphyses, Iron Age IIC). All specimens belong to adult animals. The species inhabits various biotopes in open landscapes, including steppes, semi-deserts and deserts.[29]

Stone marten (Martes foina) was identified on a right distal tibia (fused epiphysis) in the bone collection of the Byzantine/Umayyad period. The bone comes from an adult animal. Stone marten inhabits different habitats and also occurs in rocky terrain.[30] In Jordan, this species is mostly associated with fertile and wooded parts of the Mediterranean ecozone.[31]

One bone, a sacrum in the faunal collection from the Iron Age I period, was identified as coming from hare *(Lepus capensis)*. The specimen represents an adult animal. The hare is a typical inhabitant of open landscapes like semi-deserts, steppes and cultivated areas. The small number of hare bones in the material from Tall Zirā'a is surprising. One would expect that hare should have found favorable living conditions in the vicinity of the site.

Two mandibula finds from collections of the Late Bronze Age *(Fig. 5.5)* and the Iron Age IIA/B (older) period were assigned to the southern white-breasted hedgehog *(Erinaceus concolor)*. Both specimens come from adult animals. The species inhabits open and dry terrain.[32]

Fig. 5.5 Hedgehog, right mandible (TZ 012984, scale 2 cm), author: M. Hochmuth, Berlin.

5.3.1. Wild Birds

A total of 283 bird bones were recovered at Tall Zirā'a. Compared to the mammals, birds are weakly represented in the faunal assemblage of this site. Corresponding losses during the recovery of the bone finds will probably not be responsible for this. It is rather conceivable that a certain part of the bird bones was prematurely destroyed by means of dog biting or trampling, and thus did not become part of the deposits. Therefore, birds seem to be under-represented in the bone collection studied. The species identified comprise domestic birds as well as local wild taxa *(Tab. 5.18)*. Five bird bones remained unidentified. Wild birds are represented by 27 specimens belonging to 10 species. These few finds seem to indicate a minor importance of fowling.

The great crested grebe *(Podiceps cristatus)* is documented by two bones, a right tarsometatarsus (Iron Age IIC) and a complete right femur (Roman period, *Fig. 5.6)*. Both bones belong to full-grown birds. The species occurs in open areas of freshwater, but also in coastal water during the winter. At present, the great crested grebe is primarily a migratory bird in Jordan.[33] A complete right femur (Iron Age II) could be assigned to the coot (Fulica atra). The bone comes from an adult bird. The coot inhabits waters rich in vegetation, but can also be content with waterholes surrounded by thickets. Currently, the coot is a sedentary and wintering bird in Jordan.[34]

Fig. 5.6 Great Crested Grebe, right femur (TZ 017010, scale 2 cm), author: M. Hochmuth, Berlin.

The mallard (Anas platyrhynchos) is documented by a partly damaged left humerus of an adult animal (Iron Age I). As habitats mallards prefer wetlands where highly productive waters produce large amounts of floating, emergent and submerged vegetation. At present, the mallard is primarily a wintering bird in Jordan.[35]

Birds of prey are represented by three species in the bird bone collection from Tall Zirā'a. Two bones, a nearly complete right tibiotarsus (Iron Age II, *Fig. 5.7*) and a right distal tarsometatarsus (Umayyad period), were assigned to the golden eagle (Aquila chrysaetos). Both bones come from adult birds. Golden eagles are fairly adaptable in habitat but often reside in rugged and mountainous areas. At present, the golden eagle is a sedentary, nesting and migratory bird in Jordan.[36]

25 Ibid.
26 Ibid.
27 Ibid., 454.
28 Ibid., 456.
29 Reichstein 1993, 602.
30 Stubbe 1993, 443 ff.
31 Amr et al. 2004, 457.
32 Holz – Niethammer 1990, 58.
33 Hollom et al. 1988, 14.
34 Heinzel et al. 1983, 116; Hollom et al. 1988, 82.
35 Heinzel et al. 1983, 52.
36 Ibid., 79.

Fig. 5.7 Golden Eagle, right tibiotarsus (distal part) (TZ 014037, scale 2 cm), author: M. Hochmuth, Berlin.

The second bird of prey species which could be identified among the bird remains is long-legged buzzard *(Buteo rufinus)*. A left proximal ulna of an adult bird (Iron Age I) was assigned to this species. Open, uncultivated areas, with high bushes, trees, cliffs or hillocks are favoured as nesting areas by this species. Currently, the long-legged buzzard is a sedentary, nesting and migratory bird in Jordan.[37]

The common black kite *(Milvus migrans)* is represented by a single find, a right distal humerus of an adult bird (Iron Age I). Milvus migrans is a medium-sized bird of prey which inhabits various biotopes like desert, savanna, grassland and open woodland. Animals of this species often occur near wetlands and can also be found in urban areas. At present, the common black kite is a sedentary bird in Jordan.[38]

The chukar partridge *(Alectoris chukar)* is by far the most numerous species represented in the finds of wild birds from Tall Zirā'a. A total of 15 bones were assigned to this species: Late Bronze Age – four bones (scapula, humerus, carpometacarpus, femur), Iron Age I – three bones (three humeri), Iron Age IIA/B (older) – two bones (coracoid, tibiotarsus), Iron Age IIA/B (younger) – one bone (tibiotarsus), Roman – two bones (humerus, radius), Roman/Byzantine – one bone (humerus), Byzantine – one bone (ulna), Abbasid–Ottoman – one bone (humerus). All bones come from adult birds. The chukar partridge, a typical game bird, inhabits rocky open hillsides with grass or scattered scrub as well as cultivated areas. Currently, the chukar partridge is a residential bird in Jordan.[39]

The laughing dove *(Streptopelia senegalensis)* is documented by two bones, a complete left radius (Iron Age I) and a complete left humerus (Iron Age IIA/B younger) of adult birds. This small long-tailed dove is found in dry scrub and semi-desert habitats. At present, the laughing dove is a sedentary bird in Jordan.[40]

Two bones belong to species of the crow genus. As a careful comparison with recent skeletons shows, one bone, a complete right femur (Iron Age IIC, *Fig. 5.8*), belongs to the common raven *(Corvus corax)* and the second one, a left distal tibiotarsus (Iron Age I), to the desert or brown-necked raven *(Corvus ruficollis)*. At present, both species are nesting birds in Jordan.[41]

Fig. 5.8 Common Raven, right femur (TZ 013972, scale 2 cm), author: M. Hochmuth, Berlin.

5.4. Fishing

The excavations at Tall Zirā'a have produced a rather small assemblage of fish remains. The entire collection comprises a total of 76 individual bones and fragments, of which 70 could be taxonomically identified *(Tab. 5.22)*.[42] Similar to birds, fish seem to be under-represented in the faunal assemblages studied. This is mainly due to the lack of fine sieving as well as to the low structural density of fish bones and therefore the poor chance of preservation. The fish remains are unevenly distributed over the various periods. The largest sub-samples come from the Late Bronze Age, the different phases of the Iron Age and the Roman period. This is in good accordance with the general distribution of animal remains over the time periods at this site *(Tab. 5.1, Graph 5.1)*. The identified fish species can be divided into three groups according to their supposed locations of capture: local freshwater fish from the Jordan and its tributaries or from the Lake of Galilee, marine fish, which were probably brought to Tall Zirā'a from the Mediterranean coast, and freshwater fish imported from the Nile valley in Egypt.

37 Heinzel et al. 1983, 76; Hollom et al. 1988, 57.
38 Heinzel et al. 1983, 72.
39 Hollom et al. 1988, 73.
40 Ibid., 126.
41 Heinzel et al. 1983, 308 ff
42 The identification of the fish bones was carried out in the reference collection of the Staatssammlung für Anthropologie und Paläoanatomie in Munich.

Group Species	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age II, total	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Hellenistic	Hellenistic/ Roman	Roman	Roman/ Byzantine	Byzantine	Byzantine/ Umayyad	Umayyad	Abbasid– Ottoman
Freshwater Fish																
Cyprinid (Cyprinidae)	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
Barbel (Barbus sp.)	1	–	1	3	2	1	–	1	1	–	3	–	–	–	–	–
Catfish (Clarias gariepinus)	–	1	–	1	2	–	1	–	–	–	3	–	–	–	–	–
Nile perch (Lates niloticus)	–	–	10	10	18	6	7	4	–	–	3	–	1	–	–	–
Marine Fish																
Meagre (Argyrosomus regius)	–	–	4	–	3	–	1	1	–	–	–	–	–	–	–	–
Gilt-head bream (Sparus aurata)	–	–	–	–	2	–	1	–	–	–	–	–	–	–	–	–
Unidentified Specimens	–	–	1	2	2	1	1	–	–	–	–	–	–	1	–	–
Sum	**1**	**1**	**17**	**16**	**29**	**8**	**11**	**6**	**1**	**–**	**9**	**–**	**1**	**1**	**–**	**–**

Tab. 5.22 Fish. Identified species according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

Local freshwater fish are represented by species of the carp family *(Cyprinidae)* and catfish. Except for one specimen, the remaining 11 cyprinid bones – cleithrum 1, os pharyngeum inf. 7 *(Fig. 5.9–5.10)*, vertebra 3 – were assigned to the genus *Barbus* (barbel). Six of them most likely belong to the Jordan barbel *(Barbus longiceps)*. The length of the barbels was estimated to be 50–60 cm. Seven bones could be safely assigned to the African sharptooth catfish *(Clarias gariepinus)*. They come from different parts of the skeleton: dentale 1, articulare 1, keratohyale 1, cleithrum 3 *(Fig. 5.11)*, pinna pectoralis 1. The catfish is the largest freshwater fish in the area and may attain a maximum size of about 120 cm. The excavated bones belonged to individuals of about 70 cm in length. Today, this species inhabits the Jordan River and the Lake of Galilee.[43]

Fig. 5.9 Barbel, right os pharyngeum inf. (TZ 012082, scale 2 cm), author: M. Hochmuth, Berlin.

Fig. 5.10 Barbel, left os pharyngeum inf. (TZ 012407, scale 2 cm), author: M. Hochmuth, Berlin.

Fig. 5.11 Catfish, left cleithrum (TZ 013924, scale 2 cm), author: M. Hochmuth, Berlin.

43 Hamidan 2004, 389.

Another fresh water fish, the Nile perch *(Lates niloticus)*, is represented by 42 bones and thus by far the most common species among the fish remains from Tall Zirā'a. The bones are fairly unevenly distributed over the different periods. Most of the finds are from the Late Bronze Age and the various periods of the Iron Age *(Tab. 5.22)*. There are six head bones *(Fig. 5.12)*, 30 vertebrae *(Fig. 5.13–5.14)* and six dorsal spines. Seven bones gave size estimations of 60–120 cm. The distribution area of *Lates niloticus* is limited today to the African continent.[44] It is the largest fish of the Nile and can grow up to 200 cm in length and 175 kg in weight. The adult Nile perch inhabits the deep oxygenated waters of rivers and lakes. Its tasty meat is as prized today as it has always been. Ancient Egypt exported great quantities of processed (presumably smoked) Nile perches throughout the eastern Mediterranean, as far as Cyprus, Turkey, and beyond, mainly during the Bronze and Iron Ages.[45] Remains of the Nile perch have been found in almost every excavated site in the Levant, often among the three most commonly identified fish species.[46]

Fig. 5.12 Nile Perch, right cleithrum (TZ 014800, scale 2 cm), author: M. Hochmuth, Berlin.

Fig. 5.13 Nile Perch, two vertebrae (TZ 012093, scale 2 cm), author: M. Hochmuth, Berlin.

Fig. 5.14 Nile Perch, two vertebrae (TZ 016845, scale 2 cm), author: M. Hochmuth, Berlin.

44 van Neer et al. 2004, 103 f.

45 van Neer et al. 2004.

46 Lernau 2015, 529.

Seven specimens of the fish bone collection from Tall Zirā'a belong to drums. The drum family *(Sciaenidae)* consists of medium- to large-sized species. Only three species live in the eastern Mediterranean Sea. All finds, exclusively vertebrae *(Fig. 5.15)*, were assigned to meagre *(Argyrosomus regius)*. A. regius used to be the most common drum along the Levantine coast until recently. The fish is caught mainly by trammel net and by hook and line, and is highly esteemed for its flesh.[47] The second marine fish species present in the fish bone collection is gilt-head bream *(Sparus aurata)*. Two head bones (praemaxillare, *Fig. 5.16* and dentale) were identified as belonging to this species of sea breams *(Sparidae)*. These fish inhabit inshore coastal waters of the Eastern Mediterranean and can be caught with simple fishing gear. Both species of marine fish, meagre and gilt-head bream, had to be processed by drying, salting or smoking and then carried for two or three days on land to Tall Zirā'a from the coastal plain.

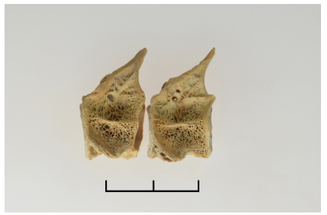


Fig. 5.15 Meagre, two vertebrae (TZ 012404, scale 2 cm), author: M. Hochmuth, Berlin.

Fig. 5.16 Gilt-Head Bream, right premaxillare (TZ 014537, scale 2 cm), author: M. Hochmuth, Berlin.

5.5. Collecting

The faunal assemblages from Tall Zirā'a also include some animal species that have apparently been collected in the vicinity of the site or far away in other areas and thus entered the settlements on the mound. These are reptiles, molluscs and crayfish.

5.5.1. Reptiles

The spur-thighed tortoise or Greek tortoise *(Testudo graeca)* is the only reptile represented in the faunal collections from Tall Zirā'a. Remains of tortoise shell were found in some features of the Iron Age I (one specimen) and Iron Age II periods (three specimens). Probably, they do not represent food remains but natural admixtures of the cultural layers. *Testudo graeca* is a common reptile in the region today.

5.5.2. Molluscs

The excavation at Tall Zirā'a yielded a total of 993 mollusc shells representing different groups: local terrestrial gastropods, freshwater shells as well as marine gastropods and bivalves. *Tab. 5.23* gives an overview of the shell finds.

The local gastropods are represented by 536 shells belonging to the genus *Helix*. Species of this genus are large edible snails. The finds probably belong to *Helix engaddensis*, a snail common in the Levant. Shells of this snail were found in nearly all periods, but the largest collection (N=393) comes from the Roman period. Remarkable is the discovery of concentrations of *Helix* shells in two pits (feature 11232 with 210 and feature 11375 with 155 snails) located in adjacent rooms of the main building of a Roman villa. These finds may represent the leftovers of single meals.

47 Lernau 2015, 527.

Group Species	Early Bronze Age	Middle Bronze Age	Late Bronze Age	Iron Age I	Iron Age II, total	Iron Age IIA/B (older)	Iron Age IIA/B (younger)	Iron Age IIC	Hellenistic	Hellenistic/ Roman	Roman	Roman/ Byzantine	Byzantine	Byzantine/ Umayyad	Umayyad	Abbasid–Ottoman
Gastropoda																
Helix sp.	2	–	27	20	56	5	16	3	–	13	393	–	2	23	–	–
Nassarius circumcinctus	–	3	11	7	15	–	1	–	–	–	2	–	–	1	–	–
Nerita sanguinolenta	–	–	2	3	3	–	–	–	–	–	1	–	–	–	–	–
Phalium saburon	–	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–
Murex brandaris	–	–	–	2	1	1	–	–	–	–	–	–	–	–	–	–
Cyprea sp.	1	1	2	–	5	–	1	1	–	1	–	–	–	2	–	–
Conus sp.	–	–	2	1	2	1	–	–	–	–	1	–	–	–	–	–
Terebra sp.	–	1	–	–	1	–	–	1	–	–	–	–	–	1	–	–
Stramonita haemastoma	–	–	1	1	1	–	–	–	–	–	1	–	–	–	–	–
Monodonta turbinata	–	–	–	–	1	1	–	–	–	–	–	–	1	1	–	–
Trunculariopsis trunculus	–	–	1	1	1	–	–	1	–	–	–	–	–	2	–	–
Bivalvia																
Unio sp.	7	2	41	12	21	2	2	2	–	9	6	–	2	14	6	–
Aspatharia rubens	–	1	1	4	–	–	–	–	–	–	–	–	–	6	1	–
Glycymeris insubrica	1	17	75	40	36	1	2	2	6	14	5	1	3	16	–	–
Cerastoderma glaucum	1	1	10	6	1	–	–	–	–	–	–	–	–	1	1	–
Spondylus gaederopus	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Mactra stultorum	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
Sum	**12**	**27**	**174**	**100**	**144**	**11**	**22**	**10**	**6**	**37**	**409**	**1**	**8**	**67**	**8**	**–**

Tab. 5.23 Molluscs. Identified species according to periods, quantified in terms of the number of identified specimens (NISP) (Source: Benecke).

The remaining gastropods in the mollusc collection (N=87) are marine species coming from the Mediterranean Sea *(Nassarius circumcinctus, Phalium saburon, Murex brandaris, Stramonita haemastoma, Monodonta turbinata, Truncullariopsis trunculus)* and the Red Sea *(Nerita sanguinolenta)*. Some of the marine gastropods could only be determined on the genus level. They belong to species of the genus *Cyprea*, *Conus* and *Terebra*. In general, marine gastropods are only represented in small numbers mainly occurring in deposits of the Late Bronze Age and the Iron Age phases. They can be regarded as trade items.

The bivalve finds (N=370) belong to freshwater (*Unio* spec., *Aspatharia rubens*) and four marine species. The shells of the river mussel (*Unio* spec.) could be of local origin. In contrast, the shells of *Aspatharia rubens* have their origin in the Nile region.[48] They must have entered the settlement through trade activities. The same seems to apply to the four marine bivalves in the present collection. The most frequent species of this group is *Glycymeris insubrica.* Today, this saltwater clam is a common species ocn the beaches of the eastern Mediterranean.[49]

48 Reese et al. 1986.

49 Bar-Yosef Mayer 2006.

5.5.3. Crayfish

Numerous cheliped remains (N=19, *Fig. 5.17*) document the presence of crayfish in the faunal collections from Tall Zirā‘a. They all belong to the semi-terrestrial freshwater crab *Potamon potamios* which is widely distributed in the Eastern Mediterranean.[50] The finds come from features of the Iron Age I (one specimen), Iron Age II (seven specimens), Hellenistic (eight specimens), Roman (one specimen) and Roman/Byzantine periods (two specimens). Whether these finds represent food leftovers or natural admixtures of the cultural layers remains an open question.

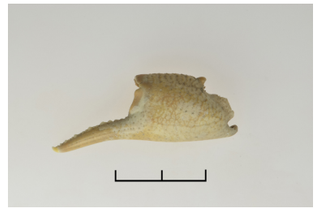


Fig. 5.17 Crab, fragment of a right cheliped (TZ 013399, scale 2 cm), author: M. Hochmuth, Berlin.

5.6. Summary

The subsistence economy at Tall Zirā‘a relied on animal keeping rather than on exploiting wild animal resources throughout its occupation from the Early Bronze Age to the Ottoman period. The faunal assemblages mainly consist of remains of domestic mammals with sheep and goats being the most frequent species according to NISP, followed by cattle and pig. Within the ovicaprids sheep are more frequent than goats. The composition of the four main food animals underwent some changes during the long period of occupation. In the oldest phases (Early and Middle Bronze Age), pig-keeping provided a relatively large contribution to meat production and consumption. In the subsequent periods, the meat supply of the inhabitants was based primarily on the keeping of sheep and goats as well as cattle.

Data on age distribution and sex ratio suggest that in addition to serving as providers of meat, some of the sheep, goats and cattle may have been exploited for other products. In sheep and goats, these data point to a mode of exploitation where meat and milk were the main products, to a lesser extent supplemented by the production of wool in sheep. In cattle, dairying appears to have been of limited importance compared to meat production. There is evidence that some cattle were also used as draft animals.

Donkeys, horses and mules are proven from the Early Bronze Age (Phase III) as livestock animals at Tall Zirā‘a. Dromedary seems to represent the only camel species that was kept and exploited on the site and its surroundings. The oldest record comes from layers dating to the Late Bronze Age. The primary use of all four species must have been as working animals and animals for transportation, i.e. for such tasks as riding, beast of burden and draft animal.

Dog is represented by few finds in the bone assemblages from Tall Zirā‘a. They represent animals of medium to large size which would have been suited for tasks such as guarding, herding and possibly hunting. Domestic cat is a rare species and has been proven only in Roman period.

During the Late Bronze Age, chicken appears for the first time among the domestic animals at Tall Zirā‘a. The chicken is an ideal domestic animal for arid regions such as those which surround the site. From the Late Iron Age (Iron Age IIC), the importance of chicken farming increased significantly. Whether geese and pigeons were kept as domestic animals remains an open question.

Hunting was of limited significance for providing food and raw materials during most of the occupation periods at Tall Zirā‘a. The game animals include 18 species of wild mammals and 10 species of wild birds. The wild mammal species fall into two groups, small animals and carnivores that were presumably killed for their furs and perhaps for medical or other reasons apart from food, and large as well as medium-sized ungulates (e.g. fallow deer, gazelle, aurochs, wild pig) that were hunted for food.

Fish remains form a small part of the faunal collection from Tall Zirā‘a. The identified fish species can be divided into three groups: local freshwater fish from the Jordan and its tributaries or from the Lake of Galilee (barbell, catfish), marine fish, which were probably brought to the tell site from the Mediterranean coast (meagre, gilt-head bream) and freshwater fish imported from the Nile Valley in Egypt (Nile perch). The finds provide evidence of an extensive fish trade, especially in the Late Bronze Age as well as in the different phases of the Iron Age.

The mollusc shells recovered at Tall Zirā‘a on the one hand document the exploitation of local terrestrial gastropods and freshwater bivalves and on the other hand the trade in mollusc shells of different species from the Nile region and the Mediterranean coast.

The range of wild animal species identified among the faunal remains point to a landscape surrounding the tall site that was similar to today’s, probably with rather more vegetation in the form of bushes and trees.

50 Brandis et al. 2000.

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5.8. Appendix: Tall Zirā‘a. Compilation of Osteometric Data

Abbreviations of periods (from the oldest to the youngest):
EBA – Early Bronze Age
MBA – Middle Bronze Age
LBA – Late Bronze Age
IA – Iron Age
Hell – Hellenistic
Rom – Roman
Byz – Byzantine
Uma – Umayyad
Abb-Mam – Abbasid–Mamluk
Ott – Ottoman

5.8.1. Mammals

Humerus

1 – breadth of the distal end, 2 – breadth of the trochlea.

Species	Inv. no.	Period	1	2
Sheep	TZ 019483	EBA	37.2	35.0
Sheep	TZ 018069	EBA	–	27.1
Sheep	TZ 018054	EBA	–	27.9
Sheep	TZ 014861	MBA	30.5	28.3
Sheep	TZ 014847	MBA	–	27.0
Sheep	TZ 016984	MBA	–	27.4
Sheep	TZ 016822	LBA	28.5	27.0
Sheep	TZ 017053	LBA	29.3	27.4
Sheep	TZ 019422	LBA	30.0	28.1
Sheep	TZ 009219	LBA	31.3	29.6
Sheep	TZ 016819	LBA	32.1	30.7
Sheep	TZ 017010	LBA	32.2	30.1
Sheep	TZ 012413	LBA	33.4	29.9
Sheep	TZ 009110	LBA	33.7	31.5
Sheep	TZ 019439	LBA	34.7	32.3
Sheep	TZ 016822	LBA	35.6	34.2
Sheep	TZ 019436	LBA	–	28.9
Sheep	TZ 018232	LBA	–	31.0
Sheep	TZ 018232	LBA	–	35.7
Sheep	TZ 016962	IA	31.7	29.5
Sheep	TZ 009112	IA	33.0	30.9
Sheep	TZ 016962	IA	33.3	30.6
Sheep	TZ 016962	IA	36.0	32.6
Sheep	TZ 017947	IA	36.3	34.0
Sheep	TZ 017947	IA	36.8	34.0
Sheep	TZ 017698	IA	–	30.5
Sheep	TZ 016962	IA	–	32.8
Sheep	TZ 016962	IA	–	35.4
Sheep	TZ 018081	IA I	30.7	28.5
Sheep	TZ 002388	IA I	30.7	28.7
Sheep	TZ 018060	IA I	32.8	30.4
Sheep	TZ 018227	IA I	32.8	30.7
Sheep	TZ 018055	IA I	33.1	30.7
Sheep	TZ 011873	IA I	33.3	30.7
Sheep	TZ 008663	IA I	34.0	31.2
Sheep	TZ 018056	IA I	34.3	31.8
Sheep	TZ 017743	IA I	35.6	32.7
Sheep	TZ 007161	IA I	39.0	36.0
Sheep	TZ 018043	IA I	39.4	35.4
Sheep	TZ 007464	IA I	–	28.0
Sheep	TZ 019402	IA I	–	28.0
Sheep	TZ 012060	IA I	–	28.2
Sheep	TZ 018065	IA I	–	29.7
Sheep	TZ 011551	IA I	–	31.5
Sheep	TZ 018246	IA I	–	32.1
Sheep	TZ 009543	IA I	–	32.2
Sheep	TZ 011935	IA I	–	33.7
Sheep	TZ 011535	IA I	–	34.0
Sheep	TZ 018567	IA I	–	35.1
Sheep	TZ 017174	IA IIA/B (older)	30.4	28.8
Sheep	TZ 010370	IA IIA/B (older)	30.9	29.2
Sheep	TZ 002340	IA IIA/B (older)	31.5	29.6
Sheep	TZ 009005	IA IIA/B (older)	32.1	29.8
Sheep	TZ 016866	IA IIA/B (older)	32.3	29.7
Sheep	TZ 017174	IA IIA/B (older)	33.1	30.5
Sheep	TZ 017178	IA IIA/B (older)	33.3	30.9
Sheep	TZ 007075	IA IIA/B (older)	33.4	31.9
Sheep	TZ 016866	IA IIA/B (older)	34.5	32.1
Sheep	TZ 010814	IA IIA/B (older)	34.8	31.6
Sheep	TZ 001499	IA IIA/B (older)	36.0	32.6
Sheep	TZ 007075	IA IIA/B (older)	36.5	35.2
Sheep	TZ 017013	IA IIA/B (older)	36.9	34.1
Sheep	TZ 008948	IA IIA/B (older)	–	26.5
Sheep	TZ 017178	IA IIA/B (older)	–	29.0
Sheep	TZ 017067	IA IIA/B (older)	–	30.4
Sheep	TZ 011007	IA IIA/B (older)	–	31.5
Sheep	TZ 017107	IA IIA/B (older)	–	31.5
Sheep	TZ 017109	IA IIA/B (older)	–	32.5
Sheep	TZ 001499	IA IIA/B (older)	–	36.0
Sheep	TZ 017071	IA IIA/B (older)	–	36.0
Sheep	TZ 016899	IA IIA/B (younger)	29.7	28.0
Sheep	TZ 008459	IA IIA/B (younger)	30.1	28.8
Sheep	TZ 016850	IA IIA/B (younger)	31.4	29.4
Sheep	TZ 016951	IA IIA/B (younger)	32.0	30.4
Sheep	TZ 002357	IA IIA/B (younger)	32.0	30.5
Sheep	TZ 017096	IA IIA/B (younger)	32.7	30.8
Sheep	TZ 017032	IA IIA/B (younger)	32.7	31.0
Sheep	TZ 016850	IA IIA/B (younger)	33.0	30.1
Sheep	TZ 017065	IA IIA/B (younger)	33.0	30.7
Sheep	TZ 017030	IA IIA/B (younger)	33.1	30.3
Sheep	TZ 012418	IA IIA/B (younger)	36.4	34.7
Sheep	TZ 015102	IA IIA/B (younger)	38.0	35.0
Sheep	TZ 007312	IA IIA/B (younger)	–	26.6
Sheep	TZ 017032	IA IIA/B (younger)	–	28.9
Sheep	TZ 010536	IA IIA/B (younger)	–	29.0
Sheep	TZ 001600	IA IIA/B (younger)	–	32.1
Sheep	TZ 010386	IA IIA/B (younger)	–	33.6
Sheep	TZ 008460	IA IIA/B (both)	31.3	29.8
Sheep	TZ 008664	IA IIA/B (both)	–	28.5
Sheep	TZ 011667	IA IIA/B (both)	–	34.0
Sheep	TZ 014803	IA IIC	31.0	28.7
Sheep	TZ 002471	IA IIC	31.0	29.0
Sheep	TZ 014802	IA IIC	33.2	30.9
Sheep	TZ 014822	IA IIC	33.6	31.5
Sheep	TZ 014849	IA IIC	33.9	31.7
Sheep	TZ 015144	IA IIC	34.3	32.3
Sheep	TZ 014109	IA IIC	–	27.9
Sheep	TZ 014109	IA IIC	–	28.9
Sheep	TZ 013972	IA IIC	–	29.3
Sheep	TZ 007060	IA IIC	–	29.6
Sheep	TZ 013281	IA IIC	–	29.6
Sheep	TZ 013972	IA IIC	–	30.9
Sheep	TZ 013972	IA IIC	–	31.7
Sheep	TZ 013972	IA IIC	–	32.2
Sheep	TZ 014057	IA IIC	–	33.5
Sheep	TZ 014749	IA IIC-Rom	30.7	28.9
Sheep	TZ 013913	IA IIC-Rom	35.5	31.5
Sheep	TZ 013290	IA IIC-Rom	–	29.1
Sheep	TZ 112031	Hell	33.4	30.6
Sheep	TZ 110070	Rom	37.3	35.3
Sheep	TZ 014056	Rom	–	32.2
Sheep	TZ 009701	Rom	–	34.0
Sheep	TZ 111981	Rom-Byz	33.4	31.8
Sheep	TZ 013767	Rom-Byz	35.4	33.0
Sheep	TZ 013292	Rom-Byz	–	29.9
Sheep	TZ 007008	Byz	34.1	31.8
Sheep	TZ 016768	Byz	35.1	33.3
Sheep	TZ 010995	Byz	–	28.9
Sheep	TZ 310281	Uma	–	30.5
Sheep	TZ 310455	Abb-Mam	–	34.1
Sheep	TZ 110283	Ott	–	29.8
Goat	TZ 019507	EBA	31.0	29.9
Goat	TZ 018261	EBA	35.8	34.0
Goat	TZ 019446	EBA	–	28.7
Goat	TZ 017072	MBA	–	27.3
Goat	TZ 017566	MBA	–	29.9
Goat	TZ 019458	LBA	31.3	29.7
Goat	TZ 013586	LBA	31.4	30.2
Goat	TZ 014804	LBA	32.5	30.5
Goat	TZ 010444	LBA	32.9	30.9
Goat	TZ 019458	LBA	33.0	30.6
Goat	TZ 016813	LBA	34.0	33.1
Goat	TZ 013036	LBA	–	28.4
Goat	TZ 017156	LBA	–	29.8
Goat	TZ 019422	LBA	–	30.6
Goat	TZ 001501	LBA	–	30.7
Goat	TZ 008468	LBA	–	31.0
Goat	TZ 009234	LBA	–	31.4
Goat	TZ 009534	LBA	–	31.4
Goat	TZ 013570	LBA	–	31.4
Goat	TZ 010527	LBA	–	32.4
Goat	TZ 019418	LBA	–	32.8
Goat	TZ 016846	LBA	–	34.6
Goat	TZ 017740	IA	40.2	37.4
Goat	TZ 017988	IA I	30.0	28.7
Goat	TZ 008117	IA I	30.5	28.4
Goat	TZ 007353	IA I	30.8	29.2
Goat	TZ 018068	IA I	31.0	29.7
Goat	TZ 018210	IA I	31.1	29.0
Goat	TZ 017948	IA I	31.7	30.5
Goat	TZ 018112	IA I	32.4	31.0
Goat	TZ 018271	IA I	32.7	31.2
Goat	TZ 012722	IA I	33.0	30.0
Goat	TZ 018249	IA I	33.0	31.5
Goat	TZ 017052	IA I	33.5	31.5
Goat	TZ 018112	IA I	33.6	31.5
Goat	TZ 018182	IA I	34.0	32.3
Goat	TZ 007487	IA I	34.1	33.0
Goat	TZ 008293	IA I	35.2	32.9
Goat	TZ 017950	IA I	40.2	38.0
Goat	TZ 010409	IA I	–	30.6
Goat	TZ 018246	IA I	–	30.6
Goat	TZ 018202	IA I	–	30.8
Goat	TZ 007709	IA I	–	31.3
Goat	TZ 017990	IA I	–	31.7
Goat	TZ 018195	IA I	–	38.2
Goat	TZ 014063	IA II	–	34.0
Goat	TZ 016866	IA IIA/B (older)	30.8	29.1
Goat	TZ 011857	IA IIA/B (older)	31.5	29.5
Goat	TZ 016866	IA IIA/B (older)	31.6	30.5
Goat	TZ 009085	IA IIA/B (older)	32.4	31.0
Goat	TZ 002363	IA IIA/B (older)	32.7	30.9
Goat	TZ 012224	IA IIA/B (older)	32.9	31.0
Goat	TZ 016881	IA IIA/B (older)	33.5	31.7
Goat	TZ 008926	IA IIA/B (older)	33.5	32.4
Goat	TZ 009005	IA IIA/B (older)	33.6	31.8
Goat	TZ 011966	IA IIA/B (older)	33.8	32.2
Goat	TZ 008920	IA IIA/B (older)	34.1	31.9
Goat	TZ 017071	IA IIA/B (older)	34.8	33.2
Goat	TZ 007070	IA IIA/B (older)	36.8	35.6
Goat	TZ 011966	IA IIA/B (older)	–	29.2

Goat	TZ 011007	IA IIA/B (older)	–	29.6
Goat	TZ 008098	IA IIA/B (older)	–	30.3
Goat	TZ 010814	IA IIA/B (older)	–	30.8
Goat	TZ 012055	IA IIA/B (older)	–	30.8
Goat	TZ 011918	IA IIA/B (older)	–	35.4
Goat	TZ 011070	IA IIA/B (older)	–	36.6
Goat	TZ 017032	IA IIA/B (younger)	31.1	29.3
Goat	TZ 016992	IA IIA/B (younger)	31.3	29.9
Goat	TZ 016992	IA IIA/B (younger)	31.5	29.7
Goat	TZ 016850	IA IIA/B (younger)	33.7	31.5
Goat	TZ 017030	IA IIA/B (younger)	33.8	32.1
Goat	TZ 017002	IA IIA/B (younger)	34.3	33.0
Goat	TZ 015143	IA IIA/B (younger)	34.4	31.9
Goat	TZ 012418	IA IIA/B (younger)	–	30.6
Goat	TZ 016951	IA IIA/B (younger)	–	32.6
Goat	TZ 01104	IA IIA/B (younger)	–	33.0
Goat	TZ 010429	IA IIA/B (younger)	–	35.5
Goat	TZ 015103	IA IIA/B (younger)	–	35.8
Goat	TZ 011667	IA IIA/B (both)	–	31.0
Goat	TZ 002506	IA IIC	–	31.7
Goat	TZ 016958	IA IIC	32.2	31.0
Goat	TZ 016860	IA IIC	33.3	31.3
Goat	TZ 014822	IA IIC	34.8	33.4
Goat	TZ 016801	IA IIC	36.2	34.3
Goat	TZ 014062	IA IIC	38.4	36.7
Goat	TZ 010715	IA IIC	38.6	36.5
Goat	TZ 011479	IA IIC	–	29.7
Goat	TZ 014768	IA IIC	–	30.8
Goat	TZ 016801	IA IIC	–	31.2
Goat	TZ 014044	IA IIC	–	32.4
Goat	TZ 014699	IA IIC-Rom	29.7	28.0
Goat	TZ 111901	Hell	32.4	31.7
Goat	TZ 017014	Rom	31.6	30.6
Goat	TZ 017007	Rom	34.5	31.3
Goat	TZ 017182	Rom	–	31.3
Goat	TZ 013299	Rom	–	33.9
Goat	TZ 011723	Rom	–	36.5
Goat	TZ 014056	Rom	–	37.7
Goat	TZ 110124	Rom-Byz	33.3	31.7
Goat	TZ 011545	Rom-Byz	–	31.4
Goat	TZ 007054	Byz	33.2	31.6
Goat	TZ 007008	Byz	33.3	31.7
Goat	TZ 013280	Byz	–	30.1
Goat	TZ 110115	Byz-Uma	31.3	30.7
Goat	TZ 009794	Byz-Uma	32.7	31.0
Goat	TZ 013915	Byz-Uma	37.1	34.9
Goat	TZ 013087	Uma	–	31.2
Cattle	TZ 017981	MBA	75.5	65.0
Cattle	TZ 016880	LBA	–	83.5
Cattle	TZ 018246	IA I	76.8	67.8
Cattle	TZ 018246	IA I	82.0	72.3
Cattle	TZ 012002	IA IIA/B (both)	71.8	64.5
Cattle	TZ 310267	Abb-Mam	–	67.5
Pig	TZ 011205	IA IIA/B (older)	29.3	
Pig	TZ 014818	IA IIC	41.1	35.0
Pig	TZ 017450	MBA	38.0	31.9
Pig	TZ 013564	LBA	–	33.6
Ass	TZ 001364	IA IIA/B (older)	63.5	59.5
Camel	TZ 310217	Uma-Abb-Mam	87.0	78.8
Dog	TZ 016775	LBA	28.2	20.1
Dog	TZ 111499	Byz	34.9	22.6
Fallow Deer	TZ 019507	EBA	44.0	41.2
Fallow Deer	TZ 013080	LBA	–	45.8
Fallow Deer	TZ 016962	IA	–	43.5
Fallow Deer	TZ 017948	IA I	51.1	46.6
Fallow Deer	TZ 018195	IA I	54.6	50.2
Fallow Deer	TZ 016869	IA I	–	45.0
Fallow Deer	TZ 011717	IA IIA/B (older)	48.0	46.0
Fallow Deer	TZ 016906	IA IIA/B (both)	–	43.3
Gazelle	TZ 014804	LBA	28.2	26.0
Gazelle	TZ 007445	IA IIA/B (both)	27.5	25.9
Wild Sheep	TZ 017697	IA IIA/B (older)	–	38.5
Wild Pig	TZ 018115	EBA	51.5	42.5
Wild Pig	TZ 016962	IA	51.6	43.0
Wild Pig	TZ 017071	IA IIA/B (older)	44.5	36.3
Fox	TZ 018267	LBA	20.9	14.2
Fox	TZ 017984	IA I	19.8	14.1
Fox	TZ 018050	IA I	20.1	13.8
Fox	TZ 007157	IA II	17.8	–

Radius

1 – breadth of the proximal end, 2 – breadth of the Facies articularis proximalis, 3 – smallest breadth of the diaphysis, 4 – breadth of the distal end, 5 – breadth of the Facies articularis distalis, 6 – greatest length.

Species	Inv. no.	Period	1	2	3	4	5	6
Sheep	TZ 019446	EBA	30.7	28.7	–	–	–	–
Sheep	TZ 015099	MBA	31.9	28.6	16.4	31.0	25.4	163.8
Sheep	TZ 014847	MBA	32.0	29.0	–	–	–	–
Sheep	TZ 014847	MBA	33.3	30.9	–	–	–	–
Sheep	TZ 014861	MBA	–	–	–	30.1	25.1	
Sheep	TZ 019439	LBA	30.4	27.8	–	–	–	–
Sheep	TZ 017194	LBA	30.8	27.6	–	–	–	–
Sheep	TZ 001601	LBA	30.9	28.2	–	–	–	–
Sheep	TZ 012214	LBA	31.0	29.0	–	–	–	–
Sheep	TZ 001540	LBA	32.0	30.6	–	–	–	–
Sheep	TZ 012425	LBA	32.5	29.3	–	–	–	–
Sheep	TZ 018581	LBA	33.3	29.5	17.2	–	26.3	169.0
Sheep	TZ 019502	LBA	33.7	29.9	–	–	–	–
Sheep	TZ 009343	LBA	35.5	32.5	–	–	–	–
Sheep	TZ 019495	LBA	36.2	32.2	–	–	–	–
Sheep	TZ 009313	LBA	37.4	34.3	–	–	–	–
Sheep	TZ 019439	LBA	37.6	34.1	–	–	–	–
Sheep	TZ 016962	IA	31.4	28.1	–	–	–	–
Sheep	TZ 016962	IA	35.7	32.2	–	–	–	–
Sheep	TZ 019402	IA I	–	–	–	33.0	27.3	
Sheep	TZ 008939	IA I	31.1	28.0	–	–	–	–
Sheep	TZ 018570	IA I	31.9	28.7	–	–	–	–
Sheep	TZ 010409	IA I	32.0	30.1	–	–	–	–
Sheep	TZ 017978	IA I	33.0	30.0	–	–	–	–
Sheep	TZ 017948	IA I	33.5	31.4	–	–	–	–
Sheep	TZ 016856	IA I	33.6	31.0	–	–	–	–
Sheep	TZ 018104	IA I	33.6	31.2	–	–	–	–
Sheep	TZ 016991	IA I	34.6	32.1	–	–	–	–
Sheep	TZ 018210	IA I	34.7	31.4	–	–	–	–
Sheep	TZ 011670	IA I	35.0	31.7	–	–	–	–
Sheep	TZ 008597	IA I	35.1	29.6	–	–	–	–
Sheep	TZ 018225	IA I	35.7	32.9	–	–	–	–
Sheep	TZ 016991	IA I	36.2	32.7	–	–	–	–
Sheep	TZ 016942	IA I	37.6	33.7	–	–	–	–
Sheep	TZ 018195	IA I	38.3	33.7	–	–	–	–
Sheep	TZ 017885	IA I	40.2	35.1	–	–	–	–
Sheep	TZ 010409	IA I	–	–	–	–	–	153.0
Sheep	TZ 017759	IA IIA/B (older)	31.9	29.3	–	–	–	–
Sheep	TZ 017700	IA IIA/B (older)	32.0	29.8	–	–	–	–
Sheep	TZ 006951	IA IIA/B (older)	32.8	29.4	–	–	–	–
Sheep	TZ 017154	IA IIA/B (older)	33.1	31.2	–	–	–	–
Sheep	TZ 017757	IA IIA/B (older)	34.2	30.2	–	–	–	–
Sheep	TZ 017757	IA IIA/B (older)	34.4	31.1	–	–	–	–
Sheep	TZ 007436	IA IIA/B (older)	36.1	32.4	–	–	–	–
Sheep	TZ 016881	IA IIA/B (older)	36.1	32.4	–	–	–	–
Sheep	TZ 008666	IA IIA/B (older)	38.0	35.0	–	–	–	–
Sheep	TZ 008819	IA IIA/B (older)	–	–	–	29.1	24.7	–

Sheep	TZ 017174	IA IIA/B (older)	–	–	–	30.3	25.9	–
Sheep	TZ 007360	IA IIA/B (older)	–	–	–	32.0	27.2	–
Sheep	TZ 016884	IA IIA/B (younger)	32.8	29.4	–	–	–	–
Sheep	TZ 017033	IA IIA/B (younger)	35.0	30.5	–	–	–	–
Sheep	TZ 012418	IA IIA/B (younger)	35.6	31.8	–	–	–	–
Sheep	TZ 016951	IA IIA/B (younger)	35.7	32.4	–	–	–	–
Sheep	TZ 008866	IA IIA/B (younger)	35.9	32.8	–	–	–	–
Sheep	TZ 015143	IA IIA/B (younger)	36.0	31.5	–	–	–	–
Sheep	TZ 002224	IA IIA/B (younger)	36.0	33.5	–	–	–	–
Sheep	TZ 008720	IA IIA/B (both)	32.1	29.9	–	–	–	–
Sheep	TZ 008464	IA IIA/B (both)	33.9	30.7	–	–	–	–
Sheep	TZ 011667	IA IIA/B (both)	35.8	32.0	–	–	–	–
Sheep	TZ 010164	IA IIC	31.8	29.3	–	–	–	–
Sheep	TZ 014822	IA IIC	32.2	30.1	–	–	–	–
Sheep	TZ 014109	IA IIC	32.3	29.1	–	–	–	–
Sheep	TZ 011532	IA IIC	33.0	30.6	–	–	–	–
Sheep	TZ 014802	IA IIC	33.1	30.0	–	–	–	–
Sheep	TZ 013972	IA IIC	34.5	31.4	–	–	–	–
Sheep	TZ 001134	IA IIC	–	–	–	33.4	26.8	–
Sheep	TZ 111572	Hell	33.5	31.9	–	–	–	149.3
Sheep	TZ 014748	Rom	32.8	29.5	–	–	–	–
Sheep	TZ 012093	Rom	34.0	30.6	–	–	–	–
Sheep	TZ 017007	Rom	37.1	34.2	–	–	–	–
Sheep	TZ 110429	Rom	37.8	33.5	–	–	–	–
Sheep	TZ 006901	Rom	–	36.0	–	–	–	–
Sheep	TZ 017182	Rom	–	–	–	35.9	29.0	–
Sheep	TZ 009706	Rom-Byz	33.8	32.2	–	–	–	–
Sheep	TZ 008106	Rom-Byz	–	–	–	30.7	25.7	–
Sheep	TZ 007072	Byz	32.2	28.7	15.7	28.7	24.6	156.4
Sheep	TZ 012218	Byz	38.7	34.6	–	–	–	–
Goat	TZ 014847	MBA	30.0	29.8	–	–	–	–
Goat	TZ 019458	LBA	29.9	29.1	–	–	–	–
Goat	TZ 012413	LBA	31.2	30.0	–	–	–	–
Goat	TZ 008468	LBA	31.3	29.6	–	–	–	–
Goat	TZ 017099	LBA	31.4	29.9	–	–	–	–
Goat	TZ 012715	LBA	31.6	29.6	–	–	–	–
Goat	TZ 019489	LBA	31.6	29.6	–	–	–	–
Goat	TZ 008249	IA I	34.6	32.5	–	–	–	–
Goat	TZ 007487	IA I	34.6	33.0	–	–	–	–
Goat	TZ 018043	IA I	34.8	33.2	–	–	–	–
Goat	TZ 001368	IA II	32.8	31.2	–	–	–	–
Goat	TZ 007157	IA II	36.1	34.7	–	–	–	–
Goat	TZ 007436	IA IIA/B (older)	30.1	28.9	–	–	–	–
Goat	TZ 008927	IA IIA/B (older)	30.6	29.6	18.8	28.7	25.0	150.0
Goat	TZ 011956	IA IIA/B (older)	31.1	29.3	–	–	–	–
Goat	TZ 017697	IA IIA/B (older)	31.3	29.8	–	–	–	–
Goat	TZ 009076	IA IIA/B (older)	33.0	31.2	–	–	–	–
Goat	TZ 011340	IA IIA/B (older)	33.3	31.5	–	–	–	–
Goat	TZ 017110	IA IIA/B (older)	33.6	30.2	–	–	–	–
Goat	TZ 017110	IA IIA/B (older)	34.4	31.4	–	–	–	–
Goat	TZ 007070	IA IIA/B (older)	38.0	36.0	–	–	–	–
Goat	TZ 017076	IA IIA/B (younger)	30.7	28.9	–	–	–	–
Goat	TZ 017031	IA IIA/B (younger)	31.2	28.9	–	–	–	–
Goat	TZ 002357	IA IIA/B (younger)	32.2	30.2	–	–	–	–
Goat	TZ 016851	IA IIA/B (younger)	33.6	31.5	–	–	–	–
Goat	TZ 008242	IA IIA/B (younger)	38.2	34.4	–	–	–	–
Goat	TZ 016884	IA IIA/B (younger)	38.6	36.1	–	–	–	–
Goat	TZ 016987	IA IIA/B (younger)	–	26.8	–	30.4	26.3	160.0
Goat	TZ 014802	IA IIC	29.4	27.9	–	–	–	–
Goat	TZ 014800	IA IIC	30.4	29.5	–	–	–	–
Goat	TZ 010371	IA IIC	30.7	29.3	–	–	–	–
Goat	TZ 008251	IA IIC	31.6	29.6	–	–	–	–
Goat	TZ 007029	IA IIC	32.3	30.5	–	–	–	–
Goat	TZ 015076	IA IIC	32.5	30.5	–	–	–	–
Goat	TZ 006914	IA IIC	33.9	32.8	–	–	–	–
Goat	TZ 011479	IA IIC	34.9	32.9	–	–	–	–
Goat	TZ 010164	IA IIC	35.0	32.7	–	–	–	–
Goat	TZ 111632	Rom	30.1	28.8	–	–	–	–
Goat	TZ 017182	Rom	30.6	28.3	–	–	–	–
Goat	TZ 017182	Rom	31.0	29.0	–	–	–	–
Goat	TZ 013936	Rom	32.3	30.7	–	–	–	–
Goat	TZ 013934	Rom	32.9	31.6	–	–	–	–
Goat	TZ 017152	Rom	33.6	30.7	–	–	–	–
Goat	TZ 006947	Rom	34.0	31.9	–	–	–	–
Goat	TZ 011545	Rom-Byz	33.4	31.5	–	–	–	–
Goat	TZ 002508	Byz	33.1	31.0	–	–	–	–
Goat	TZ 012454	Byz	35.3	35.2	–	–	–	–
Goat	TZ 013280	Byz	–	–	–	38.7	–	–
Goat	TZ 310209	Byz-Uma	31.8	29.9	–	–	–	–
Goat	TZ 310281	Uma	30.3	28.4	–	–	–	–
Goat	TZ 007979	Uma	32.3	30.5	–	–	–	–
Goat	TZ 310268	Abb-Mam	32.8	31.2	–	–	–	–
Goat	TZ 310455	Abb-Mam	32.8	31.6	–	–	–	–
Cattle	TZ 018236	LBA	72.0	65.4	–	–	–	–
Cattle	TZ 010066	LBA	73.0	67.2	–	–	–	–
Cattle	TZ 018224	LBA	74.5	64.2	–	–	–	–
Cattle	TZ 017730	IA	–	–	–	61.0	57.0	–
Cattle	TZ 017889	IA	–	–	–	70.0	62.5	
Cattle	TZ 017201	IA I	79.3	71.0	–	–	–	–
Cattle	TZ 016859	IA IIA/B (both)	69.5	63.3	–	–	–	–
Cattle	TZ 016849	IA IIA/B (younger)	69.2	84.0	–	–	–	–
Cattle	TZ 007027	IA IIA/B (younger)	76.2	72.0	–	–	–	–
Cattle	TZ 017032	IA IIA/B (younger)	–	–	–	70.0	67.5	–
Cattle	TZ 110124	Rom-Byz	73.2	65.7	–	–	–	–
Cattle	TZ 110115	Byz-Uma	76.6	70.0	–	–	–	–
Cattle	TZ 310449	Abb-Mam	75.6	70.4	–	–	–	–
Pig	TZ 014830	MBA	29.2	–	–	–	–	–
Pig	TZ 018101	MBA	30.1	–	–	–	–	–
Pig	TZ 017742	MBA	30.4	–	–	–	–	–
Pig	TZ 019458	LBA	25.8	–	–	–	–	–
Pig	TZ 019458	LBA	27.1	–	–	–	–	–
Pig	TZ 019470	LBA	27.6	–	–	–	–	–
Pig	TZ 018256	LBA	28.6	–	–	–	–	–
Pig	TZ 007488	IA I	29.0	–	–	–	–	–

Pig	TZ 008926	IA IIA/B (older)	28.5	–	–	–	–	–
Pig	TZ 008659	IA IIC	28.5	–	–	–	–	–
Ass	TZ 009612	IA IIA/B (older)	55.8	50.0	–	–	–	–
Mule	TZ 018198	EBA	–	–	–	59.4	51.7	–
Mule	TZ 111850	Rom-Byz	–	–	–	57.5	50.6	–
Equus	TZ 002329	IA IIC	60.8	53.6	–	–	–	–
Equus	TZ 110806	Byz-Uma	–	–	–	54.8	45.7	
Dog	TZ 007312	IA IIA/B (younger)	19.7	–	–	–	–	–
Fallow Deer	TZ 016870	LBA	–	–	–	37.0	34.4	–
Fallow Deer	TZ 016862	LBA	–	–	–	38.9	36.3	–
Fallow Deer	TZ 009008	IA IIA/B (younger)	44.6	40.8	–	–	–	–
Fallow Deer	TZ 110298	Rom-Byz	49.5	46.1	–	–	–	–
Gazelle	TZ 018190	EBA	23.9	22.3	–	–	–	–
Gazelle	TZ 018225	IA I	28.7	25.0	–	–	–	–
Gazelle	TZ 017977	IA I	–	–	–	25.9	23.6	
Gazelle	TZ 017091	IA IIA/B (younger)	22.7	22.3	–	–	–	–
Wild Sheep	TZ 015079	IA IIC	48.0	39.0	–	–	–	–
Fox	TZ 018127	IA I	11.3	–	8.3	16.1	12.6	114.7
Fox	TZ 017107	IA IIA/B (older)	10.4	–	7.1	12.6	–	97.6
Fox	TZ 008943	IA IIA/B (older)	11.2	–	–		–	–
Fox	TZ 016884	IA IIA/B (younger)	–	–	–	13.0	10.8	–
Fox	TZ 016850	IA IIA/B (younger)	–	–	–	15.0	12.4	–

Metacarpus

1 – breadth of the distal end, 2 – depth of the distal end, 3 – smallest breadth of the diaphysis, 4 – depth of the diaphysis, 5 – breadth of the proximal end, 6 – depth of the proximal end, 7 – greatest length.

Species	**Inv. no.**	**Period**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Sheep	TZ 014847	MBA	23.6	15.1	11.9	9.6	21.4	15.3	128.5
Sheep	TZ 014861	MBA	25.2	16.2	–	–	–	–	–
Sheep	TZ 017457	MBA	25.8	16.1	–	–	–	–	–
Sheep	TZ 013942	MBA	28.6	18.5	16.4	12.0	28.3	19.4	155.0
Sheep	TZ 019458	LBA	24.4	15.9	–	–	–	–	–
Sheep	TZ 011940	LBA	24.6	15.9	–	–	–	–	–
Sheep	TZ 011534	LBA	24.6	16.8	13.8	10.1	24.0	16.7	136.4
Sheep	TZ 019489	LBA	26.0	15.7	–	–	–	–	–
Sheep	TZ 016771	LBA	26.1	17.3	15.0	10.9	25.0	16.5	137.0
Sheep	TZ 017053	LBA	26.6	16.6	15.0	11.4	25.1	18.2	136.0
Sheep	TZ 019423	LBA	26.8	17.8	–	–	–	–	–
Sheep	TZ 017074	LBA	27.4	17.9	–	–	–	–	–
Sheep	TZ 016979	LBA	27.8	18.8	16.9	11.1	–	–	148.0
Sheep	TZ 017156	LBA	29.0	17.9	16.2	12.1	25.0	17.6	142.8
Sheep	TZ 019430	LBA	29.1	17.7	17.3	12.6	–	–	139.0
Sheep	TZ 010411	LBA	30.7	18.9	–	–	–	–	–
Sheep	TZ 01601	LBA	–	–	–	–	22.6	16.5	–
Sheep	TZ 019439	LBA	–	–	–	–	23.0	17.0	–
Sheep	TZ 014385	LBA	–	–	–	–	24.5	16.4	–
Sheep	TZ 019439	LBA	–	–	–	–	25.2	17.7	–
Sheep	TZ 016962	IA	–	–	–	–	24.1	17.3	–
Sheep	TZ 016962	IA	–	–	–	–	24.5	17.2	–

Sheep	TZ 016962	IA	–	–	–	–	28.5	18.9	–
Sheep	TZ 016962	IA	–	–	–	–	29.3	19.3	–
Sheep	TZ 007509	IA I	24.7	16.2	–	–	–	–	–
Sheep	TZ 018225	IA I	24.8	16.9	–	–	–	–	–
Sheep	TZ 018044	IA I	25.9	16.2	–	–	23.9	17.0	–
Sheep	TZ 007353	IA I	27.0	16.8	–	–	–	–	–
Sheep	TZ 018582	IA I	28.3	17.4	–	–	25.5	18.4	129.0
Sheep	TZ 009233	IA I	–	–	15.6	–	23.9	17.4	138.0
Sheep	TZ 018182	IA I	–	–	14.0	10.8	23.1	17.0	128.0
Sheep	TZ 018570	IA I	–	–	–	–	24.5	18.2	–
Sheep	TZ 016942	IA I	–	–	–	–	25.0	17.8	–
Sheep	TZ 018182	IA I	–	–	–	–	25.0	18.3	–
Sheep	TZ 018055	IA I	–	–	–	–	25.6	18.5	–
Sheep	TZ 018055	IA I	–	–	–	–	26.6	18.1	–
Sheep	TZ 017113	IA I	–	–	–	–	27.0	19.5	–
Sheep	TZ 012050	IA IIA/B (older)	25.3	–	–	–	–	–	–
Sheep	TZ 001396	IA IIA/B (older)	25.6	16.6	–	–	–	–	–
Sheep	TZ 016866	IA IIA/B (older)	26.7	19.0	–	–	–	–	–
Sheep	TZ 016866	IA IIA/B (older)	27.4	18.2	–	–	–	–	–
Sheep	TZ 007478	IA IIA/B (older)	27.5	17.6	14.6	10.8	25.6	17.4	142.3
Sheep	TZ 012110	IA IIA/B (older)	27.8	17.7	–	–	–	–	–
Sheep	TZ 011966	IA IIA/B (older)	28.0	17.6	–	–	–	–	–
Sheep	TZ 017700	IA IIA/B (older)	–	–	–	–	26.3	18.4	–
Sheep	TZ 015143	IA IIA/B (younger)	28.6	17.9	–	–	–	–	–
Sheep	TZ 016850	A/B (younger)			13.9	10.0	25.0	18.3	138.0
Sheep	TZ 001340	IA IIA/B (younger)	–	–	–	–	25.0	17.6	–
Sheep	TZ 016951	IA IIA/B (younger)	–	–	–	–	26.3	18.5	–
Sheep	TZ 016992	IA IIA/B (younger)	–	–	–	–	28.8	20.2	–
Sheep	TZ 016906	IA IIA/B (both)	–	–	–	–	29.3	20.2	–
Sheep	TZ 014802	IA IIC	24.7	16.2	–	–	–	–	–
Sheep	TZ 014806	IA IIC	24.8	16.8	–	–	–	–	132.0
Sheep	TZ 007060	IA IIC	25.2	16.8	13.7	–	23.7	16.6	133.0
Sheep	TZ 009967	IA IIC	26.4	17.0	–	–	–	–	–
Sheep	TZ 010540	IA IIC	28.3	16.9	–	–	–	–	–
Sheep	TZ 008319	IA IIC	28.6	18.0	–	–	–	–	–
Sheep	TZ 016795	IA IIC	29.9	18.7	–	–	–	–	–
Sheep	TZ 007516	IA IIC	–	–	–	–	23.8	17.2	–
Sheep	TZ 015076	IA IIC	–	–	–	–	26.3	18.5	–
Sheep	TZ 002324	Rom	24.5	16.1	–	–	–	–	–
Sheep	TZ 017182	Rom	26.3	17.3	–	–	–	–	–
Sheep	TZ 110262	Rom	26.6	–	–	–	–	–	–
Sheep	TZ 007169	Rom	26.8	18.3	14.3	10.6	24.2	18.5	140.0
Sheep	TZ 018255	Rom	27.6	18.4	–	–	–	–	–
Sheep	TZ 017078	Rom	29.2	17.8	–	–	–	–	–
Sheep	TZ 006959	Rom	–	–	–	–	24.5	18.0	–
Sheep	TZ 017017	Rom	–	–	–	–	24.8	19.0	–
Sheep	TZ 001110	Rom	–	–	–	–	28.3	19.8	–
Sheep	TZ 110452	Rom-Byz	26.3	17.2	–	–	–	–	–
Sheep	TZ 111906	Rom-Byz	26.5	16.6	14.7	10.6	24.4	17.8	130.0
Sheep	TZ 013597	Rom-Byz	27.2	17.6	14.9	10.8	24.5	18.8	132.0
Sheep	TZ 111360	Rom-Byz	27.6	16.8	–	–	–	–	–
Sheep	TZ 111906	Rom-Byz	–	–	–	–	25.4	18.0	

Goat	TZ 019440	EBA	26.9	16.3	–	–	–	–	–
Goat	TZ 019490	EBA	–	–	–	–	26.3	20.0	
Goat	TZ 017469	MBA	26.7	16.3	15.8	10.8	–	–	104.0
Goat	TZ 017467	MBA	27.5	17.2	–	–	–	–	–
Goat	TZ 013089	LBA	25.0	15.9	–	–	–	–	–
Goat	TZ 010437	LBA	25.9	15.3	–	–	–	–	–
Goat	TZ 019430	LBA	26.2	16.1	–	–	–	–	–
Goat	TZ 009119	LBA	27.0	16.7	17.4	–	–	–	108.0
Goat	TZ 012715	LBA	27.1	17.0	16.4	10.4	24.0	16.9	107.8
Goat	TZ 016790	LBA	27.8	17.3	–	–	–	–	–
Goat	TZ 012407	LBA	28.1	17.1	18.3	10.2	26.2	17.2	108.8
Goat	TZ 001578	LBA	29.2	18.1	20.7	11.6	–	–	118.4
Goat	TZ 019439	LBA	29.4	16.8	–	–	–	–	–
Goat	TZ 012897	LBA	30.0	18.7	–	–	–	–	–
Goat	TZ 001548	LBA	–	–	16.2	11.1	24.5	17.0	109.6
Goat	TZ 019488	LBA	–	–	16.4	10.6	24.8	18.1	112.3
Goat	TZ 019439	LBA	–	–	–	–	22.6	16.1	–
Goat	TZ 018025	LBA	–	–	–	–	24.4	16.7	–
Goat	TZ 017169	LBA	–	–	–	–	27.5	18.0	–
Goat	TZ 014385	LBA	–	–	–	–	27.8	19.2	–
Goat	TZ 019502	LBA	–	–	–	–	30.1	20.4	–
Goat	TZ 016856	IA I	26.4	16.2	–	–	–	–	–
Goat	TZ 012212	IA I	26.6	16.9	17.4	10.8	24.2	17.1	112.0
Goat	TZ 010734	IA I	26.7	16.2	–	–	–	–	–
Goat	TZ 002396	IA I	27.1	15.9	15.8	10.2	23.5	16.6	111.0
Goat	TZ 018044	IA I	27.2	16.7	–	–	–	–	–
Goat	TZ 002394	IA I	28.0	17.3	–	–	–	–	–
Goat	TZ 001369	IA I	29.8	17.6	19.3	11.8	26.1	18.0	110.0
Goat	TZ 018203	IA I	–	–	16.5	10.7	24.6	18.4	109.0
Goat	TZ 007707	IA I	–	–	–	–	24.0	16.4	–
Goat	TZ 018263	IA I	–	–	–	–	24.1	16.8	–
Goat	TZ 007079	IA I	–	–	–	–	26.9	17.7	–
Goat	TZ 011678	IA II	–	–	17.0	10.2	24.6	17.6	114.6
Goat	TZ 010395	IA IIA/B (older)	26.5	16.7	16.0	10.0	23.9	16.3	108.4
Goat	TZ 009425	IA IIA/B (older)	26.6	15.4	–	–	–	–	–
Goat	TZ 007443	IA IIA/B (older)	27.7	16.6	17.3	10.7	25.1	16.6	115.0
Goat	TZ 017697	IA IIA/B (older)	27.8	16.3	–	–	–	–	–
Goat	TZ 010395	IA IIA/B (older)	27.8	–	–	–	–	–	–
Goat	TZ 011857	IA IIA/B (older)	28.3	17.2	–	–	–	–	–
Goat	TZ 008926	IA IIA/B (older)	–	–	16.8	10.7	23.6	17.2	110.4
Goat	TZ 011733	IA IIA/B (older)	–	–	17.5	11.2	25.6	17.4	115.5
Goat	TZ 007316	IA IIA/B (both)	27.8	16.0	15.9	11.1	23.3	17.0	111.6
Goat	TZ 001075	IA IIA/B (younger)	27.2	18.7					
Goat	TZ 007034	IA IIA/B (younger)	27.6	17.3	16.1	11.0	25.1	16.5	115.0
Goat	TZ 002249	IA IIA/B (younger)	29.0	18.4	–	–	–	–	–
Goat	TZ 017076	IA IIA/B (younger)	29.1	17.1	–	–	–	–	–
Goat	TZ 016992	IA IIA/B (younger)	31.3	–	–	–	–	–	–
Goat	TZ 010387	IA IIC	27.6	16.5	15.7	10.0	24.3	16.4	104.0
Goat	TZ 013935	IA IIC	27.6	17.3	–	–	–	–	–
Goat	TZ 016958	IA IIC	28.4	16.4	–	–	–	–	–
Goat	TZ 014589	Rom	28.2	17.6	16.3	10.2	24.4	17.2	109.0
Goat	TZ 007730	Rom-Byz	26.1	15.7	–	–	–	–	–

Goat	TZ 111850	Rom-Byz	–	–	–	–	29.8	20.3	–
Goat	TZ 013933	Rom-Byz	–	–	–	–	–	–	112.2
Goat	TZ 013153	Byz	25.3	15.8	14.2	10.0	21.9	15.6	100.4
Goat	TZ 310443	Byz	27.7	17.4	–	–	–	–	–
Goat	TZ 310227	Byz	29.0	18.5	–	–	–	–	–
Goat	TZ 310225	Byz	31.3	18.8	–	–	–	–	–
Goat	TZ 310443	Byz	32.0	19.6	20.5	12.1	–	–	114.4
Goat	TZ 002245	Uma	–	–	–	–	24.0	16.7	
Goat	TZ 310450	Abb-Mam	25.6	17.0	–	–	–	–	–
Goat	TZ 310268	Abb-Mam	27.9	17.4	17.3	10.9	24.0	17.4	119.3
Goat	TZ 310267	Abb-Mam	29.7	17.5					
Cattle	TZ 014830	MBA	–	–	–	–	57.8	33.5	
Cattle	TZ 019467	LBA	52.5	31.0	–	–	–	–	–
Cattle	TZ 019439	LBA	60.1	31.2	–	–	–	–	–
Cattle	TZ 019437	LBA	61.5	33.0	–	–	–	–	–
Cattle	TZ 016962	IA	49.0	28.8	–	–	–	–	–
Cattle	TZ 017947	IA	–	–	–	–	61.7	36.0	–
Cattle	TZ 018225	IA I	52.6	29.4	–	–	–	–	–
Cattle	TZ 007485	IA I	53.0	28.8	–	–	–	–	–
Cattle	TZ 011476	IA I	53.0	30.0	–	–	–	–	–
Cattle	TZ 007509	IA I	53.7	28.7	–	–	–	–	–
Cattle	TZ 007486	IA I	56.5	30.5	–	–	–	–	–
Cattle	TZ 018226	IA I	56.6	32.0	–	–	–	–	–
Cattle	TZ 017117	IA I	57.0	31.7	–	–	–	–	–
Cattle	TZ 018112	IA I	66.8	36.0	–	–	–	–	–
Cattle	TZ 017125	IA IIA/B (older)	51.5	29.9	–	–	–	–	–
Cattle	TZ 016882	IA IIA/B (older)	62.3	34.4	–	–	–	–	–
Cattle	TZ 016881	IA IIA/B (older)	–	–	–	–	49.5	31.4	–
Cattle	TZ 016881	IA IIA/B (older)	–	–	–	–	51.3	32.3	–
Cattle	TZ 010386	IA IIA/B (younger)	53.0	28.9	–	–	–	–	–
Cattle	TZ 016850	IA IIA/B (younger)	58.8	32.6	–	–	–	–	–
Cattle	TZ 010740	IA IIA/B (younger)	–	–	–	–	58.0	36.6	–
Cattle	TZ 016859	IA IIA/B (both)	50.0	27.6	–	–	–	–	–
Cattle	TZ 011667	IA IIA/B (both)	55.4	30.8	–	–	–	–	–
Cattle	TZ 013938	IA IIC	54.4	30.1	31.0	22.4	51.0	33.0	194.0
Cattle	TZ 017007	Rom	–	–	–	–	57.6	34.8	–
Cattle	TZ 017007	Rom	–	–	–	–	58.0	35.7	–
Cattle	TZ 110435	Rom-Byz	55.6	29.8	–	–	–	–	–
Cattle	TZ 013282	Byz	49.1	27.1	–	–	–	–	–
Cattle	TZ 002512	Byz	–	–	–	–	62.2	36.4	–
Ass	TZ 017469	MBA	36.3	26.5	–	–	–	–	–
Ass	TZ 017758	IA I	–	–	–	–	34.8	24.3	–
Mule	TZ 018198	EBA	38.0	27.0	–	–	–	–	–
Equus	TZ 019481	EBA	40.4	–	–	–	–	–	–
Fallow Deer	TZ 016884	IA IIA/B (younger)	35.7	23.1	–	–	–	–	–
Gazelle	TZ 007445	IA IIA/B (both)	21.0	16.0	–	–	–	–	–
Gazelle	TZ 016859	IA IIA/B (both)	23.4	17.0	–	–	–	–	–
Gazelle	TZ 017919	MBA	21.8	16.7	–	–	–	–	–

Tibia

1 – breadth of the distal end, 2 – depth of the distal end, 3 – smallest breadth of the diaphysis, 4 – breadth of the proximal end, 5 – greatest length.

Species	Inv. no.	Period	1	2	3	4	5
Sheep	TZ 019407	EBA	29.2	23.6	–	–	–
Sheep	TZ 017141	MBA	24.7	20.0	–	–	–
Sheep	TZ 017742	MBA	25.3	20.4	–	–	–
Sheep	TZ 017133	MBA	25.4	21.0	–	–	–
Sheep	TZ 017022	MBA	26.0	19.9	–	–	–
Sheep	TZ 013014	MBA	26.0	20.3	–	–	–
Sheep	TZ 015108	MBA	28.1	21.3	–	–	–
Sheep	TZ 014847	MBA	28.8	21.5	–	–	–
Sheep	TZ 016871	MBA	29.2	22.4	–	–	–
Sheep	TZ 013975	MBA	30.0	23.3	–	–	–
Sheep	TZ 018232	LBA	25.7	20.1	14.8	39.0	215.0
Sheep	TZ 007983	LBA	26.4	21.0	–	–	–
Sheep	TZ 018267	LBA	26.8	20.7	–	–	–
Sheep	TZ 009119	LBA	26.8	20.8	–	–	–
Sheep	TZ 017181	LBA	27.0	20.9	–	–	–
Sheep	TZ 009238	LBA	27.5	20.4	–	–	–
Sheep	TZ 008463	LBA	27.5	22.2	–	–	–
Sheep	TZ 019430	LBA	27.5	22.3	–	–	–
Sheep	TZ 017053	LBA	27.6	20.9	–	–	–
Sheep	TZ 012914	LBA	27.6	23.1	–	–	–
Sheep	TZ 016920	LBA	27.7	21.8	–	–	–
Sheep	TZ 012066	LBA	28.2	21.1	–	–	–
Sheep	TZ 009312	LBA	28.6	–	–	–	–
Sheep	TZ 017181	LBA	29.2	22.2	–	–	–
Sheep	TZ 018053	LBA	30.1	23.4	–	–	–
Sheep	TZ 018256	LBA	30.2	22.7	–	–	–
Sheep	TZ 012426	IA I	25.0	19.8	–	–	–
Sheep	TZ 007891	IA I	25.8	–	–	–	–
Sheep	TZ 007299	IA I	26.0	21.3	–	–	–
Sheep	TZ 007480	IA I	26.3	19.9	–	–	–
Sheep	TZ 010734	IA I	26.8	20.4	–	–	–
Sheep	TZ 011453	IA I	26.9	21.2	–	–	–
Sheep	TZ 018182	IA I	27.1	–	–	–	–
Sheep	TZ 018210	IA I	27.1	21.0	–	–	–
Sheep	TZ 018107	IA I	27.1	22.1	–	–	–
Sheep	TZ 008228	IA I	27.6	22.3	–	–	–
Sheep	TZ 018051	IA I	27.7	22.1	–	–	–
Sheep	TZ 018050	IA I	27.8	21.7	–	–	–
Sheep	TZ 018182	IA I	27.9	20.4	–	–	–
Sheep	TZ 007364	IA I	28.5	22.0	–	–	–
Sheep	TZ 018246	IA I	28.8	22.2	–	–	–
Sheep	TZ 008228	IA I	28.8	–	–	–	–
Sheep	TZ 017052	IA I	29.2	23.1	–	–	–
Sheep	TZ 007460	IA I	29.5	23.4	–	–	–
Sheep	TZ 017056	IA I	29.6	22.6	–	–	–
Sheep	TZ 018258	IA I	30.4	22.2	–	–	–
Sheep	TZ 018227	IA I	30.6	23.1	–	–	–
Sheep	TZ 017939	IA I	30.9	24.6	–	–	–
Sheep	TZ 017916	IA I	31.3	25.1	–	–	–
Sheep	TZ 011717	IA IIA/B (older)	25.3	20.5	–	–	–
Sheep	TZ 017125	IA IIA/B (older)	26.6	21.5	–	–	–
Sheep	TZ 008126	IA IIA/B (older)	26.8	21.3	–	–	–
Sheep	TZ 016931	IA IIA/B (older)	27.1	20.8	–	–	–
Sheep	TZ 009783	IA IIA/B (older)	27.2	21.5	–	–	–
Sheep	TZ 009303	IA IIA/B (older)	28.2	21.5	–	–	–
Sheep	TZ 017174	IA IIA/B (older)	28.4	21.6	–	–	–
Sheep	TZ 017697	IA IIA/B (older)	28.4	21.7	–	–	–
Sheep	TZ 007194	IA IIA/B (older)	28.7	22.4	–	–	–
Sheep	TZ 009023	IA IIA/B (older)	29.2	21.7	–	–	–
Sheep	TZ 009221	IA IIA/B (older)	29.3	22.2	–	–	–
Sheep	TZ 008660	IA IIA/B (older)	30.9	23.3	–	–	–
Sheep	TZ 010815	IA IIA/B (older)	31.0	23.4	–	–	–
Sheep	TZ 017759	IA IIA/B (older)	31.8	24.8	–	–	–
Sheep	TZ 017094	IA IIA/B (younger)	25.5	19.6	–	–	–
Sheep	TZ 016827	IA IIA/B (younger)	26.0	19.5	–	–	–
Sheep	TZ 010383	IA IIA/B (younger)	26.7	20.8	–	–	–
Sheep	TZ 016858	IA IIA/B (younger)	27.7	22.6	–	–	–
Sheep	TZ 008111	IA IIA/B (younger)	27.8	20.6	–	–	–
Sheep	TZ 016992	IA IIA/B (younger)	27.9	21.8	–	–	–
Sheep	TZ 016849	IA IIA/B (younger)	28.7	21.8	–	–	–
Sheep	TZ 017029	IA IIA/B (younger)	28.8	21.2	–	–	–
Sheep	TZ 016829	IA IIA/B (younger)	29.1	22.5	–	–	–
Sheep	TZ 016806	IA IIA/B (younger)	29.5	22.8	–	–	–
Sheep	TZ 008443	IA IIA/B (both)	28.2	22.6	–	–	–
Sheep	TZ 016799	IA IIA/B (both)	32.2	24.8	–	–	–
Sheep	TZ 008453	IA IIC	25.9	20.5	–	–	–
Sheep	TZ 013935	IA IIC	26.6	21.0	–	–	–
Sheep	TZ 007516	IA IIC	27.1	21.9	–	–	–
Sheep	TZ 014822	IA IIC	27.3	21.0	–	–	–
Sheep	TZ 013402	IA IIC	28.9	23.0	–	–	–
Sheep	TZ 112029	Hell-Rom	27.0	21.0	–	–	–
Sheep	TZ 002511	Hell-Rom	28.3	–	–	–	–
Sheep	TZ 007526	Rom	26.0	19.8	–	–	–
Sheep	TZ 017179	Rom	26.7	21.3	–	–	–
Sheep	TZ 014748	Rom	27.1	21.3	–	–	–
Sheep	TZ 110070	Rom	28.2	22.2	–	–	–
Sheep	TZ 017078	Rom	29.2	23.9	–	–	–
Sheep	TZ 110521	Rom	29.3	23.1	–	–	–
Sheep	TZ 014675	Rom	30.0	23.5	–	–	–
Sheep	TZ 016944	Rom	30.4	23.7	–	–	–
Sheep	TZ 015089	Rom	31.8	24.5	–	–	–
Sheep	TZ 013456	Rom-Byz	27.2	20.6	–	–	–
Sheep	TZ 013193	Rom-Byz	28.0	20.4	–	–	–
Sheep	TZ 007517	Rom-Byz	28.4	21.4	–	–	–
Sheep	TZ 011545	Rom-Byz	28.5	21.4	–	–	–
Sheep	TZ 111906	Rom-Byz	29.0	22.5	–	–	–
Sheep	TZ 013461	Rom-Byz	29.5	22.4	–	–	–
Sheep	TZ 111902	Rom-Byz	30.7	23.7	–	–	–
Sheep	TZ 310227	Byz	30.0	22.7	–	–	–

Sheep	TZ 013291	Byz-Uma	29.5	21.9	–	–	–
Sheep	TZ 009680	Uma	25.0	20.5	–	–	–
Sheep	TZ 110267	Uma	27.4	22.0	–	–	–
Sheep	TZ 009765	Uma	28.4	21.4	–	–	–
Sheep	TZ 110451	Uma	29.0	22.5	–	–	–
Goat	TZ 111366	LBA	25.5	19.6	–	–	–
Goat	TZ 012844	LBA	25.5	20.4	–	–	–
Goat	TZ 017169	LBA	25.6	19.6	–	–	–
Goat	TZ 012929	LBA	25.6	20.0	–	–	–
Goat	TZ 019423	LBA	25.7	19.6	–	–	–
Goat	TZ 018025	LBA	26.2	20.3	–	–	–
Goat	TZ 012821	LBA	26.2	21.6	–	–	–
Goat	TZ 019467	LBA	26.4	21.3	–	–	–
Goat	TZ 019488	LBA	26.6	20.6	–	–	–
Goat	TZ 013092	LBA	26.9	21.2	–	–	–
Goat	TZ 013058	LBA	27.5	22.3	–	–	–
Goat	TZ 007313	IA I	23.1	17.5	–	–	–
Goat	TZ 008434	IA I	23.7	19.7	–	–	–
Goat	TZ 007313	IA I	25.1	–	–	–	–
Goat	TZ 001330	IA I	25.6	21.0	–	–	–
Goat	TZ 017052	IA I	26.0	21.2	–	–	–
Goat	TZ 018226	IA I	26.1	20.4	–	–	–
Goat	TZ 018195	IA I	26.4	21.9	–	–	–
Goat	TZ 008812	IA I	26.6	21.5	–	–	–
Goat	TZ 007487	IA I	27.1	22.0	–	–	–
Goat	TZ 017952	IA I	27.2	21.8	–	–	–
Goat	TZ 017145	IA I	27.8	21.0	–	–	–
Goat	TZ 018278	IA I	28.9	22.1	–	–	–
Goat	TZ 008249	IA I	31.0	23.3	–	–	–
Goat	TZ 007707	IA I	32.2	–	–	–	–
Goat	TZ 008943	IA IIA/B (older)	25.2	19.0	–	–	–
Goat	TZ 011004	IA IIA/B (older)	25.4	20.5	–	–	–
Goat	TZ 011720	IA IIA/B (older)	25.7	20.7	–	–	–
Goat	TZ 009085	IA IIA/B (older)	26.1	21.0	–	–	–
Goat	TZ 007306	IA IIA/B (older)	26.8	20.8	–	–	–
Goat	TZ 007182	IA IIA/B (older)	28.0	21.7	–	–	–
Goat	TZ 009085	IA IIA/B (older)	30.2	23.8	–	–	–
Goat	TZ 017077	IA IIA/B (older)	30.7	24.4	–	–	–
Goat	TZ 016849	IA IIA/B (younger)	24.2	19.7	–	–	–
Goat	TZ 010162	IA IIA/B (younger)	24.4	20.6	–	–	–
Goat	TZ 008465	IA IIA/B (younger)	25.3	20.1	–	–	–
Goat	TZ 014794	IA IIA/B (younger)	25.5	20.3	–	–	–
Goat	TZ 007309	IA IIA/B (younger)	27.0	22.0	–	–	–
Goat	TZ 017032	IA IIA/B (younger)	27.0	22.1	–	–	–
Goat	TZ 017031	IA IIA/B (younger)	27.4	20.1	–	–	–
Goat	TZ 014820	IA IIA/B (younger)	27.9	24.0	–	–	–
Goat	TZ 012002	IA IIA/B (both)	25.9	20.7	–	–	–
Goat	TZ 012002	IA IIA/B (both)	30.6	23.0	–	–	–
Goat	TZ 014750	IA IIC	26.2	21.6	–	–	–
Goat	TZ 007706	IA IIC	26.4	21.0	–	–	–
Goat	TZ 002506	IA IIC	27.7	21.2	–	–	–
Goat	TZ 014109	IA IIC	28.8	22.6	–	–	–
Goat	TZ 014757	Rom	26.0	20.7	–	–	–
Goat	TZ 013399	Rom	28.3	22.8	–	–	–
Goat	TZ 017152	Rom	29.1	22.0	–	–	–
Goat	TZ 111981	Rom-Byz	27.1	20.8	–	–	–
Goat	TZ 007168	Byz	25.2	20.0	–	–	–
Goat	TZ 310224	Byz	25.6	20.7	–	–	–
Goat	TZ 002275	Byz	25.6	20.8	–	–	–
Goat	TZ 110890	Byz	29.0	20.9	–	–	–
Goat	TZ 013464	Byz-Uma	28.7	22.8	–	–	–
Goat	TZ 007955	Uma	25.2	20.1	–	–	–
Cattle	TZ 009817	LBA	55.6	41.3	–	–	–
Cattle	TZ 016979	LBA	56.5	42.4	–	–	–
Cattle	TZ 017921	IA	58.5	44.5	–	–	–
Cattle	TZ 008228	IA I	52.2	39.0	–	–	–
Cattle	TZ 017956	IA I	52.8	40.5	–	–	–
Cattle	TZ 018246	IA I	54.7	44.2	–	–	–
Cattle	TZ 008247	IA IIA/B (older)	53.0	41.8	–	–	–
Cattle	TZ 017761	IA IIA/B (older)	57.0	43.5	–	–	–
Cattle	TZ 008469	IA IIA/B (younger)	51.0	37.2	–	–	–
Cattle	TZ 017029	IA IIA/B (younger)	58.4	44.3	–	–	–
Cattle	TZ 002471	IA IIC	53.3	40.6	–	–	–
Cattle	TZ 016892	Rom	54.0	41.8	–	–	–
Cattle	TZ 111577	Rom-Byz	60.7	48.5	–	–	–
Pig	TZ 018071	EBA	30.1	–	–	–	–
Pig	TZ 019413	EBA	30.2	28.1	–	–	–
Pig	TZ 017159	MBA	29.3	–	–	–	–
Pig	TZ 017189	MBA	32.0	25.2	–	–	–
Pig	TZ 007500	LBA	31.0	26.4	–	–	–
Pig	TZ 007488	IA I	30.0	24.1	–	–	–
Mule	TZ 017923	MBA	57.0	36.5	–	–	–
Equus	TZ 009712	IA IIA/B (older)	54.0	–	–	–	–
Dog	TZ 016775	LBA	19.8	14.8	–	–	–
Dog	TZ 016854	IA I	22.4	17.0	–	–	–
Dog	TZ 010521	IA I	–	–	–	32.4	–
Dog	TZ 010439	IA IIA/B (older)	21.8	16.3	–	–	–
Fallow Deer	TZ 017950	IA I	41.7	33.8	–	–	–
Fallow Deer	TZ 110212	Ott	37.0	30.7	–	–	–
Gazelle	TZ 016955	LBA	22.8	17.0	–	–	–
Gazelle	TZ 012897	LBA	26.6	21.5	–	–	–
Gazelle	TZ 006921	IA I	24.4	19.1	–	–	–
Gazelle	TZ 016991	IA I	26.0	21.3	–	–	–
Gazelle	TZ 018226	IA I	26.5	21.7	–	–	–
Gazelle	TZ 016910	IA IIA/B (older)	26.0	22.0	–	–	–
Gazelle	TZ 013162	IA IIC	22.3	18.9	–	–	–
Gazelle	TZ 014748	Rom	25.5	20.3	–	–	–
Gazelle	TZ 111009	Byz-Uma	24.9	22.0	–	–	–
Wild Sheep	TZ 018106	IA I	37.5	30.9	–	–	–
Wild Sheep	TZ 018043	IA I	39.3	33.6	–	–	–
Wild Sheep	TZ 014856	IA IIC	37.5	–	–	–	–
Fox	TZ 019472	EBA	12.9	9.5	–	–	–
Fox	TZ 014830	MBA	13.1	9.6	–	–	–
Fox	TZ 007707	IA I	12.1	8.9	–	–	–

Calcaneus

1 – greatest length.

Species	Inv. no.	Period	1
Sheep	TZ 017923	MBA	55.4
Sheep	TZ 017181	LBA	57.3
Sheep	TZ 011864	LBA	58.1
Sheep	TZ 019458	LBA	58.4
Sheep	TZ 017054	LBA	61.9
Sheep	TZ 016790	LBA	62.0
Sheep	TZ 017074	LBA	63.8
Sheep	TZ 012979	LBA	65.4
Sheep	TZ 011600	LBA	66.0
Sheep	TZ 018209	LBA	67.2
Sheep	TZ 007509	IA I	56.1
Sheep	TZ 018056	IA I	59.6
Sheep	TZ 018029	IA I	59.9
Sheep	TZ 011970	IA I	61.7
Sheep	TZ 017056	IA I	62.5
Sheep	TZ 016964	IA I	63.2
Sheep	TZ 008294	IA I	64.3
Sheep	TZ 010749	IA I	64.9
Sheep	TZ 016964	IA I	66.0
Sheep	TZ 013951	IA II	53.2
Sheep	TZ 016931	IA IIA/B (older)	55.8
Sheep	TZ 017700	IA IIA/B (older)	58.2
Sheep	TZ 011013	IA IIA/B (older)	58.9
Sheep	TZ 011929	IA IIA/B (older)	59.8
Sheep	TZ 009533	IA IIA/B (older)	60.8
Sheep	TZ 008660	IA IIA/B (older)	65.7
Sheep	TZ 008723	IA IIA/B (older)	66.5
Sheep	TZ 016806	IA IIA/B (younger)	56.4
Sheep	TZ 016829	IA IIA/B (younger)	58.3
Sheep	TZ 015078	IA IIA/B (younger)	58.5
Sheep	TZ 010819	IA IIA/B (younger)	61.5
Sheep	TZ 017002	IA IIA/B (younger)	63.5
Sheep	TZ 011868	IA IIA/B (both)	53.7
Sheep	TZ 009988	IA IIA/B (both)	58.5
Sheep	TZ 012002	IA IIA/B (both)	59.1
Sheep	TZ 014802	IA IIC	57.0
Sheep	TZ 013972	IA IIC	58.4
Sheep	TZ 011532	IA IIC	62.0
Sheep	TZ 007028	IA IIC	62.4
Sheep	TZ 014803	IA IIC	64.2
Sheep	TZ 014051	IA IIC-Rom	58.2
Sheep	TZ 011719	Rom	53.8
Sheep	TZ 014757	Rom	57.2
Sheep	TZ 014748	Rom	66.4
Sheep	TZ 110298	Rom-Byz	59.1
Sheep	TZ 110110	Rom-Byz	60.1
Sheep	TZ 012079	Byz	58.2
Sheep	TZ 010377	Byz	58.9
Sheep	TZ 110434	Byz-Uma	59.6
Sheep	TZ 009765	Uma	59.0
Sheep	TZ 112030	Abb-Mam	64.1
Goat	TZ 018053	LBA	53.0
Goat	TZ 012083	LBA	54.5
Goat	TZ 016794	LBA	56.8
Goat	TZ 014383	LBA	57.0
Goat	TZ 017192	LBA	58.5
Goat	TZ 019439	LBA	59.6
Goat	TZ 001539	LBA	64.8
Goat	TZ 016962	IA	58.9
Goat	TZ 017740	IA	61.3
Goat	TZ 008952	IA I	52.7
Goat	TZ 007707	IA I	55.0
Goat	TZ 018246	IA I	56.5
Goat	TZ 016964	IA I	56.8
Goat	TZ 012068	IA I	57.0
Goat	TZ 017916	IA I	57.0
Goat	TZ 012088	IA I	57.8
Goat	TZ 017739	IA I	57.8
Goat	TZ 012968	IA I	58.8
Goat	TZ 018104	IA I	61.5
Goat	TZ 008249	IA I	62.0
Goat	TZ 009694	IA I	65.2
Goat	TZ 009827	IA I	71.1
Goat	TZ 009085	IA IIA/B (older)	56.5
Goat	TZ 012055	IA IIA/B (older)	56.6
Goat	TZ 008247	IA IIA/B (older)	58.8
Goat	TZ 008590	IA IIA/B (older)	60.1
Goat	TZ 011720	IA IIA/B (older)	61.9
Goat	TZ 016882	IA IIA/B (older)	62.6
Goat	TZ 008469	IA IIA/B (younger)	57.8
Goat	TZ 010386	IA IIA/B (younger)	57.9
Goat	TZ 017006	IA IIA/B (younger)	58.6
Goat	TZ 007702	IA IIA/B (younger)	61.3
Goat	TZ 016899	IA IIA/B (younger)	62.1
Goat	TZ 009962	IA IIA/B (younger)	62.2
Goat	TZ 017029	IA IIA/B (younger)	64.0
Goat	TZ 016850	IA IIA/B (younger)	67.8
Goat	TZ 008923	IA IIA/B (both)	57.5
Goat	TZ 011667	IA IIA/B (both)	57.8
Goat	TZ 016860	IA IIC	58.1
Goat	TZ 002471	IA IIC	58.5
Goat	TZ 001313	IA IIC	60.0
Goat	TZ 015076	IA IIC	62.6
Goat	TZ 014060	IA IIC	65.6
Goat	TZ 111851	Hell-Rom	58.4
Goat	TZ 110250	Rom	56.7
Goat	TZ 014748	Rom	57.3
Goat	TZ 009714	Rom-Byz	57.5
Goat	TZ 110207	Ott	60.3

Cattle	TZ 019458	LBA	122.7
Cattle	TZ 012002	IA IIA/B (both)	119.5
Cattle	TZ 013281	IA IIC	117.6
Cattle	TZ 013466	Rom	125.3
Cattle	TZ 013400	Rom	138.2
Cattle	TZ 310225	Byz	135.8
Dog	TZ 017181	LBA	44.7
Dog	TZ 012569	LBA	46.0
Dog	TZ 010521	IA I	43.2
Fallow Deer	TZ 019429	EBA	94.0
Fallow Deer	TZ 016829	IA IIA/B (younger)	104.0
Fallow Deer	TZ 014056	Rom	101.6
Fallow Deer	TZ 110212	Ott	91.4
Gazelle	TZ 018093	MBA	52.8
Fox	TZ 009008	IA IIA/B (younger)	28.8

Talus

1 – greatest length of the lateral half, 2 – greatest length of the medial half, 3 – breadth of the distal end.

Species	Inv. no.	Period	1	2	3
Sheep	TZ 017471	MBA	27.7	26.8	18.1
Sheep	TZ 017044	MBA	28.8	27.0	19.5
Sheep	TZ 016981	MBA	29.1	27.5	19.1
Sheep	TZ 017447	MBA	30.6	28.7	18.8
Sheep	TZ 017072	MBA	34.8	32.2	20.6
Sheep	TZ 015084	LBA	26.7	24.9	17.1
Sheep	TZ 009224	LBA	28.0	26.2	18.8
Sheep	TZ 009300	LBA	28.0	26.6	18.2
Sheep	TZ 013002	LBA	28.2	26.3	19.0
Sheep	TZ 019430	LBA	28.4	26.4	18.8
Sheep	TZ 016762	LBA	28.6	27.5	19.8
Sheep	TZ 012439	LBA	28.7	26.6	18.4
Sheep	TZ 013570	LBA	28.7	26.8	17.0
Sheep	TZ 009110	LBA	28.7	27.5	18.8
Sheep	TZ 019458	LBA	28.7	28.0	18.6
Sheep	TZ 015107	LBA	28.9	27.2	18.3
Sheep	TZ 012979	LBA	29.3	28.0	19.3
Sheep	TZ 011332	LBA	29.6	28.0	19.1
Sheep	TZ 019467	LBA	29.6	28.8	18.6
Sheep	TZ 001501	LBA	29.7	27.4	18.2
Sheep	TZ 017008	LBA	29.7	27.8	18.7
Sheep	TZ 019437	LBA	29.9	28.1	19.4
Sheep	TZ 010146	LBA	30.1	28.2	19.4
Sheep	TZ 008041	LBA	30.1	29.0	18.8
Sheep	TZ 013575	LBA	30.2	27.0	19.7
Sheep	TZ 007502	LBA	30.2	28.0	19.3
Sheep	TZ 013169	LBA	30.2	28.7	20.0
Sheep	TZ 001539	LBA	30.2	28.9	20.1
Sheep	TZ 018273	LBA	30.4	28.6	19.3
Sheep	TZ 017099	LBA	30.4	28.9	19.9
Sheep	TZ 001581	LBA	30.5	28.5	20.6
Sheep	TZ 019430	LBA	30.5	28.7	18.7
Sheep	TZ 018262	LBA	30.7	29.0	20.0
Sheep	TZ 016774	LBA	30.7	29.0	–
Sheep	TZ 012415	LBA	30.7	30.0	19.5
Sheep	TZ 010149	LBA	30.8	29.2	19.3
Sheep	TZ 018232	LBA	30.8	29.2	19.9
Sheep	TZ 010145	LBA	30.9	29.2	–
Sheep	TZ 013945	LBA	30.9	30.0	19.4
Sheep	TZ 008238	LBA	31.0	29.2	19.8
Sheep	TZ 017156	LBA	31.2	29.6	20.5
Sheep	TZ 012914	LBA	31.2	29.9	20.7
Sheep	TZ 008438	LBA	31.2	–	19.3
Sheep	TZ 007502	LBA	31.3	28.8	20.4
Sheep	TZ 016774	LBA	31.6	30.2	19.7
Sheep	TZ 019501	LBA	32.2	30.1	21.3
Sheep	TZ 017156	LBA	32.3	29.8	20.0
Sheep	TZ 017054	LBA	32.3	31.0	19.5
Sheep	TZ 019458	LBA	32.4	30.9	20.1
Sheep	TZ 017156	LBA	32.5	31.3	20.9
Sheep	TZ 001538	LBA	32.7	30.5	20.8
Sheep	TZ 019503	LBA	32.7	31.0	20.3
Sheep	TZ 019437	LBA	33.0	31.0	20.1
Sheep	TZ 012717	LBA	33.0	31.9	21.6
Sheep	TZ 017170	LBA	33.5	31.6	20.4
Sheep	TZ 019503	LBA	33.5	31.8	20.2
Sheep	TZ 019503	LBA	33.6	32.1	21.8
Sheep	TZ 012979	LBA	33.7	31.2	21.3
Sheep	TZ 010444	LBA	34.8	31.9	21.8
Sheep	TZ 017128	IA	28.2	26.2	17.1
Sheep	TZ 016962	IA	29.0	28.0	18.6
Sheep	TZ 016962	IA	29.7	27.8	18.4
Sheep	TZ 011579	IA	32.4	29.8	20.4
Sheep	TZ 018582	IA I	26.3	25.1	16.7
Sheep	TZ 007352	IA I	27.2	26.2	18.3
Sheep	TZ 008784	IA I	27.5	–	18.3
Sheep	TZ 006906	IA I	28.2	27.7	19.9
Sheep	TZ 007487	IA I	28.4	26.9	18.1
Sheep	TZ 008939	IA I	28.7	26.2	19.6
Sheep	TZ 010420	IA I	28.7	27.8	20.2
Sheep	TZ 007206	IA I	28.8	28.0	18.8
Sheep	TZ 018202	IA I	28.9	27.2	18.3
Sheep	TZ 018183	IA I	29.0	27.1	19.0
Sheep	TZ 007707	IA I	29.1	27.4	19.1
Sheep	TZ 007299	IA I	29.1	27.8	18.8
Sheep	TZ 002388	IA I	29.1	27.9	18.9
Sheep	TZ 011721	IA I	29.3	27.7	19.0
Sheep	TZ 011860	IA I	29.5	27.5	18.1
Sheep	TZ 018182	IA I	29.7	27.5	19.3
Sheep	TZ 018106	IA I	29.7	28.0	19.6

Sheep	TZ 008294	IA I	30.0	27.6	20.6
Sheep	TZ 018183	IA I	30.2	28.7	20.2
Sheep	TZ 017056	IA I	30.3	29.3	19.2
Sheep	TZ 018570	IA I	30.5	29.1	18.3
Sheep	TZ 008939	IA I	30.5	29.4	19.3
Sheep	TZ 018270	IA I	30.6	29.0	19.9
Sheep	TZ 016964	IA I	30.8	28.8	20.3
Sheep	TZ 008228	IA I	30.8	29.0	19.7
Sheep	TZ 011182	IA I	30.8	29.2	19.4
Sheep	TZ 007299	IA I	31.1	29.0	19.7
Sheep	TZ 018106	IA I	31.2	28.7	18.6
Sheep	TZ 017180	IA I	31.2	29.0	21.1
Sheep	TZ 009710	IA I	31.4	30.1	20.0
Sheep	TZ 011595	IA I	31.7	29.2	–
Sheep	TZ 008451	IA I	31.9	30.0	20.4
Sheep	TZ 009565	IA I	32.0	29.8	20.0
Sheep	TZ 013484	IA I	32.0	29.8	21.6
Sheep	TZ 018112	IA I	32.8	30.7	20.4
Sheep	TZ 011854	IA I	33.2	31.0	21.9
Sheep	TZ 008593	IA I	33.3	31.3	20.9
Sheep	TZ 018194	IA I	33.4	31.3	21.1
Sheep	TZ 011519	IA I	33.4	31.7	21.2
Sheep	TZ 018112	IA I	34.4	32.5	22.7
Sheep	TZ 009710	IA I	34.5	32.0	–
Sheep	TZ 018570	IA I	35.4	32.7	21.5
Sheep	TZ 007307	IA I	–	28.5	–
Sheep	TZ 008593	IA I	–	29.4	–
Sheep	TZ 007307	IA I	–	31.5	–
Sheep	TZ 007199	IA IIA/B (older)	27.2	26.0	19.4
Sheep	TZ 007296	IA IIA/B (older)	27.9	26.3	18.2
Sheep	TZ 008926	IA IIA/B (older)	28.1	27.9	19.4
Sheep	TZ 012055	IA IIA/B (older)	28.5	27.3	18.5
Sheep	TZ 008247	IA IIA/B (older)	28.5	–	–
Sheep	TZ 013952	IA IIA/B (older)	28.6	28.2	18.3
Sheep	TZ 008758	IA IIA/B (older)	28.7	–	18.5
Sheep	TZ 008651	IA IIA/B (older)	28.8	26.5	18.1
Sheep	TZ 011929	IA IIA/B (older)	28.8	–	19.6
Sheep	TZ 012104	IA IIA/B (older)	29.0	26.7	18.8
Sheep	TZ 009685	IA IIA/B (older)	29.0	–	18.6
Sheep	TZ 010446	IA IIA/B (older)	29.5	27.6	20.2
Sheep	TZ 009005	IA IIA/B (older)	29.9	–	18.9
Sheep	TZ 009612	IA IIA/B (older)	30.0	28.9	18.7
Sheep	TZ 007182	IA IIA/B (older)	30.2	28.3	19.0
Sheep	TZ 008449	IA IIA/B (older)	30.2	28.8	19.0
Sheep	TZ 016881	IA IIA/B (older)	30.3	28.7	19.8
Sheep	TZ 010815	IA IIA/B (older)	30.3	28.9	19.8
Sheep	TZ 011918	IA IIA/B (older)	30.4	29.7	20.0
Sheep	TZ 011013	IA IIA/B (older)	30.6	28.7	20.5
Sheep	TZ 017125	IA IIA/B (older)	30.6	29.7	19.9
Sheep	TZ 015106	IA IIA/B (older)	30.7	28.3	18.4
Sheep	TZ 011929	IA IIA/B (older)	31.0	29.9	20.2
Sheep	TZ 009009	IA IIA/B (older)	31.3	30.2	21.1
Sheep	TZ 009834	IA IIA/B (older)	31.4	29.5	20.7
Sheep	TZ 009842	IA IIA/B (older)	31.5	–	20.2
Sheep	TZ 016931	IA IIA/B (older)	31.6	30.7	20.5
Sheep	TZ 012055	IA IIA/B (older)	32.0	30.3	20.0
Sheep	TZ 011186	IA IIA/B (older)	32.1	30.8	21.3
Sheep	TZ 008660	IA IIA/B (older)	32.2	29.8	21.5
Sheep	TZ 007306	IA IIA/B (older)	32.4	–	20.2
Sheep	TZ 016931	IA IIA/B (older)	32.5	31.7	21.1
Sheep	TZ 011199	IA IIA/B (older)	32.8	30.0	20.2
Sheep	TZ 017105	IA IIA/B (older)	32.8	31.0	22.2
Sheep	TZ 011915	IA IIA/B (older)	33.2	31.5	20.9
Sheep	TZ 002340	IA IIA/B (older)	33.5	31.1	21.9
Sheep	TZ 008303	IA IIA/B (older)	33.9	31.9	21.4
Sheep	TZ 010853	IA IIA/B (older)	34.0	31.5	21.2
Sheep	TZ 009085	IA IIA/B (older)	–	29.8	20.0
Sheep	TZ 017070	IA IIA/B (younger)	28.2	25.5	17.4
Sheep	TZ 017032	IA IIA/B (younger)	29.6	27.6	18.0
Sheep	TZ 008469	IA IIA/B (younger)	30.1	27.8	–
Sheep	TZ 014819	IA IIA/B (younger)	30.8	29.1	19.5
Sheep	TZ 010999	IA IIA/B (younger)	31.0	29.6	19.5
Sheep	TZ 016849	IA IIA/B (younger)	31.5	29.4	19.4
Sheep	TZ 010386	IA IIA/B (younger)	32.4	30.1	21.0
Sheep	TZ 008925	IA IIA/B (younger)	32.9	31.6	20.6
Sheep	TZ 001075	IA IIA/B (younger)	33.6	31.2	20.8
Sheep	TZ 009008	IA IIA/B (younger)	–	31.1	–
Sheep	TZ 012057	IA IIA/B (both)	29.1	27.3	18.6
Sheep	TZ 009776	IA IIA/B (both)	29.5	27.7	19.5
Sheep	TZ 008100	IA IIA/B (both)	31.4	–	19.5
Sheep	TZ 009780	IA IIA/B (both)	31.7	29.1	–
Sheep	TZ 016859	IA IIA/B (both)	31.8	30.2	20.4
Sheep	TZ 008934	IA IIA/B (both)	–	28.6	–
Sheep	TZ 002502	IA IIC	29.3	28.0	19.4
Sheep	TZ 006965	IA IIC	29.8	27.8	19.2
Sheep	TZ 008297	IA IIC	30.0	27.5	19.0
Sheep	TZ 014802	IA IIC	30.9	29.2	20.3
Sheep	TZ 013281	IA IIC	30.9	29.4	20.2
Sheep	TZ 011599	IA IIC	31.0	29.4	19.5
Sheep	TZ 007028	IA IIC	32.0	30.2	21.2
Sheep	TZ 010410	IA IIC	32.1	30.3	20.3
Sheep	TZ 014505	IA IIC	32.2	29.6	21.0
Sheep	TZ 013390	IA IIC	32.4	31.2	21.6
Sheep	TZ 011599	IA IIC	33.0	31.7	21.6
Sheep	TZ 008659	IA IIC	33.3	31.2	22.4
Sheep	TZ 007016	IA IIC	34.2	32.2	22.1
Sheep	TZ 013465	IA IIC-Rom	30.5	28.3	18.7
Sheep	TZ 014699	IA IIC-Rom	30.5	29.1	18.5
Sheep	TZ 016956	Rom	28.5	27.3	18.4
Sheep	TZ 002472	Rom	28.7	26.6	19.0
Sheep	TZ 014757	Rom	29.2	26.8	20.3
Sheep	TZ 017152	Rom	29.3	27.4	20.1
Sheep	TZ 013762	Rom	29.6	27.3	18.3
Sheep	TZ 111335	Rom	29.7	28.8	21.1
Sheep	TZ 017152	Rom	29.8	28.5	19.6
Sheep	TZ 012086	Rom	31.4	29.5	19.8
Sheep	TZ 009672	Rom	31.4	–	20.3
Sheep	TZ 017014	Rom	32.2	31.4	20.1
Sheep	TZ 013560	Rom	33.7	30.1	20.5
Sheep	TZ 111984	Rom-Byz	29.9	28.0	19.9
Sheep	TZ 013301	Rom-Byz	31.2	29.7	20.0
Sheep	TZ 112028	Rom-Byz	31.6	29.2	19.8
Sheep	TZ 111981	Rom-Byz	31.6	30.0	21.4
Sheep	TZ 007168	Byz	30.1	29.2	20.4
Sheep	TZ 008108	Byz-Uma	30.4	27.7	19.4
Sheep	TZ 111513	Uma	29.7	27.9	18.0
Sheep	TZ 007893	Uma	31.0	29.3	19.8
Sheep	TZ 009790	Uma	31.5	29.8	19.4
Sheep	TZ 007957	Uma	33.8	32.1	–
Sheep	TZ 110211	Ott	31.1	29.4	21.1
Goat	TZ 018575	EBA	27.7	26.0	17.5
Goat	TZ 019490	EBA	30.1	27.3	18.6
Goat	TZ 018047	EBA	30.6	27.9	18.6
Goat	TZ 019490	EBA	32.3	29.2	22.4
Goat	TZ 014701	MBA	30.5	28.1	19.7
Goat	TZ 010437	LBA	25.6	28.4	17.5
Goat	TZ 017192	LBA	25.7	23.5	15.8
Goat	TZ 009116	LBA	26.5	24.8	17.1
Goat	TZ 008463	LBA	26.6	25.1	16.9
Goat	TZ 017156	LBA	26.8	25.5	18.0
Goat	TZ 016778	LBA	27.0	24.3	17.5
Goat	TZ 017181	LBA	27.0	25.1	17.6
Goat	TZ 008032	LBA	27.0	25.3	17.2
Goat	TZ 017169	LBA	27.9	26.2	18.4
Goat	TZ 012721	LBA	27.9	26.9	17.1
Goat	TZ 016979	LBA	28.2	26.7	17.9
Goat	TZ 018262	LBA	28.7	26.3	18.0
Goat	TZ 012579	LBA	28.9	26.6	18.5
Goat	TZ 009981	LBA	28.9	26.6	18.8
Goat	TZ 016935	LBA	29.0	27.3	17.7
Goat	TZ 008238	LBA	29.3	26.8	18.5
Goat	TZ 019430	LBA	29.4	27.4	17.7
Goat	TZ 019423	LBA	29.5	27.4	20.3
Goat	TZ 007502	LBA	29.5	27.8	19.1
Goat	TZ 016862	LBA	29.7	27.1	19.2
Goat	TZ 017169	LBA	29.7	27.7	–
Goat	TZ 009110	LBA	29.9	28.0	19.1
Goat	TZ 011665	LBA	30.0	28.0	18.7
Goat	TZ 011600	LBA	30.3	28.0	19.9
Goat	TZ 011788	LBA	31.2	28.6	19.7
Goat	TZ 010146	LBA	31.2	–	–
Goat	TZ 011139	LBA	31.7	31.1	20.5
Goat	TZ 012115	LBA	32.5	30.3	20.4
Goat	TZ 009689	IA	28.6	26.8	18.6
Goat	TZ 009689	IA	31.0	29.4	20.2
Goat	TZ 017128	IA	32.2	29.9	20.4
Goat	TZ 016962	IA	32.4	29.7	18.9
Goat	TZ 008952	IA I	27.5	25.6	17.1
Goat	TZ 007821	IA I	27.8	25.7	–
Goat	TZ 017743	IA I	27.9	25.9	17.3
Goat	TZ 007709	IA I	28.2	26.1	17.9
Goat	TZ 007704	IA I	28.2	27.1	19.0
Goat	TZ 007767	IA I	28.5	25.8	17.1
Goat	TZ 002396	IA I	28.5	26.9	17.4
Goat	TZ 007487	IA I	28.5	26.9	19.0
Goat	TZ 012220	IA I	28.7	27.4	19.0
Goat	TZ 010440	IA I	28.9	26.8	18.3
Goat	TZ 001330	IA I	29.0	27.3	18.5
Goat	TZ 011425	IA I	29.1	27.3	18.8
Goat	TZ 012088	IA I	29.3	27.8	18.9
Goat	TZ 009228	IA I	29.8	27.3	19.0
Goat	TZ 007697	IA I	29.8	27.6	20.2
Goat	TZ 008231	IA I	29.8	27.9	18.4
Goat	TZ 011473	IA I	29.8	28.4	18.4
Goat	TZ 018246	IA I	30.0	28.2	20.0
Goat	TZ 007697	IA I	30.6	28.8	20.2
Goat	TZ 017113	IA I	30.9	28.0	19.9
Goat	TZ 008952	IA I	30.9	29.4	20.7
Goat	TZ 008915	IA I	31.0	28.7	18.3
Goat	TZ 018183	IA I	31.3	30.3	19.3
Goat	TZ 007356	IA I	31.8	29.5	19.3
Goat	TZ 002348	IA I	31.9	29.5	19.1
Goat	TZ 017916	IA I	32.6	30.3	20.6
Goat	TZ 016853	IA I	35.6	33.1	21.0
Goat	TZ 011340	IA IIA/B (older)	26.8	25.1	18.0
Goat	TZ 017067	IA IIA/B (older)	27.0	25.4	17.8
Goat	TZ 009959	IA IIA/B (older)	27.2	26.3	17.1
Goat	TZ 009429	IA IIA/B (older)	27.4	25.5	18.0
Goat	TZ 016882	IA IIA/B (older)	28.6	26.1	17.7
Goat	TZ 007439	IA IIA/B (older)	28.9	27.9	19.2
Goat	TZ 008820	IA IIA/B (older)	29.1	–	18.8
Goat	TZ 012055	IA IIA/B (older)	29.2	27.2	19.2
Goat	TZ 002334	IA IIA/B (older)	29.2	27.8	18.1
Goat	TZ 011340	IA IIA/B (older)	29.4	27.2	19.1
Goat	TZ 009562	IA IIA/B (older)	29.4	27.3	17.4
Goat	TZ 012061	IA IIA/B (older)	29.7	28.3	18.3
Goat	TZ 009113	IA IIA/B (older)	29.7	28.3	19.4
Goat	TZ 012213	IA IIA/B (older)	29.9	27.7	19.7
Goat	TZ 009085	IA IIA/B (older)	29.9	27.8	–

Goat	TZ 008660	IA IIA/B (older)	30.3	28.5	19.4
Goat	TZ 009378	IA IIA/B (older)	30.4	28.4	–
Goat	TZ 008948	IA IIA/B (older)	30.8	28.3	19.3
Goat	TZ 007071	IA IIA/B (older)	30.9	28.2	19.7
Goat	TZ 011918	IA IIA/B (older)	31.1	29.6	21.7
Goat	TZ 011186	IA IIA/B (older)	31.6	29.9	19.6
Goat	TZ 007306	IA IIA/B (older)	33.5	31.0	20.1
Goat	TZ 016840	IA IIA/B (younger)	28.6	26.9	18.3
Goat	TZ 016992	IA IIA/B (younger)	29.2	27.0	18.3
Goat	TZ 017065	IA IIA/B (younger)	30.6	28.0	19.5
Goat	TZ 006950	IA IIA/B (younger)	30.6	32.4	21.4
Goat	TZ 017032	IA IIA/B (younger)	30.7	28.7	19.9
Goat	TZ 009008	IA IIA/B (younger)	31.3	28.8	19.6
Goat	TZ 016829	IA IIA/B (younger)	31.3	29.0	19.3
Goat	TZ 017091	IA IIA/B (younger)	32.9	29.9	19.9
Goat	TZ 008100	IA IIA/B (both)	29.6	27.5	19.5
Goat	TZ 011667	IA IIA/B (both)	30.4	28.3	19.7
Goat	TZ 012002	IA IIA/B (both)	30.9	28.9	19.7
Goat	TZ 011855	IA IIA/B (both)	32.4	29.8	21.9
Goat	TZ 008464	IA IIA/B (both)	32.4	31.0	20.8
Goat	TZ 012106	IA IIA/B (both)	32.6	30.0	20.9
Goat	TZ 011868	IA IIA/B (both)	34.7	31.7	21.3
Goat	TZ 013972	IA IIC	28.1	25.9	18.4
Goat	TZ 007158	IA IIC	28.1	26.2	16.9
Goat	TZ 014798	IA IIC	28.6	26.2	17.9
Goat	TZ 011532	IA IIC	29.5	27.4	19.1
Goat	TZ 112028	Rom-Byz	28.1	25.9	18.5
Goat	TZ 013192	Rom-Byz	29.0	27.6	18.5
Goat	TZ 011545	Rom-Byz	30.9	28.0	19.7
Goat	TZ 002477	Rom-Byz	33.0	30.8	19.9
Goat	TZ 007970	Byz	28.4	26.0	17.9
Goat	TZ 007970	Byz	28.8	26.1	19.2
Goat	TZ 013153	Byz	30.8	28.6	19.0
Goat	TZ 016768	Byz	31.1	29.4	20.4
Goat	TZ 002241	Byz	33.2	30.7	21.8
Goat	TZ 008244	Byz-Uma	28.6	27.2	18.4
Goat	TZ 008710	Byz-Uma	32.9	30.4	21.2
Goat	TZ 110177	Uma	29.4	27.0	19.1
Cattle	TZ 017474	MBA	58.3	53.0	38.0
Cattle	TZ 018187	MBA	59.2	54.0	39.8
Cattle	TZ 019422	LBA	59.7	55.1	36.7
Cattle	TZ 019439	LBA	61.2	56.9	40.6
Cattle	TZ 011287	LBA	62.2	37.4	37.5
Cattle	TZ 018262	LBA	63.3	58.3	38.7
Cattle	TZ 019436	LBA	64.7	58.4	42.9
Cattle	TZ 017169	LBA	66.7	61.7	43.7
Cattle	TZ 019437	LBA	67.0	60.2	43.7
Cattle	TZ 018578	LBA	67.6	61.1	45.3
Cattle	TZ 014702	LBA	73.4	65.2	50.6
Cattle	TZ 019437	LBA	–	58.4	43.0
Cattle	TZ 019488	LBA	–	62.8	40.6
Cattle	TZ 016962	IA	60.2	55.1	36.8
Cattle	TZ 016962	IA	61.3	56.7	40.8
Cattle	TZ 016962	IA	61.9	56.4	40.4
Cattle	TZ 016962	IA	65.4	60.1	42.1
Cattle	TZ 017978	IA I	56.6	52.3	37.0
Cattle	TZ 011551	IA I	57.4	51.2	39.3
Cattle	TZ 007462	IA I	57.5	53.4	36.7
Cattle	TZ 018194	IA I	60.0	54.9	37.4
Cattle	TZ 018056	IA I	60.8	54.1	39.4
Cattle	TZ 009228	IA I	66.9	–	43.1
Cattle	TZ 007353	IA I	68.4	–	–
Cattle	TZ 011593	IA I	68.6	61.7	42.6
Cattle	TZ 018050	IA I	69.0	64.1	45.0
Cattle	TZ 007306	IA IIA/B (older)	57.5	52.6	34.8
Cattle	TZ 016881	IA IIA/B (older)	58.9	54.4	37.9
Cattle	TZ 016882	IA IIA/B (older)	59.7	55.0	36.2
Cattle	TZ 017178	IA IIA/B (older)	63.6	58.2	39.3
Cattle	TZ 017174	IA IIA/B (older)	66.0	61.2	42.4
Cattle	TZ 017174	IA IIA/B (older)	71.2	65.6	47.7
Cattle	TZ 017105	IA IIA/B (older)	–	61.0	44.0
Cattle	TZ 012002	IA IIA/B (both)	62.9	58.2	38.7
Cattle	TZ 012002	IA IIA/B (both)	65.4	60.7	39.6
Cattle	TZ 011667	IA IIA/B (both)	65.8	61.7	43.0
Cattle	TZ 012002	IA IIA/B (both)	66.4	59.3	41.4
Cattle	TZ 01075	IA IIA/B (younger)	61.0	55.7	–
Cattle	TZ 016884	IA IIA/B (younger)	62.6	56.7	39.5
Cattle	TZ 016884	IA IIA/B (younger)	66.2	60.0	40.6
Cattle	TZ 016849	IA IIA/B (younger)	66.3	62.4	41.8
Cattle	TZ 002471	IA IIC	59.0	–	–
Cattle	TZ 002341	IA IIC	64.7	58.5	38.0
Cattle	TZ 014792	IA IIC-Rom	61.1	54.8	37.4
Cattle	TZ 013572	IA IIC-Rom	62.2	55.0	39.7
Cattle	TZ 014700	IA IIC-Rom	66.6	59.7	41.3
Cattle	TZ 017007	Rom	65.3	61.9	38.8
Cattle	TZ 310225	Byz	67.6	60.6	42.8
Cattle	TZ 310208	Byz-Uma	62.0	55.7	39.7
Cattle	TZ 008244	Byz-Uma	62.2	–	–
Cattle	TZ 310448	Abb-Mam-Ott	75.8	69.8	47.2
Pig	TZ 017644	MBA	38.1	35.5	20.8
Pig	TZ 017474	MBA	39.0	34.3	21.2
Pig	TZ 013942	MBA	39.3	35.2	21.8
Pig	TZ 017955	MBA	40.5	35.5	20.7
Pig	TZ 017085	MBA	40.6	36.4	–
Pig	TZ 014040	LBA	39.0	–	–
Pig	TZ 012439	LBA	41.7	36.1	24.9
Pig	TZ 007500	LBA	41.2	36.8	23.5
Pig	TZ 011473	IA I	40.0	–	22.5
Pig	TZ 017712	IA I	42.9	37.0	23.3
Pig	TZ 016959	Rom	38.8	34.2	22.0
Camel	TZ 110112	Byz	80.4	70.5	53.5
Dog	TZ 011186	IA IIA/B (older)	28.0	–	–
Fallow Deer	TZ 019442	EBA	46.1	44.7	29.8
Fallow Deer	TZ 018120	MBA	–	41.4	27.3
Fallow Deer	TZ 011201	LBA	42.7	41.7	–
Fallow Deer	TZ 016769	LBA	44.8	42.7	28.9
Fallow Deer	TZ 009829	LBA	45.0	43.8	28.7
Fallow Deer	TZ 013561	LBA	47.1	44.6	29.6
Fallow Deer	TZ 009110	LBA	48.0	–	–
Fallow Deer	TZ 018225	IA I	42.9	40.0	26.1
Fallow Deer	TZ 011666	IA I	43.0	41.5	28.2
Fallow Deer	TZ 010815	IA IIA/B (older)	44.4	43.0	27.5
Fallow Deer	TZ 001462	IA IIA/B (older)	45.8	44.0	29.5
Fallow Deer	TZ 016861	IA IIA/B (older)	46.0	44.2	29.5
Fallow Deer	TZ 110212	Ott	43.3	41.0	28.0
Gazelle	TZ 010440	IA I	28.9	25.9	17.7
Gazelle	TZ 018249	IA I	30.5	27.9	17.7
Gazelle	TZ 016850	IA IIA/B (younger)	27.6	26.1	18.0
Gazelle	TZ 014700	IA IIC-Rom	27.8	25.9	17.4
Gazelle	TZ 110361	Rom-Byz	26.8	24.3	14.9
Wild Sheep	TZ 014856	IA IIC	42.5	39.8	26.6
Wild Pig	TZ 016874	LBA	51.2	46.3	29.4
Wild Pig	TZ 012718	LBA	53.8	47.4	31.1
Wild Pig	TZ 017765	IA IIA/B (older)	52.7	46.7	30.5
Wild Pig	TZ 016951	IA IIA/B (younger)	48.0	43.2	27.0
Wild Pig	TZ 002482	IA IIC	50.4	44.0	28.2
Wild Pig	TZ 013762	Rom	49.0	42.2	28.0
Wild Pig	TZ 013915	Byz-Uma	53.0	46.9	29.4

Talus

1 – greatest height, 2 – greatest breadth, 3 – breadth of the Facies articularis distalis, 4 – length of the medial part of the Trochlea tali.

Species	Inv. no.	Period	1	2	3	4
Equus	TZ 011717	IA IIA/B (older)	46.1	46.1	39.3	–
Ass	TZ 007052	Rom	42.3	44.0	35.0	25.5
Horse	TZ 016890	Rom	55.1	53.3	44.5	53.8

Metatarsus

1 – breadth of the distal end, 2 – depth of the distal end, 3 – smallest breadth of the diaphysis, 4 – depth of the diaphysis, 5 – breadth of the proximal end, 6 – depth of the proximal end, 7 – greatest length.

Species	Inv. no.	Period	1	2	3	4	5	6	7
Sheep	TZ 017938	EBA	26.0	14.8	–	–	–	–	–
Sheep	TZ 017450	MBA	22.2	15.4	–	–	–	–	–
Sheep	TZ 017072	MBA	23.6	16.4	–	–	–	–	–
Sheep	TZ 014861	MBA	24.3	16.5	–	–	–	–	–
Sheep	TZ 018187	MBA	25.0	16.8	–	–	–	–	–
Sheep	TZ 016784	MBA	26.5	17.4	–	–	–	–	–
Sheep	TZ 017047	MBA	26.6	17.3	–	–	–	–	–
Sheep	TZ 009119	LBA	22.6	14.1	–	–	–	–	–
Sheep	TZ 019458	LBA	22.8	15.4	–	–	–	–	–
Sheep	TZ 019430	LBA	23.4	16.0	–	–	–	–	–
Sheep	TZ 009116	LBA	23.5	16.8	–	–	–	–	–
Sheep	TZ 009119	LBA	24.2	16.8	–	–	–	–	–
Sheep	TZ 018224	LBA	24.3	16.3	–	–	–	–	–
Sheep	TZ 012123	LBA	24.4	16.9	–	–	–	–	–
Sheep	TZ 016885	LBA	24.6	16.6	–	–	–	–	–
Sheep	TZ 008430	LBA	24.8	17.0	–	–	–	–	–
Sheep	TZ 014498	LBA	25.1	16.4	–	–	–	–	–
Sheep	TZ 016955	LBA	26.2	17.0	–	–	–	–	–
Sheep	TZ 017054	LBA	26.3	18.6	–	–	–	–	–
Sheep	TZ 019489	LBA	26.8	18.5	–	–	–	–	–
Sheep	TZ 019430	LBA	27.6	19.7	–	–	–	–	–
Sheep	TZ 016942	IA I	26.6	17.4	–	–	–	–	–
Sheep	TZ 018055	IA I	27.1	18.9	–	–	–	–	–
Sheep	TZ 018102	IA I	27.8	18.8	–	–	–	–	–
Sheep	TZ 013946	IA II	–	–	–	–	–	–	144.0
Sheep	TZ 008936	IA IIA/B (older)	23.7	16.6	11.7	–	20.2	20.4	147.3
Sheep	TZ 008926	IA IIA/B (older)	24.7	16.0	–	–	–	–	–
Sheep	TZ 011142	IA IIA/B (older)	25.3	16.6	–	–	–	–	–
Sheep	TZ 017697	IA IIA/B (older)	25.7	15.5	–	–	–	–	–
Sheep	TZ 017004	IA IIA/B (older)	25.7	17.4	–	–	–	–	–
Sheep	TZ 008449	IA IIA/B (older)	26.1	18.4	–	–	–	–	–
Sheep	TZ 001292	IA IIA/B (older)	26.2	16.7	–	–	–	–	–
Sheep	TZ 007182	IA IIA/B (older)	27.2	17.4	–	–	–	–	–
Sheep	TZ 016884	IA IIA/B (younger)	25.4	16.6	–	–	–	–	–
Sheep	TZ 07359	IA IIA/B (younger)	29.1	18.0	–	–	–	–	–
Sheep	TZ 012106	IA IIA/B (both)	–	–	–	–	–	–	145.2
Sheep	TZ 011950	IA IIC	24.8	17.0	–	–	–	–	–
Sheep	TZ 011479	IA IIC	25.1	17.1	–	–	–	–	–
Sheep	TZ 014790	IA IIC	25.7	17.2	–	–	–	–	–
Sheep	TZ 014802	IA IIC	26.0	16.8	–	–	–	–	–
Sheep	TZ 017078	Rom	25.3	16.5	–	–	–	–	–
Sheep	TZ 011862	Rom	27.5	18.7	–	–	–	–	–
Sheep	TZ 111850	Rom-Byz	23.8	15.7	–	–	–	–	–
Sheep	TZ 013933	Rom-Byz	24.1	16.7	–	–	–	–	–
Sheep	TZ 013288	Rom-Byz	25.4	17.7	–	–	–	–	–
Sheep	TZ 013193	Rom-Byz	25.8	17.5	–	–	–	–	–
Sheep	TZ 013456	Rom-Byz	26.9	18.2	–	–	–	–	–
Sheep	TZ 013933	Rom-Byz	27.9	18.9	–	–	–	–	–
Sheep	TZ 007168	Byz	25.9	17.8	–	–	–	–	–
Sheep	TZ 310457	Byz	30.2	20.1	–	–	–	–	–
Sheep	TZ 013963	Byz-Uma	26.5	17.1	–	–	–	–	–
Sheep	TZ 310267	Abb-Mam	25.6	17.0	–	–	–	–	–
Sheep	TZ 310463	Abb-Mam	26.4	17.4	–	–	–	–	–
Sheep	TZ 002336	Ott	24.5	16.5	–	–	–	–	–
Goat	TZ 017474	MBA	23.0	15.4	–	–	–	–	–
Goat	TZ 015121	LBA	22.6	15.4	–	–	–	–	–
Goat	TZ 017098	LBA	23.0	14.5	13.8	10.6	19.0	17.6	106.0
Goat	TZ 019421	LBA	23.5	15.4	–	–	–	–	–
Goat	TZ 019436	LBA	23.9	14.8	–	–	–	–	–
Goat	TZ 019495	LBA	23.9	15.7	–	–	–	–	–
Goat	TZ 013035	LBA	24.1	15.3	–	–	–	–	–
Goat	TZ 011332	LBA	24.2	16.1	–	–	–	–	–
Goat	TZ 012714	LBA	24.4	15.2	–	–	–	–	–
Goat	TZ 019488	LBA	24.5	15.5	14.0	10.5	20.7	18.7	115.2
Goat	TZ 014383	LBA	24.8	16.0	13.0	11.1	20.2	19.8	115.7
Goat	TZ 012433	LBA	25.0	16.0	13.6	10.8	20.6	19.4	120.5
Goat	TZ 016962	IA	26.0	16.7	–	–	–	–	–
Goat	TZ 007512	IA I	23.6	15.4	–	–	–	–	–
Goat	TZ 002396	IA I	23.7	16.4	13.4	11.3	–	–	114.5
Goat	TZ 007707	IA I	24.7	16.4	14.1	11.6	–	–	121.0
Goat	TZ 007347	IA I	24.8	16.2	–	–	–	–	–
Goat	TZ 018570	IA I	25.0	16.1	–	–	–	–	–
Goat	TZ 012095	IA I	26.5	16.5	–	–	–	–	–
Goat	TZ 011186	IA IIA/B (older)	23.7	16.0	–	–	–	–	–
Goat	TZ 001536	IA IIA/B (older)	23.9	16.1	–	–	–	–	–
Goat	TZ 009009	IA IIA/B (older)	25.5	15.8	–	–	–	–	–
Goat	TZ 009783	IA IIA/B (older)	25.9	17.4	–	–	–	–	–
Goat	TZ 017697	IA IIA/B (older)	26.0	16.7	–	–	–	–	–
Goat	TZ 009377	IA IIA/B (older)	27.4	17.1	–	–	–	–	–
Goat	TZ 016992	IA IIA/B (younger)	23.8	15.7	–	–	–	–	–
Goat	TZ 007165	IA IIA/B (younger)	24.5	16.4	–	–	–	–	–
Goat	TZ 016987	IA IIA/B (younger)	24.6	15.8	–	–	–	–	–
Goat	TZ 016850	IA IIA/B (younger)	25.5	16.5	–	–	–	–	–
Goat	TZ 017091	IA IIA/B (younger)	26.1	17.0	–	–	–	–	–
Goat	TZ 015102	IA IIA/B (younger)	–	–	13.0	11.0	21.0	20.2	120.4
Goat	TZ 017999	IA IIA/B (both)	22.9	14.6	–	–	–	–	–
Goat	TZ 012002	IA IIA/B (both)	24.0	15.7	–	–	–	–	–
Goat	TZ 016859	IA IIA/B (both)	25.0	16.6	–	–	–	–	–
Goat	TZ 013095	IA IIC	23.4	15.1	14.1	11.2	20.2	18.1	113.0
Goat	TZ 011532	IA IIC	25.0	16.4	–	–	–	–	–
Goat	TZ 014142	IA IIC	25.2	15.7	13.5	10.7	21.5	19.9	117.0
Goat	TZ 014071	IA IIC	26.9	18.1	–	–	–	–	–
Goat	TZ 014850	IA IIC	27.4	16.8	–	–	–	–	–
Goat	TZ 111901	Hell	25.4	16.7	14.3	11.2	21.6	19.8	120.0
Goat	TZ 017007	Rom	24.2	16.6	–	–	–	–	–
Goat	TZ 014748	Rom	25.8	14.5	–	–	–	–	–
Goat	TZ 017007	Rom	27.8	18.7	–	–	–	–	–
Goat	TZ 013288	Rom-Byz	25.5	17.0	–	–	–	–	–

Goat	TZ 013933	Rom-Byz	28.6	18.6	–	–	–	–	–
Goat	TZ 310268	Abb-Mam	24.1	16.5	–	–	–	–	–
Goat	TZ 310268	Abb-Mam	25.6	16.7	13.1	11.7	21.1	19.5	126.4
Cattle	TZ 016771	LBA	49.4	28.8	–	–	–	–	–
Cattle	TZ 016962	IA	55.7	32.3	–	–	–	–	–
Cattle	TZ 018225	IA I	49.9	30.7	25.0	–	46.5	–	243.0
Cattle	TZ 018246	IA I	51.3	30.2	–	–	–	–	–
Cattle	TZ 017950	IA I	56.7	33.2	–	–	–	–	–
Cattle	TZ 017032	IA IIA/B (younger)	48.8	31.1	–	–	–	–	–
Cattle	TZ 016849	IA IIA/B (younger)	49.5	28.4	–	–	–	–	–
Cattle	TZ 017091	IA IIA/B (younger)	56.6	32.6	–	–	–	–	–
Cattle	TZ 011479	IA IIC	53.2	30.6	–	–	–	–	–
Cattle	TZ 112028	Rom-Byz	46.5	27.1	–	–	–	–	–
Cattle	TZ 001253	Byz	–	–	–	–	46.3	45.0	
Cattle	TZ 011290	Ott	49.8	30.0	–	–	–	–	–
Horse	TZ 07203	IA IIA/B (younger)	–	–	–	–	51.0	–	–
Horse	TZ 002514	Byz	46.2	35.6	–	–	–	–	–
Ass	TZ 017026	LBA	–	–	–	–	35.2	–	–
Fallow Deer	TZ 014820	IA IIA/B (younger)	36.2	24.0	–	–	–	–	–
Fallow Deer	TZ 014819	IA IIA/B (younger)	38.8	24.4	–	–	–	–	–
Fallow Deer	TZ 017007	Rom	39.7	23.8	–	–	–	–	–
Gazelle	TZ 017948	IA I	24.1	16.6	–	–	–	–	–
Gazelle	TZ 015143	IA IIA/B (younger)	23.9	17.1	–	–	–	–	–
Gazelle	TZ 007445	IA IIA/B (both)	23.6	16.9	–	–	–	–	–
Gazelle	TZ 014800	IA IIC	24.4	18.7	–	–	–	–	–
Gazelle	TZ 002511	Hell-Rom	19.9	14.1	–	–	–	–	–

Phalanx 1

1 – greatest length of the peripheral half, 2 – breadth of the proximal end, 3 – smallest breadth of the diaphysis, 4 – breadth of the distal end.

Species		Inv. no.	Period	1	2	3	4
Cattle	ant.	TZ 013037	MBA	54.5	27.6	24.2	25.6
Cattle	ant.	TZ 009817	LBA	51.8	26.3	23.1	24.5
Cattle	ant.	TZ 012589	LBA	52.1	28.2	24.4	25.4
Cattle	ant.	TZ 009534	LBA	54.4	28.6	25.2	26.7
Cattle	ant.	TZ 018267	LBA	54.9	27.7	25.0	27.3
Cattle	ant.	TZ 013763	LBA	55.6	28.9	27.3	26.5
Cattle	ant.	TZ 014704	LBA	55.7	27.2	22.5	24.5
Cattle	ant.	TZ 016813	LBA	56.8	27.7	25.6	28.5
Cattle	ant.	TZ 019439	LBA	57.6	31.2	26.9	30.3
Cattle	ant.	TZ 012841	LBA	58.1	36.1	29.5	35.6
Cattle	ant.	TZ 019458	LBA	59.4	32.4	27.0	30.5
Cattle	ant.	TZ 017947	IA	53.0	26.6	24.9	26.5
Cattle	ant.	TZ 017947	IA	54.6	30.5	26.6	27.9
Cattle	ant.	TZ 011469	IA I	47.6	24.3	20.6	23.2
Cattle	ant.	TZ 018263	IA I	48.0	25.6	21.7	23.6
Cattle	ant.	TZ 018195	IA I	50.8	26.2	23.2	25.7
Cattle	ant.	TZ 011535	IA I	50.9	28.0	24.6	25.4
Cattle	ant.	TZ 010150	IA I	51.2	26.5	21.9	23.4

Cattle	ant.	TZ 018210	IA I	51.5	27.6	23.0	24.2
Cattle	ant.	TZ 018183	IA I	51.8	26.2	22.1	24.0
Cattle	ant.	TZ 008228	IA I	52.0	27.4	23.0	25.3
Cattle	ant.	TZ 018060	IA I	52.2	27.1	22.6	24.9
Cattle	ant.	TZ 018246	IA I	52.4	27.7	22.2	24.1
Cattle	ant.	TZ 017952	IA I	53.8	28.9	25.6	26.8
Cattle	ant.	TZ 018116	IA I	56.6	29.7	25.5	27.6
Cattle	ant.	TZ 017117	IA I	57.0	30.6	26.3	27.6
Cattle	ant.	TZ 018107	IA I	57.5	28.6	23.2	27.8
Cattle	ant.	TZ 018246	IA I	58.4	29.9	24.4	29.1
Cattle	ant.	TZ 018051	IA I	58.8	36.1	30.0	31.3
Cattle	ant.	TZ 017884	IA I	60.9	30.4	28.1	28.0
Cattle	ant.	TZ 008864	IA II	50.3	24.3	20.6	23.6
Cattle	ant.	TZ 011918	IA IIA/B (older)	50.6	27.0	24.0	25.4
Cattle	ant.	TZ 001429	IA IIA/B (older)	50.7	27.4	23.3	24.8
Cattle	ant.	TZ 008820	IA IIA/B (older)	51.0	27.1	20.8	22.5
Cattle	ant.	TZ 009419	IA IIA/B (older)	51.0	27.4	23.2	25.5
Cattle	ant.	TZ 012091	IA IIA/B (older)	51.4	28.5	24.4	26.2
Cattle	ant.	TZ 009711	IA IIA/B (older)	53.6	26.5	24.0	24.1
Cattle	ant.	TZ 017067	IA IIA/B (older)	55.8	28.5	24.2	25.1
Cattle	ant.	TZ 017071	IA IIA/B (older)	57.0	30.3	–	–
Cattle	ant.	TZ 010815	IA IIA/B (older)	57.4	30.4	26.8	28.1
Cattle	ant.	TZ 016866	IA IIA/B (older)	58.4	32.6	26.6	26.5
Cattle	ant.	TZ 009005	IA IIA/B (older)	60.7	35.2	31.8	33.8
Cattle	ant.	TZ 008935	IA IIA/B (younger)	51.5	26.1	22.1	–
Cattle	ant.	TZ 010729	IA IIA/B (younger)	53.3	31.4	25.5	24.9
Cattle	ant.	TZ 017002	IA IIA/B (younger)	55.8	27.8	25.6	27.3
Cattle	ant.	TZ 009776	IA IIA/B (both)	52.7	28.2	24.6	25.4
Cattle	ant.	TZ 011934	IA IIA/B (both)	58.3	30.8	27.2	28.6
Cattle	ant.	TZ 002471	IA IIC	49.0	25.4	21.9	23.5
Cattle	ant.	TZ 014802	IA IIC	49.5	26.2	22.4	23.6
Cattle	ant.	TZ 007726	IA IIC	50.8	26.1	21.4	23.9
Cattle	ant.	TZ 112029	Hell-Rom	54.4	28.2	23.7	26.7
Cattle	ant.	TZ 002474	Rom-Byz	54.3	24.1	21.2	22.9
Cattle	ant.	TZ 310458	Byz	53.5	26.7	22.2	24.4
Cattle	ant.	TZ 111579	Byz-Uma	63.0	34.0	28.8	29.3
Fallow Deer	ant.	TZ 017554	MBA	44.3	16.7	12.1	14.6
Fallow Deer	ant.	TZ 009703	IA	50.9	20.6	15.9	17.7
Fallow Deer	ant.	TZ 018112	IA I	45.8	17.4	13.0	16.1
Fallow Deer	ant.	TZ 018182	IA I	48.3	20.0	14.1	17.1
Fallow Deer	ant.	TZ 011007	IA IIA/B (older)	48.0	19.2	15.2	17.3
Cattle	post.	TZ 017451	MBA	56.6	–	24.1	24.7
Cattle	post.	TZ 011716	LBA	51.6	23.4	19.6	20.5
Cattle	post.	TZ 012903	LBA	52.2	24.4	21.9	22.6
Cattle	post.	TZ 018224	LBA	53.8	25.6	22.3	24.8
Cattle	post.	TZ 012713	LBA	56.0	26.2	23.6	23.7
Cattle	post.	TZ 012417	LBA	59.4	30.3	26.8	29.4
Cattle	post.	TZ 016986	LBA	59.6	27.9	23.9	25.9
Cattle	post.	TZ 009835	LBA	62.2	27.3	25.3	27.3
Cattle	post.	TZ 009115	IA	50.6	24.2	20.6	22.7
Cattle	post.	TZ 011722	IA	52.7	28.4	22.5	25.0
Cattle	post.	TZ 017947	IA	53.8	25.2	21.6	24.7

Cattle	post.	TZ 016962	IA	54.3	24.5	21.8	22.2
Cattle	post.	TZ 017947	IA	62.6	26.8	23.5	26.6
Cattle	post.	TZ 018203	IA I	51.7	23.3	21.6	23.1
Cattle	post.	TZ 011190	IA I	54.5	24.3	20.1	22.4
Cattle	post.	TZ 007465	IA I	54.6	–	23.2	25.3
Cattle	post.	TZ 018112	IA I	54.9	24.6	20.3	23.3
Cattle	post.	TZ 009007	IA I	55.1	25.7	20.1	23.0
Cattle	post.	TZ 017884	IA I	55.2	26.3	22.0	24.0
Cattle	post.	TZ 018264	IA I	55.8	26.7	23.1	–
Cattle	post.	TZ 018246	IA I	56.1	27.0	24.7	24.9
Cattle	post.	TZ 018246	IA I	56.2	25.9	22.9	24.1
Cattle	post.	TZ 018051	IA I	57.8	28.1	24.8	25.5
Cattle	post.	TZ 018195	IA I	58.7	28.5	25.6	28.3
Cattle	post.	TZ 017977	IA I	59.0	31.4	27.5	30.0
Cattle	post.	TZ 007465	IA I	59.5	28.0	23.0	24.7
Cattle	post.	TZ 018226	IA I	60.0	27.5	23.8	24.2
Cattle	post.	TZ 018183	IA I	65.6	29.9	24.6	27.8
Cattle	post.	TZ 011918	IA IIA/B (older)	52.0	24.7	21.7	22.8
Cattle	post.	TZ 011918	IA IIA/B (older)	52.0	25.3	21.6	22.4
Cattle	post.	TZ 017071	IA IIA/B (older)	53.0	24.2	20.5	22.2
Cattle	post.	TZ 012061	IA IIA/B (older)	53.4	26.5	22.3	23.7
Cattle	post.	TZ 017107	IA IIA/B (older)	53.5	25.7	20.7	22.9
Cattle	post.	TZ 008723	IA IIA/B (older)	53.8	25.0	22.5	26.2
Cattle	post.	TZ 010395	IA IIA/B (older)	57.1	26.6	22.5	25.3
Cattle	post.	TZ 011918	IA IIA/B (older)	58.0	27.2	25.2	28.6
Cattle	post.	TZ 016882	IA IIA/B (older)	58.9	27.5	22.1	26.2
Cattle	post.	TZ 001430	IA IIA/B (older)	60.1	27.2	22.8	25.2
Cattle	post.	TZ 017154	IA IIA/B (older)	60.1	29.6	25.0	27.4
Cattle	post.	TZ 017697	IA IIA/B (older)	60.1	30.4	26.8	28.1
Cattle	post.	TZ 011667	IA IIA/B (both)	50.0	21.4	20.7	21.8
Cattle	post.	TZ 011667	IA IIA/B (both)	51.8	25.2	21.4	22.8
Cattle	post.	TZ 008114	IA IIA/B (both)	52.0	26.8	21.8	23.3
Cattle	post.	TZ 011718	IA IIA/B (both)	56.2	27.1	23.7	25.7
Cattle	post.	TZ 012002	IA IIA/B (both)	58.8	26.3	23.9	24.9
Cattle	post.	TZ 010817	IA IIA/B (younger)	52.8	25.0	21.3	22.1
Cattle	post.	TZ 016850	IA IIA/B (younger)	58.1	30.1	25.3	27.6
Cattle	post.	TZ 016992	IA IIA/B (younger)	58.7	28.0	23.9	25.6
Cattle	post.	TZ 010730	IA IIC	50.2	24.0	19.4	21.0
Cattle	post.	TZ 002329	IA IIC	50.4	23.8	20.6	23.3
Cattle	post.	TZ 001317	IA IIC	55.0	27.0	22.7	25.1
Cattle	post.	TZ 014033	IA IIC	55.3	25.7	22.5	25.0
Cattle	post.	TZ 016795	IA IIC	55.5	25.7	22.0	22.8
Cattle	post.	TZ 014796	IA IIC	56.3	29.0	24.0	28.1
Cattle	post.	TZ 014802	IA IIC	56.4	25.7	21.8	23.2
Cattle	post.	TZ 014068	Rom	50.6	24.0	19.5	22.2
Cattle	post.	TZ 016808	Rom	56.5	25.3	20.9	24.4
Cattle	post.	TZ 017007	Rom	60.0	27.8	23.6	26.9
Cattle	post.	TZ 013399	Rom	60.9	27.7	24.7	26.4
Cattle	post.	TZ 310277	Byz	51.9	24.1	20.4	23.3
Cattle	post.	TZ 007054	Byz	54.6	25.9	21.0	23.5
Cattle	post.	TZ 009972	Byz	60.5	29.5	23.3	26.4
Cattle	post.	TZ 010714	Byz-Uma	53.6	25.1	21.9	22.8

Cattle	post.	TZ 013915	Byz-Uma	60.3	26.8	23.7	26.7
Cattle	post.	TZ 111908	Byz-Uma	60.4	26.6	23.6	25.1
Cattle	post.	TZ 007972	Uma	50.3	23.3	18.7	20.7
Cattle	post.	TZ 007841	Uma	52.5	25.0	20.1	22.7
Cattle	post.	TZ 310268	Abb-Mam	62.2	30.8	25.4	27.8
Fallow Deer	post.	TZ 017065	IA IIA/B (younger)	49.1	18.1	11.8	15.7
Wild Sheep	post.	TZ 009106	IA IIA/B (older)	52.8	18.9	15.7	19.0
Wild Pig		TZ 007680	IA I	42.0	21.5	16.2	19.3
Wild Pig		TZ 111583	Abb-Mam	44.8	22.3	17.2	20.4

Phalanx 1

1 – greatest length, 2 – breadth of the proximal end, 3 – breadth of the Facies articularis proximalis, 4 – depth of the proximal end, 5 – smallest breadth of the diaphysis, 6 – breadth of the distal end, 7 – brea dth of the Facies articularis distalis.

Species		Inv. no.	Period	1	2	3	4	5	6	7
Ass	ant.	TZ 007042	IA IIC	65.6	34.3	33.2	24.5	22.7	–	–
Equus	post.	TZ 019456	EBA	–	42.0	38.9	30.4	25.6	–	–
Ass	post.	TZ 011672	IA IIA/B (older)	62.3	–	–	–	20.9	–	–
Ass	post.	TZ 001178	IA IIA/B (both)	62.4	35.9	34.6	26.2	20.6	30.7	29.1

Phalanx 2

1 – greatest length of the peripheral half, 2 – breadth of the proximal end, 3 – smallest breadth of the diaphysis, 4 – breadth of the distal end.

Species		Inv. no.	Period	1	2	3	4
Cattle	ant.	TZ 018184	EBA	40.9	31.8	26.5	30.1
Cattle	ant.	TZ 017467	MBA	33.7	25.5	20.9	22.2
Cattle	ant.	TZ 017883	MBA	41.0	31.5	26.0	28.5
Cattle	ant.	TZ 016880	LBA	36.2	29.1	23.4	25.2
Cattle	ant.	TZ 009979	LBA	38.6	30.3	24.6	26.2
Cattle	ant.	TZ 016994	LBA	39.9	32.4	26.0	28.1
Cattle	ant.	TZ 017074	LBA	40.3	31.3	25.8	27.8
Cattle	ant.	TZ 019439	LBA	41.4	30.3	24.3	25.4
Cattle	ant.	TZ 012413	LBA	41.7	37.0	29.0	–
Cattle	ant.	TZ 018224	LBA	42.1	35.0	25.7	28.9
Cattle	ant.	TZ 017947	IA	36.9	31.5	25.9	27.1
Cattle	ant.	TZ 017921	IA	37.9	–	25.6	26.6
Cattle	ant.	TZ 017128	IA	38.3	27.3	22.2	23.3
Cattle	ant.	TZ 017889	IA	39.8	30.3	24.0	23.8
Cattle	ant.	TZ 011673	IA	41.5	31.6	25.8	28.8
Cattle	ant.	TZ 016991	IA I	33.4	27.6	22.0	25.0
Cattle	ant.	TZ 011451	IA I	33.8	26.4	20.6	21.5
Cattle	ant.	TZ 016964	IA I	33.9	25.4	19.8	22.3
Cattle	ant.	TZ 018226	IA I	35.0	25.8	20.6	22.2
Cattle	ant.	TZ 008431	IA I	35.0	27.5	23.8	–

Cattle	ant.	TZ 017056	IA I	37.4	30.1	25.3	26.6
Cattle	ant.	TZ 018246	IA I	39.2	29.5	22.8	24.7
Cattle	ant.	TZ 018226	IA I	39.9	29.5	24.1	26.8
Cattle	ant.	TZ 012068	IA I	42.0	31.3	27.8	30.0
Cattle	ant.	TZ 011051	IA II	37.2	30.1	24.7	27.7
Cattle	ant.	TZ 016866	IA IIA/B (older)	33.9	27.0	22.5	25.0
Cattle	ant.	TZ 017077	IA IIA/B (older)	34.8	28.9	23.3	24.4
Cattle	ant.	TZ 017154	IA IIA/B (older)	38.0	29.4	22.7	26.2
Cattle	ant.	TZ 012106	IA IIA/B (both)	36.3	29.8	23.7	26.8
Cattle	ant.	TZ 017032	IA IIA/B (younger)	33.7	25.6	20.4	21.5
Cattle	ant.	TZ 009560	IA IIA/B (younger)	35.1	26.6	19.8	21.6
Cattle	ant.	TZ 016850	IA IIA/B (younger)	35.2	29.0	24.8	25.0
Cattle	ant.	TZ 008866	IA IIA/B (younger)	35.4	27.5	22.5	24.9
Cattle	ant.	TZ 010733	IA IIA/B (younger)	35.7	31.4	23.9	25.1
Cattle	ant.	TZ 016829	IA IIA/B (younger)	36.3	27.2	22.1	23.8
Cattle	ant.	TZ 016858	IA IIA/B (younger)	39.9	30.5	23.8	25.9
Cattle	ant.	TZ 014802	IA IIC	33.2	–	21.3	–
Cattle	ant.	TZ 014142	IA IIC	33.7	28.1	21.4	23.2
Cattle	ant.	TZ 016860	IA IIC	34.0	28.1	21.7	23.7
Cattle	ant.	TZ 112029	Hell-Rom	35.8	28.5	22.2	23.7
Cattle	ant.	TZ 016956	Rom	35.7	29.0	23.6	26.8
Cattle	ant.	TZ 111981	Rom-Byz	37.9	30.0	24.1	25.5
Cattle	ant.	TZ 014533	Uma	36.2	31.1	23.9	26.7
Fallow Deer	ant.	TZ 018126	EBA	33.7	19.1	13.3	14.6
Fallow Deer	ant.	TZ 019423	LBA	37.8	19.2	14.5	14.2
Fallow Deer	ant.	TZ 008238	LBA	37.8	19.1	14.6	15.5
Bos	ant.	TZ 016829	IA IIA/B (younger)	43.5	38.1	30.2	31.7
Aurochs	ant.	TZ 018101	MBA	59.6	48.6	39.0	41.5
Cattle	post.	TZ 017467	MBA	33.9	25.0	20.3	21.1
Cattle	post.	TZ 017475	MBA	35.2	27.1	21.0	21.6
Cattle	post.	TZ 017450	MBA	36.8	26.9	21.0	23.0
Cattle	post.	TZ 017554	MBA	39.6	29.0	23.9	24.7
Cattle	post.	TZ 017133	MBA	41.3	28.8	23.2	23.8
Cattle	post.	TZ 017133	MBA	41.9	28.9	22.1	–
Cattle	post.	TZ 018236	LBA	33.8	24.2	19.7	20.7
Cattle	post.	TZ 016985	LBA	35.3	24.1	20.4	21.1
Cattle	post.	TZ 016985	LBA	35.3	24.3	20.6	21.1
Cattle	post.	TZ 009110	LBA	36.0	24.4	20.6	20.2
Cattle	post.	TZ 012431	LBA	36.0	26.9	22.3	23.5
Cattle	post.	TZ 018267	LBA	37.3	24.6	19.8	20.5
Cattle	post.	TZ 012072	LBA	37.9	27.0	22.0	22.1
Cattle	post.	TZ 014398	LBA	40.1	29.3	24.3	25.6
Cattle	post.	TZ 001539	LBA	44.7	34.2	29.0	–
Cattle	post.	TZ 019439	LBA	48.9	30.8	24.6	26.4
Cattle	post.	TZ 011674	IA	35.3	25.6	20.5	21.4
Cattle	post.	TZ 017921	IA	36.8	28.2	22.9	–
Cattle	post.	TZ 017921	IA	37.3	27.9	22.0	22.4
Cattle	post.	TZ 017947	IA	38.6	28.4	22.0	24.5
Cattle	post.	TZ 017128	IA	42.2	31.6	26.0	25.6
Cattle	post.	TZ 011476	IA I	34.7	24.5	19.5	19.7
Cattle	post.	TZ 018112	IA I	35.3	24.7	19.6	21.0
Cattle	post.	TZ 007319	IA I	37.1	27.1	22.0	22.9

Cattle	post.	TZ 018195	IA I	37.8	27.2	22.8	21.9
Cattle	post.	TZ 017976	IA I	38.0	26.7	20.6	20.8
Cattle	post.	TZ 008812	IA I	38.1	26.9	22.5	23.7
Cattle	post.	TZ 018246	IA I	38.2	26.6	22.2	22.4
Cattle	post.	TZ 008545	IA I	38.2	27.1	21.1	21.7
Cattle	post.	TZ 012117	IA I	38.6	27.8	22.3	23.4
Cattle	post.	TZ 018246	IA I	38.7	26.7	21.5	–
Cattle	post.	TZ 018246	IA I	38.8	26.6	21.6	22.3
Cattle	post.	TZ 018271	IA I	39.0	27.7	22.3	22.1
Cattle	post.	TZ 018227	IA I	39.2	28.2	22.6	24.4
Cattle	post.	TZ 008769	IA IIA/B (older)	33.6	23.6	18.8	20.5
Cattle	post.	TZ 017107	IA IIA/B (older)	34.1	23.9	19.0	18.8
Cattle	post.	TZ 001364	IA IIA/B (older)	35.3	25.6	20.1	21.6
Cattle	post.	TZ 007436	IA IIA/B (older)	35.4	25.6	20.2	20.0
Cattle	post.	TZ 016993	IA IIA/B (older)	35.4	26.4	20.8	22.2
Cattle	post.	TZ 017105	IA IIA/B (older)	35.5	24.6	18.6	–
Cattle	post.	TZ 017004	IA IIA/B (older)	35.6	25.1	20.6	21.0
Cattle	post.	TZ 017105	IA IIA/B (older)	36.0	25.4	19.8	20.8
Cattle	post.	TZ 011142	IA IIA/B (older)	36.6	26.8	20.5	22.0
Cattle	post.	TZ 007306	IA IIA/B (older)	37.7	27.4	21.5	–
Cattle	post.	TZ 015075	IA IIA/B (older)	37.9	29.0	22.1	22.8
Cattle	post.	TZ 007296	IA IIA/B (older)	38.0	27.5	21.6	–
Cattle	post.	TZ 010814	IA IIA/B (older)	39.2	28.6	21.8	23.7
Cattle	post.	TZ 009783	IA IIA/B (older)	40.2	30.3	24.8	24.7
Cattle	post.	TZ 012122	IA IIA/B (both)	35.4	26.7	20.7	21.6
Cattle	post.	TZ 012002	IA IIA/B (both)	37.1	26.0	20.1	21.2
Cattle	post.	TZ 012002	IA IIA/B (both)	39.7	26.5	21.6	21.8
Cattle	post.	TZ 012002	IA IIA/B (both)	42.3	31.2	25.0	27.7
Cattle	post.	TZ 007468	IA IIA/B (younger)	33.7	27.3	21.6	–
Cattle	post.	TZ 010385	IA IIA/B (younger)	34.4	24.1	18.9	19.7
Cattle	post.	TZ 009560	IA IIA/B (younger)	37.2	26.5	20.8	–
Cattle	post.	TZ 016849	IA IIA/B (younger)	37.8	28.5	24.2	25.0
Cattle	post.	TZ 017006	IA IIA/B (younger)	38.7	28.6	23.4	24.2
Cattle	post.	TZ 07165	IA IIA/B (younger)	39.0	26.9	21.8	22.2
Cattle	post.	TZ 017031	IA IIA/B (younger)	41.8	30.9	23.6	24.9
Cattle	post.	TZ 017076	IA IIA/B (younger)	43.2	30.0	23.0	25.0
Cattle	post.	TZ 002471	IA IIC	32.6	24.1	19.1	–
Cattle	post.	TZ 006958	IA IIC	35.5	24.8	20.2	22.8
Cattle	post.	TZ 009068	IA IIC	35.5	–	–	22.1
Cattle	post.	TZ 014796	IA IIC	36.4	29.0	23.5	24.3
Cattle	post.	TZ 007516	IA IIC	36.5	24.8	19.6	20.1
Cattle	post.	TZ 016801	IA IIC	36.7	27.0	21.3	22.6
Cattle	post.	TZ 013166	IA IIC	37.5	29.5	22.4	23.6
Cattle	post.	TZ 016860	IA IIC	37.6	28.4	21.6	21.8
Cattle	post.	TZ 013972	IA IIC	38.4	26.5	21.7	21.8
Cattle	post.	TZ 015076	IA IIC	38.6	28.9	23.8	23.5
Cattle	post.	TZ 007154	Rom	34.7	24.6	20.1	21.1
Cattle	post.	TZ 110070	Rom	37.0	26.6	21.6	21.7
Cattle	post.	TZ 015105	Rom	38.8	27.3	20.5	21.4
Cattle	post.	TZ 111298	Rom	38.9	26.8	20.7	21.0
Cattle	post.	TZ 111567	Rom-Byz	33.6	24.2	19.5	19.8
Cattle	post.	TZ 014061	Byz-Uma	38.7	25.0	20.5	21.5

Cattle	post.	TZ 110522	Byz-Uma	39.5	25.8	20.0	21.0
Cattle	post.	TZ 010530	Uma	37.0	29.0	22.6	22.0
Cattle	post.	TZ 111214	Uma	38.3	28.4	22.4	24.6
Fallow Deer	post.	TZ 018276	EBA	33.3	16.6	12.8	13.5
Fallow Deer	post.	TZ 018194	IA I	35.0	17.7	13.8	13.9
Fallow Deer	post.	TZ 017065	IA IIA/B (younger)	35.1	16.5	12.0	13.5

Phalanx 2

1 – greatest length, 2 – breadth of the proximal end, 3 – breadth of the Facies articularis proximalis, 4 – depth of the proximal end, 5 – smallest breadth of the diaphysis, 6 – breadth of the distal end.

Species		Inv. no.	Period	1	2	3	4	5	6
Ass	ant.	TZ 017756	IA I	32.6	33.7	32.3	23.3	31.3	32.1
Ass	ant.	TZ 007046	IA IIA/B (younger)	32.3	34.9	32.1	22.2	29.0	28.6
Horse	ant.	TZ 017005	Rom	51.2	56.1	48.8	32.8	48.4	50.8
Ass	post.	TZ 011856	IA IIA/B (older)	32.5	35.1	32.0	22.5	29.2	29.1

5.8.2. Birds

Coracoid

1 – greatest length, 2 – medial length, 3 – basal breadth.

Species	Inv. no.	Period	1	2	3
Chicken	TZ 017977	IA I	48.9	47.0	–
Chicken	TZ 010371	IA IIC	47.3	45.0	–
Chicken	TZ 017059	Rom	47.5	45.2	–
Chicken	TZ 014748	Rom	48.5	46.6	12.3
Chicken	TZ 017007	Rom	48.9	46.3	–
Chicken	TZ 014748	Rom	49.6	47.3	12.6
Chicken	TZ 015117	Rom	49.6	47.5	–
Chicken	TZ 0110262	Rom	50.0	47.6	12.8
Chicken	TZ 016990	Rom	50.7	48.4	–
Chicken	TZ 013411	Byz	46.7	44.6	12.0
Chicken	TZ 013398	Byz	55.5	–	–
Pigeon/Dove	TZ 012448	LBA	30.9	–	–
Pigeon/Dove	TZ 019467	LBA	31.4	–	–
Chukar Partr.	TZ 011928	IA IIA/B (older)	42.2	41.5	10.3

Humerus

1 – greatest length, 2 – breadth of the proximal end, 3 – smallest breadth of the corpus, 4 – breadth of the distal end.

Species	Inv. no.	Period	1	2	3	4
Chicken	TZ 017201	IA I	66.5	16.9	6.0	–
Chicken	TZ 011599	IA IIC	65.2	17.1	5.9	13.6
Chicken	TZ 013195	Rom	60.5	16.2	5.6	12.1
Chicken	TZ 015105	Rom	64.2	18.1	6.3	13.8
Chicken	TZ 014864	Rom	81.6	22.0	7.5	17.1
Chicken	TZ 013302	Rom-Byz	66.6	18.0	6.0	13.6
Chicken	TZ 110301	Rom-Byz	72.2	–	–	–
Chicken	TZ 013915	Byz-Uma	71.0	18.8	6.5	14.9
Chicken	TZ 310267	Abb-Mam	62.5	17.7	6.0	13.9
Pigeon/ Dove	TZ 009538	IA I	47.0	–	5.1	–
Pigeon/ Dove	TZ 016951	IA IIA/B (younger)	44.6	17.8	5.3	10.6
Laughing dove	TZ 005228	IA IIA/B (younger)	35.2	–	4.0	8.2

Radius

1 – greatest length.

Species	Inv. no.	Period	1
Chicken	TZ 017014	Rom	52.1
Chicken	TZ 014748	Rom	54.6
Laughing dove	TZ 006076	IA I	45.3

Ulna

1 – greatest length.

Species	Inv. no.	Period	1
Chicken	TZ 018182	IA I	63.5
Chicken	TZ 017014	Rom	58.0
Chicken	TZ 018255	Rom	59.0
Chicken	TZ 310449	Abb-Mam	61.3
Pigeon/Dove	TZ 017056	IA I	49.2
Pigeon/Dove	TZ 018182	IA I	51.1
Chukar Partr.	TZ 0111008	Byz	49.6

Carpometacarpus

1 – greatest length, 2 – length of the metacarpus II.

Species	Inv. no.	Period	1	2
Chicken	TZ 017014	Rom	40.9	–
Chicken	TZ 112028	Rom-Byz	36.1	33.7
Chukar Partr.	TZ 017192	LBA	31.9	–

Tibiotarsus

1 – greatest length.

Species	Inv. no.	Period	1
Chicken	TZ 310267	Abb-Mam	100.0

Femur

1 – greatest length, 2 – medial length, 3 – breadth of the proximal end, 4 – smallest breadth of the corpus, 5 – breadth of the distal end.

Species	Inv. no.	Period	1	2	3	4	5
Chicken	TZ 016964	IA I	67.6	63.6	12.7	5.6	12.6
Chicken	TZ 014818	IA IIC	67.3	63.1	12.7	5.5	12.0
Chicken	TZ 015076	IA IIC	69.2	64.9	12.8	5.7	12.3
Chicken	TZ 014142	IA IIC	71.9	68.7	14.8	6.5	13.6
Chicken	TZ 017059	Rom	68.0	63.8	14.5	5.8	12.6
Chicken	TZ 017017	Rom	75.7	70.0	15.4	–	14.1
Chicken	TZ 013462	Rom	79.3	–	15.4	7.0	15.0
Chicken	TZ 017017	Rom	86.4	80.0	17.1	7.3	16.9
Chicken	TZ 013193	Rom-Byz	66.8	–	13.3	5.6	12.3
Chicken	TZ 013597	Rom-Byz	67.6	62.9	13.8	5.8	12.6
Chicken	TZ 111008	Byz	79.5	75.5	15.3	7.3	15.3
Pigeon/Dove	TZ 018182	IA I	39.3	36.6	8.6	3.5	7.4
Pigeon/Dove	TZ 017978	IA I	39.3	37.7	8.5	3.4	–
Pigeon/Dove	TZ 09783	IA IIA/B (older)	40.8	38.1	8.7	3.4	7.8
Crested Grebe	TZ 017017	Rom	43.5	40.6	12.5	4.9	12.9
Chukar Partr.	TZ 112029	Hell-Rom	57.2	54.7	11.3	4.5	10.2
Coot	TZ 012002	IA IIA/B (both)	59.2	56.5	12.6	4.7	10.3
Common Raven	TZ 004457	IA IIC	68.7	64.4	16.1	6.7	15.8

Tarsometatarsus

1 – greatest length, 2 – breadth of the proximal end, 3 – smallest breadth of the corpus, 4 – breadth of the distal end.

Species	Inv. no.	Period	Sex	1	2	3	4
Chicken	TZ 018182	IA I	female	62.0	11.1	5.4	11.4
Chicken	TZ 016882	IA IIA/B (older)	female	78.5	12.5	6.2	12.8
Chicken	TZ 016990	Rom	female	64.8	–	5.8	11.9
Chicken	TZ 015122	Rom	female	70.5	11.5	5.5	11.0
Chicken	TZ 017078	Rom	female	73.7	12.4	5.7	12.7
Chicken	TZ 310226	Byz	female	67.3	11.5	5.5	–
Chicken	TZ 310224	Byz	female	80.3	12.6	6.4	12.9
Chicken	TZ 016825	Rom	male	71.0	12.3	5.5	11.5
Chicken	TZ 016825	Rom	male	72.8	12.8	5.7	12.6