

# EASTERN BADIA ARCHAEOLOGICAL PROJECT: WISAD POOLS, JORDAN

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## Introduction

The Eastern Badia Archaeological Project (EBAP) examines two regions in the Black Desert of eastern Jordan, the Wadi al-Qattafi and Wisad Pools, located near the border of Saudi Arabia (fig. 1). At Wisad Pools in June of 2013, we sectioned and excavated one half of a Late Neolithic (7,000–5,000 cal. BC) structure constructed from large basalt slabs. The rich artifact and faunal assemblage was reported in the *Oriental Institute 2013–2014 Annual Report*. Structure W-80 consisted of a circular tomb built atop a collapsed Late Neolithic dwelling (Rollefson et al. 2013), but the volume of sediments and the weight of basalt blocks made it impossible to clear more than about the southern half of the complex during the four-week season. The crew returned for another four-week season (June 5–July 4) in 2014 to continue the excavation.

## The Tomb

In 2014 the crew completed the excavation of the tomb (fig. 2), a poorly preserved and hastily built structure measuring approximately 5 meters in diameter, with a wall of roughly four courses that remained about 80 centimeters high (Rollefson et al. 2013, fig. 3). The state of preservation was poor due to bioturbation, disturbing the stratigraphic integrity

of the tomb; some artifacts appear to have migrated into sediment layers of the house mound beneath the tomb, particularly small carnelian beads. White powdery bones may have been human. Within the burial layer other small finds provide the possibility of assigning the tomb to a particular period, although this assignment remains tentative. Finds from this upper layer of slabs and loose sediment included a finger ring of copper, an earring, possibly of silver, and a bronze arrowhead. A small sculpted bead of greenish stone is identical to one from 2013 (figs. 3–4). The bronze arrowhead and silver earring have close parallels to late Late Bronze IIA finds, at 'Ara (Yahalom-Mack 2014, p. 213 and fig. 10.4; p. 222 and fig. 10.11:12). Two of the beads from Wisad may be glass/frit (fig. 4:a–b); they are similar to examples from 'Ara (Paz 2014, fig. 11.1:15). The sculpted beads

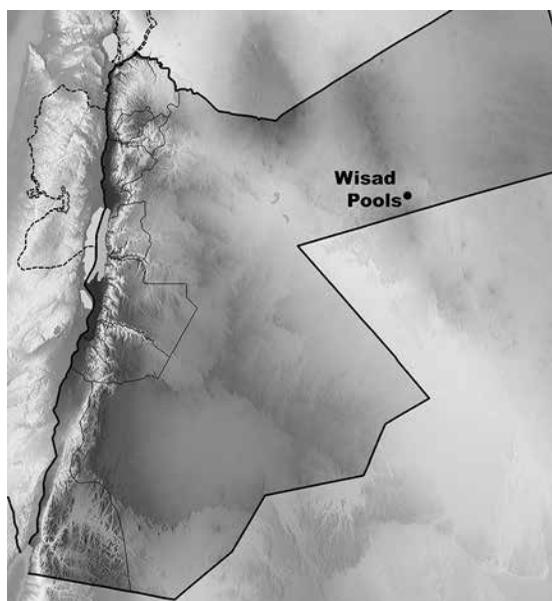


Figure 1. Map of Jordan showing the location of Wisad Pools

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Figure 2. Aerial view from 2013 of the tomb atop W-80. View toward the northeast (photo: A. C. Hill)



Figure 3. Objects recovered from inside the tomb atop W-80 in 2014. a: bronze arrowhead; b: copper finger ring; c: silver earring (photo: G. Rollefson)



Figure 4. Beads ascribable to the W-80 tomb. (a) Glass/frit bead; (b) glass/frit bead; (c) Dabba marble "melon" bead (photo: G. Rollefson.)

from Wisad (fig. 4:c and Rollefson et al. 2013, fig. 21) resemble the “melon beads” from Late Bronze IIA ‘Ara (Paz 2014, fig. 11.1:22–25). In view of the probable burrowing activity in the tomb, the copper bead found in 2013 (Rollefson et al. 2013, fig. 22) may belong to this tomb assemblage even though it was found in a locus beneath the tomb.

## The Underlying Architecture

Below this tomb, structure W-80 was a corbeled building with a collapsed roof, indicated by the vertical and nearly vertical corbel slabs inside the wall (fig. 5). This is similar to structure W-66 at Wisad and structure SS-11 on Maitland’s Mesa at Wadi al-Qattafi (Rowan et al. 2015). Butchering, grinding on large slabs, chipped-stone tool production, and bead manufacture suggest the structure continued in use after the collapse. By the end of the 2014 excavation season, W-80 was clearly a building with greater architectural complexity than either W-66 or SS-11.

At the end of the 2014 season, W-80 (fig. 6) had a large room (ca. 6.5 m NW–SE × 5.5 m SW–NE). A northeastern doorway (D1) approximately 60 centimeters wide led into the main room (M). A central pillar (CP), was probably only one of several that originally supported the roofing slabs; the room interior was probably reorganized more than once during the lifecycle of the building. Within the main room, an area of very large flat ground stones each with a “cupmark” or mortar was found (GS). An alcove (A) was exposed in the southwestern area of the main room. There may have been an additional southwestern doorway (D2) leading into a semicircular “fenced porch” (P) where one large grinding slab with a cupmark/



*Figure 5. Excavation along eastern edge of W-80 showing Wall 019 (right) and collapsed, nearly vertical corbel slabs (left) (photo: Y. Rowan)*

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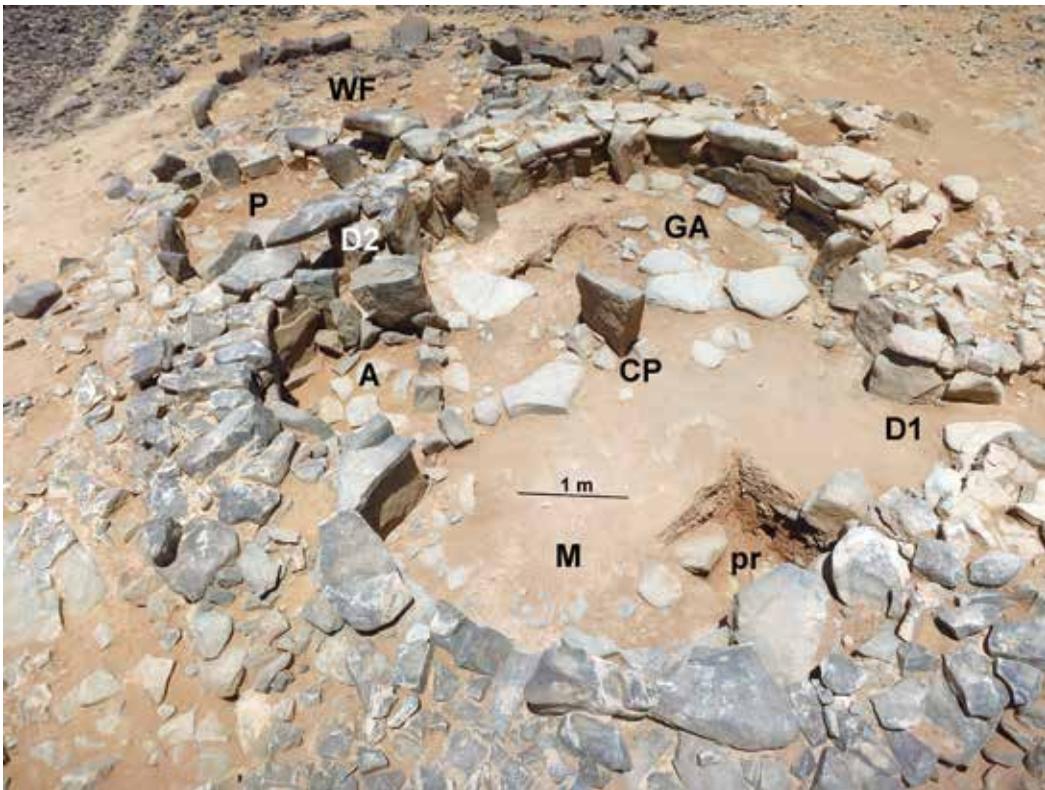


Figure 6. Overhead view of W-80 at the end of the 2014 season; see text for abbreviations. North is at upper right (photo: Y. Rowan)

mortar was located. Farther to the west was a low area delineated by small upright stones, termed the Western Forecourt (WF).

### The Southwestern Doorway (D2)

Excavations inside the doorway and in the “vestibule” (Rollefson et al. 2013, fig. 6) in 2014 revealed that the southern doorway (D2) is a later feature after the original construction of W-80, suggesting that the porch (P) and probably the vestibule itself were also later additions. This, in turn, suggests the northern wall of the alcove/southern wall of the vestibule is also relatively late. All of these later changes to W-80 might be contemporaneous with the use of the structure as a windbreak during the principal use of the grinding area (GA).

### The Grinding Area (GA)

The grinding area dominates the northern half of the building. Altogether sixty-seven milling stones came from the area, including forty-six handstones and twenty-one grinding slabs. These numbers contrast with the total of only thirteen grinding slabs, thirty handstones, and four pestles recovered in 2013, including those from outside the main room (Rollefson et al. 2013, p. 18). Four of the large slabs found during 2014 included central mortars ranging



Figure 7. Hearths 058, 055, and 061 among grinding slab/mortars; door D1 is at upper right (photo: Y. Rowan)

between 7 and 11 cm in diameter (fig. 7). The largest of the slab/mortars has dimensions of  $89 \times 76 \times 11$  cm (140 kg) and the smallest  $38 \times 29 \times 13$  cm (54 kg). It is perhaps important that four hearths were found in the northern half of W-80 in 2014 in close proximity to the grinding stones whereas only one diffuse area of burning was found in the southern half in 2013.

A feature that might be related to the use of the grinding area is a rectangular “bin” (Locus 068) along the western wall 070, approximately 60 cm west of the grinding slab/mortar complex in figure 8. Measuring 170 cm N-S  $\times$  69 cm E-W, the bin is outlined by basalt, including one long block on edge and another on end (fig. 8). Elsewhere in the grinding area two caches of gazelle and caprine astragali were found just inside and to the west of the northeastern doorway D1 (fig. 9) and next to the eastern face of the central pillar CP.

A clear example of the renovations that structure W-80 underwent is shown in the north wall of the building (fig. 10). At some time an opening measuring 2.3 m had been created in wall 070 that extended eastward to wall



Figure 8. The rectangular bin along the western wall of W-80 (photo: Y. Rowan)

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019, which was an original part of W-80. Sometime later the opening was closed with blocking stones Locus 071, creating at the same time doorway D1. The timing of the blockage may have coincided with the construction of the alcove, the southwestern doorway D2, and the vestibule. A platform of rocks (Locus 062) accumulated to the north of the blocking.



Figure 9. (a) Cache of gazelle/caprine astragali 064 inside doorway D1; (b) cache of gazelle/caprine astragali adjacent to east edge of central pillar CP (photos: Y. Rowan)



Figure 10. Renovations in the north wall of W-80. An opening was made in wall 070, then blocked sometime later using basalt slabs placed on edge (071), creating doorway D1 at the same time. Platform 062 was built to the north of 070. The original eastern wall 019 of W-80 is just off the photo to the right (photo: G. Rollefson)

## The Probe (PR)

Without sufficient time to excavate all areas to sterile soil, we decided to open a 1 × 1 meter probe adjacent to the eastern wall 019 down to bedrock (fig. 6). The structure was not built on bedrock, but on a culturally sterile, gritty, and porous reddish brown sandy silt. We wonder if this might represent an early/Middle Holocene topsoil protected from deflation by the presence of W-80. A similar sediment was found beneath the walls of structure W-66, excavated in 2011 (Rollefson et al. 2012). Cores drilled into the sediments of the *qa* (mudflat) to the southeast of W-80 show a layer of similar sediment.

## Botanical Analysis

Charcoal recovered from the hearths in W-80 has been identified as *Tamarix* sp. and deciduous *Quercus* sp., components of a forest-steppe vegetation (cf. Willcox 1999). If the basal sediment layer under the walls of W-80 absorbed and retained winter rainfall better than at present, this might explain the presence of oak. Samples have been sent to determine if pollen and phytoliths are present in the reddish brown sediment, and OSL (optically stimulated luminescence) samples have been taken from the soils under W-80 and W-66 as well as the *qa* south of Wisad Pools.

## Faunal Remains

Animal bones were numerous and well preserved. According to initial analyses by Alexander Wasse, based on a sample of more than 250 NISP (number of identified specimens) bones from three loci in the 2013 season, gazelle dominate at around 50 percent, hare at about 25 percent, with caprines around 10 percent of the mammals. Large and small felids occur rarely, as does domestic dog and fox. Bird bones are numerous. We expect the ratios of taxa will remain similar for the 2014 assemblage. Among the abundant faunal remains, three bone awls were identified, but more bone tools will undoubtedly come to light as faunal analysis continues.

## Chipped-Stone Tools

A total of 1,437 chipped-stone tools came from the W-80 excavations in 2014. This includes forty-six bead drills and 108 borers, as well as eight cortical knives and twenty tabular scrapers.

A total of 620 arrowheads were recovered from the structure over the past two seasons. More than 85 percent are transverse arrowheads, and in view of the small size as well as the ease and rapidity of their manufacture, it is likely that the ratio of transverse arrowheads to other types might reflect the ratio of smaller mammals and birds to larger mammals in the faunal remains. The total of 620 arrowheads is astonishing, but the recurrent occupation of W-80 spanned a time period of possibly a thousand years (cf. Rollefson et al. 2014, p. 291), so the rate is low on an absolute scale. At the same time, the actual rate of deposition may have been periodically high. The amount of lithic debris inside W-80 is very high, indicating that stone tool manufacture was a major activity inside the structure, including the production of arrowheads. The presence of so many arrowheads in the building, however, might also have been partly due to their presence in the carcasses that were butchered inside the building.

## Small Finds

Items that were probably associated with the tomb were discussed above, and a few small finds from the 2013 season probably also belong to this assemblage, including several biconical carnelian beads, a tiny carnelian tubular bead, a copper bead, two cowrie shell beads, and a sculpted “melon” bead (Rollefson et al. 2013, figs. 21 and 22). The same may be true for the “mace-head” fragments: six from 2014 and three from 2013; however, mace-heads are known from the Late Neolithic (Rosenberg 2010), even as far back as the Late Pre-Pottery Neolithic B and C (Rollefson and Kafafi 1996; Rollefson, Kafafi, and Simmons 1990; Rollefson, Simmons, and Kafafi 1990).

The burned “grooved stone” appears to be a piece of chalky limestone roughly formed by direct percussion to a subrectangular shape (fig. 11). One surface was smoothed and then incised with at least eight parallel grooves. These may have been used for sharpening bone needles and awls, and are known from other sites, such as ‘Ain Ghazal.

The common perception of the eastern badia of Jordan is one of a forbidding landscape constraining occupation of the area during later prehistory, that is, Late Neolithic, Chalcolithic, and Early Bronze Age. Intensified interdisciplinary field research over the past six years is beginning to reveal a different perspective of the opportunities available for hunter-herder groups during later prehistory. The identification of arboreal charcoal paints a very different late prehistoric landscape, and we hope that sediments preserved under the Late Neolithic buildings at Wisad Pools hold promise for detailing what the conditions were like in the seventh millennium and later. We hope that additional excavation of structures at Wisad Pools will disclose whether or not a porous topsoil existed and disappeared, providing clear insights into the process of desertification and its consequences on human presence in the eastern badia.

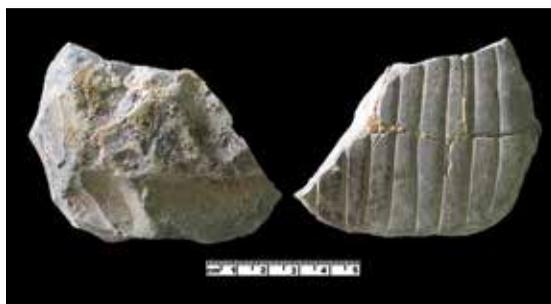


Figure 11. Burned grooved stone of uncertain function (photo: G. Rollefson)

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