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Gazelles, Liminality, and Chalcolithic Ritual: A Case Study from Marj Rabba, Israel

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Endangered today, gazelles were both economically and symbolically important to the peoples of the ancient Near East. In various contexts, the gazelle has represented liminality, death, and rebirth. Gazelles held special significance in the southern Levant, where archaeologists have documented cases, spanning 20,000 years, of ritual behavior involving gazelle body parts. What roles did gazelles play during the Chalcolithic (ca. 4500–3600 B.C.), a period of both decreased hunting and ritual intensification? In this article, we discuss a unique find of burned gazelle feet at the site of Marj Rabba (northern Israel). The feet were found within a well-constructed building that was used for rituals and included two articulated human feet. The gazelle foot bones, the majority of which derive from adult male mountain gazelles (Gazella gazella), *appear to reflect the remains of intentionally destroyed skins or severed limbs. This unique find highlights the evolving symbolic importance of gazelles, perhaps as forces of liminality, in Chalcolithic rituals.*

Keywords: Levant; zooarchaeology; gazelle; ritual; Chalcolithic

The Sumerian story *Dumuzi's Dream* details the downfall of the mythical king of Uruk. Befouled by an undisclosed sadness, the protagonist falls asleep and has a nightmare of bodily transformation and death. Upon waking, Dumuzi relates the dream to his sister, who interprets the imagery. She informs him that he is in danger and instructs him to flee. The king soon learns that his sister is correct; he is being hunted by demons. In desperation, Dumuzi begs the god Utu to turn his hands and feet into those of a gazelle (Alster 1972: 73). Utu grants the wish, and Dumuzi evades capture. But the demons eventually succeed in ambushing him. Dumuzi dies, his nightmare realized (Alster 1972; Hoffman 2004).

Dumuzi's Dream includes some of the first literary references to gazelles. In it, the form of the gazelle prolongs the liminal state between life and death by drawing on the animal's behavior: its speed, its quickness to take flight, and, ultimately, its susceptibility to ambush tactics. These qualities shaped the long history of interactions between humans and gazelles in the Near East (Simmons and Ilany 1975–1977; Martin 2000). They influenced not only the economic roles that the animal played but also its symbolic significance.

In this article, we focus on the symbolic value of gazelles in the southern Levant during the Chalcolithic, a period defined by ritual intensification and socioeconomic change. We present a unique find from the site of Marj Rabba, Israel. Within a well-constructed building associated with ritual activity, we recovered 268 gazelle remains, most of which were burned, articulated phalanges. The nature of this unique deposit, which has only vague parallels to other finds in the region, remains unclear. Yet it has the potential to shed light on the ritual meaning of gazelles in the Chalcolithic.

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The History of Gazelle Exploitation

Three species of gazelle are native to the southern Levant. The dorcas gazelle (*Gazella dorcas*) and goitered gazelle (*G. subguturrosa*) are native to arid environments, thriving on steppic vegetation and acacia trees. The mountain gazelle (*G. gazella*) is more common in the temperate uplands, the region where Marj Rabba is located (Simmons and Ilany 1975–1977; Martin 2000). All three species are currently listed as "threatened" by the International Union for Conservation of Nature (IUCN). Human settlement expansion and hunting are among the major factors for the depletion of gazelle populations. Recently, the IUCN downgraded the status of the Israeli mountain gazelle, the species that figures prominently in this article, to "endangered" (Rinat 2015).

Gazelles have a long history of exploitation in the region (Davis 1983; Tchernov, Dayan, and Yom-Tov 1986; Bar-Oz 2004; Munro and Bar-Oz 2005; Bar-Oz, Zeder, and Hole 2011; Martin, Edwards, and Garrard 2013). They were some of the most commonly hunted animals in the Epipalaeolithic period and remained an important source of meat during the transition to agriculture in the Neolithic. From the Late Neolithic to the modern day, gazelles continued to be a food source for communities located in the steppe and desert (Simpson 1994; Bar-Oz, Zeder, and Hole 2011; Rowan et al. 2015). In addition, gazelle skins were luxury goods for prehistoric and historic communities in the Near East (Kirkbride 1974; Bar-Oz, Zeder, and Hole 2011). The construction of thousands of desert kites (long stone-wall structures used for trapping animals) across the arid parts of the Near East is indicative of the importance of gazelle hunting in prehistoric and historic periods (Nadel et al. 2010; Kennedy 2012; Zeder et al. 2013).

Despite the importance of gazelle on the desert margins, Neolithic and Chalcolithic communities located in the temperate regions of the southern Levant largely replaced gazelle meat with that of sheep, goats, cattle, and pigs (Garfinkel 1993; Gopher 1993: 59; Haber and Dayan 2004; Sapir-Hen et al. 2009). Gazelle remains typically make up less than 10% of faunal assemblages from these periods (Grigson 1998), paralleling the general decline in the exploitation of wild plants and animals (Rowan and Golden 2009: 23–26). The expansion of agriculture may also have precipitated habitat destruction, a problem that currently threatens Near Eastern gazelle populations.

Gazelles in Ritual of the Southern Levant before the Chalcolithic

The use of gazelles in ritual activity in the southern Levant and neighboring regions has a long history. Epipalaeolithic (ca. 21,000–9600 cal B.C.) burials frequently included gazelle and other animal bones (Maher et al. 2011). Some of the animal bones reflect the remains of funerary feasts (Munro and Grosman 2010). Other animal bone deposits associated with burials indicate more symbolic functions. For example, at the Natufian period (ca. 12,500–9600 cal B.C.) site of ʿAin Mallaha, two adult burials included gazelle phalanges, which seem to have been strung together on a necklace (Byrd and Monahan 1995: 170). A young child buried in the El-Wad B-2 Group, meanwhile, was interred with a headdress made of 32 perforated gazelle phalanges (Byrd and Monahan 1995: 170). The use of gazelle phalanges in these examples is particularly intriguing, given the nature of the Marj Rabba assemblage. However, one should bear in mind that gazelles were extremely common in the faunal assemblages from these sites, and there are numerous examples of beads and ornaments fashioned from gazelle phalanges at El-Wad (Weinstein-Evron et al. 2007: 77–78). Gazelle phalanges may simply have represented an available material whose thin tubular shape made it ideal for certain types of ornaments.

The ritual use of gazelle horns is perhaps the clearest sign of this animal's long-term symbolic importance. At Kharaneh IV, an adult male burial dating to ca. 17,000 cal B.C. contained gazelle horn cores above his head (Muheisen 1988; Maher et al. 2012: 3). Excavators at ʿAin Mallaha found a similar grave: an adult female with two gazelle horn cores near her head (Byrd and Monahan 1995: 170). Such inclusions, although not necessarily near the head, were common in Natufian graves (Tchernov and Valla 1997: 71; Grosman, Munro, and Belfer-Cohen 2008). Southern Levantine communities also curated gazelle horn cores; caches of them have been found at archaeological sites throughout the prehistoric period (Garfinkel 1987: 206; Verhoeven 2002; Grigson 2006: 239; Maher et al. 2012: 3). The meaning of horns probably differed from context to context. However, the placement of one of the most distinctive features of the gazelle body with the deceased could reflect an intended afterlife hybridity with an animal that embodied speed and gracefulness. In the same way that Dumuzi was divinely transformed into a gazelle to escape death, the addition of gazelle elements to burials may have been a way of hastening the deceased's spiritual transition into the world of the dead.

An imagined hybridity between gazelles and humans is perhaps best attested at the unusual Pre-Pottery Neolithic B (ca. 8700–6000 cal B.C.) site of Kefar ha-Horesh (Horwitz and Goring-Morris 2004; Goring-Morris and Horwitz 2007). Among other unique animal burials, the excavators uncovered:

> a lime-plastered pit (L1004) containing an excellently preserved lime-plaster modeled skull of an adult male, aged 20–25 years (Homo #1). An intact Byblos point had been placed immediately adjacent to the back of the skull as a grave good. Some 15–20 cm lower in the same pit the remains of a headless but otherwise largely articulated mountain gazelle (*Gazella gazella*) had been placed. The faunal-human ensemble was intentionally placed within a plaster-lined pit that was then filled and sealed by a sandwich of plaster cappings. (Goring-Morris and Horwitz 2007: 905–6)

The burials at Kefar ha-Horesh included a variety of other animals. The excavators, for example, found human bones arranged in the shape of unidentifiable animals (Horwitz and Goring-Morris 2004: 169), as well as the headless burial of an adult male, which was positioned above a pit containing the bones of at least seven aurochsen (*Bos primigenius*) (Horwitz and Goring-Morris 2004: 172–73). Indeed, the diversity of animal imagery at Kefar ha-Horesh is notable. Nevertheless, *G. gazella* was the most common taxon in both the non-burial and burial contexts at the site (Horwitz and Goring-Morris 2004: 174) and thus may have played a more prominent ritual role than other animals.

Gazelles were also common in other Pre-Pottery Neolithic contexts. In this period of subsistence change, hunting gazelles may have transitioned from a primarily economic activity to one whose main purpose was symbolic or even recreational. For example, the remains of gazelles and other wild animals are frequently associated with contexts identified as feasting debris, even as they become less important features of the everyday diet (Twiss 2008). The association of less commonly eaten animals with ritual contexts is not unexpected—indeed, it is one of the ways to identify such contexts (e.g., Horwitz 1987; Russell 2012: 360). Despite their diminished dietary importance, there is continued representation of gazelles in art and in figurines, the latter of which may have been used in sympathetic magic hunting rituals and/or as children's toys (Twiss 2001; Rollefson 2008).

There is little published evidence on the ritual uses of gazelles in the southern Levant in the later phases of the Neolithic. It is possible that their symbolic significance diminished with the expansion of farming in the ancient Near East and with the overall decrease in human–gazelle interaction. For example, a series of zoomorphic figurines recovered from sixth-millennium Shaʿar ha-Golan contained no examples of animals that could be clearly identified as gazelle (Freikman and Garfinkel 2009). Gazelles continued to have ritual significance on the margins of farming communities, where hunting was still a dominant subsistence practice. At Wisad Pools, a Late Neolithic site dating to the mid-seventh millennium in the Black Desert of eastern Jordan, Yorke Rowan et al. (2015: 5–6) found two small caches of gazelle and caprine astragali near the doorway of a building containing dozens of grinding slabs, mortars, and pestles. Despite this case, gazelles appear to have lost some of their ritual luster as communities settled into full-time agriculture.

The Chalcolithic in the Southern Levant and the Role of Ritual

The Chalcolithic period (ca. 4500–3600 cal B.C.) in the southern Levant was defined by social and economic change. Communities adopted new crops, such as olives, and began a more intensive exploitation of caprines and cattle for milk and traction (Sherratt 1983; Galili et al. 1997; Rowan and Golden 2009; Greenfield 2010; 2014). The Chalcolithic saw distinctive changes in ritual behavior as well, particularly in terms of mortuary practice. Extra-settlement burials became the dominant form of disposing of the dead (Levy and Alon 1985; Levy et al. 1990; Rowan and Golden 2009: 50). Secondary burials in ossuaries were also common, with notable examples from Peqiʿin Cave (Gal, Smithline, and Shalem 1997; Shalem, Gal, and Smithline 2013). Meanwhile, grave goods increased in frequency and richness compared with the preceding Neolithic period (Rowan and Ilan 2013: 90). At the Shiqmim cemetery, for example, excavators recovered numerous V-shaped bowls and other ceramic vessels, as well as jewelry made of bone and shell (Levy and Alon 1985: 80).

Sanctuaries and cultic centers were important features of the Chalcolithic landscape, providing spaces for rituals that may have taken on new meaning during this period of social change. Notable examples include Gilat and Teleilat el-Ghassul (Ghassul). Gilat has been interpreted as a cultic center, perhaps one that attracted regular pilgrimages. Evidence for ritual activity is demonstrated by the preponderance of high-value artifacts, such as eccentric ceramics and violin-shaped figurines (Alon and Levy 1989; Joffe, Dessel, and Hallote 2001; Commenge 2006; Levy 2006). At Ghassul, domestic village architecture seems to have been interspersed with buildings of a more ritual nature. Well-preserved polychrome wall murals at Ghassul may represent some aspects of the ritual activity that took place there (Bourke et al. 2000; Bourke 2001; Bourke et al. 2007; Lovell 2010; Ilan and Rowan 2011; Drabsch and Bourke 2014; Drabsch 2015).

It is possible that the intensification of ritual activity was causally linked to socioeconomic changes (Rowan and Golden 2009; Lovell 2010; Ilan and Rowan 2011). If so, the Chalcolithic in the southern Levant might

best be described as an example of what Norman Yoffee (2005: 162–71) has termed "rituality." Referring to the Chaco phenomenon during the 11th century A.D. in the American Southwest, Yoffee (2005: 168) argued that the elaboration of a ceremonial network could compel economic change, particularly in food production, in order to supply ritual sites and specialists. It is open to debate whether this was occurring in the Chalcolithic. However, the role of costly rituals was clearly important to almost every community in the southern Levant.

Gazelles appear somewhat sporadically in these rituals. The so-called Star Painting at Ghassul, which depicts a gazelle next to a masked figure, is one of the few clear examples of gazelles' symbolic role (Mallon, Koeppel, and Neuville 1934; Ilan and Rowan 2011: 92). Chalcolithic communities also attached symbolic value to horns. At Tel Tsaf, a late sixth- to early fifth-millennium site, excavators found caches of adult male gazelle horn cores, similar to those found in Pre-Pottery Neolithic and Epipalaeolithic sites. In the case of the Tsaf horn cores, most of them were burned, perhaps implying intentional destruction (Hill 2011: 161–63). At the cultic center of Gilat, gazelle horn cores were disproportionally represented, and excavators uncovered a cache of nine burned male gazelle horn cores alongside bone tools and a complete basalt fenestrated and pedestalled stand (Grigson 2006: 239; Levy et al. 2006: pls. 5.21, 25.79). All of these items were associated with a burial structure containing nine human corpses (Levy et al. 2006: 138 and pl. 135.119). Gazelle horn cores were also recovered among other animal bones in association with Chalcolithic burial caves at Shaʿar Efrayim (Horwitz 2011). In the far south, near modern-day ʿAqaba, the excavators of Hujayrat al-Ghuzlan recovered caches of gazelle, ibex (*Capra ibex*), and domestic goat horn cores (Klimscha 2011: 189).

The significance of horns extended beyond those of gazelles. Chalcolithic imagery often depicted horned animals. For example, horns appear on a copper "scepter" from the Nahal Mishmar hoard, on basalt house idols from the Golan, and on wall paintings in the ʿAqaba region (Schmidt 2009; Ilan and Rowan 2011). It is clear that some of these images represent ibexes, cattle, sheep, and goats; the importance may have been the horns themselves rather than the animals they sat atop. We can only speculate about their meaning, but it is possible that horns were a phallic symbol. Indeed, David Ilan and Rowan (2011: 104–6) argue that they may have been associated with fertility or regeneration. That interpretation dovetails well with the role of the gazelle as an animal of death/rebirth in *Dumuzi's Dream*, as well as with the mortuary rituals of the Pre-Pottery Neolithic and Epipalaeolithic.

Introduction to Marj Rabba

Marj Rabba is a Chalcolithic site located in the hilly lower Galilee of modern-day Israel (**Fig. 1**). A team from the Oriental Institute of the University of Chicago excavated Marj Rabba over six seasons between 2009 and 2014. At around 8 ha, Marj Rabba was one of the largest villages in the Galilee during this period. A small number of radiocarbon dates indicate an occupation of several centuries in the mid–late fifth millennium cal B.C. (Rowan and Kersel 2014; Urban, Rowan, and Kersel 2014). The excavators revealed three major Chalcolithic phases. The earliest phase (IV) was only partially exposed and consisted of wall fragments and associated deposits. Phase III primarily contained rectilinear buildings and associated features, including the remains of a well-constructed building complex—Building 1—that figures prominently in this article. The latest phase (II) included fragments of rectilinear houses and stone circles, the latter possibly representing the bases of silos.

Faunal, lithic, ceramic, botanical, and architectural remains indicate that Marj Rabba was occupied by sedentary farmers who practiced mixed agriculture with an emphasis on grain production (Price et al. 2013; Rowan and Kersel 2014). Bones of domestic sheep, goats, cattle, and pigs dominated the faunal remains, which will be published as a chapter in an upcoming Oriental Institute volume, and are shown in **Table 1**. Gazelles composed a small proportion of the remains.

There is evidence for the ritual uses of animals at Marj Rabba. The nearly complete and articulated remains of two adult cattle were recovered from a pit (559C) dating to 4360–4260 cal B.C. (Beta 366672; 5470 ± 40 B.P.). These dates are contemporaneous with Phase II (Hill, Price, and Rowan 2016). We have previously discussed our interpretation of this deposit as reflecting a village-wide feast, involving a high degree of food waste (Hill, Price, and Rowan 2016). Later in this article, we discuss the similarities between the cattle remains in Pit 559C and the gazelle bones recovered from Building 1.

Building 1

The western portion of Building 1 in Phase III spread across four excavation squares—G1, G2, H1, and H2—the balks between which were removed in order to better expose the architecture (**Figs. 2, 3**). The eastern portion of the structure was not excavated. Building 1 was in use for some time and went through several renovations. We describe the stratigraphic sequence, associated features, and artifacts below.

The initial preparation for the construction of Building 1 is evident from the exterior of the building on its

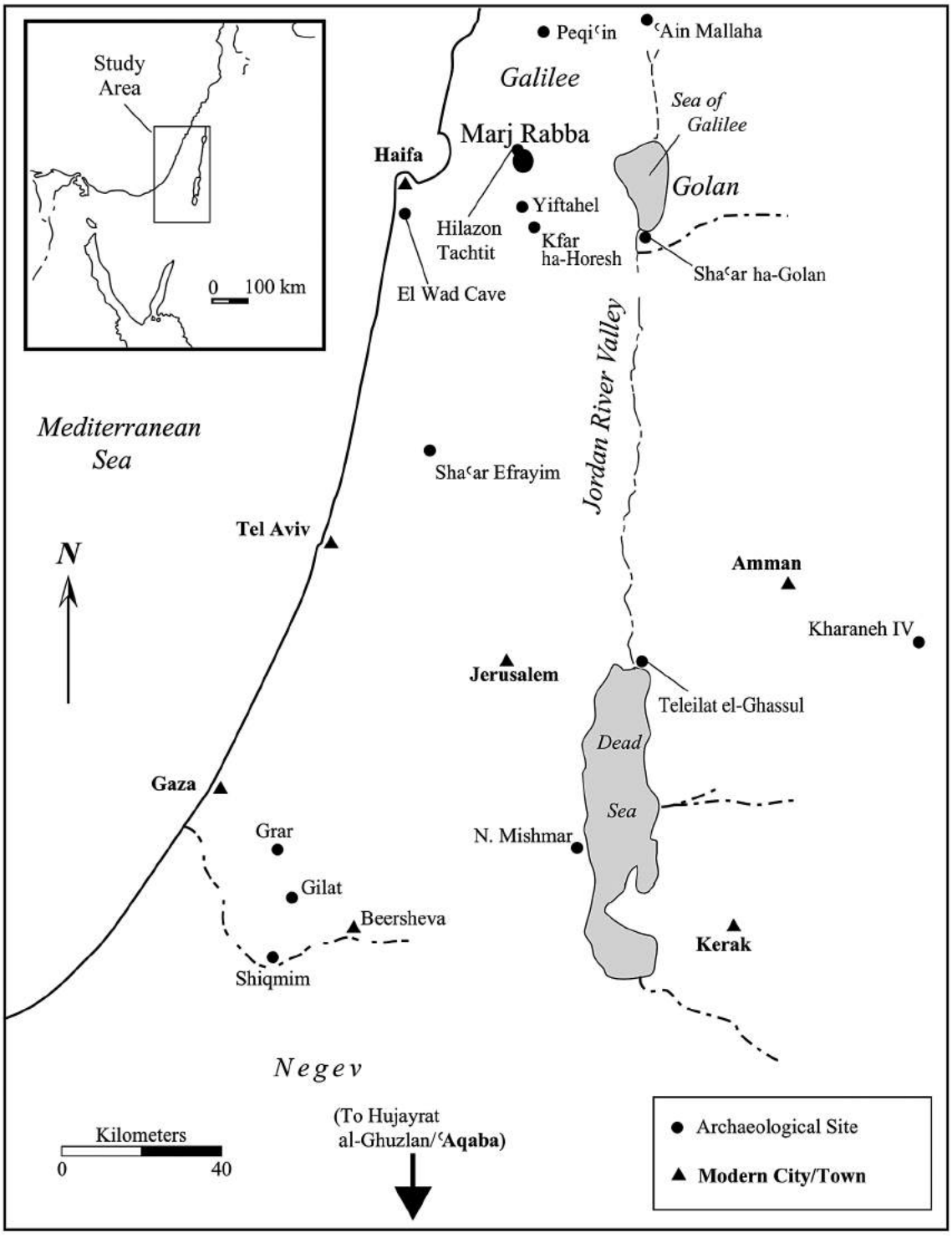

Fig. 1. Map of the southern Levant showing the location of Marj Rabba and sites mentioned in the text. (Map by Y. M. Rowan and M. D. Price)

Table 1. Number of Identified Specimens (NISP) for Major Taxa and Percent of Domestic Taxa from Latest (I) to Earliest (IV) Phases at Marj Rabba

Taxon	*Building 1 Loci*[1]	*Building 1 Burned*	*Total in All Phases N (%)*
Bos	20 (4%)	7 (35%)	750 (13%)
Ovis/Capra[2]	130 (29%)	7 (5%)	2,855 (50%)
Ovis	9	0	182
Capra	8	1	239
Sus	67 (14%)	7 (10%)	1,685 (30%)
Gazella	268 (55%)	256 (96%)	373 (7%)
Total Domestic + Gazelle	**485**	**278 (57%)**	**5,663**

[1] Includes data from all loci assigned to Phases III, II/III, and III/IV in Squares G1, G2, H1, and H2.

[2] *Ovis/Capra* includes specimens identified specifically to *Ovis* or *Capra*.

southern and western walls. The southern wall of Building 1 (w315B/w368B) was built atop a deposit of large uniform cobbles, which were placed at the bottom of a foundation trench (393B). Exposure of Wall w315B/w368B revealed small cobbles from this builders' trench adhering to the southern face of the wall. Another stone wall (w904B) defined the western edge of Building 1. Walls w315/368B and w904B met at an exceptionally well-built corner, which is unique in the Chalcolithic (see **Fig. 2**). On the western outer face of Wall w904B, excavators identified another builder's trench (326B). On the northern end of Wall w904B, Wall w925B ran to the east for ca. 6.5 m before disappearing into the northeastern edge of the trench.

Within Building 1, the excavators detected at least two distinct subphases: IIIA and IIIB. They also partially exposed an earlier subphase (IV) in a small sounding. The chronological relationship between these phases is unclear. It is possible that they were deposited in rapid succession. Gazelle remains were recovered in roughly equal proportions from IIIA and IIIB.

Phase IV

Starting with the earliest building phase, a 1 × 1 m probe (433B) situated along the northern face of Wall w315B/w368B revealed a floor with an in situ plastered cup mark (12–15 cm conical feature). This probably represents the earliest use of the building. Repeated refloorings episodes are indicated by multiple surfaces, reflecting the continued use of space within the building. In the surface immediately above the cup mark, excavators exposed two articulated human feet. These feet were adjacent to each other, as they would be in a flexed burial (**Fig. 4**). However, no other human remains were recovered. Because the exposure of Phase IV was limited, it is unclear whether the remaining parts of the skeleton lay elsewhere beneath Surface 417B, or whether the occupants of Marj Rabba intentionally detached the feet and deposited them in Building 1. Another possibility, which finds strong parallels in other parts of the southern Levantine Chalcolithic, is that the feet were left in situ when the other parts of the skeleton were removed for secondary burial. Secondary burial of partial skeletons was a common practice in the Chalcolithic (Gal, Smithline, and Shalem 1997; Smith et al. 2006; Shalem, Gal, and Smithline 2013).

Phase IIIB

Surface 417B served as the floor of Building 1 during Phase IIIB. In this period of use, the entrance was open to Room 1, which was created through the construction of a well-built wall (w922) running north–south. This interior wall had a threshold (425B) on the southern end for the entrance to Room 1 and a second doorway on the northern end that opened into a storage space (390B). A poorly made wall (w358B) on the eastern end and a more substantial wall (w357B) on the southern end created a storage space adjacent to the room. The southern wall (w357B) seems to have also served as a support on the eastern face of Wall w922. Artifacts recovered from Phase IIIB included at least three ceramic vessels, smashed on the floor of Surface 417B, as well as many other sherds pressed into the matrix of the floor. One of the ceramic vessels was apparently set into a shallow pit in the floor (431B).

Phase IIIA

Several changes occurred in the structure and layout of Building 1 in its latest phase of use. Both doorways in

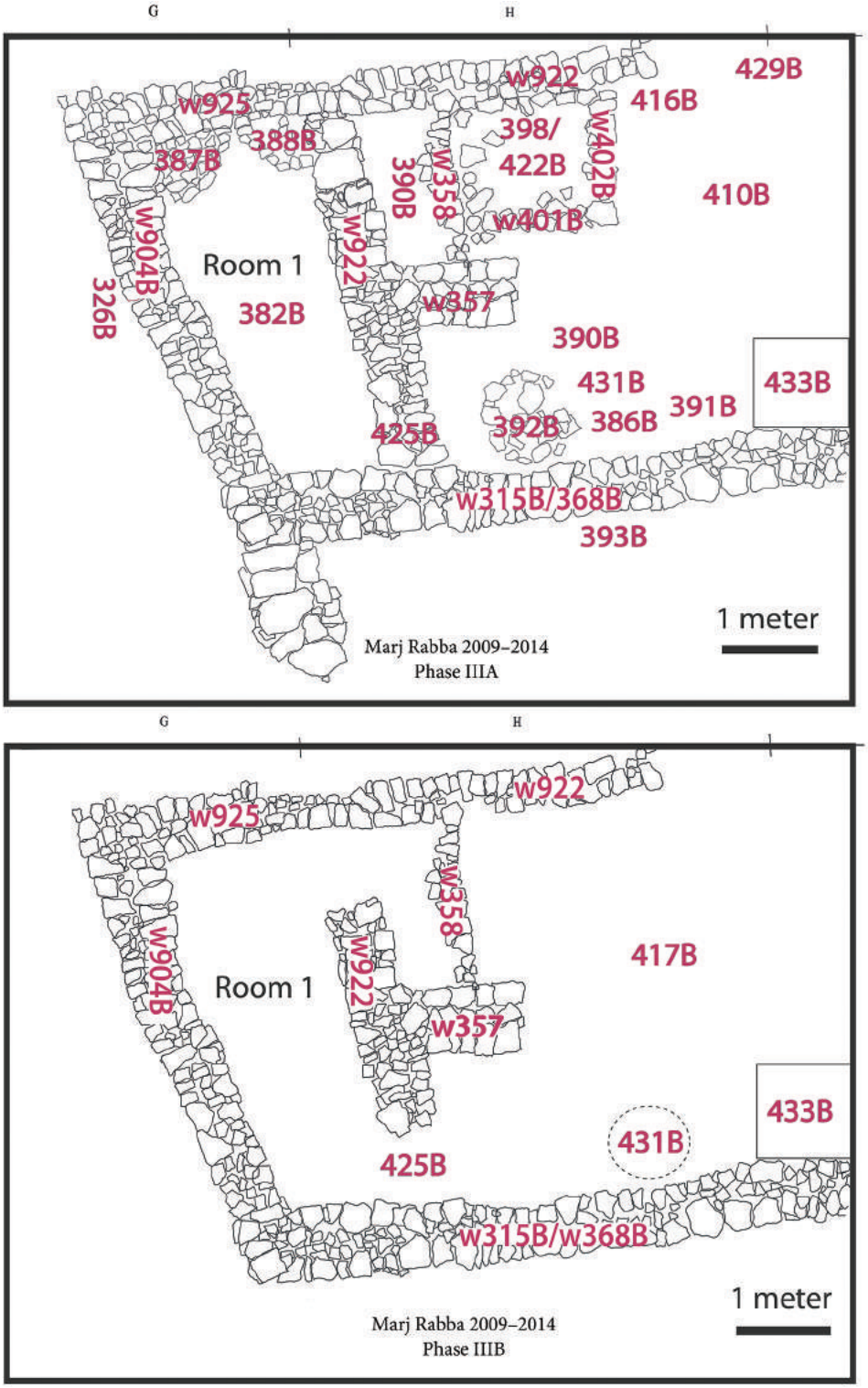

Fig. 2. Building 1 in Phases IIIB (earlier) and IIIA (later) and locus numbers mentioned in the text. Most of the gazelle foot bones derive from Loci 417B and 410B. (Drawings by M. M. Kersel)

Fig. 3. Orthophoto of Area BB, showing the structures in Building 1. (Photo by A. C. Hill)

Fig. 4. Articulated human feet in situ in Locus 433B. (Photo by Y. M. Rowan)

Fig. 5. Mace-head from Locus 390B. (Photo by A. C. Hill)

Room 1 were blocked. Before sealing it off, Building 1's occupants left a finely ground stone mace-head inside Storage Bin 390B (**Fig. 5**). The doorway on the southern end of the room was also blocked, and a circular stone feature with an erect stele (392B) was built directly in front of the threshold. The enigmatic small stone feature (398/422B) was also built against the exterior of the storage bin at about the same time. A rubble layer (410B) was associated with Phase IIIA use in Building 1.

Zooarchaeological Analysis of Gazelles in Building 1

The excavators recovered 268 gazelle bones, the vast majority of which were burned toe bones found in articulation (**Fig. 6**). These were found primarily on the surface of the main room in Building 1 in a burned deposit that extended across the phases. There were no other signs of burning in the room, and thus the remains seem to indicate a controlled burning of gazelle feet rather than a catastrophic fire affecting the whole building. This is confirmed by a comparison between the relative abundance of burning in non-gazelle remains in these loci (9%; n = 234) and the relative percent of burning in gazelles (96%; n = 256).

In contrast to the rest of Marj Rabba, gazelle bones dominate the faunal remains recovered from Building 1. Gazelle compose over 50% of the recovered fauna from these loci compared with just 7% for whole site. This 7% is inflated, moreover, by the abundance of gazelle specimens in Building 1, which account for over 70% of the total number of gazelle specimens recovered from Marj Rabba. The relative abundance of gazelle in all loci outside of Building 1 is 2% (n = 105).

Table 2 indicates the elements represented. The vast majority (n = 245 of 268) were phalanges and their associated sesamoids—bones of the distal foot. Although it is notoriously difficult to identify sesamoids to taxon, the fact that they were found in close proximity and/or in articulation with readily identifiable phalanges strongly argues that they are, in fact, from gazelle. Indeed, many of the gazelle elements were found in articulation (see **Fig. 6**). In addition, there were 15 metapodial fragments, of which both metacarpal and metatarsal bones were represented—that is, both fore and hind limbs were present. Small numbers of fragments of other elements were recovered as well, including a hemimandible with five associated teeth, a calcined ulna, and a loose upper molar.

Table 3 indicates the specific loci from which the gazelle bones derived. Two loci dominate: 410B (n = 109 fragments) in Phase IIIA and 417B (n = 102 fragments) in Phase IIIB. The gazelle remains from these two contexts are shown in **Figure 7**. Although Locus 417B was stratigraphically below Locus 410B, the gazelle remains were likely deposited in the same event, an interpretation strengthened by the fact that there were two cases in which broken and burned phalanges from Locus 417B refit with their counterparts from Locus 410B. As **Table 3** shows, gazelle remains were recovered from a number of other contexts in Building 1 in Phases IIIA and IIIB, including Loci 382B, 386B, 391B, 416B, 422B, and 429B. These contexts also primarily contained gazelle foot bones. Locus 382B, located in Room 1, is perhaps unique

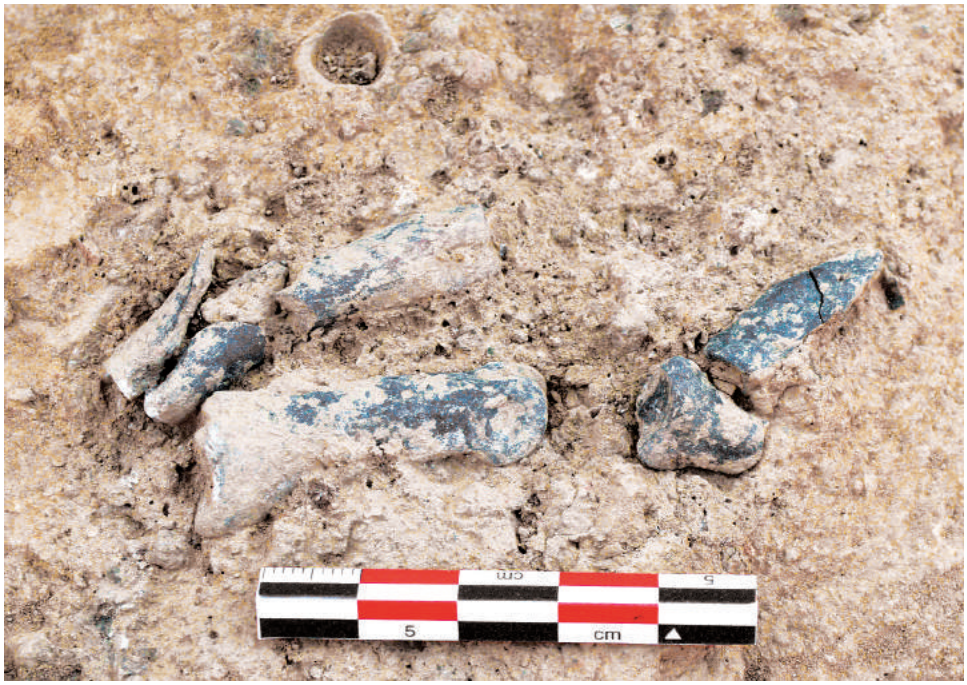

Fig. 6. Gazelle phalanges in situ in Locus 417B. (Photo by A. C. Hill)

Table 2. Gazelle Elements Represented and Burned in Building 1

Element	*NISP*	*MNE*	*NISP Scorched*	*NISP Carbonized*	*NISP Calcined*
Mandible	1	1	0	0	0
Teeth	6	6	0	0	0
Ulna	1	1	0	0	1
Metacarpal	1	1	0	0	0
Metatarsal	2	2	1 (50%)	1 (50%)	0
Metapodial	12	6	0	1 (8%)	11 (92%)
Phalanx 1	81	58	15 (19%)	48 (59%)	18 (22%)
Phalanx 2	64	56	14 (22%)	37 (58%)	10 (16%)
Phalanx 3	66	56	20 (30%)	38 (58%)	7 (11%)
Proximal sesamoid	16	16	0	6 (37%)	10 (63%)
Distal sesamoid	18	18	0	12 (67%)	6 (33%)
Total	**268**	**221**	**50 (19%)**	**143 (53%)**	**53 (20%)**

Note: Percentages show proportion of total NISP for each element with varying levels of burning intensity.

because it contained a relatively intact adult gazelle hemimandible in close proximity to the mace-head fragment.

In terms of pre-depositional treatment, 96% (n = 256) of the identified gazelle specimens were burned. Of these, 25% (n = 63) were calcined, indicating prolonged exposure to high temperatures. In addition, 20% (n = 50) of the bones recorded as burned were unevenly exposed to fire, which may mean that the flesh and hooves were still attached to the feet at the time of immolation. None of the bones displayed butchery marks, suggesting that the feet were butchered above the phalanx/metapodial articulation. Also, there were no signs of gnawing on the bones, indicating dogs or other scavengers did not have access to them.

Any calculation of the minimum number of individual (MNI) gazelles depends on how one decides to aggregate

Table 3. Locus Numbers and Stratigraphic Assignment of Building 1 Contexts with Gazelle Remains

Locus	*NISP**	*Phase*	*Description*	*Other Finds*
382B	7	IIIA	Packed floor deposit in Room 1	Ax fragment, nearby basalt mace-head (371B)
386B	12	II/III	Mud-brick fill north of Wall w368	Spindle whorl, pot fragments
391B	5	IIIA	Mud brick and stone collapse below 386B	Spindle whorl
410B	109	IIIA	Rocky collapse above Surface 417B	
416B	2	IIIA	Fill under Surface 415B	
417B	102	IIIB	Disturbed floor of Building 1	2 axes, ballistic stone fragment, spindle whorl, pot fragments, spatulate-type bone tools
422B	4	IIIA	Inside main room of Building 1	
429B	27	IIIA	Circular stone feature in north section of Square H1	

* NISP is of gazelle specimens only.

the contexts. Because there were two refits between Loci 410B and 417B, it is reasonable to treat the contexts as a single deposit. By aggregating all the contexts together, one arrives at the most conservative MNI estimate. The MNI was calculated by determining the maximum of the minimum number of elements (MNE), which is here defined as the number of necessarily independent specimens based on the state of fusion and the proximal-distal portion represented. The first phalanx had the highest MNE with 58 unique elements, which represents at least 29 feet and at least eight gazelles. Thus, the MNI is eight. However, the true number of individuals represented may be greater than this conservative estimate.

It is difficult to estimate the age structure of the population because of the fact that, in the mountain gazelle, the phalanges are one of the first elements to undergo epiphyseal fusion. Phalanges are fully fused in most individuals by 12 months (Munro, Bar-Oz, and Stutz 2009). The ratios of fused-to-unfused first and second phalanges were 3:49 and 3:53, respectively. These ratios indicate that the Building 1 assemblage derived mostly from adults, with only a small number (< 5%) from fawns. There were small numbers of fragments of metapodials, an element that fuses in most individuals at around two years of age (Munro, Bar-Oz, and Stutz 2009: 757). In the Building 1 assemblage, two fused metatarsals and one metacarpal represent adult animals, while six fragments of unfused distal metapodials, coming from at least two metapodials, represent yearlings or younger animals. Although a small sample, the metapodial data suggest roughly even contributions of gazelles older and younger than two years.

In terms of sex distribution, the Building 1 assemblage appears to be composed mostly of males. Measurements of 32 second phalanges, shown in **Figure 8** (see also the **Appendix** to this article), were compared with analogous measurements taken on modern *G. gazella* specimens from Israel (Munro, Bar-Oz, and Hill 2011). Natalie Munro, Guy Bar-Oz, and Austin Hill (2011) identified the proximal breadth and greatest length of the second phalanx as sexually dimorphic in modern mountain gazelle populations. Although the authors maintain that sex ratios in zooarchaeological assemblages are best calculated using measurements on multiple elements—especially the atlas and pubis—that approach is not possible in the foot-focused Building 1 assemblage. For this reason, our sex ratios, derived from the second phalanx alone, are inexact. Nevertheless, Munro, Bar-Oz, and Hill's (2011: 1260) discriminant function equations and cut-off values suggest that 86–92% of the second phalanges in the Building 1 assemblage derived from males.

The high percentage of males might be inflated. Chalcolithic gazelles appear to have been larger than modern ones, perhaps as a result of reduced hunting pressure in the fifth and fourth millennia B.C. (see Davis 1981; Bar-Oz et al. 2004). In fact, 11 of the specimens (34%) were larger than one standard deviation beyond the mean male greatest length, and 7 (22%) were larger than one standard deviation beyond the mean male proximal breadth. These proportions are larger than the 16% expected if the measurements were normally distributed. Although the large size of the phalanges might lead one to cast doubt on our taxonomic identifications, the metrics are significantly different from those taken on sheep and goats from other contexts at Marj Rabba. The phalangeal proximal breadths were significantly smaller in Building 1 gazelles than those of sheep/goats (first phalanx: $\mu_{gazelle} = 11.1$ mm, $\mu_{sheep/goat} = 11.8$ mm, $t_{two\text{-}tailed} = 2.054$, $p = .046$; second phalanx: $\mu_{gazelle} = 9.5$ mm, $\mu_{sheep/goat} = 12.5$ mm, $t_{two\text{-}tailed} = 6.336$, $p < 0.001$). Additionally, the first phalanges of gazelles are identifiable based on their long and thin shape. That can be shown metrically; we measured the ratio of proximal breadth to greatest

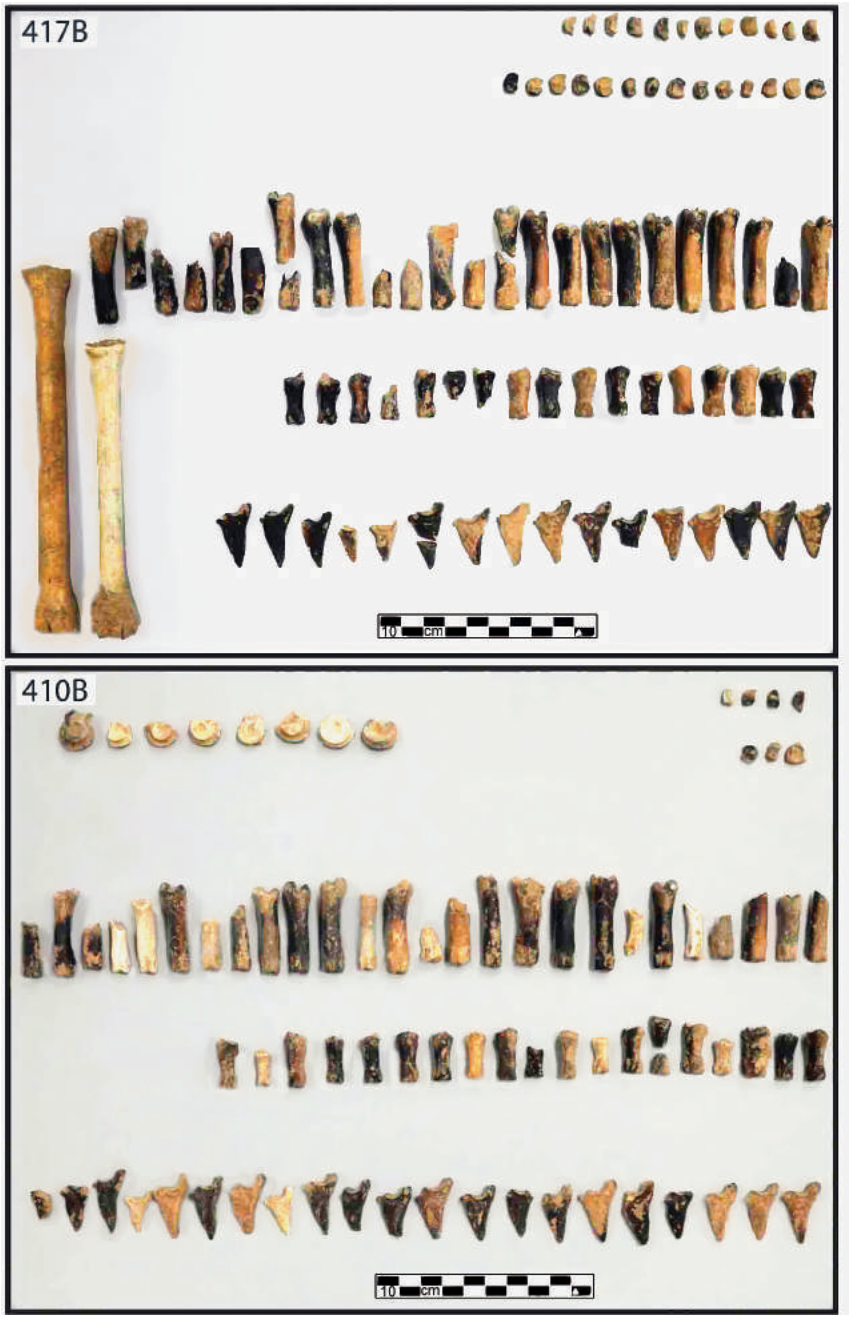

Fig. 7. Gazelle remains from Loci 410B and 417B arranged anatomically. (Photo by M. D. Price)

length and found that it was consistently less than 30% in first phalanges identified as gazelle (range: 24–29%) and greater than 30% in sheep/goats (range: 32–39%). Thus, the metrical evidence suggests that the Building 1 assemblage comprised gazelle remains and was male-focused, a conclusion that is consistent with the sex ratios in horn core caches at nearby Tel Tsaf (Hill 2011: 161–63).

In addition to gazelle, 217 disarticulated fragments were identified as coming from sheep, goat, cattle, and pigs, with ratios between the species roughly equivalent to those found at the rest of the site (see **Table 1**). There were small numbers of tortoise (*Testudo graeca*; n = 5), fallow deer (*Dama mesopotamica*; n = 1), partridge (*Alectoris* sp.; n = 1), duck (*Anas* sp.; n = 1), and weasel (*Mus-*

tela cf. *nivalis*; n = 1). A further 1,108 fragments were not identified to taxon. The large number of non-identified remains stemmed from the high level of breakage, which was typical of the Marj Rabba assemblage, as well as the excavators' exacting recovery methods: All deposits were sieved through a 5 mm mesh.

It is unlikely that the bones of these other animals were deposited as a result of the same activities that affected the gazelle remains. While it is true that a high proportion (47%) of the entire assemblage was burned, there are three reasons to suspect that the non-gazelle remains reflect a different behavioral/depositional pattern: (1) The proportion of burned specimens identified to a taxon was low. Of the major domestic taxa, only 10% (n = 21) of the specimens were burned. This percentage is similar to the percentage of burned bones from the entire Marj Rabba assemblage (13%). (2) None of the non-gazelle remains were found in articulation, and all were highly fragmented. The highly fragmented nature of these bones is different from the relatively intact and articulated gazelle phalanges. (3) The taxon composition of the identified non-gazelle remains matches that of the rest of the site. Taken together, the most likely explanation is that the non-gazelle bones were deposited in Building 1 during a period of disuse or that they were included with sediment that was used as intentional fill in reflooring episodes.

Discussion: Interpreting the Gazelles in Building 1

The unique nature of Building 1 suggests it had a purpose other than as a domestic dwelling. The careful nature of construction and stretcher-header masonry, the presence of an orthostat (392B) near the doorway, the presence of articulated human remains in an early phase, its series of rooms, and the concentration within its walls of several high-value artifacts, including a finely created mace-head, clearly differentiate it from the other buildings at Marj Rabba. Additionally, the abundance of burned gazelle phalanges is atypical for both the site and the period. Similar to structures at Ghassul (Lovell 2010), Building 1 was likely a place of ritual activity adjacent to domestic architecture.

Our interpretation of Building 1 as a ritual place is not without hesitation and much discussion. It has become something of a parody for archaeologists to label anything unusual as "ritual" (Insoll 2004: 1–2). Nevertheless, Building 1 was occupied and used over an extended period of time. It was not an ephemeral structure haphazardly executed by an eccentric individual and used only briefly, but rather a building that required a considerable amount of community investment, and one in which gazelles—or at least their feet—figured prominently. The importance of gazelle body parts to the rituals in Building 1 supports the notion that the division of objects into "sacred" and "profane" spheres is often unwarranted (Bradley 2005; Fogelin 2007: 59–61; Rowan 2012: 2). Such a division neglects the process of ritualization, which has the power to transform objects from the profane to the sacred and back again (Bell 1992). Gazelle feet were probably not religious in and of themselves, but they may have become so through their performance in a specific context.

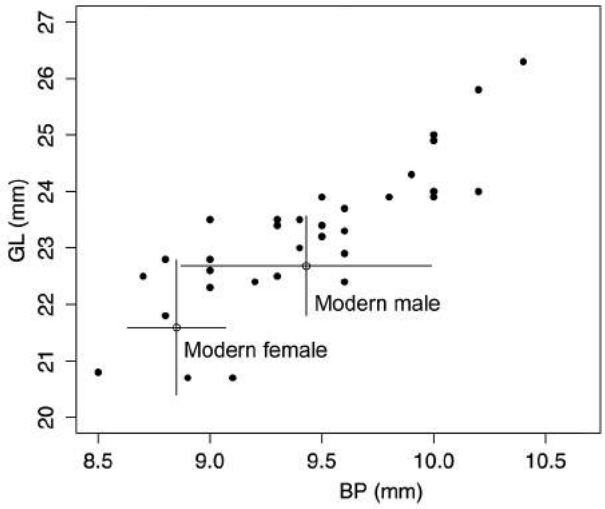

Fig. 8. Metrics for gazelle second phalanges. BP = breadth of proximal end; GL = greatest length. (Graph by M. D. Price)

That being said, the exact use and meaning of gazelle feet is obscure. There are a limited number of practical uses for gazelle feet. They contain almost no meat, and therefore it is unlikely that they represent food remains. Lewis Binford (1978: 148) noted that Nunamiut hunters discarded the phalanges unless food was scarce, in which case they would crush the phalanges for their marrow and grease. The fact that the Building 1 bones were primarily intact and showed no signs of butchery argues strongly against the interpretation that they were used for food. Another practical use of gazelle feet is for making rattles. Animal hoof rattles are used, for example, by the Yaqui deer dancers in the southwestern United States (Turpin 1996: 268). However, such rattles are fashioned by disarticulating the phalanges and stringing them together with the hollow keratinous hoof. The fact that many of the Building 1 bones were found articulated and that numerous sesamoids were recovered—thus indicating that the feet were not defleshed—argue against the rattle hypothesis.

Another possibility is that the Building 1 gazelle were the remains of hide-making activities. The identification

of gazelle skin processing has recently been argued by Bar-Oz, Melinda Zeder, and Frank Hole, who found a disproportionately large number of gazelle phalanges in the faunal remains from mid-fourth-millennium Tell Kuran in the Khabur basin in Syria, suggesting that the deposits represented waste from the initial stage of hide preparation rather than the deposition of skins (2011: 7347). It is here that the parallel between the Tell Kuran and Building 1 assemblages breaks down. Bar-Oz, Zeder, and Hole found limb, axial, and cranial bones at Tell Kuran; the Building 1 assemblage contained almost no bones except those of the distal foot (see **Table 2**). Rather than reflecting the initial preparation of gazelle hides, it seems that the Marj Rabba hunters selectively transported gazelle feet to Building 1, perhaps attached to hides. Such a practice is consistent with ethnohistorical observations. Hide makers occasionally leave the hooves on ungulate skins for decorative purposes or to make it easier to transport the dressed hide (Serjeantson 1989; O'Connor 2003: 3232). If this was the case at Marj Rabba, burning the hides may have been an act of conspicuous consumption similar to the intentional destruction of hides in burial contexts (Piggott 1962).

There are other potential—and admittedly speculative—ritual-symbolic explanations if one accepts the hypothesis that the gazelle foot bones in Building 1 are the remains of hides. Skins and other body parts are sometimes used in rituals designed to invoke the spirit of the animal (e.g., Conneller 2004; Russell 2012: 138). The already-mentioned deer dances, which are common among Native American tribes in the Southwest, are a prime example. As described in the beginning of this article, acts of becoming a gazelle, or at least calling upon its figurative qualities, may have played an important, if sporadic, role in Near Eastern rituals since the Epipalaeolithic. Dancing or conducting a ceremony while clothed in gazelle skins may have been a means of embodying the animal; the retention of the feet on these hides would have recalled the speed and gracefulness of the gazelle. If so, the skins may have been burned in an act designed to ritually kill the hide.

Alternatively, the gazelle feet may have had no purpose at all before they were deposited. They may have simply been tossed in a fire as-is, perhaps as some form of offering. As noted above, gazelle feet have little utilitarian value, and thus, from an economic standpoint, they represent an ideal part of the body to sacrifice. Such offerings recall the Greek myth of Prometheus at Mecone. In that story, Prometheus tricks Zeus into eternally claiming the less edible parts (bones and feet) of sacrificed animals, leaving the meatier parts for humans. It is also tempting to consider the possibility that there was a connection between the gazelle feet and the partially articulated human feet shown in **Figure 4**, which were recovered several centimeters below the floor surface of Building 1. Although small numbers (n = 57) of human bones have been found in isolation throughout the Marj Rabba excavations, the two feet represent the only articulated specimens to date.

Whichever interpretation proves to be correct, the deposit clearly represents the intentional destruction of intact gazelle feet. These feet may or may not have been part of hides. The gazelle remains were treated differently from the other remains in Building 1. The latter were neither articulated nor were they frequently burned. The intentional destruction of gazelle feet or hides bears potential parallels to Pit 559C, which was found about 30 m to the east of Building 1 and dates to Phase II. In Pit 559C, excavators recovered the nearly complete skeletons with articulated portions of two adult male cattle (Hill, Price, and Rowan 2016). Although Pit 559C seems to reflect the remains of a feast, it is also clear from the articulated nature of the specimens that a high degree of food was wasted. Thus, in both cases, we have evidence for the intentional destruction of valuable animal remains in the Galilee during the Chalcolithic.

What then, was the ritual significance of gazelle to the inhabitants of Marj Rabba? This higher-level question necessarily resists interpretation and, without additional evidence, is open to speculation. Nevertheless, it is hard to escape the fact that people of the ancient Near East consistently associated gazelles with liminality over the course of several millennia. *Dumuzi's Dream* is one example of this. Dumuzi himself would later become a deity of regeneration—a liminal process par excellence (Alster 1972; Hoffman 2004). The role of gazelles in burials in the prehistory of the Near East suggests that the connection between gazelles, death, and rebirth extended further back in time. Bedouin folklore is also rich with stories of the magical qualities of gazelles, which seem to derive from their associations with the betwixt-and-between (e.g., Khan 2008). On another level, but one no less connected to their liminality, gazelles' gracefulness in flight has long inspired comparison to feminine beauty. Specifically, gazelles represent girls on the cusp of womanhood and their pursuit by bachelors—that is, boys on the cusp of manhood (Bürgel 1989; Behrens-Abouseif 1997; Strandberg 2009: 187–94).

Conclusion

The symbolic importance of gazelles in the mythology of the Near East has a long and rich history. At least in certain periods, these animals held special significance because of their associations with flight and transition. In the southern Levant, gazelles figured prominently in

rituals since the Epipalaeolithic. The Chalcolithic has been viewed as a period of ritual intensification and change, perhaps in conjunction with the development of new forms of socioeconomic organization. Gazelles maintained a more muted role in these new and diverse ritual practices. Although we have documented caches of gazelle horn cores and gazelle imagery in the Chalcolithic, the inclusion of such animals as ibexes suggests that the emphasis was on the horns rather than on the other qualities of gazelles.

The Marj Rabba Building 1 assemblage is unusual for its focus on gazelle feet or skins in what seems to have been an intentionally destructive ritual. The exact nature of this ritual is unclear. Yet the long-standing symbolic associations between gazelles and liminality in the Near East offer tantalizing clues to its interpretation. What is clear is that the Building 1 assemblage represents yet another example of the important role that gazelles have played in human societies in the Near East, a tradition that has evolved over the past 20,000+ years. The impending extirpation of the gazelle from Israel and other areas of the Near East, one of many environmental tragedies currently playing out in the region, threatens the continuation of this legacy. Gazelles have long helped humans muster the courage to face death's twilight; we should repay that debt by bringing them back from the brink of annihilation.

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Appendix: Measurements of Gazelle Phalanges Recovered from Building 1

Element	*Locus*	*Basket*	*Greatest Length (GL) (in mm)*	*Proximal Breadth (BP) (in mm)*	*Proximal Depth (Dp) (in mm)*	*Burning*
Ph3	429B	6666			13.4	Partly burned
Ph3	410B	6614			13.6	Burned
Ph3	429B	6682			13.7	Burned
Ph3	429B	6682			13.8	Burned
Ph3	429B	6682			13.9	Partly burned
Ph3	422B	6630			14.3	Partly burned
Ph3	410B	6653			14.3	Partly burned
Ph3	410B	6607			14.5	Burned
Ph3	410B	6653			14.5	Partly burned
Ph3	410B	6614			14.5	Burned
Ph3	417B	6681			14.6	Burned
Ph3	417B	6707			14.6	Partly burned
Ph3	417B	6681			14.7	Burned
Ph3	410B	6607			14.8	Burned
Ph3	417B	6659			14.8	Burned

Appendix: *continued*

Element	*Locus*	*Basket*	*Greatest Length (GL) (in mm)*	*Proximal Breadth (BP) (in mm)*	*Proximal Depth (Dp) (in mm)*	*Burning*
Ph3	417B	6707			14.9	Partly burned
Ph3	429B	6682			15.0	Burned
Ph3	417B	6681			15.0	Burned
Ph3	410B	6614			15.2	Partly burned
Ph3	410B	6607			15.3	Burned
Ph3	429B	6682			15.3	Burned
Ph3	417B	6706			15.5	Partly burned
Ph3	417B	6706			15.7	Partly burned
Ph3	410B	6614			15.7	Unburned
Ph3	410B	6644			15.8	Partly burned
Ph3	417B	6707			15.8	Partly burned
Ph3	417B	6706			15.9	Burned
Ph3	410B	6653			16.0	Partly burned
Ph3	417B	6706			16.1	Burned
Ph3	410B	6614			16.1	Burned
Ph3	410B	6614			16.1	Burned
Ph3	429B	6682			16.3	Burned
Ph3	429B	6666			16.4	Partly burned
Ph3	417B	6707			16.4	Burned
Ph2	417B	6677	22.9	9.6		Burned
Ph2	422B	6630	22.6	9.0		Burned
Ph2	410B	6607	22.4	9.6		Unburned
Ph2	410B	6607	23.2	9.5		Burned
Ph2	410B	6607	24.9	10.0		Burned
Ph2	410B	6607	23.9	10.0		Burned
Ph2	417B	6691	23.5	9.4		Burned
Ph2	417B	6706	24.0	10.0		Partly burned
Ph2	417B	6706	23.7	9.6		Burned
Ph2	417B	6706	23.9	9.8		Partly burned
Ph2	417B	6706	23.4	9.5		Burned
Ph2	410B	6653	22.5	9.3		Partly burned
Ph2	410B	6653	24.3	9.9		Partly burned
Ph2	410B	6653	24.3	9.9		Partly burned
Ph2	410B	6653	24.0	10.2		Partly burned
Ph2	410B	6653	22.3	9.0		Burned
Ph2	429B	6682	20.8	8.5		Burned
Ph2	429B	6682	21.8	8.8		Burned
Ph2	429B	6682	24.0	10.0		Unburned
Ph2	429B	6682	25.8	10.2		Partly burned

Ph2	429B	6682	22.5	8.7	Partly burned
Ph2	429B	6682	23.5	9.0	Burned
Ph2	429B	6666	20.7	8.9	Burned
Ph2	429B	6666	26.3	10.4	Partly burned
Ph2	417B	6659	20.7	9.1	Burned
Ph2	417B	6681	23.4	9.3	Burned
Ph2	417B	6681	23.0	9.4	Burned
Ph2	410B	6614	23.2	9.5	Burned
Ph2	410B	6614	25.0	10.0	Burned
Ph2	410B	6614	22.8	9.0	Burned
Ph2	410B	6614	22.8	8.8	Burned
Ph2	417B	6707	23.5	9.3	Burned
Ph2	417B	6707	23.9	9.5	Partly burned
Ph2	417B	6707	22.4	9.2	Burned
Ph2	417B	6707	23.3	9.6	Partly burned
Ph2	417B	6707	24.0	10.0	Partly burned
Ph1	410B	6600	40.7	11.4	Burned
Ph1	417B	6707	48.3	11.4	Partly burned
Ph1	417B	6707	40.7	11.0	Burned
Ph1	417B	6707	40.8	11.2	Burned
Ph1	417B	6707	42.5	10.2	Burned
Ph1	417B	6707	43.5	12.3	Partly burned
Ph1	417B	6707	45.2	11.0	Partly burned
Ph1	417B	6707	38.2	11.0	Partly burned
Ph1	417B	6707	48.2	11.4	Partly burned
Ph1	429B	6666	40.4	9.5	Burned
Ph1	410B	6625	39.8	10.1	Burned
Ph1	417B	6701	37.8	10.5	Burned
Ph1	417B	6691		10.7	Burned
Ph1	417B	6681	44.0	10.2	Burned
Ph1	410B	6614	40.8	11.7	Burned
Ph1	410B	6614	39.8	11.6	Burned
Ph1	410B	6614	41.2	11.7	Burned
Ph1	410B	6614	43.9	11.7	Burned
Ph1	410B	6614	42.9		Partly burned
Ph1	417B	6706	44.5	10.7	Burned
Ph1	417B	6706	45.7	11.3	Partly burned
Ph1	417B	6706		11.0	Partly burned
Ph1	417B	6706		11.7	Burned
Ph1	417B	6710	44.6	12.3	Partly burned
Ph1	410B	6607	41.3		Burned
Ph1	410B	6607	41.3	11.6	Burned

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