'Atiqot 79, 2014

Middle Bronze Age IIA and Later Settlement Remains near Yehud on the Coastal Plain

Edwin C.M. van den Brink, Oren Shmueli, Eli Yannai,
Liora Kolska Horwitz and Eyal Vadaei[1]

Yehud is a modern town near the outskirts of Tel Aviv on the coastal plain, 13 km east of the Mediterranean coast and 8 km north of Lod (Lydda; Fig. 1). It is situated on the alluvium at the interface between the coastal plain and inland Shephelah. The town covers much of the barely visible remains of an ancient mound, Tel Yehud (Arabic: Tell el-Yehudiyeh).[2]

A salvage excavation was conducted (van den Brink and Shemueli 1997) after potsherds ranging from the Chalcolithic to the Byzantine period were collected by IAA inspectors Oren Shmueli and Zohar Grossinger, c. 700 m south of the tell, alongside a recently built road bypassing Yehud (map ref. NIG 1898/6593, OIG 1398/1593; Figs. 1, 2).[3] The site extends approximately over a 150 m long and 130 m wide stretch of fallow land, which, at c. 37 m above sea level, rises about 3 m above its immediate surroundings. The newly constructed bypass road (Highway 461) cuts the site on the east and north. A longitudinal trench (not recorded), accommodating a major water supply pipe, cuts the site on the south.

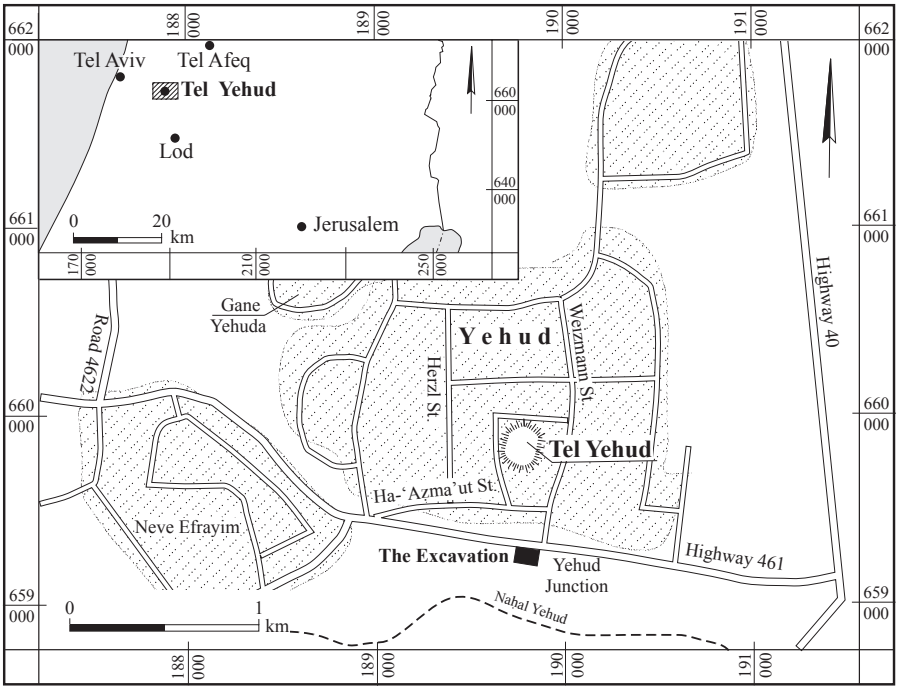


Fig. 1. Location map of the Yehud Bypass Road excavations and immediate surroundings; inset showing central coastal plain.

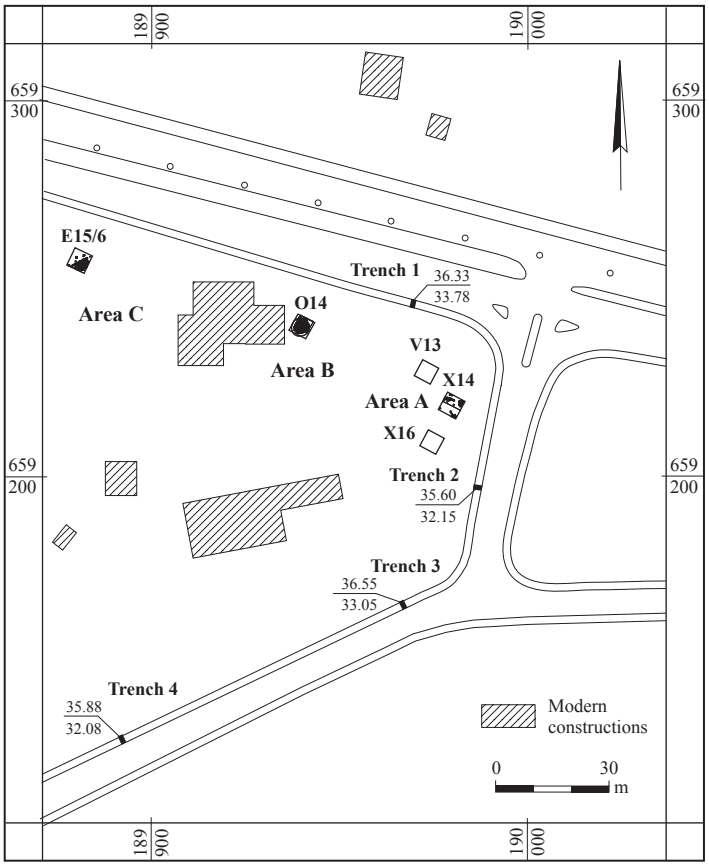


Fig. 2. Map of the site and excavation areas.

THE EXCAVATION

Five isolated 5 × 5 m probes were excavated, distributed over three excavation areas (A–C; Fig. 2). The sequences of occupational layers differ from one area to the next, as no single area contained the entire stratigraphic sequence of the site (Table 1).

Area A (Plans 1, 2) yielded sparse *in situ*, stratified remains of the late Byzantine (Stratum I), Persian (Stratum II) and transitional Iron Age II/Persian (Stratum III) periods. These overlay a layer about 2 m thick of near-sterile alluvial deposits (Stratum IV, labeled for convenience sake, Unit 1). Only in its basal levels is this unit mixed with appreciable amounts of washed-in Middle Bronze (MB) IIA materials. Below this stratum are thick layers of marshy deposits (Stratum V; labeled Unit 2) that also yielded small quantities of washed-in MB II sherds (see Fig. 22).

Area B (Plan 3) yielded the badly preserved remains of a pottery kiln dated to the late Byzantine period, contemporary with Area A, Stratum I. The foundations of the kiln cut into the aforementioned layer of alluvial deposits (i.e., Unit 1, Stratum IV).

Strata II–III and V are absent in Area C. The latter area yielded, below disturbed surface topsoil (Stratum I) and thick layers of Unit 1 deposits (Stratum IV), three strata (VI–VIII) with sparse remains dating from MB IIA (Plan 4). Strata VI–VIII are the main focus of this report.

Table 1. Yehud Bypass Road Excavations: Stratigraphic Overview per Area

Stratum	Area	Date/Description	Notes
I	A B C	Top layer Byzantine kiln	
II	A	Persian period, sherds, floor	
III	A	Persian/Iron II, sherds	
IV	A (Sq X14) B C	Alluvial deposits (‘Unit 1’)	
V	A (Sqs V13, X16)	Marshy deposits, MB II pottery (‘Unit 2’)	
VI	C	MB IIA/B	
VII	C	MB IIA	Overlaid by sand (‘Unit 3’)
VIII	C	MB IIA	
IX?	C	IBA and Chalcolithic sherds	

In an attempt to establish the boundaries of the site, four additional probes at the edges of the area under investigation (Trenches 1–4; Fig. 2) were mechanically excavated to a depth of 3.5 m below the surface. They revealed only layers of sterile alluvial soils.

STRATIGRAPHY AND FEATURES

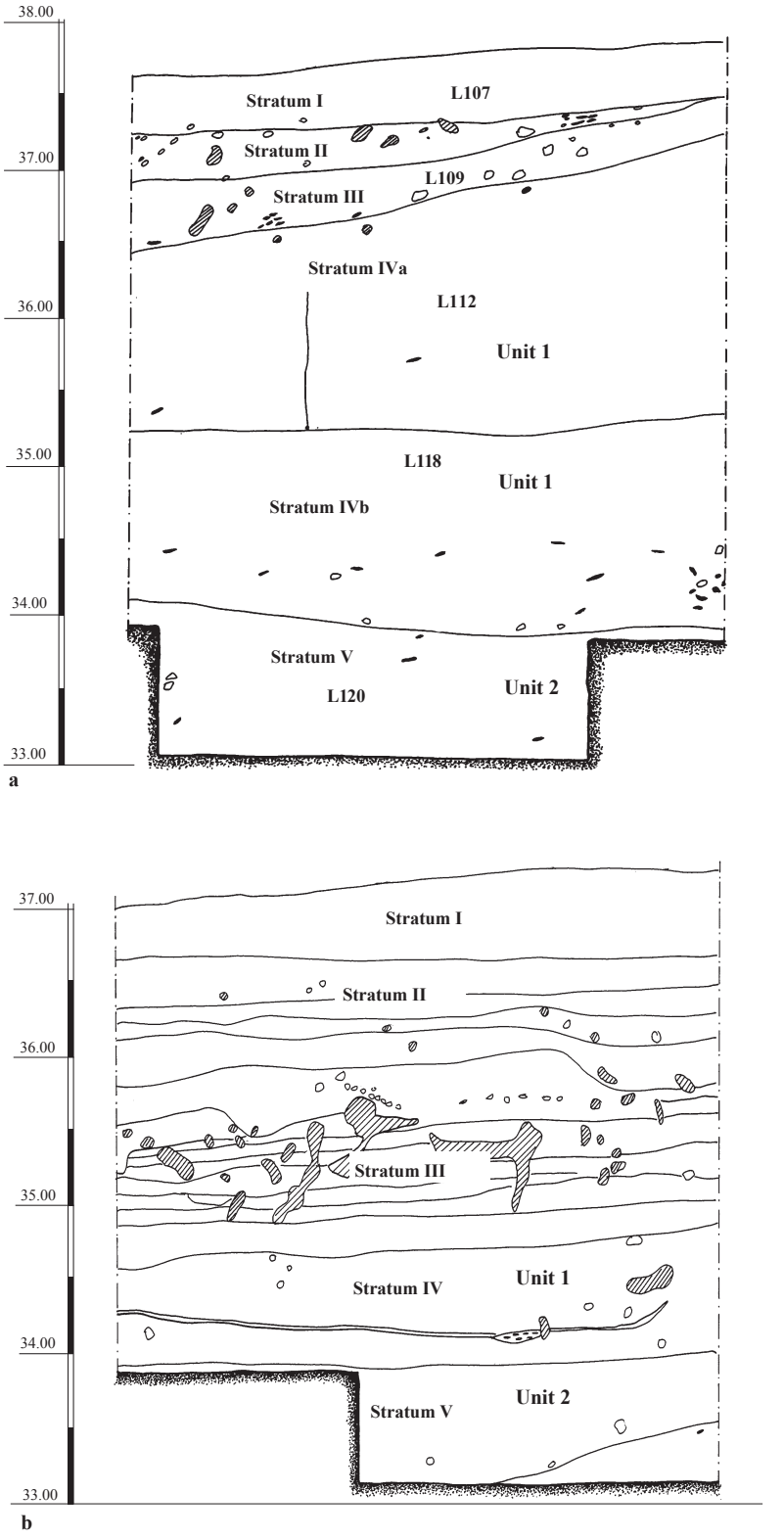
Area A (Plans 1, 2)
Three 5 × 5 m squares (V13, X14 and X16; Fig. 2) were manually excavated. Five strata, three of which contained archaeological remains could be established in this area (Plans 1, 2; Fig. 3).

Stratum I.— The topmost stratum, consisting of a featureless fill unevenly distributed over all three probes (Loci 100, 107), can be dated on the basis of the pottery uncovered to the late Byzantine period. It is contemporary with the remains of a pottery kiln uncovered in Area B (see below).

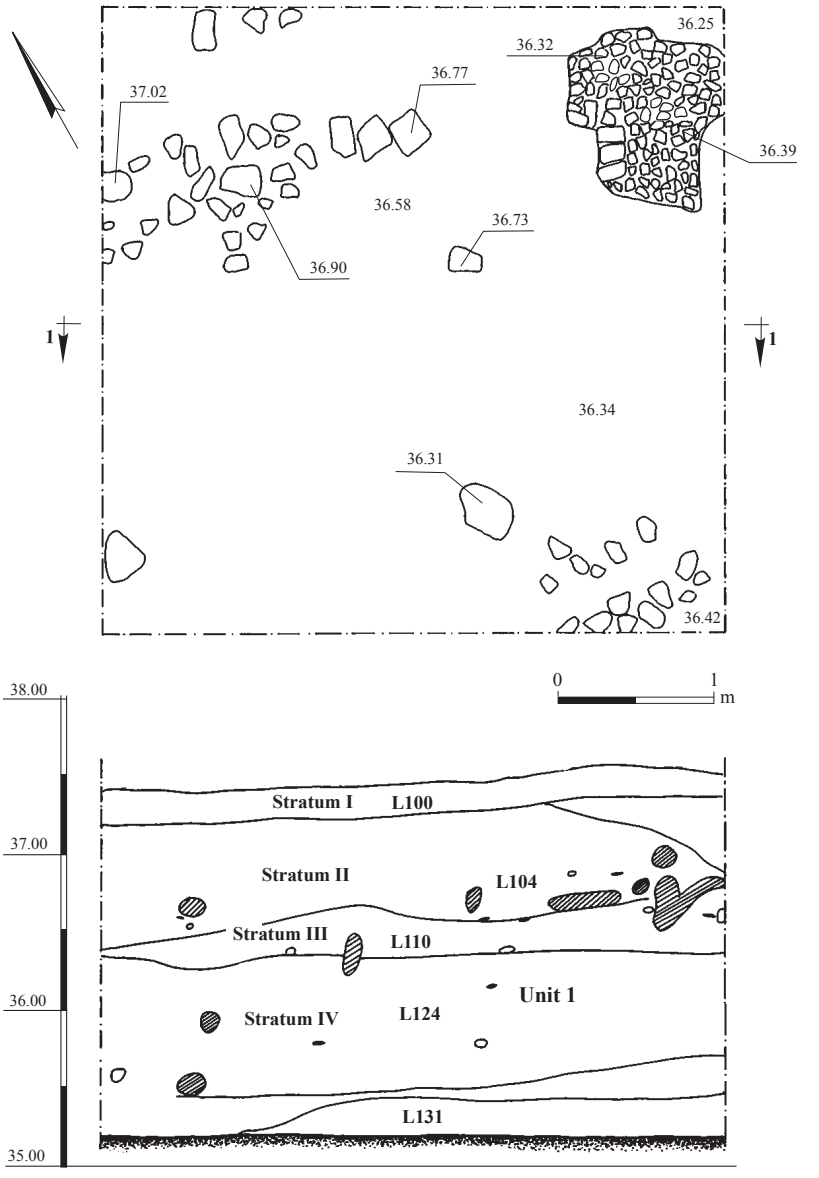
Stratum II.— The next stratum dates to the Persian period (c. fifth–third centuries BCE). It consists of a fill associated with a floor segment of neatly laid medium-sized pebbles (Sq X14, L104; Plan 2), on top of which pottery (not illustrated) dating to the Persian period was found.

Stratum III.— Based on the pottery retrieved from it, this stratum dates to the transitional Iron II/Persian period (Sq X14, L110). It consists of two small fireplaces in Sq X16 (unrecorded) and an otherwise featureless fill.

Stratum IV.— Immediately underlying Stratum III, this stratum consists of alluvial deposits (Unit 1) encountered in all three squares (Loci 112, 118, 124, 131; Plans 1, 2), at a depth varying between 33.8 and 37.2 m asl (see Table 1). Unit 1 is over 3 m thick and almost completely void of any anthropogenic materials (it is divided into two layers, denoted Strata IVa and IVb). In Sq V13 (Plan 1:a), the lower part of this deposit contains, however, a c. 1 m thick layer of MB II ceramic sherds, pebbles and ashes (L118) that was embedded in a matrix of alluvial sediments (Plan 1:a; Stratum IVb). These most probably constitute washed-in materials from the nearby settlement such as those uncovered in Area C (see below).



Plan 1. Area A, southern sections of Sqs V13 (a) and X16 (b).



Plan 2. Area A, Sq X14: plan and section.

Stratum V.— In Sqs V13 and X16 (L120; Plan 1), immediately below the sediment containing pottery are layers of apparently marshy deposits (Unit 2; A. Horowitz, pers. comm. 1994). Unit 2 consists of very dark, blackish clay materials, still containing small amounts of washed-in sherds (see Fig. 22) and animal bones. The presence of these marshy deposits is an indicator of prevailing local environmental conditions at the time.

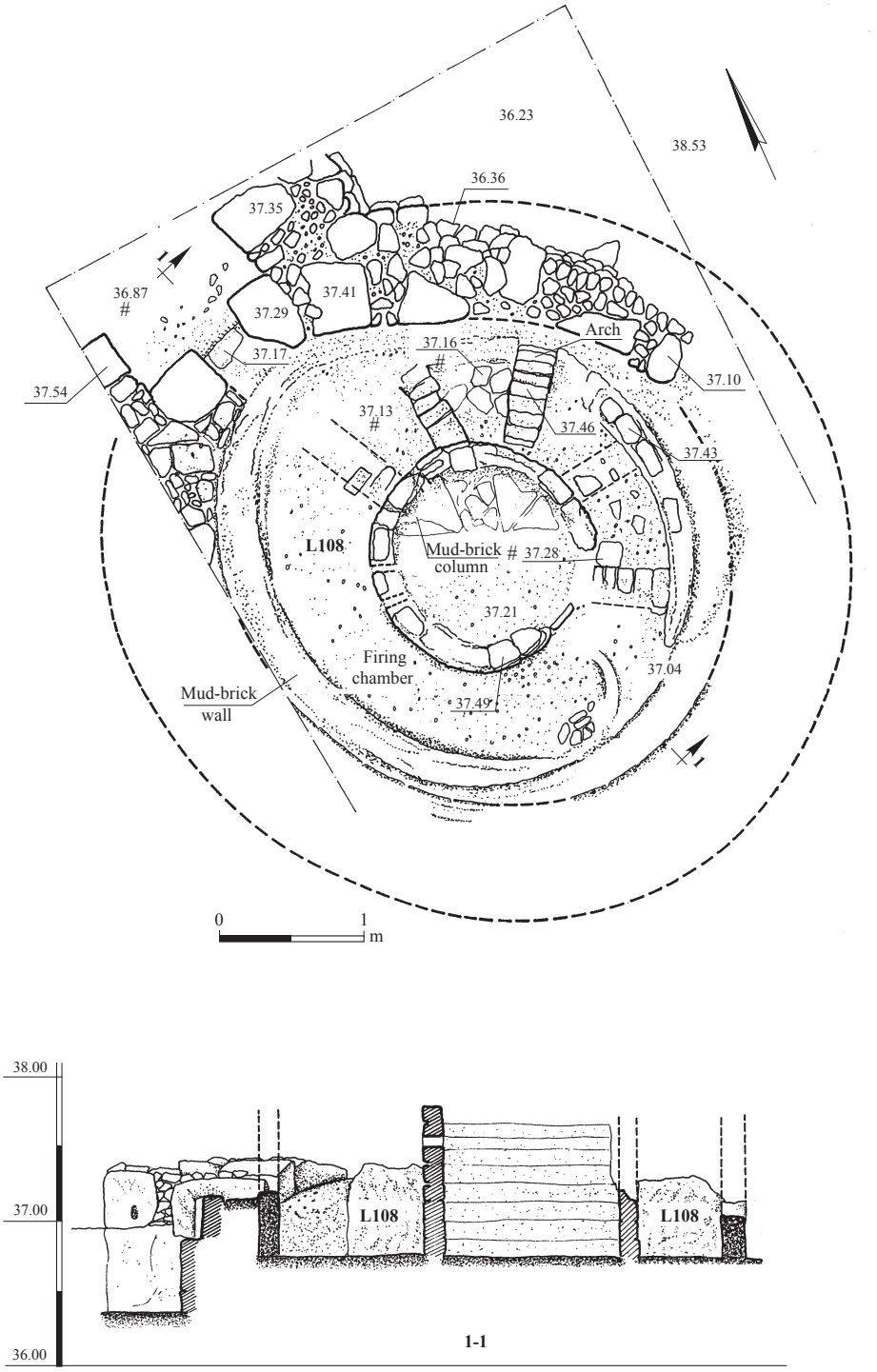
Fig. 3. Area A, southern section of Sq X16.

Fig. 4. Area B, Sq O14, pottery kiln.

Area B

In this area, a single 5 × 5 m probe (Sq O14; Plan 3) was manually excavated down to sterile soil (Unit 1). About 0.5 m below present surface level, the remains of a circular pottery kiln were exposed, partially sunk into the slope of the site. The pottery kiln is of the vertical, or up-draft type (see, e.g., Vitto 1980).

The first three courses of the circular wall, built of mud bricks, and the lower chamber or fire box are preserved (Fig. 4). The internal diameter of this chamber is 3.5 m. It has a round, massive



Plan 3. Area B, Sq O14: plan and section of pottery kiln.

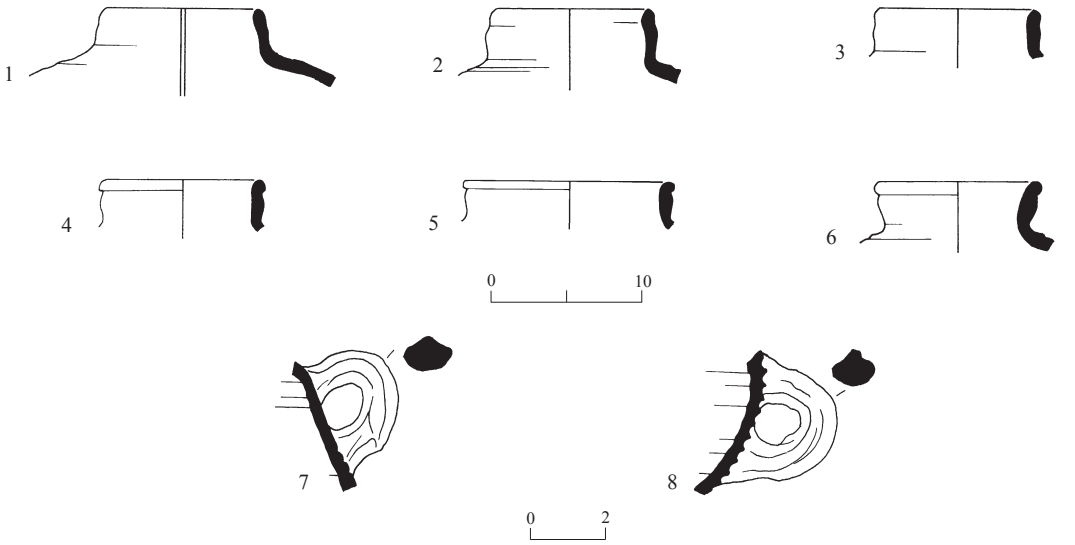


Fig. 5. Area B, Sq O14, L108: selection of Byzantine pottery from the kiln.

No.	Basket
1	638.1
2	579.1
3	569.5
4	669.4

No.	Basket
5	570.1
6	720.1
7	570.4
8	720.4

column (diam. c. 1.5 m, preserved height 1 m) in its center, built of triangular slabs of mud bricks, preserved eight courses high. It once supported a (now missing) mud-brick vaulted ceiling, which served as the vessel floor or stacking chamber (for comparable constructions, see, e.g., Vitto 1980; 1983/4). The stacking chamber must have originally been supported by about 12 converging arches, as indicated by the vestiges of five remaining arches (Plan 3).

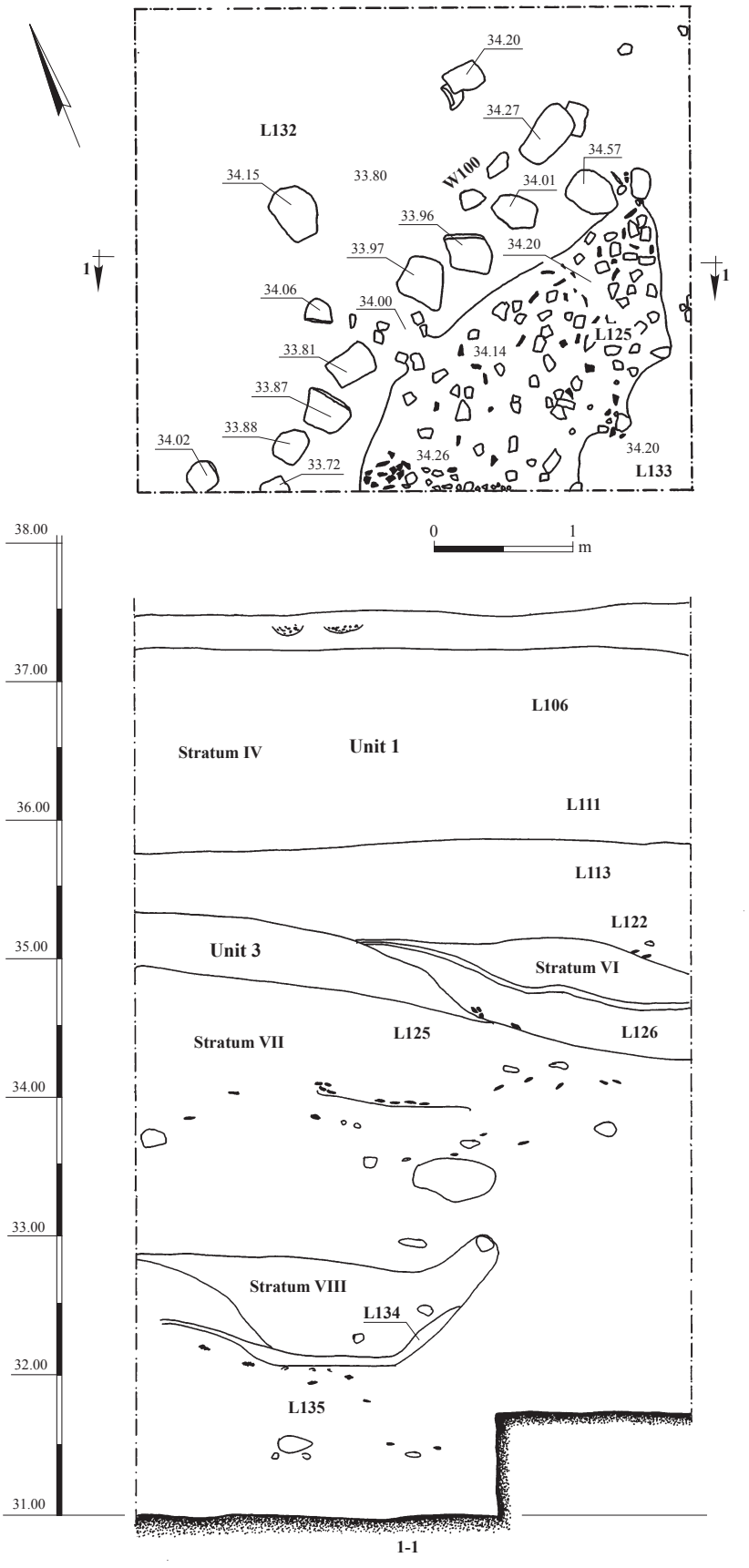
The narrow opening (0.4 m) or *preafornium* of the kiln was in the north. It consisted of carefully arranged ashlars, which form an integral part of a heavy, semicircular stone wall or revetment (preserved height 1 m) enclosing the northern half of the kiln (Plan 3). The foundations of this wall are well below the floor level of the firing compartment.

The absence of anthropogenic materials below the foundation level of the kiln and its stone encasing indicate that the pit containing the kiln had been dug into sterile soil, consisting here of homogeneous, light brown colored, alluvial sediments, identified as Unit 1 in Area A, Sq V13 (Stratum IV; see above), and Area C (see below).

Based on the rather sparse pottery finds (N = 28 storage-jar sherds; Fig. 5) from within the kiln (L108; Plan 3), it dates to the Byzantine period (Stratum I).

Area C

A single, deep probe (Sq E15/16) was opened here close to the bypass road (Fig. 2; Plan 4). After manual removal of the topsoil (Stratum I), consisting of recently turned-over soil containing a mixture of sherds dating from various periods, sterile flood-plain deposits came to light (Stratum IV; Plan 4: Section 1–1, Unit 1, as in Area A). It was decided to dig through these non-anthropogenic deposits mechanically, until the expected archaeological



Plan 4. Area C, Sq E15/6: plan and section.

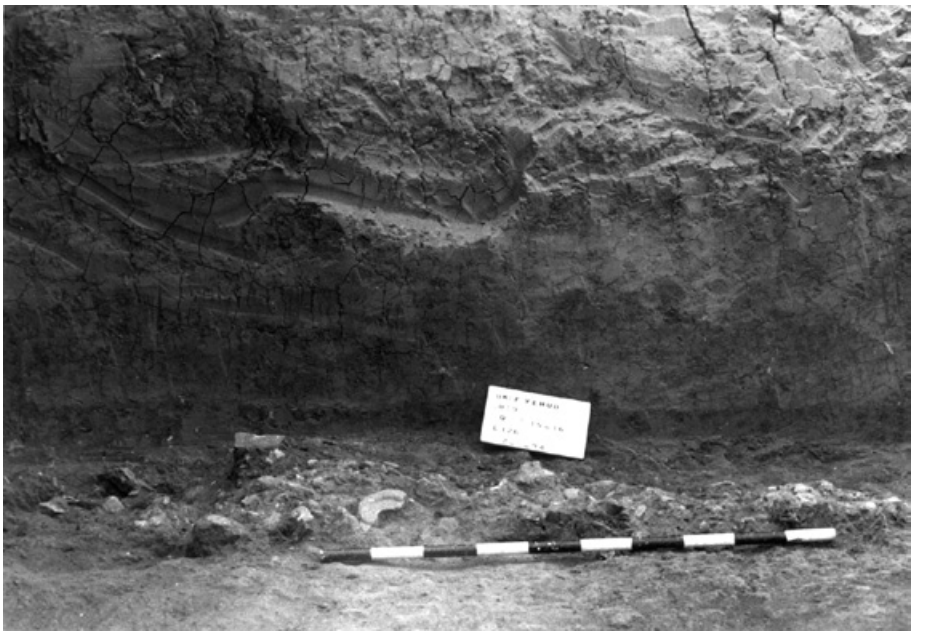


Fig. 6. Area C, Sq E15/6: accumulation of pottery sherds (L126).

levels should be reached again. Such levels (Stratum VI) did indeed appear at 35.20 m asl. They consist of an anthropogenic fill (L126; Fig. 6) containing MB IIA(–B?) pottery, including quite a number of Cypriot imports.

Below Stratum VI is a c. 25 cm thick layer of clean, fluviatile sand (labeled Unit 3), perhaps indicating a sudden heavy flooding of the area that might account for the end of the underlying MB IIA occupation.

Immediately below this level of Unit 3, remains of a pebble pavement (L125) associated with the stone foundations of a southwest–northeast oriented wall segment (W100) were exposed (Stratum VII; Plan 4). The ceramic materials recovered from Stratum VII include MB II ceramic sherds (see Figs. 12–15), a weight (see Fig. 24:2), as well as few grinding stones, flint tools and animal bones (see below).

Excavations continued below the foundation level of this wall segment, through thick deposits of alluvial soil (Stratum VIII) mixed mainly with MB II potsherds and few Intermediate Bronze Age sherds (see Fig. 23:5–8), ashes and animal bones until a depth of c. 3 m below the foundation level of the Stratum VII wall segment. These materials attest to preceding human activities at this spot. Due to time and funding constraints, work was stopped at an arbitrary level of c. 31.00 m asl, without reaching virgin soil. The increasing occurrence of late Chalcolithic pottery sherds (see Fig. 23:1–4) in the lowest levels of Stratum VIII could perhaps indicate the presence of occupation layers buried still deeper below the alluvium (Stratum IX?), which in turn might be related to Chalcolithic *in situ* occupation at nearby Tel Yehud (van den Brink, Golan and Shemueli 2001).

THE MIDDLE BRONZE AGE II POTTERY

The discussion of the MB II pottery includes the finds from Areas A and C, Strata V–VIII. The pottery presented here was recovered in a single 5 × 5 m probe (Sq E15/16), and comprises a limited range of types. Most of the types are common to all three strata, yet in each stratum several sherds have no parallels in the other layers.

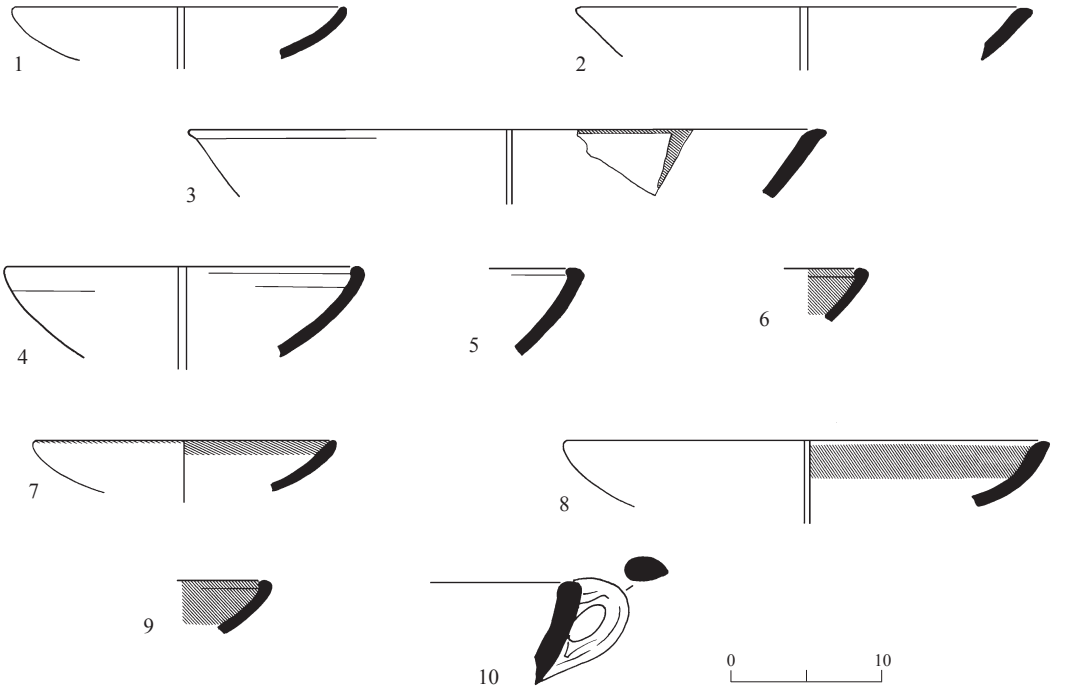


Fig. 7. Area C, Stratum VIII: open bowls.

No.	Locus	Basket	Remarks
1	134	689.14	
2	135	713.3	
3	134	690.18	Red decoration (cross design)
4	135	718.13	
5	134	691.11	Traces of soot on int. and ext.
6	134	690.19	Red slip and burnish on int.
7	134	695.4	Red decoration
8	134	695.5	Red decoration
9	134	695.6	Red decoration
10	135	713.11	

Parallels to the ceramic assemblage of the site are mostly from the well-dated and stratified pottery assemblage from Areas A, B and X at Tel Afeq (Beck 1975; 2000; Yadin 2009), located less than 10 km northeast of Yehud. Some pottery assemblages from the northern moat slope deposit at Ashqelon (Stager, Schloen and Master 2008:215–245) were also used.

STRATUM VIII

Bowls

Bowl with Curved Walls (Fig. 7:1).— Similar bowls were found in Strata XVII of Area A in Afeq (Beck 2000: Fig. 10.1:12). Parallels were also found in Strata X-16–15 at Afeq (Yadin 2009: Figs. 7.19:1; 7.22:1), which date to MB IIB. The flat form, open contour and absence of slip are [more] typical of MB IIB bowls (Amiran 1969: Pl. 26).

Large Bowls with a Flat-Top Rim (Fig. 7:2, 3).— Parallels to these bowls were found in Stratum A-XVII and in L421 of Stratum A-XIVa at Afeq (Beck 2000: Figs. 10.1:14; 10.13:10). Flat-top rims characterize the early phases at Afeq and they were found in the tombs excavated by Ory, which are also attributed to the early phases of the period (Beck 2000: Fig. 10.27:3, 4, 6). No cut rims were found in assemblages postdating the palace at Afeq.

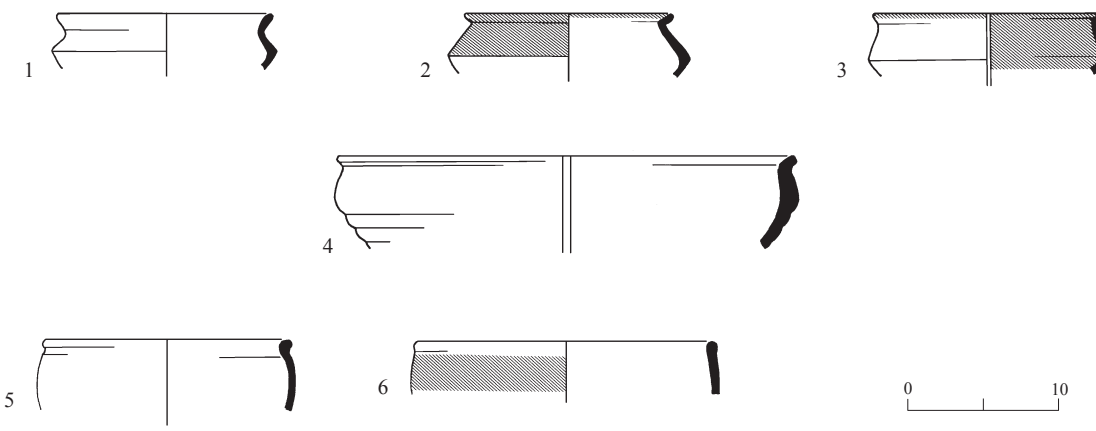


Fig. 8. Area C, Stratum VIII: bowls.

No.	Locus	Basket	Remarks
1	135	718.1	
2	135	721.2	Red slip, horizontal burnish, on rim and above carination ext.
3	134	690.9	combing on ext., red slip on int.
4	135	719.1	
5	134	695.11	
6	135	719.6	Red slip on ext., horizontally burnished

Bowls with Ridge on Inner Rim (Fig. 7:4–6).— Bowls belonging to this group were found in L442 in Stratum A-XIVb and in Stratum A-XII at Afeq (Beck 2000: Figs. 10.12:10; 10.20:6, 7). Fragments of similar bowls were also found in the northern moat deposits in Ashqelon (Stager, Schloen and Master 2008: Fig. 14.18). The bowls from Yehud are deeper than most of those bowls.

Bowl with In-Turned Rim (Fig. 7:7–9).— A similar, shallow wide bowl with a thick wall and thick in-turned rim was found in Stratum X-16 at Afeq (Yadin 2009: Fig. 7.14:7; cf. Amiran 1969: Pl. 25).

Large Bowl with a Rim Handle (Fig. 7:10).—A wide deep bowl with a thick wall and rim handles has parallels in Stratum A-XIVb at Afeq (Beck 2000: Fig. 10.10:12, 13). However, the Afeq bowls have a cut rim that protrudes both in and out, and therefore, they are not exact parallels for a curved rim such as was found at Yehud.

Carinated Bowls (Fig. 8:1–4).— The three fragments in Fig. 8:1–3 have parallels in Stratum A-XIVa-b at Afeq (Beck 2000: Figs. 10.10:2; 10.13:4, 5). Bowls of this type continue in later phases at Afeq and here at Yehud (see Fig. 13:1–3). Parallels were found in Stratum X-16 at Afeq (Yadin 2009: Fig. 7.15:1, 2). A rare type of carinated bowl with a large diameter, rounded carination and stepped exterior underside (Fig. 8:4) has a single parallel in L450 in Stratum A-XIVb at Afeq (Beck 2000: Fig. 10.10: 6). The two vessels are atypical in the repertoire of carinated bowls, which are usually of smaller sizes.

Small Bowl with Curved Wall and Outwardly Folded Rim (Fig. 8:5).— This is a fine bowl with a clean and slightly combed surface treatment. There are no exact parallels to this bowl from Afeq, although it may be considered a very delicate variant of several types of bowls found in L450 in Stratum A-XIVb (Beck 2000: Fig. 10.10:4–6). A somewhat similar bowl was

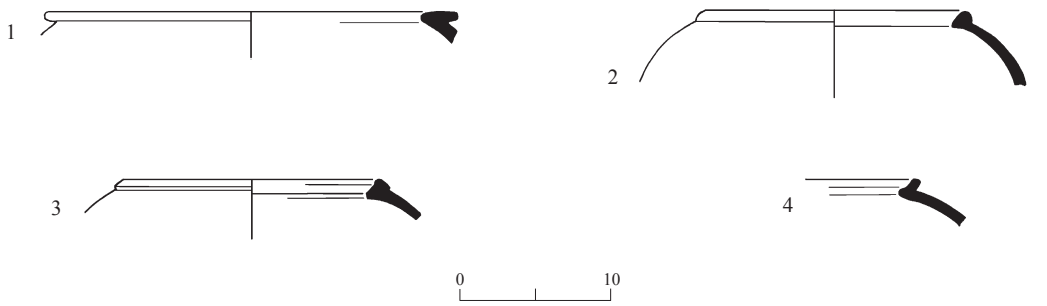


Fig. 9. Area C, Stratum VIII: a krater and cooking pots.

No.	Type	Locus	Basket	Remarks
1	Krater	134	695.10	
2	Cooking pot	134	690.1	
3	Cooking pot with gutter rim	135	721.1	Soot on ext.
4	Cooking pot with gutter rim	134	689.12	

also found in a tomb of Stratum A-XIVa (Beck 2000: Fig. 10.16:6).

A Small Bowl with Thin Wall and Rounded Rim (Fig. 8:6).— No parallels were found.

Krater (Fig. 9:1)
The krater has a thick, outwardly folded ring rim. Its upper part is shaped like a holemouth, with a very large diameter, and it appears that the thick ring was intended to reinforce the large diameter rim. Parallels come from Stratum A-XIV (Beck 2000: Fig. 10.10:19) and Stratum X-16 (Yadin 2009: Fig. 7.18:7) at Afeq (see also Beck 1975: Fig. 4:2; Gophna and Beck 1981: Fig. 5:5).

Cooking Pots (Fig. 9:2–4)
The cooking pots are divided into two groups: (a) cooking pots with a triangular cross-section (Fig. 9:2, 3) and (b) cooking pots with a thin, upright rim (Fig. 9:4). Parallels to both types were found in the potter's kiln at Naḥal Soreq (Singer-Avitz and Levy 1992: Fig. 3:8, 9), as well as in Stratum XVI (the phase preceding the palace) and in Stratum XIVa (the palace phase) at Afeq (Beck 2000: Figs. 10.1:20–22; 10.13:18, 19). Other parallels were found at the northern moat deposit at Ashqelon (Stager, Schloen and Master 2008: Fig. 14.14 left) and Strata X-18–16 at Afeq (Yadin 2009: Figs. 7.16:3, 4; 7.18:9).

Jars (Fig. 10)
The jars are classified according to their rim profile.

Outwardly Folded Rim with a Deep Groove on the Inside (Fig. 10:1–4).— The rims in this group have a triangular cross-section similar to the rims recovered in Afeq Loci 421, 442 and 450, in Strata XIVa–b at Afeq (Beck 1975: Fig. 5:11; 2000: Figs. 10.11:1, 9; 10.12:28; 10.13:27, 28); other parallels come from Stratum X-16 (Yadin 2009: Fig. 7.17:4–9).

Folded Rim with an Oval Cross-Section and a Thin Ridge on the Outer, Lower Rim (Fig. 10:5).— Parallels to this rim were found in Strata XIVa–b at Afeq (Beck 2000: Figs. 10.11:2; 10.13:24).

A Round Cross-Section Rim (Fig. 10:6).— This is a rare type of rim, not as common as the two preceding ones. The only parallel was found in Stratum XIVb at Afeq (Beck 2000: Fig. 10.11:3).

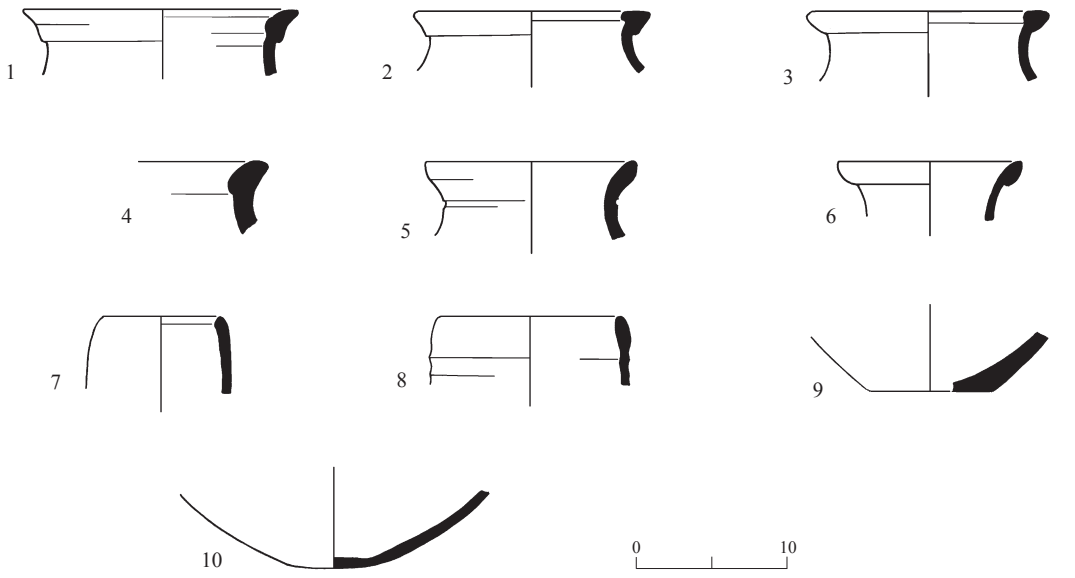


Fig. 10. Area C, Stratum VIII: storage jars.

No.	Locus	Basket	Remarks
1	135	721.3	Many white inclusions, highly fired
2	134	691.6	Possible remains of pinkish slip outside
3	135	719.7	
4	135	713.1	
5	134	695.8	
6	134	691.9	
7	135	718.4	Highly fired; white slip on ext.
8	134	698.13	
9	134	695.16	Combing on ext. of bottom
10	135	713.6	

Upright Rim with a Rounded Lip (Fig. 10:7, 8).— No parallels to this rim were found at Afeq. Figure 10:8 probably has its origins in the rims of jars with a "stepped" neck that were found in Ashqelon (Stager, Schloen and Master 2008: Fig. 14.24).

Bases (Fig. 10:9, 10).— Figure 10:9 is a flat base with a small diameter; according to its thickness, it probably belongs to a storage jar. It is likely that No. 10 belongs to a thinner-walled storage jar.

Jugs and Juglets (Fig. 11)

Rims of jugs with handles made of three clay strands (Fig. 11:1) are found in all MB II sites; hence, there is no point in presenting here an entire list of parallels. Our fragment (Fig. 11:1) is too small to define the type of jug to which the handle was attached. Rim fragments (Fig. 11:2, 3) are small, yet they probably belong to juglets with cylindrical or piriform bodies. These juglets are identical in shape to the rims of small juglets that were found in the tombs in the palace in Stratum XIVa and until Stratum XII in the phase postdating the palace in Area A at Tel Afeq (Beck 2000: Figs. 10.16:12; 10.21:4; 10.23:2). A parallel to the jug with the stepped rim (Fig. 11:4) was found at Afeq in Stratum XII (Beck 2000: Fig. 10.20:10). It is somewhat similar to the elaborate jugs that were found in the tombs excavated by Ory at Afeq (Beck 2000: Fig. 10.29:2–4); however, its shape, slip and burnish are not as refined as the

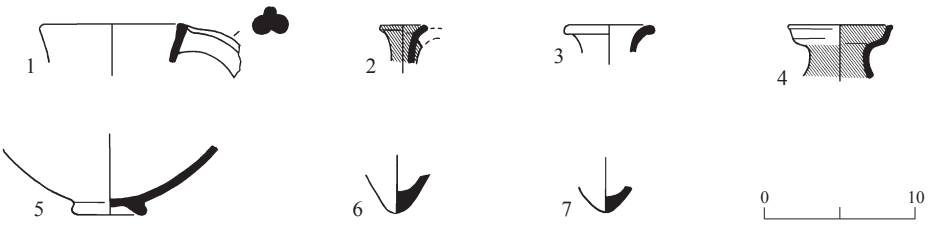


Fig. 11. Area C, Stratum VIII: jugs and juglets.

No.	Type	Locus	Basket	Remarks
1	Jug	134	689.8	
2	Juglet	134	690.20	Traces of red slip on int. rim and ext.
3	Juglet	135	721.6	
4	Juglet	135	721.7	Traces of red slip on int. rim and ext.
5	Ring base of jug	135	713.7	Traces of soot on ext.
6	Dipper juglet	135	718.21	
7	Dipper juglet	135	721.18	

tomb vessels. A base of a jug (Fig. 11:5) and two pointed bases of juglets (Fig. 11:6, 7) are also illustrated.

STRATUM VII

Bowls

Deep Bowls with Curved Walls and Rounded Rim (Fig. 12:1, 2).— Bowls of this type were found in Afeq from Stratum A-XVII (the phase predating the palace; Beck 2000: Fig. 10.1:12). A similar bowl was also found in Stratum VIII (see Fig. 7:1 and parallels therein).

Bowl with Cut Rim (Fig. 12:3, 4).— Two fragments of bowls belonging to this rim-type were found, one shallow and the other somewhat deep. Flat bowls as Fig. 12:3 are not representative of the beginning of MB II, which is characterized by deep bowls with curved walls. Rare parallels were found in at Afeq L395 in Stratum B-Vd (Beck 2000: Fig. 8.10:2) and also in L442 in Stratum A-XIVb (Beck 2000: Fig. 10.12:11). Parallels for the deeper variant (Fig. 12:4) were found at Afeq in Stratum A-XVII, which predates the palace, in L442 of Stratum A-XIVb of the palace phase in Area A (Beck 2000: Fig. 8.10:3), as well as in L395 in Area B at Afeq (Beck 2000: Figs. 10.1:14; 10.12:12), and Strata X-16–15 at Afeq (Yadin 2009: Figs. 7.14:4, 5; 17.21:11); see also the potter's kiln at Naḥal Soreq (Singer-Avitz and Levy 1992: Fig. 3:3).

Bowl with Flat-Top Rim and Tapered Ridge on the Inside and Outside (Fig. 12:5).— This type of rim is characteristic of large bowls and kraters (see Beck 2000: Fig. 10.10:12, 13), and another variant of the bowl occurs with a more delicate and thinner rim (Beck 2000: Fig. 10.12:9). Parallels were found in Stratum A-XVII and in L421 in Stratum A-XIVa at Afeq (Beck 2000: Figs. 10.1:13; 10.13:10).

Deep Bowl with Ridge on the Inner Rim (Fig. 12:6).— The early phases of MB II are characterized by deep bowls, whereas the later phases in the period are characterized by flatter bowls. Therefore, the bowl that was found in Stratum VII at Yehud is a bowl that is quite typical of the early phases of MB II. Parallels were found in L442 of Stratum A-XIVb (palace phase) and in Stratum XII (post-palace) at Afeq (Beck 2000: Figs. 10.12:10; 10.20:6, 7). The red slip is more characteristic of the bowls dating to the palace phase and rarer in the post-palace phases at Afeq.

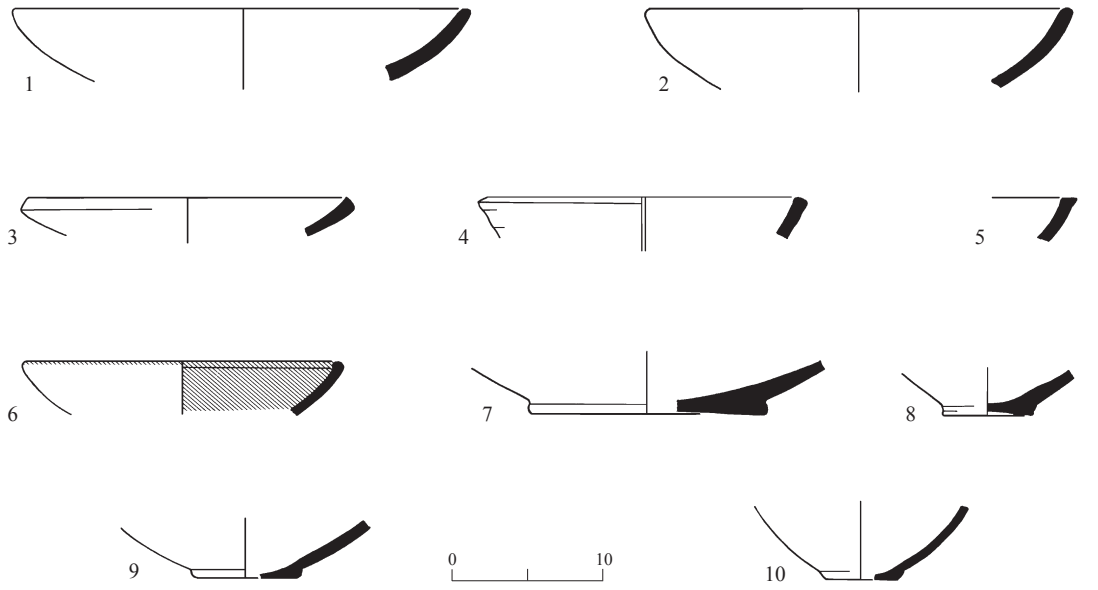


Fig. 12. Area C, Stratum VII: open bowls.

No.	Locus	Basket	Remarks
1	125	700.8	Traces of combing on ext.
2	133	706.8	Traces of combing on ext.
3	133	703.12	
4	125	700.9	
5	133	706.7	

No.	Locus	Basket	Remarks
6	125	697.14	Traces of red slip on rim and int.
7	133	703.17	
8	132	705.4	Traces of soot on int. and ext.
9	133	706.13	
10	125	685.5	Metallic fabric, many white inclusions

Bases (Fig. 12:7–10).— Bowl bases include a disk base with a large diameter (Fig. 12:7), probably of an open bowl. Figure 12:8 is a concave base with a small diameter, probably of a small open bowl. Two disk bases, with a small diameter, probably belong to an open (Fig. 12:9) and a closed bowl (Fig. 12:10).

Carinated Bowls (Fig. 13:1–3).— Parallels to carinated bowls were found at Afeq in Loci 442 and 450, Stratum A-XIVb (Beck 2000: Fig. 10.10:1; 10.12:4) and at Stratum X-16 at Afeq (Yadin 2009: Fig. 7.14:1, 5); see also above, Stratum VIII, Fig. 8:1–3, and parallels therein.

Small, Deep Bowl with Curved Wall and Outwardly Folded Rim (Fig. 13:4).— No exact parallels to this bowl were found at Afeq. It should be considered a variant of the deep bowls that were mostly found in Strata A-XIVa–b (Beck 2000: Fig. 10.10:3–6; 10.16:6) and in Stratum X-16 (Yadin 2009: Fig. 7.15:3) at Afeq, as well as in Strata XI–XII at Megiddo (Loud 1948: Pl. 28:5).

Krater (Fig. 14:1)
Based on the dimensions of the large-diameter rim, it is difficult to determine if the rim is that of a krater or a holemouth pithos. However, since holemouth pithoi are not known from this period, we will define the sherd as a krater despite the size of the vessel. Parallels of large types of kraters were found in Stratum A-XVII (Beck 2000: Fig. 10.1:17), Strata B-Vc–d and B-IV (Beck 2000: Figs. 8.18:1; 8.20:2, 3), and Stratum X-16 (Yadin 2009: Fig. 7.21:6) at Afeq

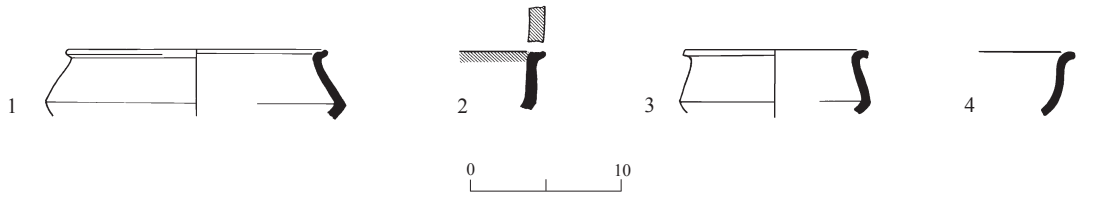


Fig. 13. Area C, Stratum VII: carinated bowls.

No.	Locus	Basket	Remarks
1	133	706.3	Traces of a whitish slip on ext.
2	133	704.5	Red slip/paint on and inside rim, metallic fabric, many white inclusions
3	133	706.4	
4	125	697.12	

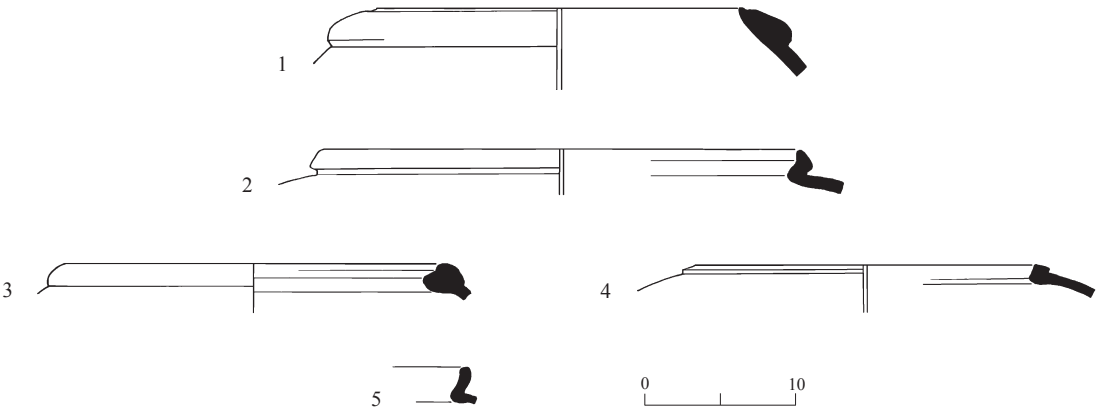


Fig. 14. Area C, Stratum VII: a krater (1) and cooking pots (2–5).

No.	Locus	Basket	Remarks
1	125	700.4	White-pinkish slip on ext.
2	125	700.2	Many white inclusions
3	133	704.1	
4	125	697.7	
5	133	703.6	Soot on ext. of rim

(see also Beck 1975: Fig. 4:19; Gophna and Beck 1981: Figs. 10:9; 11:13).

Cooking Pots (Fig. 14:2–5)

The cooking pots are divided into two types. Those with a folded rim and a triangular cross-section (Fig. 14:2–4) have parallels in Strata B-Vb–d and in Stratum A-XVII at Afeq (Beck 2000: Figs. 8.10:9; 8.12:10; 10.1:20; see also Gophna and Beck 1981: Fig. 8:19). These cooking pots have numerous variants and the few parallels presented do not reflect all of the possible variations of these types.

A cooking pot with a bow-like rim (Fig. 14:5) has parallels from L395 in Stratum B-Vd and Strata B-Vc–d and from Stratum A-XVII (Beck

2000: Figs. 8.10:7; 8.18:2; 10.1:23) at Afeq. Somewhat similar cooking pots come from Stratum VIII (see Fig. 9:2, 3).

Jars (Fig. 15)

Outwardly Folded Rim with a Deep Groove on the Inside (Fig. 15:1–6).— There are many variants of this rim and no two are identical. Some of the rims have a pointed, triangular cross-section (Fig. 15:1–4) and others have a cross-section that is square in shape (Fig. 15:5, 6). Figure 15:1–4 have parallels in Strata A-XV–XII at Afeq (Beck 2000: Figs. 10.8:2; 10.13:28; 10.20:16). Parallels of the rim with a square cross-section were found at Afeq in Strata A-XVI–XV (Beck 2000: Fig. 10.8:8) and Stratum X-16 (Yadin 2009: Fig. 7.17:9, 13, 14). We can see from the above parallels

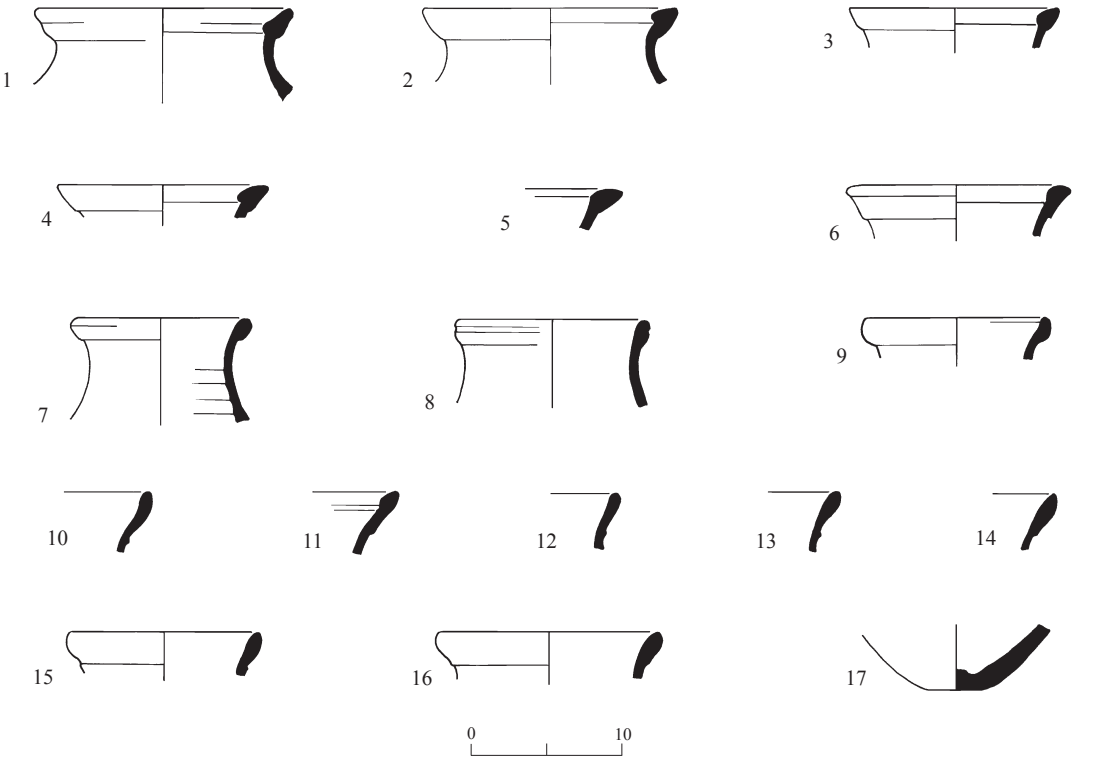


Fig. 15. Area C, Stratum VII: storage jars.

No.	Locus	Basket
1	133	703.4
2	125	700.3
3	133	704.2
4	125	697.3
5	133	703.3
6	125	697.4
7	135	690.5
8	125	685.1
9	125	701.2

No.	Locus	Basket
10	133	706.11
11	132	699.3
12	125	701.4
13	133	703.7
14	125	697.5
15	133	703.5
16	125	685.2
17	125	697.20

that the rims belonging to this group were found in Afeq in the phases both predating and postdating the palace.

Round Cross-Section Rim (Fig. 15:7, 8).— No exact parallels for this group were found in Afeq. The ring rims that were found in Afeq have a longer and oval-like cross-section and all of them belong to "collared rim" pithoi (Beck 2000: Figs. 8.13:14; 10.1:7). These pithoi have yet to be studied.

Curved, Gutter-Like Rim (Fig. 15:9).— Only one sherd of this type was found in Stratum VII at Yehud, and a parallel comes from Stratum B-Vc at Afeq (Beck 2000: Fig. 8.12:16, 19). Very similar rims characterize the decorated jars that were found in the earliest phases at Afeq, in Stratum A-XVII (Beck 2000: Fig. 10.2:7). A similar rim of a Red, White and Blue (RWB) Ware jar was found in the north-slope moat deposits in Ashqelon (Stager, Schloen and Master 2008: Fig. 14.13: lower).

Out-Turning Rim with a Thin Ridge on Exterior (Fig. 15:10–16).— This group of rims also has many variants and no two identical ones were found. Some of the rims are slightly convex (Fig. 15:10, 12) while others are not (Fig. 15:13–16). Parallels for these two variations were found in Strata A-XIVa–b (Beck 2000: Figs. 10.11:6–8; 10.13:23) and in Strata B-Va–IV (Beck 2000: 8.10:17; 8.16:10; 8.18:3; 8.20:7, 8) at Afeq. Jars with an arched rim were found in Stratum A-XVII, the earliest MB II phase at Afeq (Beck 2000: Fig. 10.4:4, 6) and in the strata in Area B, where the two rim types were found together in the early phases. It is apparent, however, that the arched rims do not appear in the later phases of the period.

STRATUM VI

Bowls

Deep Open Bowls with Curved Walls (Fig. 16:1–3).— Parallels to this type of bowl, with its simple rim, were found at Afeq beginning in the phases that predate the palace in Stratum A-XVII (Beck 2000: Figs. 10.1:2; 10.4:8; 10.7:3) and at Stratum X-16 (Yadin 2009: Fig. 7.20:1; 7.21:1; 7.22:1).

Shallow Open Bowls (Fig. 16:4, 5).— These thick-walled shallow bowls are slightly rounded with a square rim (Fig. 16:4), or straight and thick-walled with a pointed rim (Fig. 16:5). Hardly any parallels to these bowls were found at Afeq (Beck 1975: Fig. 13:5).

Flat Bowls with Ridge on the Inner Rim (Fig. 16:6–8).— Parallels were found in Stratum B-Vc at Afeq (Beck 2000: Fig. 8.13:13) that is contemporary with the palace phase in Area A. In the early strata at Afeq, the ridge on the inside of the rim is pointed and is triangular in cross-section (Beck 2000: Fig. 10.8:4) whereas at Yehud the ridge is flatter and curved. The earliest curved ridge was found in Stratum A-XIVa (Beck 2000: Figs. 10.12:12; 10.13:9) and continues also into the post-palace phase in Stratum A-XII (Beck 2000: Fig. 10.20:6, 7) and Stratum X-16 (Yadin 2009: Fig. 7.14:7).

Carinated Bowls (Fig. 17).— The bowls from this stratum are divided into those that are sharply carinated (Fig. 17:1–3) and a group with a more rounded carination (Fig. 17:4–7). Numerous parallels to the bowls with sharp carination have been found in every MB IIA site; however, the body of the carinated bowls at Tel Afeq is somewhat more closed than those of the bowls from Yehud (e.g., Beck 1975: Fig. 6:3). Afeq bowls are red-slipped and burnished, which is not the case with the Yehud bowls. The red slip characterizes both phases of Stratum A-XIV and there is a significant decrease in the amount of vessels with a slip in the post-palace phases at Afeq (Yadin 2009: Fig. 7.13).

The bowl with the rounded carination (Fig. 17:4) has a parallel from Stratum A-XII, in the post-palace phase at Afeq (Beck 2000: Figs. 10.20:4; 10.21:2). Bowls of this type were identified as kraters at Afeq (Yadin 2009: Fig. 7.13). Figure 17:5–7 are slightly carinated

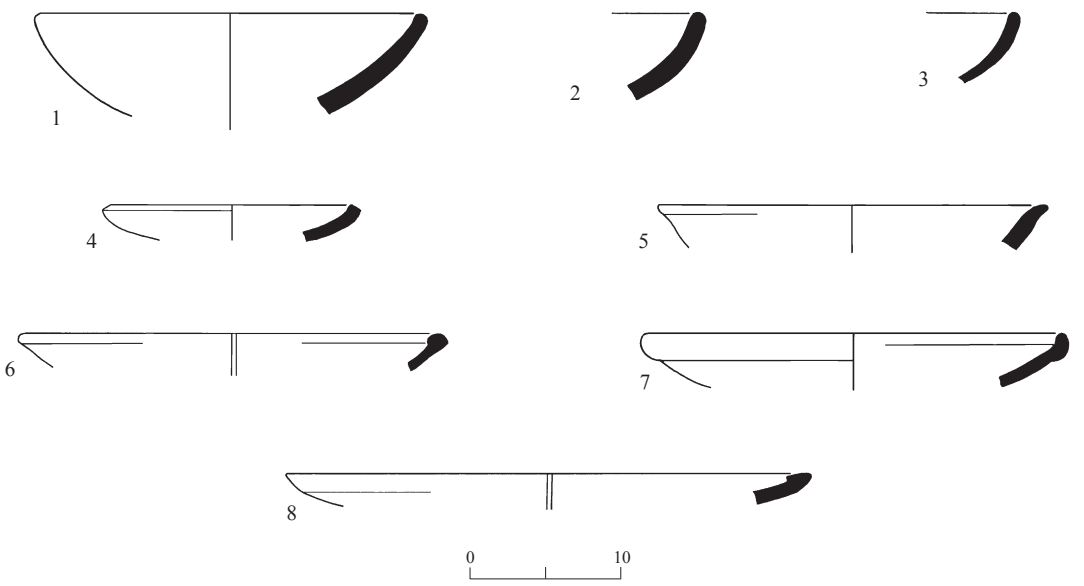


Fig. 16. Area C, Stratum VI: open bowls.

No.	Locus	Basket	Remarks
1	128	676.2	High temperature firing, white inclusions
2	126	614.10	
3	128	693.9	Highly fired, white inclusions
4	128	691.5	
5	126	614.9	
6	126	654.7	
7	128	691.6	Highly fired, many white inclusions
8	126	669.2	Highly fired, white inclusions

rounded bowls with out-turned rims. A parallel to Fig. 17:6 was found in the Palace II phase in Area A-B and in Stratum X-17 at Afeq (Yadin 2009: Fig. 7.11:3). The disk bases (Fig. 17:8, 9) have a small diameter and an open shape; they probably belong to carinated bowls.

Kraters (Fig. 18:1–3)

The most common type of krater has a rim that is folded out. This rim is exceptionally strong, and allows the potter to create a holemouth shape that has a broad opening and was easy to use. Rims of this type first appear at Afeq in Stratum B-IV (Beck 2000: Fig. 8.20:1–4), Stratum A-XVII (Beck 2000: Fig. 10.1:16, 17), Stratum XIVb in Area A-B (Palace II; Beck 2000: Figs. 10.10:19; 10.12:15, 16) and in Stratum X-16 (Yadin 2009: Figs. 7.6:8; 7.18:7; 7.22:12); they continue into late strata. Another parallel was found in the potter's kiln at Naḥal Soreq (Singer-Avitz and Levy 1992: Fig. 4:3).

Cooking Pot (Fig. 18:4)

Thin-walled cooking pots with an outward-folded rim are variations of the cooking pots in Stratum VIII (Fig. 9:2, 3) and Stratum VII (Fig. 14:2–4); see also Gophna and Beck 1981: Fig. 11:17.

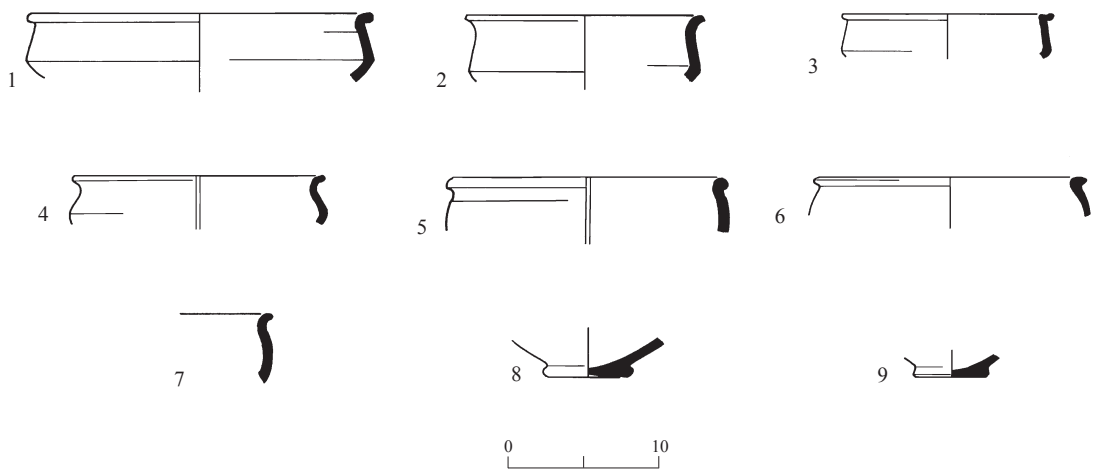


Fig. 17. Area C, Stratum VI: carinated bowls.

No.	Locus	Basket	Remarks
1	128	691.1	
2	128	693.5	
3	128	683.3	Traces of combing and red slip on ext.
4	126	668.6	
5	129	671.3	
6	128	688.16	
7	126	655.5	
8	128	691.11	
9	128	693.12	

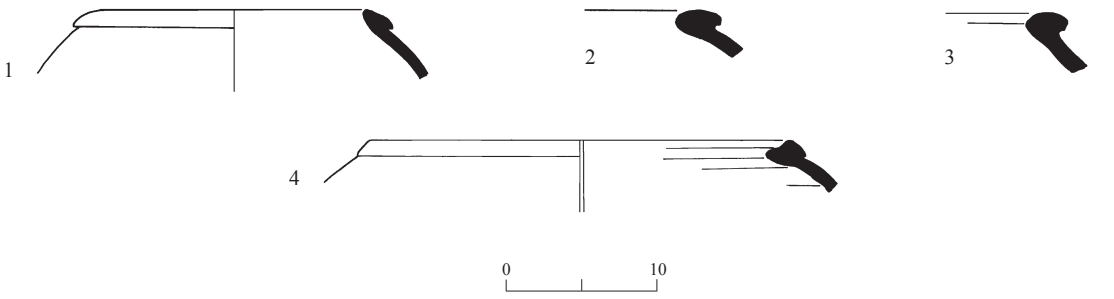


Fig. 18. Area C, Stratum VI: kraters (1–3) and a cooking pot (4).

No.	Locus	Basket
1	126	654.1
2	126	622.4
3	126	623.1
4	128	688.7

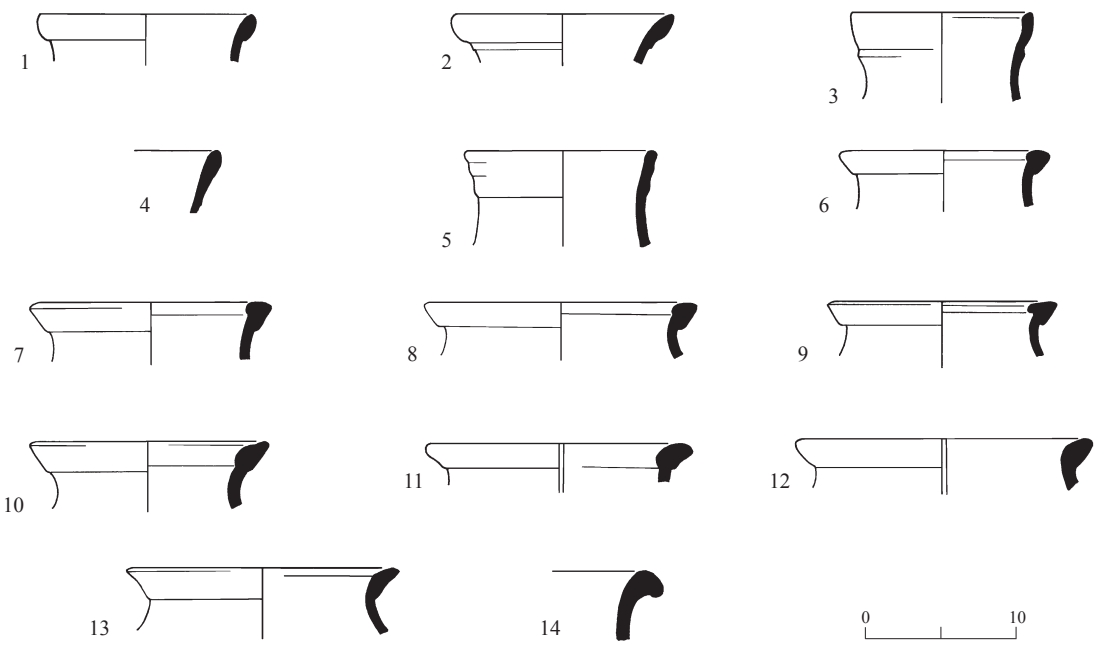


Fig. 19. Area C, Stratum VI: storage jars.

No.	Locus	Basket	Remarks
1	128	666.8	
2	128	666.7	Highly fired
3	128	666.6	Highly fired
4	128	683.5	Traces of combing on ext.
5	128	691.3	
6	126	655.3	
7	126	623.2	
8	126	655.2	Highly fired, many white inclusions
9	128	688.5	Highly fired, many white inclusions
10	126	614.1	Highly fired, many white inclusions
11	126	657.13	
12	126	623.3	
13	126	636.3	
14	126	657.2	

Jars (Fig. 19)

Parallels to Fig. 19:1, 2 were found in the moat excavation in Ashqelon (Stager, Schloen and Master 2008: Fig. 14.10:D, C, respectively), and are dated by the Ashqelon excavators to the time of Gate 2, parallel to the transition from Palace III to Palace IV at Afeq (Stager, Schloen and Master 2008: Fig. 14.4). A parallel to the jars with a grooved rim (Fig. 19:3–5) was found in Stratum A-XII, in the post-palace phase in Afeq (Beck 2000: Fig. 10.25:3). Rims belonging to this jar type were not found in the early phases at Afeq and this rim is indicative of the correlation between Stratum A-XII of Afeq and Stratum VI at Yehud. Numerous parallels to jars with an outwardly folded rim (Fig. 19:6–11) were found at Afeq. Jars in Fig. 19:9, 10 have parallels in Stratum A-XII, in the post-palace phase at Afeq (Beck 2000: Fig. 10.20:16, 17). The rim in Fig. 19:12 is a variation of a folded rim. It lacks a groove on its interior, which appears in Fig. 19:6–11. Figure 19:13 has a parallel from the potter's kiln at Naḥal Soreq (Singer-Avitz and Levy 1992: Fig. 3:10). Parallels to the outwardly-folded rim (Fig. 19:14) were also found at Stratum Vd (pre-palace) at Afeq (Beck 2000: Fig. 8.10:11, 12, 26).

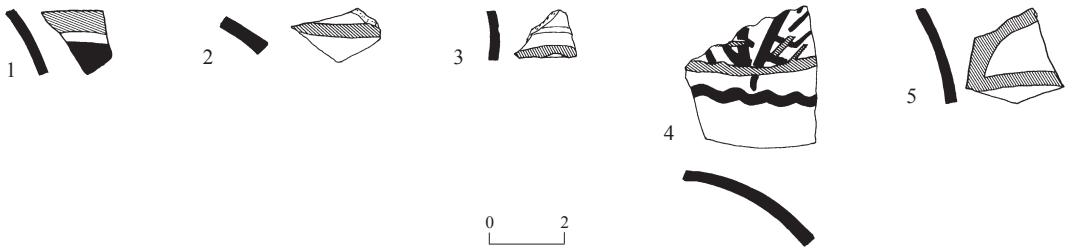


Fig. 20. Area C, Strata VIII–VI: RWB ware.

No.	Stratum	Locus	Basket	Remarks
1	VII	133	706.2	White slip, red and black decoration
2	VI	126	657.1	White slip, red and black decoration
3	VII	133	703.29	White slip, red and black decoration
4	VIII	134	695.1	White slip, red and black decoration
5	VII	125	697.1	Red and black painted pattern on cream(?) background

STRATUM VIII–VI: PAINTED VESSELS

Red, White and Blue (-to-Black) (RWB) Painted Storage Jars (Fig. 20)

Five RWB sherds were uncovered from Strata VIII–VI. Their presence at this site fits well with the general observation that RWB 'ware' constitutes "primarily a southern coastal group" during MB II (Maeir 2002:232). RWB jars were found in the northern moat in Ashqelon (Stager, Schloen and Master 2008: Fig. 14.13), dating to the assemblages of Gate 2, and—according to the excavators—parallel to the transition from Afeq Palace IV to Palace III. Yuval Goren and Anat Cohen-Weinberger conducted petrographic analysis on several jar sherds of this type at Ashqelon. The results indicate that several of these were made in Ashqelon, while others were brought there from the Shephelah (Stager, Schloen and Master 2008:227). The five sherds from Yehud were made of homogenous clay, similar to that used to produce other vessels found at the site. The colors of the slip and the decoration appear to be uniform and it can be reasonably assumed that the jars were made on the coastal plain in the vicinity of Yehud.

Imported Cypriot Vessels (Fig. 21)

Fragments of 12 imported pottery vessels were found in Area C, Strata VIII–VI. All of the sherds were most likely White Painted (WP) Ware, six belonging to the WP III category (Amiran 1969: Pl. 37). Figure 21:1 and 2 are from the neck and rim sherds of two WP III jugs (Åström 1972: Fig. 9:10–13). Figure 21:3 is decorated in the Cross Line Style (CLS) related to this type of ware (Åström 1972: Fig. 9:10–14). Figure 21:4–6 are decorated body fragments of WP III jugs and juglets (Åström 1972: Fig. 9:3–5). Body fragments of a jar and a handle (Fig. 21:7) do not resemble any vessel in Åström's catalogue. Based on the yellowish, levigated fabric, the dimensions of the body and the thickness of the ceramic as well as the shape of the handle, one can assume that these fragments belong to a WP V jar. One jug belonging to this ware type was found in an MB IIB assemblage at Tel Mevorakh (Stern 1984: Fig. 17:4). The jar that was found at Tel Mevorakh is very similar to the jar that Åström published, whereas the jar that was found at Yehud is adorned with a more intricate decoration on the body and handle. Five additional decorated body fragments (Fig.

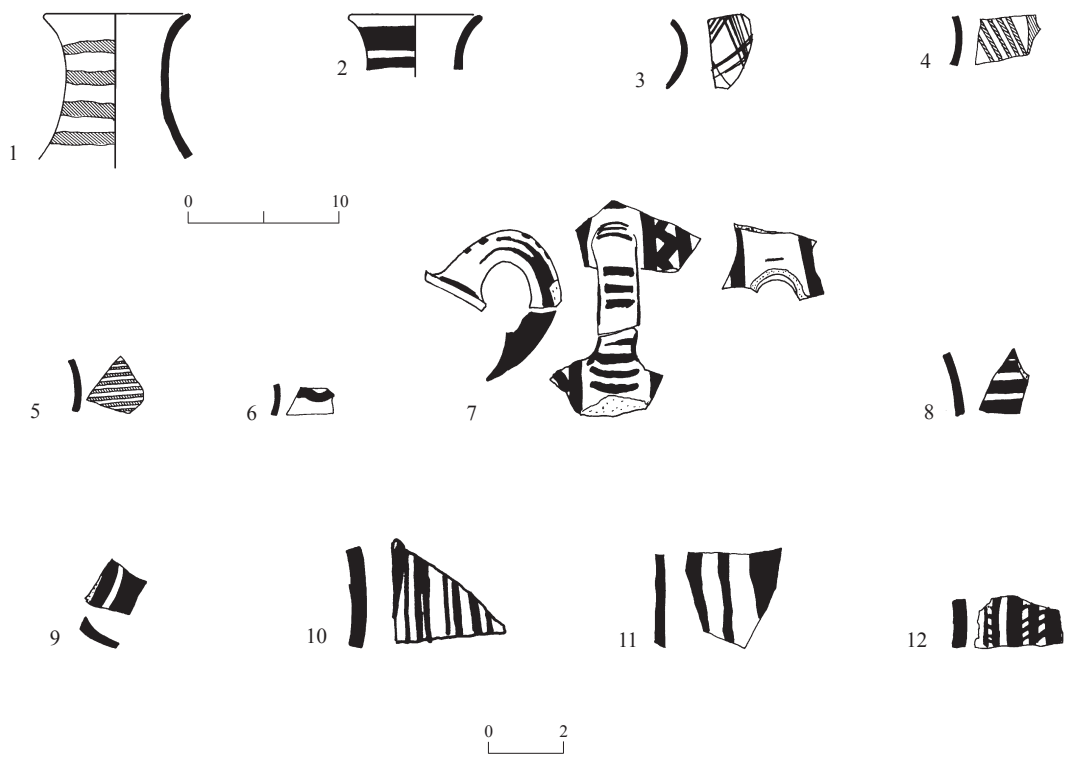


Fig. 21. Area C, Strata VIII–VI: Cypriote White-Painted wares III and V.

No.	Type	Stratum	Locus	Basket	Remarks
1	Jug (WP III)	VII	133 132	706.1 705.7	Red decoration, burnish
2	Jug (WP III)	VII	132	699.1	Black decoration
3	Juglet (WP III CLS)	VI	129	671.1	Black decoration
4	Juglet (WP III)	VIII	134	691.1	Red decoration
5	Juglet (WP III)	VII	125	700.1	Red decoration
6	Jug (WP III)	VII	125	687	Black decoration
7	Jug (WP V)	VI	126	636 653	Black decoration
8	Jug	VI	129	677.2	Black decoration
9	Jug	VI	129	677.3	Brown-black decoration
10	Jug	VI	128	688.2	Black decoration
11	Jug (locally made?)	VI	128	688.1	Black decoration over combed surface
12	Jug	VI	128	688.3	Black decoration

21:8–12) probably also belong to WP ware but are too small to further classify.

One parallel to a WP CLS juglet from Yehud was found in an MB IIA level in the small tell at Kh. Rujum in the northern coastal plain (Shalem 2002: Fig. 15:12). Two parallels, one WP Pendent Line Style (PLS) and one WP CLS were found in a tomb at Jatt in the western Galilee within a typical MB IIA context (Getzov and Nagar 2002: Fig. 4:3, 4). The sherds from Yehud support the tendency to lump together the WP PLS and WP CLS of the WP III–IV (Eriksson 2009:62). Those few and still rare parallels from the southern Levant coastal plain fit well with some parallels of WP CLS from Stratum G at Tell el-Dab'a (Maguire 2009: Fig. 29:DAB 59–60). The WP necks (Fig. 21:1, 2) may be WP PLS or WP CLS, and have parallels at Stratum G in Tell ed-Dab'a (Maguire 2009: Fig. 30:DAB 76).

The presence of Middle Cypriot pottery at the site is one of the most important contributions of this small Tell. Their appearance here sharply contrasts with their absence at the nearby major town at Afeq. In most sites in Israel vessels of this type date to MB IIB, yet, at Tel Nami fragments of such vessels were found in a clear MB IIA context (Artzy and Marcus 1992). A similar assemblage, decorated in a Cross Line Style, was also found in the MB IIA moat dated to the Gate 2 phase at Ashqelon (Stager, Schloen and Master 2008: Fig. 14.26). These finds are contemporary with the late phase of Stratum H and Stratum G/4 at Tell ed-Dab'a (Stager, Schloen and Master 2008:231).

The limited imported Cypriot assemblage from Yehud will probably not settle the problematic Cypriot chronology (Maguire 2009:82–83); yet, these few sherds are very important because of their clear link to the end of MB IIA. Based on the dates from Tell ed-Dab'a, Ashqelon and Tel Nami, they date to the transition phases from the end of MB IIA to MB IIB.

STRATUM V

A selection of the meager MB II pottery from Area A, L120 (Fig. 22), represents similar types described in the discussion of the Area C MB II pottery above. A bowl with vertical handles (Fig. 22:3) is a rare type in MB IIA assemblages. A parallel lacking handles was found in one of Ory's tombs at Tel Afeq (Beck 2000: Fig. 10.27:2). A similar bowl with a deep, curved wall, a hammer-like rim and a large loop handle was also found in another tomb (Beck 2000: Fig. 10.29:1). An incised thick body fragment may belong to a holemouth or a krater (Fig. 22:5). Unfortunately, the sampling from Stratum V is too small to provide a chronological range for the assemblage.

CONCLUSIONS

The MB II pottery from Yehud was discussed and dated here according to the Afeq MB II ceramic assemblage. A common type of handmade cooking pot with upright sides and a coil with rope ornamentation was not found in Yehud. This type was only found at Afeq in Strata X-19–18 (Yadin 2009: Figs. 7.1:6, 7; 7.3:8–11). It was not reported from Stratum X-17 or Strata X-15–16, which are attributed to MB IIB. The two latest examples of the type ascribed to the Palace III phase (Yadin 2009: Fig. 7.13) are from Stratum A-XIV; no parallel stratum was found in Area X (Yadin 2009: Table 7.1).

One type of jar/pithos rim, which was found in all of the MB II strata at Yehud (Figs. 10:1–4; 15:1–6; 19:6–12), was not reported from Strata X-19–18, and its early variants were only published from Stratum X-16 (Yadin 2009: Fig. 7.17:4–9). These two types (the straight-sided cooking pot and jar/pithos) allow us to assume that the vessels from the Yehud assemblage date close to the end of Stratum A-XIV and also include several types from Stratum X-16. The assemblage is analogous to Palace III phase at Afeq, between the end of MB IIA and the beginning of MB IIB.

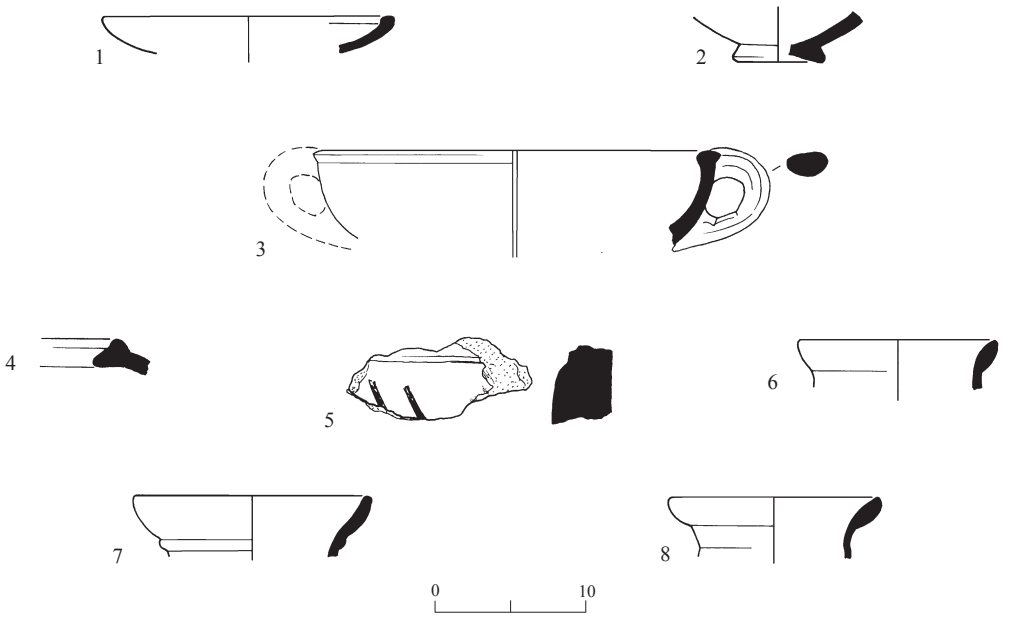


Fig. 22 Area A, Stratum V (Sq V13, L120): selection of MB IIA pottery.

No.	Type	Basket	Fig. (Area C)
1	Bowl	598.2	16:6
2	Base of bowl(?)	598.9	17:8?
3	Bowl	621.2	7:10
4	Holemouth/krater	615.1	9:3

No.	Type	Basket	Fig. (Area C)
5	Krater(?)	639.2	
6	Storage jar	615.2	15:14–16
7	Storage jar	607.11	15:10
8	Storage jar	629.1	19:1, 2

The parallels cited here attest to the great similarity between the Yehud ceramic assemblages of all three strata and those from Strata A-XIVa–b in the palace, Strata B-Vb–d and Stratum X-16 of the Palace II phase at Afeq. No types were found in the Yehud assemblages that are unique to the pre-palace phases and a number of types were found that are common to both the palace and post-palace phases at Afeq. Furthermore, no vessels in the Yehud assemblage are unique to Strata A-XII and X-15 of MB IIB. In short, based on the parallels presented, we can date all three MB II strata in Area C at Yehud as contemporary with Stratum A-XIVa–b palace of Afeq and with the potter's kiln at Naḥal Soreq.

Taking into account all of the chronological considerations (Merrillees 2002), WP PLS Cypriot pottery, such as is present in dated assemblages at Tell ed-Dab'a, should be dated to 1700–1500 BCE: the end of Middle Cypriot III and Late Cypriot IA periods (Merrillees 2002:6) and contemporary with the Middle Kingdom and the beginning of the Egyptian Dynasty XVIII.

The local vessels of the Yehud ceramic assemblage credibly represent the principal phases of MB IIA. Based on the imported Cypriot vessels, many of which derive from Stratum VI, and the absence of handmade cooking pots, we can perhaps venture to date the Stratum VI assemblage a bit later, to the MB IIA–MB IIB transition.

POTTERY FROM EARLIER PERIODS

Chalcolithic Period (Fig. 23:1–4)

Four sherds from Area C dated to the Chalcolithic period are seen in Fig. 23:1–4. One is a cornet base (Fig. 23:3).

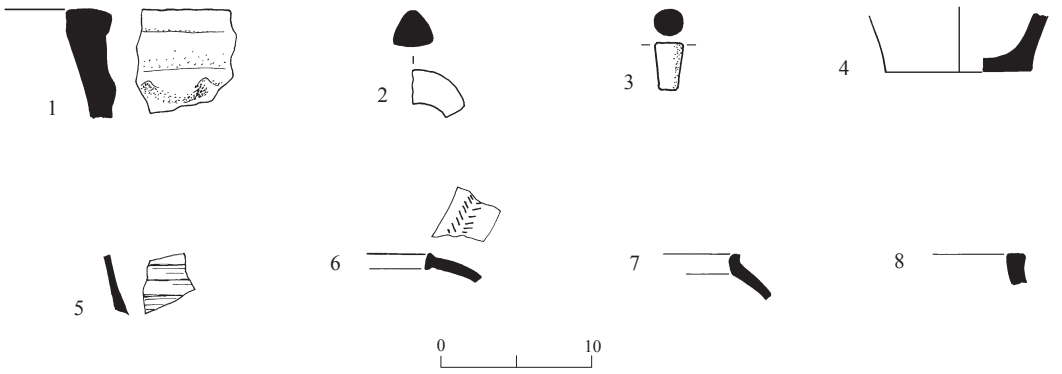


Fig. 23. Area C, selection of Chalcolithic (1–4) and Intermediate Bronze Age (5–8) pottery.

No.	Type	Locus	Basket	Remarks
1	Basin	113	590.1	
2	Handle	Surface		
3	Cornet	125	624.9	
4	Jar	125	697.18	
5	Cup	135	721.26	Body sherd with horizontal combing
6	Holemouth jar/bowl	126	655.1	Incised herringbone pattern around the rim
7	Small jar	134	689.24	
8	Holemouth bowl	134	689.17	

Intermediate Bronze Age (Fig. 23:5–8)
Four sherds from Area C, dated to the Intermediate Bronze Age, are presented in Fig. 23:5–8. Figure 23:6 is a holemouth jar/bowl with a herringbone incised decoration (see Edelstein 1998: Fig. 4:6).

WEIGHTS

A ceramic (Fig. 24:1) and a stone (Fig. 24:2) weight were found in Area C.

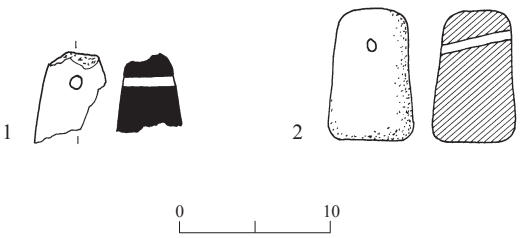


Fig. 24. Area C, weights.

No.	Stratum	Locus	Basket	Remarks
1	VI	126	636.2	Clay
2	VII	132	705.1	Stone

THE LITHIC ASSEMBLAGE[4]

It should be noted that the lithic collection from the site is very small: 123 flint artifacts, and 12 knapped limestone and 25 ground stone implements. Therefore, the conclusions of the report are preliminary, and may change in the event of additional excavations or surveys around the site.

As most material came from mixed fills, the artifacts were not dated according to their context. In order to overcome this problem, a few typological lists were used (Gopher 1989; Rosen 1997). The collection was compared

Table 2. Breakdown of the Flint Artifacts

Category	No.	%
Primary elements	13	21.67
Flakes	34	56.67
Blades	6	10.00
CTEs	7	11.66
Total Debitage	*60*	*100.00*
Chunks	10	83.33
Chips	2	16.67
Total Debris	*12*	*100.00*
Debitage	60	48.78
Debris	12	9.76
Cores	12	9.76
Tools	39	31.71
Total	*123*	*100.00*

Table 3. Frequency of Flint Tools

Category	No.	%
Sickles	11	28.2
Burins	2	5.1
Notches	4	10.3
Awls	2	5.1
Borers	1	2.6
Scrapers	5	12.8
Fan scraper	1	2.6
Bifaces	1	2.6
Retouched flakes	2	5.1
Retouched blades	2	5.1
Truncated pieces	2	5.1
Multiple tools	6	15.4
Total	*39*	*100.0*

with several published assemblages (Rosen 1986; Fridman 1991; Gilead 1995). The typology of the ground stone tools from the site was based on Wright's classification list (Wright 1992).

FLINT

The breakdown of the flint assemblage is shown in Table 2. The tool frequency is shown in the following Table 3.

Raw Material

A number of raw materials were used at the site, including flint in various colors: white, gray-blue, black-gray, earth-brown, gray-brown and light brown. Some of the flint artifacts have double patina. It seems that most of the flint artifacts were manufactured from nodules that were collected in the nearby valley of Naḥal Ayyalon. The closest sources of Senonian flint are about 15 km to the southeast. The nearest sources of better-quality flint (of the Eocene) is farther to the south, about 22 km away.

Cores

Only 12 cores were found at the site. Notably, three were made on flakes. None of the cores, at any period, could have been used for the manufacture of sickle blades.

Table 4. Tentative Dating of the Sickles

Period	No.	%	Figure
Neolithic	1	9	25:1
Chalcolithic	2	18	25:2, 26:1
Early/Intermediate Bronze Age	5	46	25:3, 4
Middle Bronze Age	2	18	25:5, 6
Late Bronze/Iron Age	1	9	25:7
Total	*11*	*100*	

Tools

Sickle Blades.— Eleven sickle blades were recovered, of different shapes and from different periods (Table 4). The sickles are made from various raw materials. One of the sickle blades (Fig. 25:1) is similar to those of the Pre-pottery Neolithic B. It has fine irregular retouch of the ventral face on both sides, and has a trapezoid cross-section. The blade is broken on both ends, and signs of heat treatment are evident. Clear sickle gloss appears on both the dorsal

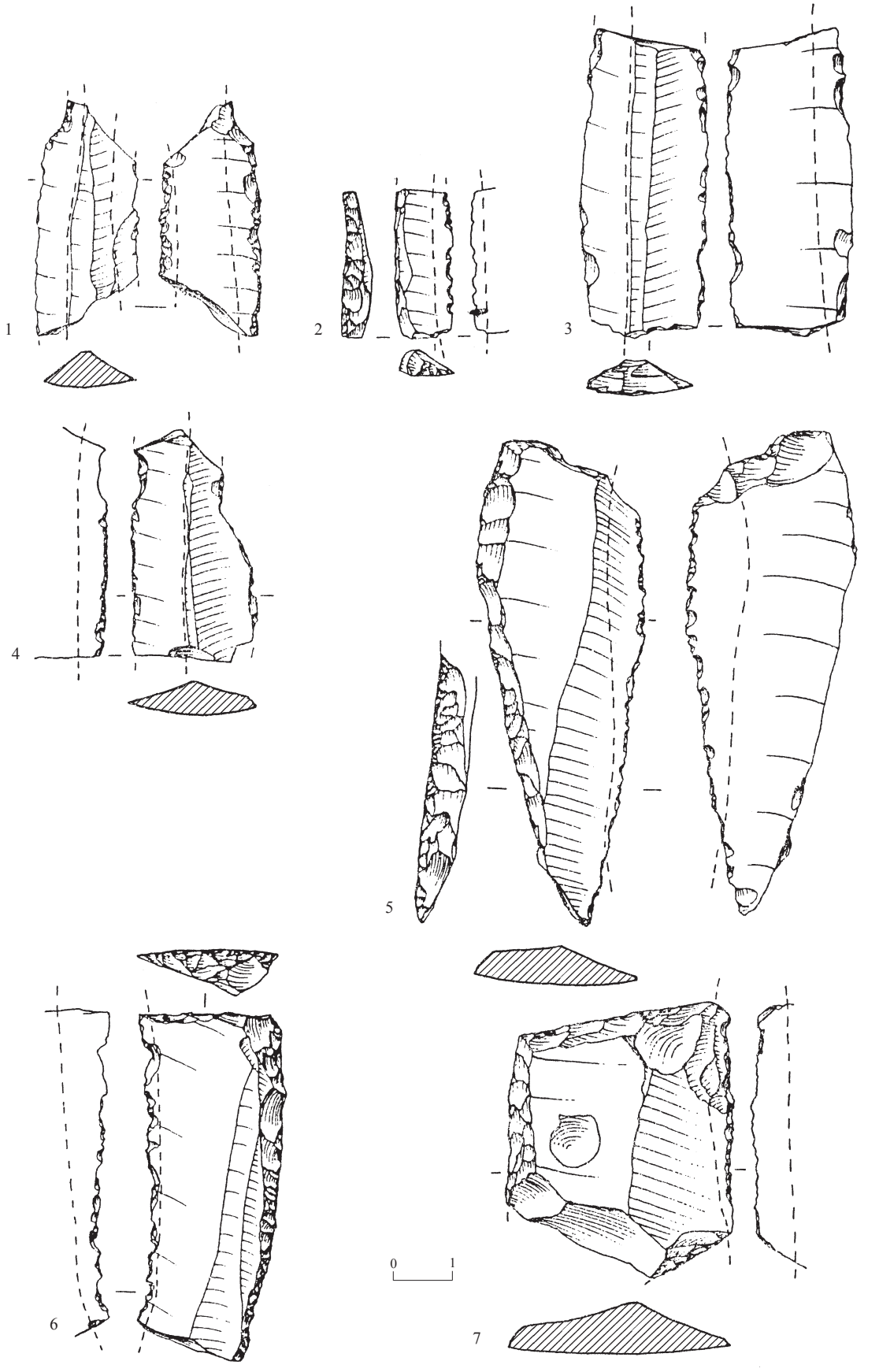


Fig. 25. Sickle blades.

and the ventral faces on both sides. It can be associated with Gopher's (1989:44–51) 'Plain on blade' group.

Two sickle blades are backed (abrupt retouch), and have light denticulation on the working edge (Figs. 25:2; 26:1). Sickle gloss appears on both the ventral and the dorsal faces. One of the blades is truncated on the proximal end and broken on the distal end (Fig. 25:2). The other is broken on both ends, and there seems to be a burin on the distal end (see Fig. 26:1). The sickle blades are similar to those of the Chalcolithic period, as described by Gilead (1995:245, 250–255).

Five Canaanean sickle blades (Fig. 25:3, 4) are typical of the Early and Intermediate Bronze Age (Rosen 1997); two have a trapezoidal cross-section (Fig. 25:3), and three, a triangular cross-section (Fig. 25:4). All are broken on both edges. Figure 25:3 is long and has only very light retouch on one side; on the opposite side, signs of gloss are evident. Another sickle is burnt and broken, and has very light retouch on the working edge, as well as gloss on both sides (Fig. 25:4).

Two Large Geometric sickle blades (Fig. 25:5, 6) should be dated to the Middle Bronze Age on the basis of the typology of Rosen (1983:108–115). One blade (Fig. 25:5) comes from an *in situ* MB IIA layer in Area C, Stratum VII; it has a long triangle shape and measures 82.3 × 28.6 mm. One of the lateral edges is backed (abrupt retouch), while the active edge is delicately denticulated. The bulb of percussion was removed, and there are traces of dark material on the working edge that may represent hafting, but no gloss. It could have been the last blade inserted inside the handle of a sickle because of its trianglular shape (Fridman 1991:35, Pl. 11), or was hafted for some other purpose, perhaps as a side-scraper. The other sickle (Fig. 25:6) is backed and has very light denticulation on the other side; signs of sickle gloss are evident on both faces.

One large geometric sickle (Fig. 25:7) is burnt and broken, and probably was in the shape of a parallelogram. The sickle is backed, and there are traces of truncation on the distal end, while the proximal end is broken. The working edge is delicately denticulated, and sickle gloss appears on both faces. On the basis of shape and size, it could be associated with a later period, perhaps Late Bronze, or Iron Age (but see Rosen 1997:60).

Burins (Fig. 26:1, 2).— Two burins were uncovered. One may be a reworked Chalcolithic sickle blade (Fig. 26:1, see above). The other is, perhaps, a double burin on both edges on the ventral face of a retouched blade (Fig. 26:2).

Notches.— Four pieces with notches were uncovered.

Awls and Borers.— Two awls were uncovered, one on a primary flake and the other on a flake. One borer was found on a triangular flake (Fig. 26:3; cf. Gilead 1995:245–247).

Scrapers.— Three double scrapers (e.g., Fig. 26:4), a fragment of a simple-side scraper, one core-scraper and one fragment of a fan scraper (Fig. 26:5) were found at the site.

Retouched Pieces.— Two retouched flakes were found at the site. One is irregularly retouched on both sides, while the other has fine retouch on the dorsal face of the right lateral side. In addition, two retouched blades were found. One is retouched on both lateral sides to form an elongated triangular shape (Fig. 26:6). The other is broken and is retouched on the ventral face of the left lateral side.

Truncated Pieces.—Two truncated pieces were collected at the site.

Multiple Tools.— Six multiple tools were found: a double endscraper; an endscraper on a truncated piece that was probably a core tablet; a burnt core trimming element that was retouched and has a notch on one of the ends (Fig. 26:7); a notch on an endscraper; a burin on the proximal end and an endscraper on the

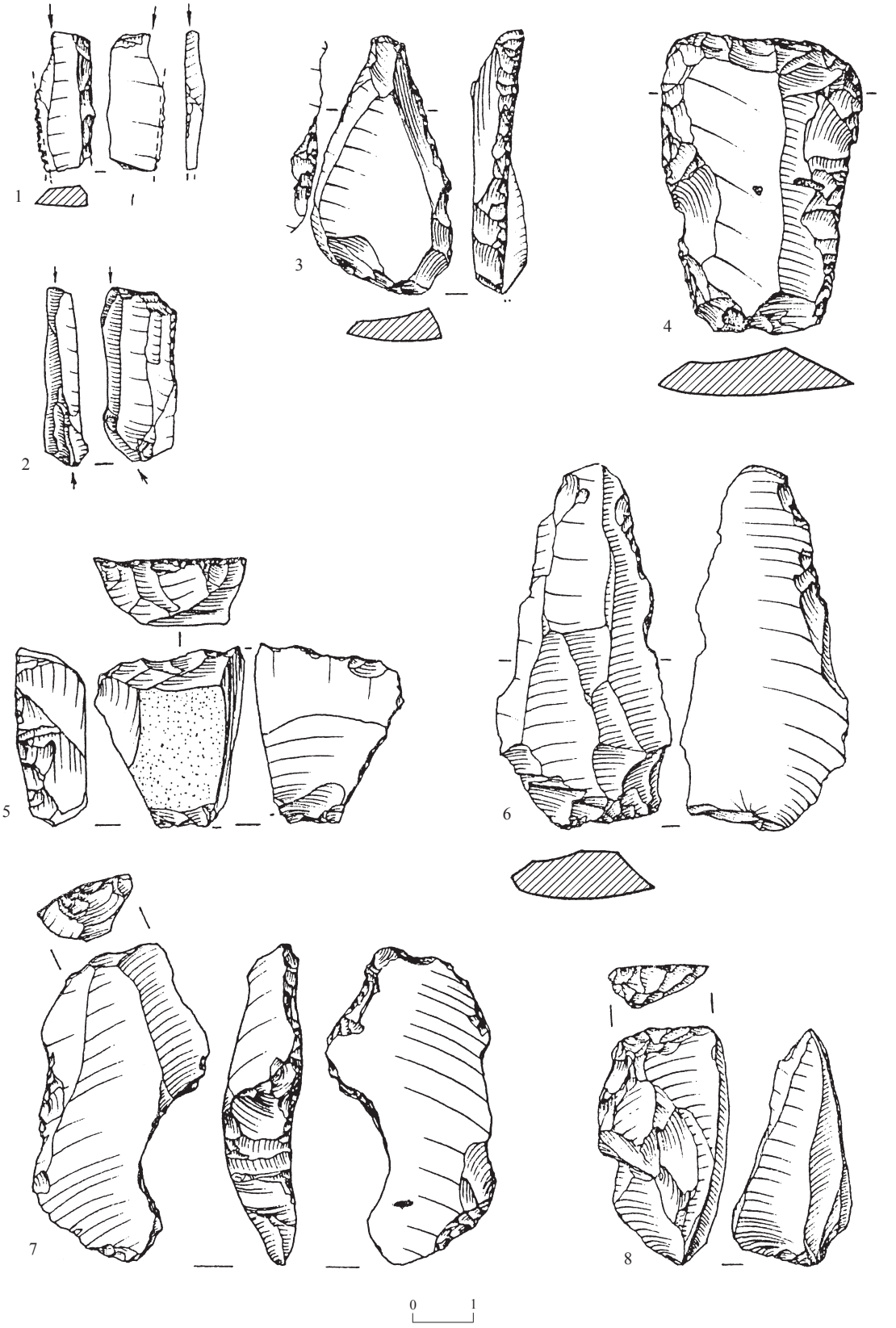


Fig. 26. Selection of flint tools.

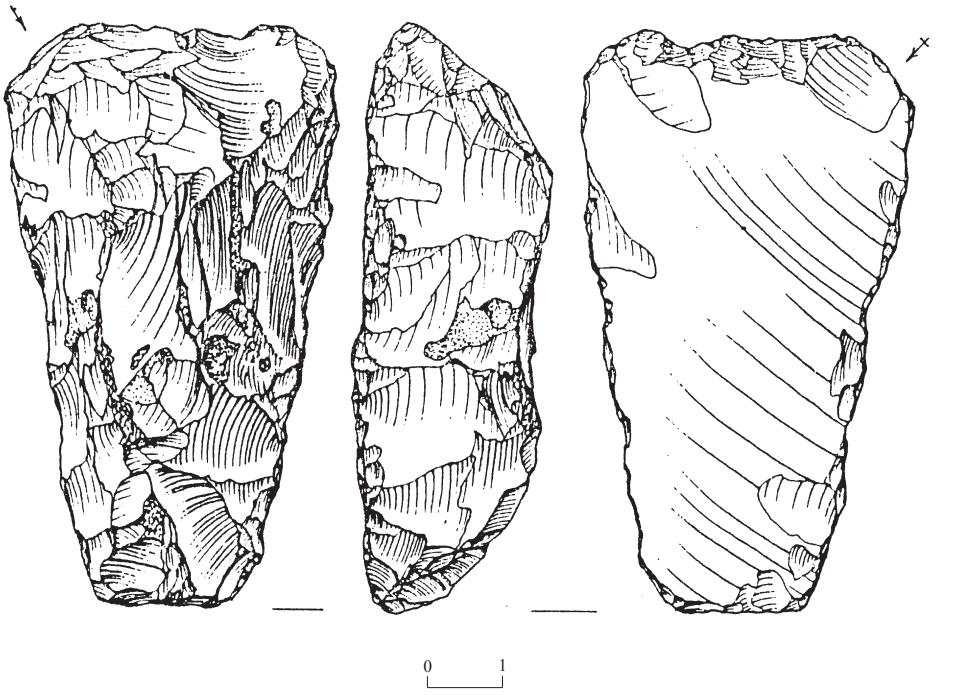


Fig. 27. Flint adze.

distal end; a nucleiform burin on the proximal end and an endscraper on the distal end (Fig. 26:8). This last tool was made on a flake.

Bifacials.— One flint adze (Fig. 27) is from an *in situ* MB IIA floor. However, its shape and morphology suggest that it should be dated to the Chalcolithic period (Gilead 1995:258–259). The presence of a Chalcolithic adze in an MB IIA context can be explained in two ways: either it was in secondary use during a later period, or, it was redeposited.

KNAPPED LIMESTONE

Very few limestone artifacts were found; most of it is debitage (Table 5). Knapped limestone artifacts are commonly found in the Chalcolithic period (see Gilead 1995:281–307).

Table 5. Knapped Limestone Artifacts

Category	No.	%
Flakes	4	33.33
Primary flakes	2	16.67
Chunk	1	8.33
Notches	3	25.00
Retouched flake	1	8.33
Modified pebble	1	8.33
Total	*12*	*100.00*

GROUND STONE IMPLEMENTS

The ground stone assemblage also shows a variety of raw materials used, with items made of basalt, limestone and beach-rock, amongst others.

Grinding Slabs (Fig. 28; Table 6).— Two complete grinding slabs and nine fragments were found, in different shapes and from different raw materials. One of the complete slabs is made of dolomite, and its measurements are 285 × 170 mm. The bottom is convex, while the upper surface is smoothed and somewhat concave (Fig. 28:1). The second complete slab is made from beach-rock, and its measurements

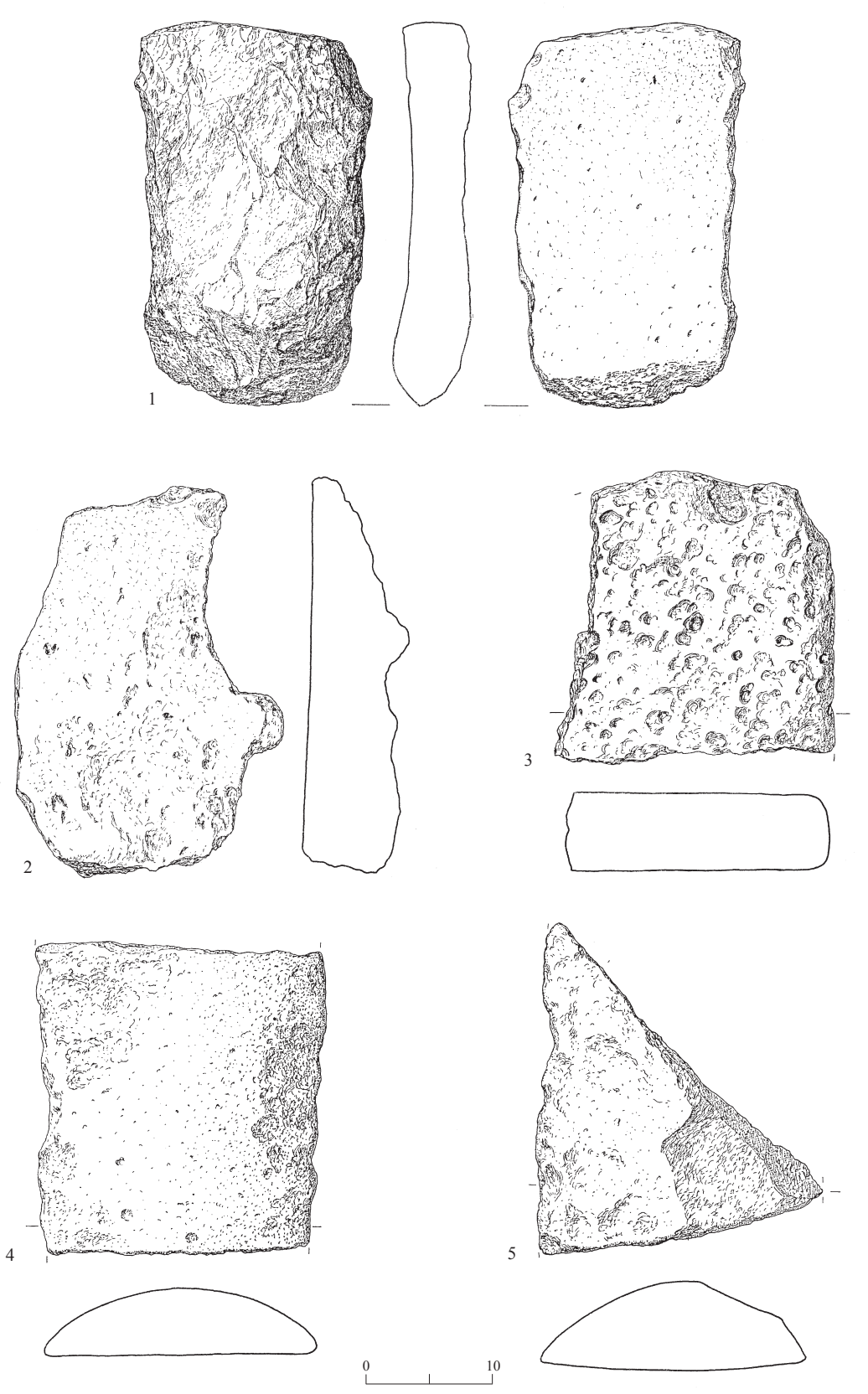


Fig. 28. Grinding stones.

Table 6. Grinding Slabs

Description	Material	Quantity	Fig.
Complete slab	Dolomite	1	28:1
Complete slab	Beach-rock	1	28:2
Slab fragments	Vesicular basalt	3	28:3
Slab/handstone fragments	Basalt	3	28:4, 5
Slab/handstone fragment	Beach-rock	1	
Slab/handstone fragment	Quartzite	1	
Slab fragment	Limestone	1	

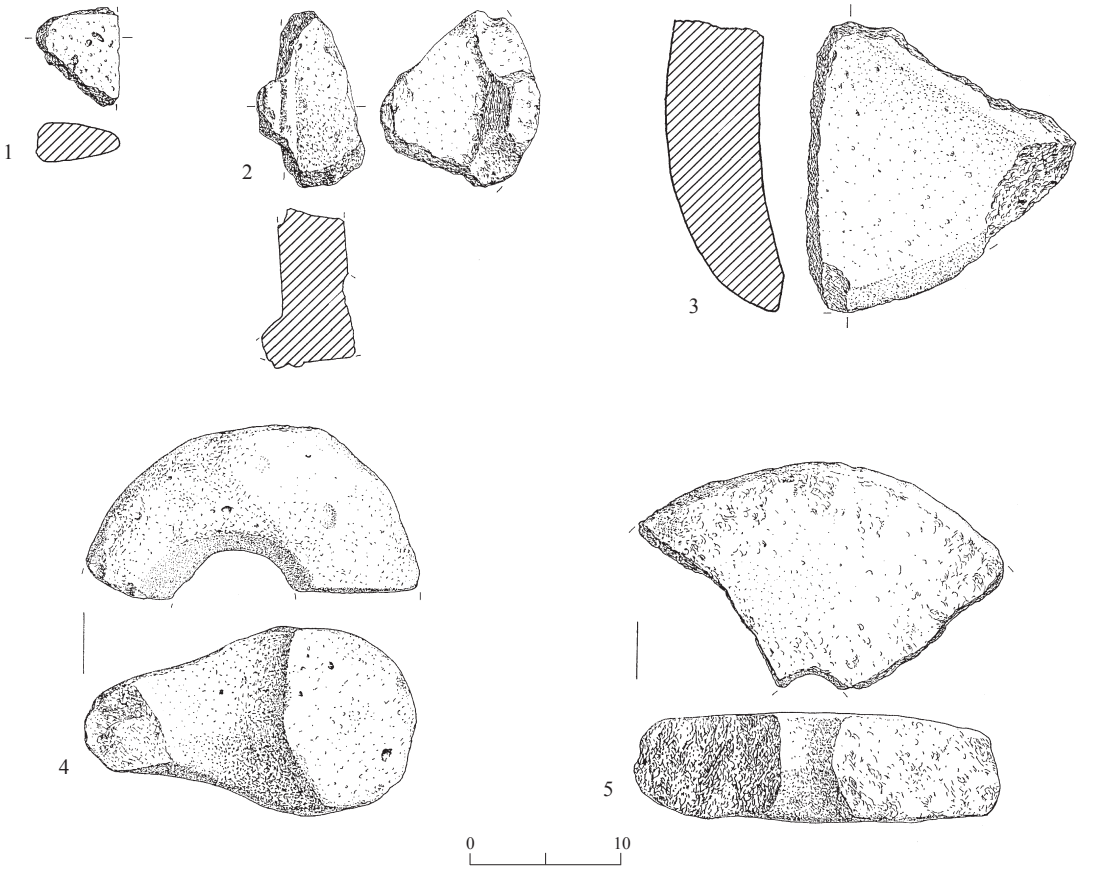


Fig. 29. Ground stone vessels and perforated stones.

are 285 × 200 mm. This item has a very rough bottom, while the upper surface is smoothed and somewhat concave (Fig. 28:2). Figure 28:3 is a fragment of a slab made of porous basalt. Of the fragments, some could also be handstones. On two basalt fragments scars from flaking are visible (Fig. 28:4, 5). Another fragment (unillustrated) is quite amorphous, and it is difficult to determine whether it was part of a grinding slab; however, one slightly smoothed face can be seen.

Vessels.— Six fragments of basalt vessels were found; they date to the Chalcolithic and Early Bronze periods. Four pieces, including one rim (Fig. 29:1) and one base fragment, are part of

a fenestrated vessel, indicating the edge of its window (Fig. 29:2; cf. Wright 1992:76–78; Gilead 1995:310–321).

A rim fragment of a mortar made of basalt (Fig. 29:3) had a long duration of usage. After the mortar went out of use, one of the fragments was used for some sort of rubbing or grinding that wore down one edge and the rim. Later, chips were flaked from the smoothed break and the rim (cf. Wright 1992:65–67).

Perforated Grinding Stone.— One rim fragment made of basalt (Fig. 29:4) had a biconical perforation in the middle: it was drilled from both sides. This was probably a rounded grinding stone.

Pierced Stones.— Two fragments are made of limestone. They are perforated, round stones, in the shape of a ring or a disk (Fig. 29:5), with a biconical perforation in the middle. Such pierced stones are known also from the Chalcolithic period. Possible functions suggested are weights for digging sticks, flywheel weights for drills, loomweights or door sockets (Wright 1992:74–75; Gilead 1995:335–345).

Hammer Stones.— One complete hammer stone and three hammer-stone fragments were uncovered at the site. All of them are made of flint and are small in dimensions.

Basalt Flake.— One basalt flake was uncovered at the site.

DISCUSSION

The knapped stone and ground-stone assemblage from Yehud is very small and is therefore hardly sufficient to allow us to draw final conclusions concerning the dating of the site. However, besides the presence of two sickle blades dating to the Middle Bronze Age, one of which was found *in situ* in Area C, Stratum VII, there is clear evidence of a Chalcolithic and an Intermediate Bronze Age presence at the site. The Chalcolithic presence is indicated by two sickle blades, an adze, knapped limestone items and some ground-stone tools, as well as by sporadic pottery sherds in the ceramic assemblage, and might be explained by the proximity of the site to Tel Yehud (cf. van den Brink, Golan and Shemueli 2001). The Intermediate Bronze Age is indicated by five Canaanean sickle blades. These may also date to the Early Bronze Age, but as the ceramic assemblage from Yehud contains a few Intermediate Bronze Age sherds and none from EB I–III, the latter date is favored.

ANIMAL BONES FROM AREAS A–C

A total of 197 bones were examined, 53 of which were unidentified splinters and 144 (73%) that could be assigned to skeletal elements and species. Species representation by period is given in Table 7; Table 8 lists the camel finds. Table 9 and Fig. 30 give the breakdown for skeletal elements in the Middle Bronze Age deposits, while a list of skeletal element measurements is given in Appendix 1.

Area A

Stratum I (L101, L107, Sq V13).— The topmost stratum in this area yielded a total of seven identifiable bones representing pig (*Sus scrofa*), cattle (*Bos taurus*), sheep/goat (*Ovis/Capra*) and dog (*Canis familiaris*). The sheep/goat remains include an adult goat aged 4–6 years, based on dental attrition (Payne 1973: Stage G). This material is attributed to the late Byzantine period.

Stratum II (L104, Sq X14).— In the fill associated with a pebble floor, dating to the Persian period, 22 bones were recovered. Of these, six proved to be unidentified fragments. Three taxa were represented in the identified sample; one bone of sheep, three of sheep/goat, two bones of camel, probably dromedary (*Camelus* cf. dromedarius), and ten bones of cattle.

Table 7. Species Represented at Yehud by Period (all areas combined)

Period / Species	L. Byzantine N	Persian N	Persian/Iron II N	MB IIA(B) N	%
Sheep (*Ovis aries*)	-	1	-	6	5.1
Goat (*Capra hircus*)	1	-	-	2	1.7
Sheep/Goat (*Ovis/Capra*)	1	3	1	32	27.3
Cattle (*Bos taurus*)	4	10	1	57	48.7
Pig (*Sus scrofa*)	1	-	-	10	8.5
Camel cf. dromedary (*Camelus* cf. *dromedarius*)	1	2	-	6[i]	5.1
Equid cf. donkey (*Equus* cf. *asinus*)	-	-	-	1	0.8
Dog (*Canis familiaris*)	1	-	-	-	-
Large Mammal	-	-	-	3	2.5
Total (Identified)	9	16	2	117	100.0
Total (Unidentified)	0	6	0	47	

[i] Material is probably intrusive from overlying Persian or Byzantine layers.

Table 8. List of Camel Remains by Area and Stratum/Period

Area / Body Part	A (Stratum II) Persian Period	A (Stratum IV) MB IIa?[i]	B Byzantine Period	C (Stratum VI) MBIIA[i]
Cranial				Right jaw symphysis; Jaw ramus fragment; Lower molar fragment
Trunk			Rib fragment	Cervical vertebra fragment
Upper Forelimb	Left distal radius fragment			Scapula blade fragment
Upper Hindlimb	Pelvis acetabulum fragment with deep chop marks on the ventral aspect			
Foot		Proximal 2nd phalanx		

[i] May derive from the overlying Persian or Byzantine levels.

Stratum III (L112, Sq V13; L110, Sq X14).— This stratum contained mixed Persian/Iron Age II material. Isolated bones of cattle and sheep/goat were found in the sterile floodplain deposits that underlie this stratum.

Stratum IV (below L110, Sq X14).— Twenty-three bones were retrieved from washed-in MB II deposits, which were lying just below a pebble pavement belonging to the Persian Stratum IV. Eight of these bones were unidentified fragments; the remaining fifteen identified bones represent cattle (N = 5), sheep/goat (N = 8), pig (N = 1) and camel (N = 1).

Most of the caprine bones in this sample could not be separated into sheep and goats. However, one distal metatarsal in this sample has a condylar index of 62%, characteristic of goats (Boessneck 1969). All caprine remains are derived from adult animals. The single pig bone, an unfused proximal ulna, represents an immature animal aged less than three years (Silver 1969). The cattle remains are too

Table 9. Skeletal Element Breakdown (No. of Bones) for Middle Bronze Age Deposits (all areas combined)

Skeletal Element	Sheep/ Goat	Cattle	Pig
Horncore	2		
Skull		1	
Mandible	3	3	2
Mandibular teeth	1	1	1
Maxillary		1	
Maxilla teeth	4	1	1
Vertebra undetermined		4	
Cervical vertebra		1	
Lumbar vertebra		3	
Rib proximal		1	
Rib shaft	1	9	
Scapula distal	2	2	
Scapula blade	2		1
Humerus whole			1
Humerus proximal	1		1
Humerus shaft	3		1
Humerus distal		2	
Radius proximal	1		
Radius shaft	2		
Radius distal	1		
Ulna proximal	1		1
Ulna distal		2	
Metacarpal whole		1	
Metacarpal shaft	1		
Metacarpus proximal	1		
Carpal		1	
Pelvic acetabulum	5	3	
Femur proximal		2	
Femur distal		1	
Patella		1	
Tibia proximal	2	1	
Tibia shaft	2	1	
Tibia distal	2		1
Calcaneum		2	
Metatarsal proximal	1	3	
Metatarsal shaft	1	2	
Metatarsal distal	1	4	
Tarsal		1	
Phalanx 2		2	
Phalanx 3		1	
Total	*40*	*57*	*10*

fragmentary to establish the age of the animals from which they are derived.

The species of camel found at Yehud cannot be determined precisely given the fragmented nature of the bones. But, given the predominance of osteological remains of the single humped, dromedary camel in the region (Hakker-Orion 1984; Wapnish 1984; Horwitz and Rosen 2005), it is most likely that this species, rather than the two-humped Bactrian, is represented at Yehud. The presence of a camel bone in the MB IIA deposit at Yehud is unusual; few other camel remains have been reported from this period in Israel (for a summary of camel remains by period and sites, see Horwitz and Rosen 2005: Table 2). Together with a handful of examples from Neolithic and Early Bronze Age sites, many if not all, the Middle Bronze Age camel specimens derive from equivocal contexts and are thought by most researchers to be later, intrusive elements. The earliest camel remains from well-documented contexts in Israel date to Iron Age I and not the Late Bronze Age as previously thought (e.g., Hakker-Orion 1984; Horwitz and Rosen 2005), since the Tell Jemmeh remains derive from questionable contexts (Wapnish 1984), while new dates for Site 30 at Timna clearly indicate a post-12th century BCE date (Grigson 2012).[5] In these Iron Age I sites, camel remains occur in small numbers, and only become abundant in the southern Levant from the Iron II/Persian period onward (Wapnish 1984; Horwitz and Rosen 2005). Based on these data, it is highly likely that the Yehud camel bone is intrusive and derives from the overlying Persian level, which has yielded two camel bones. Only direct dating of this specimen will settle this issue.

Strata IV–V (L120, Sq V13).— This deposit comprises a mixture of eroded material and MB II sherds. Of the five identified bones from this layer three are of cattle and two of sheep/ goat.

Unstratified Fill (Loci 109, 115, 116, 117, 121, 123, 130).— In addition to the 37 bones derived

from stratified contexts, another 61 bones were recovered in Area A from unstratified fills. These comprise 35 identified bones and 24 fragments. Species represented, in order of predominance are: cattle, sheep/goat (including at least one goat, *Capra hircus*) and dog. In addition, a single camel bone was recovered from the Mekorot section (test trench).

Area B

In this area, a Byzantine pottery kiln was excavated. Only two bones were recovered from the floodplain deposits (L103): a fragment of a cattle humerus and part of a camel rib.

Area C

Stratum I (L106).— The topsoil contained two bones, one of a dog and the other of cattle; these cannot be ascribed to a particular period.

Stratum VI (Loci 126, 128).— A total of 92 bones were recovered from two loci in this stratum which represents a MB IIA(–B) fill. Of these, 60 were identified to species and element and represented cattle (N = 29), sheep/goat (N = 19), pig (N = 7) and camel (N = 5).

The caprine sample included at least one domestic sheep and a domestic goat. All the caprine remains belong to adult animals. The minimum number of cattle is 2, one of which was an animal aged less than 3.5 years. The pig remains represent at least two individuals, including one immature animal aged less than 1 year. All the camel remains are derived from one locus (L126) and may belong to the same adult animal. As in Area A, it is most likely that the camel remains are intrusive from overlying Iron Age/Persian-period deposits. One unidentified bone fragment has carnivore score marks on the surface, resulting from gnawing, while a distal metatarsal of *Bos* exhibits boney growths that may be due to arthritic changes associated with advanced age (Baker and Brothwell 1980).

Two bone tools were found in L126. The first is a fragment of mammalian long bone shaft, unidentifiable to species, about 55 mm in length and 18 mm wide. It is made on a halved shaft that has unworked medullary cavity on the inner aspect. The outer aspect has been worked and is smooth and polished as well as blackened from fire. One end of this piece—apparently the working edge—is rounded, while the opposite end has been intentionally severed at a slight right angle to the long axis of the bone. The second worked piece is a domestic goat horncore that has been removed by chopping from the skull at its base. The entire horn has then been halved along its long axis by sawing. The halved surface of the horn is smooth and exhibits saw marks while the outer surface of the horn remains in its natural state and is unworked. This piece appears to form a blank that would have been further modified to form an artifact or inlay (see MacGregor 1985:69, 95–96 on similar blanks used in the production of single-piece combs in the Roman and Anglo-Saxon periods in Britain).

Stratum VII (Loci 125, 132, 133).— A small collection of 13 bones were recovered from this MB IIA stratum. The five identified bones represent cattle (N = 2), sheep/goat (N = 2) and pig (N = 1). In addition, three rib fragments of a large mammal, either camel or cattle, were identified.

Stratum VIII (Loci 134, 135).— The bone assemblage recovered from these MB IIA deposits was extremely small, numbered only 36 bones of which 29 were identified to species and element. Species represented were cattle (N = 18), sheep/goat (N = 9), pig (N = 1) and a distal metacarpal of a small equid, probably a donkey (*Equus asinus*) (N = 1). The sheep/goat sample included five bones of sheep and one of goat.

Cattle and caprines are both represented by cranial, limb and foot bones. All the caprine remains are derived from adult animals, while at least one juvenile, aged less than 4 years old, is present in the cattle sample. The only

modified bone is a cattle rib that had been severed at either end.

Conclusions

The small size of the Yehud Bypass Road site bone assemblage severely limits the analyses that may be carried out on this assemblage. Despite this factor, it is evident that, in all periods, domestic animals predominate, and cattle (*Bos taurus*) is the most common species (Table 7). However, it should be borne in mind that this may be the result of the larger size of cattle bones, which, being more visible during excavation than smaller size caprine or pig bones, are often better represented in hand-collected samples (Payne 1972). This is illustrated in Fig. 30, where, despite similar-sized assemblages, caprines and cattle exhibit markedly different skeletal element distributions, with the relatively smaller foot and trunk elements absent or rare in the caprine sample but present for cattle. The pig assemblage is too small for this feature to be assessed.

Both domestic sheep and goat are represented at the site, with sheep tending to be more common (Table 7). This finding should be treated with caution due to the limitations of the sample size.

Pig is the third most common animal at the site, and is represented by isolated remains. Its domestic status is based on comparison of the few available tooth measurements (Appendix 1) with those from the Chalcolithic site of Gilat (Grigson 2006: Appendix 6.4) and MB II site of Tel Qashish (Horwitz 2003:432), where the animals were equivocally demonstrated as domestic. Pig frequencies appear to peak throughout Israel during the Middle Bronze Age, as attested to in sites from distinct phytogeographic zones, such as the Refa'im Valley, Jerusalem (Horwitz 1998a), Tel Te'enim, Sharon Valley (Horwitz 1998b), Tel Megadim, Carmel coast (Sapir-Hen, Wolff and Bar-Oz, forthcoming), Tel Qashish (Horwitz 2003) and Yoqne'am in the Jezreel Valley (Horwitz et al. 2005; and others noted in Horwitz and Milevski 2001). As discussed by Horwitz and Milevski (2001), this may reflect

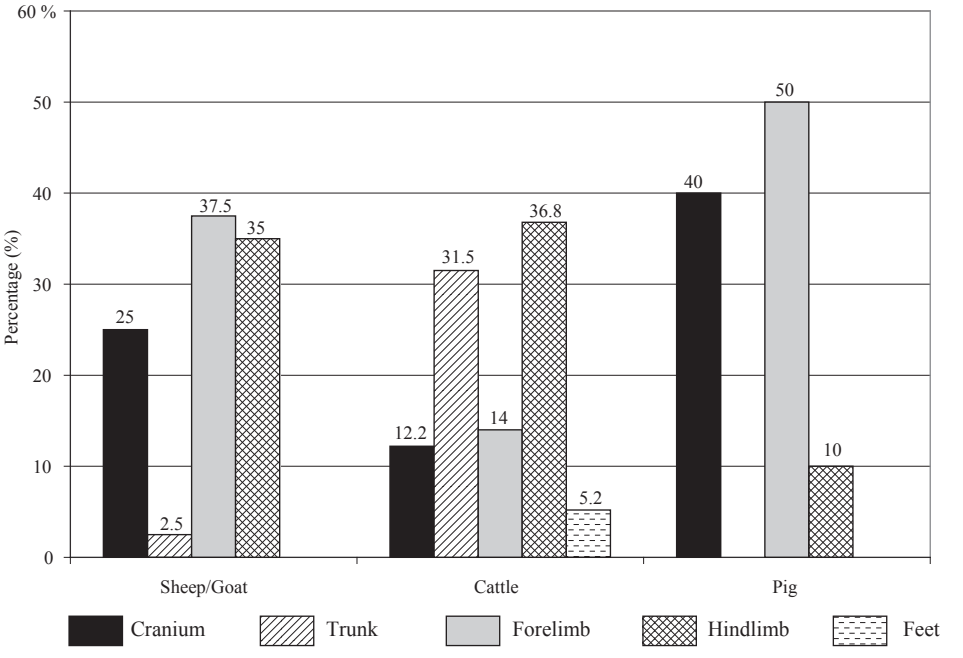


Fig. 30. Skeletal element breakdown for the main Middle Bronze Age species (data in Table 9).

reduced involvement in agriculture, changes in markets inside or outside Canaan, an episode of climatic amelioration or a change in local dietary preferences.

Scanty remains of beasts of burden, camel and an equid, probably a donkey, are also found at Yehud (Tables 7 and 8). As discussed above, the camel remains—most likely representing the dromedary *Camelus dromedaries*—recovered from the Middle Bronze Age sample, are probably intrusive from the Persian or Byzantine periods. If not, then they may represent some of the earliest camel remains from the Levant.

The majority of caprine bones are those of adult animals, but once again it is difficult to assess the extent of the diagenetic bias at the site against the more fragile bones of immature animals. This bias does not appear to have been too great as immature cattle and pig bones are represented in the assemblage, suggesting that there may have been some inter-species difference in the age of slaughter. Thus, a larger proportion of pigs and cattle may have been slaughtered while young, i.e., for meat, in contrast to caprines that were mostly kept into adulthood, perhaps for production of secondary products, such as milk and wool.

SUMMARY

The rescue excavations alongside the Yehud Bypass Road have revealed six archaeological strata and three units of geomorphologic deposits. In Area A, Strata I–III (late Byzantine period, Persian period and late Iron Age II/Persian period respectively) are separated by several meters of alluvial sediments (Unit 1, also documented in Areas B and C) and—at still deeper levels—marsh deposits (A. Horowitz, pers. comm. 1994; Unit 2, appearing only in Area A), yielding small amounts of washed-in MB IIA materials. These are associable with the MB IIA remains in Strata VI–VIII in Area C. The ceramic assemblages of all three strata in Area C compare best with those from Strata A-XIVa–b in the palace of Area A at Tel Afeq and with Strata B-Vb–d there. In Yehud, Area C, Stratum VI is separated from Strata VII–VIII by a 0.25 m thick layer of clean, fluviatile sand (Unit 3), indicating abrupt, heavy flooding during this particular period, around the beginning of the second millennium BCE. A few Intermediate Bronze Age pottery sherds and flint tools and sporadic Chalcolithic pottery sherds, flints and a basalt vessel fragment from the deeper levels of Area C indicate the likely presence of occupation layers predating MB II, yet to be explored.

Whether the MB IIA *in situ* findings in Area C, Stratum VII, and *ex situ* remains at Area A, Stratum IV at Yehud represent remains of a farmstead or a small rural settlement is impossible to tell in view of the very limited nature of the two probes (Sq E15/16, V13). Whatever its original nature, this site can be added to the list of many similar sites (mainly in the central and northern part of the coastal plain) inhabited during the first stage of MB IIA, "first and foremost along the coast and adjacent valleys" (Kempinski 1992:166). Middle Bronze Age IIB remains in more-or-less the same surroundings of Yehud were noted already by Gophna and Beck (1981:74, No. 31): "MB IIB pottery scatter southeast of town" [of Yehud]. However, the absence of Tell el-Yehudiyeh 'ware', a ceramic *fossile directeur* for MB IIB, and the presence of flat and low disc bases or shallow ring bases, as opposed to higher ones characteristic of the MB IIB, are indicators that the site must have been abandoned before the latter period, possibly due to heavy flooding of the area.

APPENDIX 1. BONE MEASUREMENTS

Species/Bone	Locus/Period	Measurements (in mm)[i]				
Dog						
Scapula dist.	L107/L. Byzantine	GLP: 25.8	BG: 15.2			
Cattle						
Scapula dist.	L126/Fill	GLP: 70.4	BG: 49.0			
Scapula dist.	L126/MB II	GLP: 70.4	BG: 49.0			
Scapula dist.	L134/MB II	GLP: 61.6	BG: 44.9	SLC: 47.0		
Humerus dist.	L135/MB II	Bd: 78.4	BT: 70.4	#2*: 34.7		
Radius dist.	L126/MB II	Bd: 64.7	Dd: 35.7			
Metacarpal	L128/MB II	GL: 221.6	SD: 29.6	#1*: 56.4	#2*: 56.4	
Metacarpal	L128/MB II	Bp: 57.4	Dp: 36.1	Bd: 50.4	#4*: 23.8	#2*: 32.2
Metatarsal prox.	L128 – MB II	L: 50.6	B: 50.7			
Metatarsal dist.	L132/LB	Bd: 46.0	#1*: 52.8	#3*: 52.8	#4*: 23.8	#2*: 29.4
Patella	L135 – MB II	GL: 51.4	GB: 61.8			
1st phalanx	L104/Persian	GLpe: 59.9	Bd: 25.9	Bp: 28.2	Dp: 30.0	
1st phalanx	L104/Persian	GLpe: 56.3	Bd: 25.4	Bp: 27.2	Dp: 29.3	
2nd phalanx	L128/MB II	GLpe: 36.1	Bd: 22.7	Bp: 25.4	Dp: 25.8	
3rd phalanx	L128/MB II	GL: 71.7	Lad: 57.1	Bp: 51.1		
Goat						
Scapula dist.	L134/MB II	GLP: 28.4	BG: 19.4	SLC: 17.1		
Metatarsal dist.	below L110/MB II	#1*: 24.4	#3*: 12.4	#4*: 11.1	#2*: 17.7	
Sheep						
Scapula dist.	L134/MB II	GLP: 31.9	BG: 20.6			
Metacarpal	L134/MB II	Bp: 23.8	Dp: 17.2	SD: 13.2		
Pig						
M3 lower	L126/MB II	L: 38.8	B: 15.5			
M1 upper	L126/MB II	L: 16.1	B: 13.4			
M2 upper	L126/MB II	L: 20.4	B: 16.0			
Tibia dist.	L126/MB II	Bd: 29.6	Dd: 25.9			
Donkey						
Metacarpus prox.	L135/MB II	Bp: 33.6	Dp:22.1			
Camel						
2nd phalanx prox.	below L110/MB II?	Bp: 34.3	Dp: 28.5			

[i] All measurements were taken after von den Driesch 1976, except those marked with an asterisk that were taken after Davis 1985.
dist. = distal; prox. = proximal; B = breadth; Bd = distal end; BG = breadth of glenoid cavity; Bp = proximal end; BT = greatest breadth of trochlea; Dd = distal depth; Dp = proximal breadth; GL = greatest length; GLP = greatest length of glenoid process; GLpe = greatest length of peripheral half; L = length; SD = smallest breadth of shaft; SLC = smallest length scapula neck; #1 = distal epiphysis width; #2 = diameter or height of distal condyles; #3 = width or depth of condyle; #4 = width of trochlea

NOTES

[1] Edwin C.M. van den Brink and Oren Shmueli are responsible for the excavation report, the stratigraphy description and the final conclusions; Eli Yannai, for the pottery report; Eyal Vadaei, for the lithics report and Liora Kolska Horwitz, for the archaeozoology report.

[2] The tell is indicated as a closed contour-line on the 1:50,000 topographic map of Rishon Le-Ẓiyyon, Sheet 7-IV, grid ref. 160–159/139. In order to distinguish it from Tel Yehud and to avoid possible confusion, the name of the present site is Yehud Bypass Road.

[3] The excavation was carried out on behalf of the Israel Antiquities Authority from January 16 through March 24, 1994 (Permit No. A-2099), directed by Edwin C.M. van den Brink and assisted by Oren Shmueli, with the participation of A. Elnekaveh (administrator), Vadim Essman, Stas I. Stark, Pavel Gertopsky, Nissim Kolelle and Israel Vatkin (surveyors) and Tsila Sagiv (field photography). Eitan Ayalon, Lilly Gershuny, Aharon Horowitz, Felix Joffe, Yossi Levy, Fanny Vitto and Eli Yannai all visited us in the field and gave practical advice. The MB II pottery was studied by Eli Yannai (text translated from Hebrew by Don Glick); the lithics, by Eyal Vadaei, with later assistance by Ariel Vered; the animal bones, by Liora Kolska Horowitz. The excavations were financed by the Public Works Department and the Mekorot Water Company.

[4] We would like to thank Ofer Marder and Hamoudi Khalaily for their much appreciated help and encouragement during work on this report. We would like to thank Vladimir G. Zbenovich for his advice during work on the tool typology. Special thanks go to Leonid Zeiger for the flint illustrations in this report.

[5] Since this faunal report was written, a new publication by Sapir-Hen and Ben-Yosef (2013) provides new stratigraphic associations and dates for camel remains from Iron Age sites in Timna. They place the earliest domestic camels in the ʻArava Valley sites as not earlier than the last third of the tenth century BCE, i.e., early Iron IIA.

REFERENCES

Amiran R. 1969. *Ancient Pottery of the Holy Land, from Its Beginning in the Neolithic Period to the End of the Iron Age.* Jerusalem–Ramat Gan.

Artzy M. and Marcus. E. 1992. Stratified Cypriote Pottery in MB IIa Context at Tel Nami. In G.C. Ioannides ed. *Studies in Honour of Vassos Karageoghis*. Nicosia. Pp. 103–110.

Åström P. 1972. *The Swedish Cyprus Expedition* IV, 1B: *The Middle Cypriote Bronze Age*. Lund.

Baker J. and Brothwell D. 1980. *Animal Diseases in Archaeology.* London.

Beck P. 1975. The Pottery of the Middle Bronze Age IIA at Tel Aphek. *Tel Aviv* 2:45–85.

Beck P. 2000. Area A: Middle Bronze IIA Pottery. In M. Kochavi. *Aphek-Antipatris* I: *Excavation of Areas A and B; The 1972–1976 Seasons* (Tel Aviv Universtiy Institute of Archaeology Monograph Series 19). Tel Aviv. Pp. 173–238.

Boessneck J. 1969. Osteological Differences between Sheep (*Ovis aries* Linné) and Goats (*Capra hircus* Linné). In D. Brothwell and E.S. Higgs eds. *Science in Archaeology: A Survey of Progress and Research* (2nd ed.). London. Pp. 331–358.

Brink E.C.M. van den, Golan S. and Shemueli O. 2001. A Note on the Archaeological Investigations at Yehud and Some Chalcolithic Finds. *ʻAtiqot* 42:25–34.

Brink E.C.M. van den and Shemueli O. 1997. Yehud. *ESI* 16:83–84.

Davis S.J.M. 1985. A Preliminary Report of the Fauna from Hatoula: A Natufian-Khiamian (PPNA) Site near Latroun, Israel. In M. Lechevallier and A. Ronen. *Le site natoufien-khiamien de Hatoula près de Latroun; Fouilles 1980–1982, rapport préliminaire* (Les Cahiers du Centre de Recherche Français de Jérusalem 1). Paris. Pp. 71–98.

Driesch A. von den. 1976. *A Guide to the Measurement of Animal Bones from Archaeological Sites* (Peabody Museum Bulletin 1). Cambridge, Mass.

Edelstein G. 1998. The Pottery Assemblage. In G. Edelstein, I. Milevski and S. Aurant. *Villages, Terraces and Stone Mounds: Excavations at Manaḥat, Jerusalem, 1987–1989 (The Rephaim Valley Project)* (IAA Reports 3). Jerusalem. Pp. 37–60.

Eriksson K.O. 2009. Regionalism and Island-Wide Analysis: Some Observations regarding White Painted V and VI Wares from Middle Cypriot III/Late Cypriot I Tombs from the North West Region of Cyprus. In I. Hein ed. *The Formation of Cyprus in the 2nd Millennium B.C.: Studies in Regionalism during the Middle and Late Bronze Ages (Proceedings of a Workshop Held at the 4th Cyprological Congress, May 2nd 2008, Lefkosia, Cyprus)* (Österreichische Akademie der Wissenschaften, Denkschriften der Gesamtakademie LII; Contributions to the Chronology of the Eastern Mediterranean XX). Vienna. Pp. 49–63.

Fridman E. 1991. The Flint Tools of Area E/3. In S. Givon ed. *The First Season of Excavation at "Tel Harasim" 1990: Preliminary Report* 1. Tel Aviv. Pp. 34–37.

Getzov N. and Nagar Y. 2002. Middle Bronze Age II Burials in the Western Galilee. In Z. Gal ed. *Eretz Zafon: Studies in Galilean Archaeology.* Jerusalem. Pp. 1–49 (Hebrew; English summary, p. 178*).

Gilead I. 1995. *Grar: A Chalcolithic Site in the Northern Negev* (Beer-Sheva VII). Be'er Sheva'.

Gopher A. 1989. *The Flint Assemblages of Munhata: Final Report* (Les Cahiers du Centre de Recherche Français de Jérusalem 4). Paris.

Gophna R. and Beck P. 1981. The Rural Aspect of the Settlement Pattern of the Coastal Plain in the Middle Bronze Age II. *Tel Aviv* 8:45–80.

Grigson C. 2006. Farming? Feasting? Herding? Large Mammals from the Chalcolithic of Gilat. In T.E. Levy ed. *Archaeology, Anthropology and Cult: The Sanctuary at Gilat, Israel.* London–Oakville. Pp. 215–319.

Grigson C. 2012. Camels, Copper and Donkeys in the Early Iron Age of the Southern Levant: Timna Revisited. *Levant* 44:82–100.

Hakker-Orion D. 1984. The Role of the Camel in Israel's Early History. In J. Clutton-Brock and C. Grigson eds. *Animals and Archaeology* 3: *Early Herders and their Flocks* (BAR Int. S. 202). Oxford. Pp. 207–212.

Horwitz L.K. 1998a. The Faunal Remains. In G. Edelstein, I. Milevski and S. Aurant. *Villages, Terraces and Stone Mounds: Excavations at Manaḥat, Jerusalem, 1987–1989 (The Rephaim Valley Project)* (IAA Reports 3). Jerusalem. Pp. 104–112.

Horwitz L.K. 1998b. Faunal Remains from Middle Bronze Age Tel Te'enim. *Tel Aviv* 25:105–109.

Horwitz L.K. 2003. Fauna from Tel Qashish. In A. Ben-Tor, R. Bonfil and S. Zuckerman. *Tel Qashish: A Village in the Jezreel Valley; Final Report of the Archaeological Excavations (1978–1987)* (Qedem Reports 5). Jerusalem. Pp. 427–443.

Horwitz L.K. and Milevski I. 2001. The Faunal Evidence for Socio-Economic Change between the Middle and Late Bronze Age in the Southern Levant. In S.R. Wolff ed. *Studies in the Archaeology of Israel and Neighboring Lands in Memory of Douglas L. Esse* (SAOC 59/ASOR Books 5). Chicago–Atlanta. Pp. 283–305.

Horwitz L.K. and Rosen B. 2005. A Review of Camel Milking in the Southern Levant. In J. Mulville and A.K. Outram eds. *The Zooarchaeology of Fats, Oils, Milk and Dairying.* Oxford. Pp. 121–131.

Horwitz L.K., Bar Giora N., Mienis H.K. and Lernau O. 2005. Faunal and Malacological Remains from the Middle Bronze, Late Bronze and Iron Age Levels at Tel Yoqne'am. In A. Ben-Tor, D. Ben-Ami and A. Livneh. *Yoqne'am* III: *The Middle and Late Bronze Ages; Final Report of the Archaeological Excavations (1977–1988)* (Qedem Reports 7). Jerusalem. Pp. 395–435.

Kempinski A. 1992. The Middle Bronze Age. In A. Ben-Tor ed. *The Archaeology of Ancient Israel.* New Haven–London. Pp. 159–210.

Loud G. 1948. *Megiddo* II: *Seasons 1935–39* (OIP LXII). Chicago.

MacGregor A. 1985. *Bone, Antler, Ivory and Horn: The Technology of Skeletal Materials since the Roman Period.* London–Sidney.

Maeir A.M. 2002. Red, White and Blue Ware: A Little-Known Group of Painted Pottery of the Middle Bronze II Period. In E.D. Oren and S. Ahituv eds. *Aharon Kempinski Memorial Volume: Studies in Archaeology and Related Disciplines* (Beer-Sheva 15). Be'er Sheva'. Pp. 228–240.

Maguire L.C. 2009. *Tell el-Dab'a* XXI: *The Cypriot Pottery and Its Circulation in the Levant* (Österreichische Akademie der Wissenschaften, Denkschriften der Gesamtakademie LI; Untersuchungen der Zweigstelle Kairo der österreichischen archäologischen Institutes XXXIII). Vienna.

Merrillees R.S. 2002. The Relative and Absolute Chronology of the Cypriote White Painted Pendent Line Style. *BASOR* 326:1–9.

Payne S. 1972. Partial Recovery and Sample Bias: The Results of Some Sieving Experiments. In E.S. Higgs ed. *Papers in Economic Prehistory.* Cambridge. Pp. 49–64.

Payne S. 1973. Kill-Off Patterns in Sheep and Goats: The Mandibles from Aşvan Kale. *Anatolian Studies* 23:281–303.

Rosen S.A. 1983. *Lithics in the Bronze and Iron Ages in Israel.* Ph.D. diss. The University of Chicago. Chicago.

Rosen S.A. 1986. Note on the Gezer Flint Caches. In W.G. Dever ed. *Gezer* IV: *The 1969–71 Seasons in Field VI, the "Acropolis"*. Jerusalem. Pp. 259–263.

Rosen S.A. 1997. *Lithics after the Stone Age: A Handbook of Stone Tools from the Levant.* Walnut Creek–London–New Dehli.

Sapir-Hen L. and Ben-Yosef E. 2013. The Introduction of Domestic Camels to the Southern Levant: Evidence from the Aravah Valley. *Tel Aviv* 40: 277–285.

Sapir-Hen L., Wolff S.R. and Bar-Oz G. Forthcoming. Early Bronze to Persian Period Faunal Remains from Tel Megadim (Carmel Coast). In G. Bar-Oz and L.K. Horwitz. Discovering Noah's Ark: Zooarchaeology of the Holyland*. IAA Reports*.

Silver I.A. 1969. The Ageing of Domestic Animals. In D. Brothwell and E.S. Higgs eds. *Science in Archaeology: A Survey of Progress and Research.* London*.* Pp. 283–302.

Singer-Avitz L. and Levy Y. 1992. An MB IIA Kiln at the Naḥal Soreq Site. *'Atiqot* 21:9*–14* (Hebrew; English summary, p. 174).

Shalem D. 2002. Khirbet er-Rujum in the Sharon Plain. In Z. Gal ed. *Eretz Zafon: Studies in Galilean Archaeology.* Jerusalem. Pp. 50–79 (Hebrew; English summary, p. 179*).

Stager L.E., Schloen J.D. and Master D.M. 2008. *Ashkelon* 1: *Introduction and Overview (1985–2006)*. Winona Lake.

Stern E. 1984. *Excavations at Tel Mevorakh (1973–1976)* II: *The Bronze Age* (Qedem 18). Jerusalem.

Vitto F. 1980. Potter's Kilns at Kfar Naḥf. *IEJ* 30:205–206.

Vitto F. 1983/4. A Look into the Workshop of a Late Roman Galilean Potter. *BAIAS* 3:19–22.

Wapnish P. 1984. The Dromedary and Bactrian Camel in Levantine Historical Settings: The Evidence from Tell Jemmeh. In J. Clutton-Brock and C. Grigson. *Animals and Archaeology* 3: *Early Herders and Their Flocks* (BAR Int. S. 202). Oxford. Pp. 171–200.

Wright K. 1992. A Classification System for Ground Stone Tools from the Prehistoric Levant. *Paléorient* 18/2:53–81.

Yadin E. 2009. Middle Bronze Age Pottery. In Y. Gadot and E. Yadin. *Aphek Antipatris* II: *The Remains on the Acropolis. The Moshe Kochavi and Pirhiya Beck Excavations* (Tel Aviv University Institute of Archaeology Monograph Series 27). Tel Aviv. Pp. 111–181.