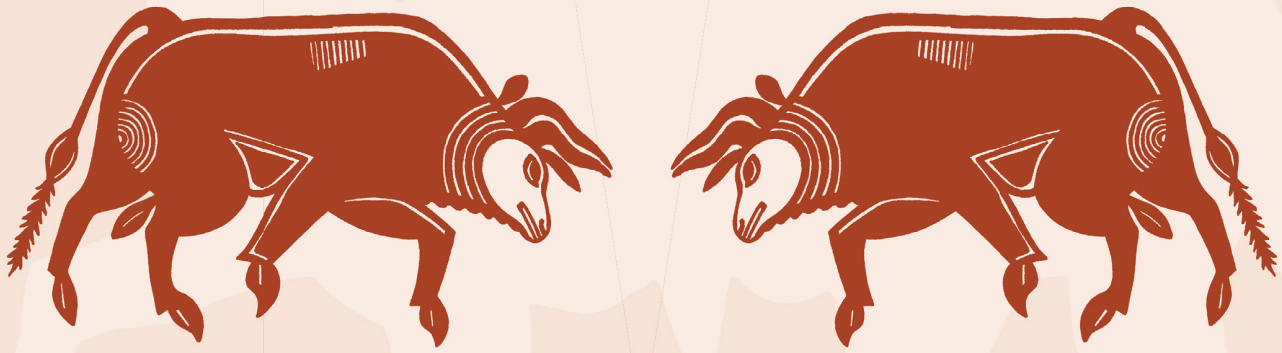
Archaeobiology 3

ARCHAEOZOOLOGY OF SOUTHWEST ASIA AND ADJACENT AREAS XIII



Proceedings of the Thirteenth International Symposium, University of Cyprus, Nicosia, Cyprus, June 7–10, 2017

edited by

Julie Daujat, Angelos Hadjikoumis, Rémi Berthon, Jwana Chahoud, Vasiliki Kassianidou, and Jean-Denis Vigne

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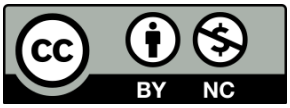

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Group photo of the 13th ASWA[AA] meeting June 8th 2017
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Part 2: Subsistence Economies of Early and Late Complex Societies in Southwest Asia and Adjacent Areas

Part 3: Beyond Subsistence: Animals in the Symbolic World of Southwest Asia and Adjacent Areas

FOREWORD

The 13th ASWA conference was hosted by the University of Cyprus, one of the youngest of Europe's universities. In 2019, it was only thirty years since its foundation. Nevertheless, this is a thriving academic institution, which currently consists of eight faculties, twenty-two departments, and eleven research units.

In 1991, and just two years after the university's foundation, the Archaeological Research Unit (ARU) was founded by decree from the Government of the Republic of Cyprus, following the issuance of the dependent legislation by the House of Representatives. The decision to establish the ARU was based on the recommendation of the Interim Steering Committee of the University of Cyprus, which stated the following:

1. Cyprus is offered for primary research in the field of archaeology thanks to its distinctive cultural signature and history, as well as due to the fact that Cypriot archaeology and archaeological research on the island already has a distinguished tradition and international reputation;

2. The subsequent international recognition of the importance of archaeological research in Cyprus should comprise one of the first incentives for choosing the University of Cyprus as a center for postgraduate studies, and will pave the way for the exchange of students and academics between the University of Cyprus and academic institutions overseas.

The faculty members of the ARU, who are also part of the Department of History and Archaeology academic staff, have contributed immensely over the past 28 years to the achievement of the aforementioned objectives for the study and promotion of Cypriot cultural heritage through their research, their teaching, and the practical training they have been providing to students at undergraduate and postgraduate levels. The active study of other regions of the Mediterranean world have not been overlooked either, as members of the ARU academic staff have been carrying out excavations and research projects in Greece, Turkey, and France.

The members of the ARU are actively carrying out research in Pre- and Protohistoric Archaeology, Classical and Byzantine Archaeology but also Archaeometry and Environmental Archaeology, Maritime Archaeology, and Western Art. In the course of the past 28 years, the ARU has laid very stable foundations in all aforementioned specialisations of the archaeological discipline, none of which existed at academic level in Cyprus before the unit's establishment. Through their teaching at undergraduate and postgraduate levels, all members of the ARU academic staff have been contributing to the formation of a new generation of Cypriot archaeologists, equipped with all the necessary knowledge and practical experience needed to excel in this scientific field.

Over the years, the ARU has been very active in organizing international conferences and workshops. The ARU has organized over 50 international conferences, while members of the academic staff have published the proceedings of over 20 scientific meetings held at the ARU.

Thus, when Jean-Denis Vigne came to my office several years ago with the suggestion to co-organize the 13th Archaeozoology of Southwest Asia and Adjacent Areas conference I gladly accepted. The meeting in Nicosia brought together colleagues from all over the world and offered a venue where new results from the field or the laboratory could be presented and discussed. The publication of the conference proceedings enables colleagues who were unable to attend the conference to read about the latest developments in the archaeozoology of this culturally important region.

I would like to close by thanking all the members of the 13th ASWA organizing committee for all the work they have put into bringing so many scholars to Cyprus, many of them for the first time. I would also like to thank the co-editors of this volume for all the work they have put into the publication of the proceedings.

Professor Vasiliki Kassianidou
Director of the Archaeological Research Unit,
University of Cyprus
Nicosia, August 2019

EDITORS' PREFACE

Due to their location at the meeting point of the three Old World's continents—Africa, Asia, and Europe—Southwest Asia and its adjacent areas played a pivotal role in the history of humanity. They received successive waves of our species—*Homo sapiens*—out of Africa. Different processes in several areas of this large region brought about the transition to the Neolithic, and later on the urban revolution, the emergence of empires bringing with them important subsequent religious, cultural, social, and political consequences. Southwest Asia also played a major role in the interactions between East (Asia) and West (Europe) during the last two millennia. The unique importance of Southwest Asia in the history of humanity is strengthened by the, also related to its location, fact that this area is a hotspot of biodiversity, especially in mammals, which were—as everywhere in the world—tightly associated to the history of civilizations in a diversity of roles: game, providers of meat and milk, traded raw material, symbol of prestige and wealth, pets, etc.

Everywhere in the world, the biological and cultural interactions between humans and animals often remain under-evaluated in their heuristic value for understanding complex social and biological interactions and trajectories. This is why, almost half a century ago, archaeologists who were carrying out research and reflecting on such themes founded a very active nonprofit world organization named the International Council for Archaeozoology (ICAZ). This is also why the ICAZ working group "Archaeozoology of Southwest Asia and Adjacent Areas" (ASWA[AA]) was one of the first ones created within ICAZ, constituting one of the largest and most active of ICAZ's working groups.

The ASWA[AA] was formed during the 1990 ICAZ International Conference in Washington, D.C. Its purpose is to promote communication between researchers working on archaeological faunal remains from sites in western Asia and adjacent areas (e.g., Northeast Africa, Eastern Europe, Central Asia, and South Asia). It carries out its mandate mainly through the sponsoring of biennial international conferences. Since 1998, these meetings have alternated in being hosted in Europe or in Southwest Asia: Paris (1998), Amman (2000), London (2002), Ankara (2004), Lyon (2006), Al Ain (2008), Brussels (2011), Haifa (2013), Groningen (2015).

Ongoing armed conflicts and political tensions in several countries of Southwest Asia made it difficult to locate a safe and convenient place that would enable the organizing the 13th ASWA[AA] meeting in within that region. Although Cyprus is currently a member of the European Union, in (pre-)history Cyprus was embedded in the eastern Mediterranean "world." Because of its location, Cyprus was indeed at the confluence of African, Levantine, Anatolian, and Greek cultural streams and, as is common for islands, recombined them in different but always original ways all along its history. Archaeozoology recently provided one of the most convincing illustrations of the tight connection between Cyprus and Southwest Asia, demonstrating that the earliest domesticated mammals, especially cats, pigs, cattle, sheep, and goats, were introduced to the island very shortly after their first incipient domestication on the near continent, that is, during the ninth millennium BC. For all these reasons, Cyprus represented an ideal place to host the 13th ASWA[AA] conference.

Despite the illegal military occupation of part of its territory by a foreign country, the option of hosting the meeting in Cyprus was enthusiastically embraced by all members of the working group, especially because it is open to all nationalities and maintains good diplomatic relationships with a large majority of countries in Southwest Asia. These facts contributed towards the 13th ASWA[AA] meeting in Cyprus (June 7–9, 2017) becoming one of the best-attended ASWA[AA] meetings. It brought together 80 scientists coming from 25 different countries: from Southwest Asia (6 countries), Europe (14 countries), North America (2 countries), and Japan.

They presented their results in 36 oral and 32 poster presentations. They debated the long-term interactions between humans and biodiversity, about the beginning of animal domestication and husbandry, the strategies of animal exploitation from the Paleolithic to modern times, and the symbolic and funeral use of animals through time. They also greatly enjoyed the numerous social events organized, in-

cluding a fantastic Cypriot mezze dinner, enhanced by a local folk-music band, and a nice excursion to the archaeological sites of Amathous, Kourion, and Khirokitia, and to the museums of Nicosia and Larnaca, which provided ample opportunities for scientific exchanges in a friendly atmosphere.

The hosting of the conference at the new campus of the University of Cyprus was another major reason to the meeting's success. This campus was a convenient and pleasant venue for such a conference, and the strong support of the University of Cyprus, as well as its valuable experience for the organization of such meetings were deeply appreciated by both the scientific organizers and the delegates. Several other partners contributed to the organization: the French archaeological mission "Neolithisation—Klimonas," which is itself strongly supported by the French School at Athens, the Cyprus Department of Antiquities, the French Institute of Cyprus, the French National Center for Scientific Research (Centre National de la Recherche Scientifique [CNRS]), and the French National Museum of Natural History (Muséum national d'Histoire naturelle [MNHN]).

The present volume brings together the texts of 18 of the 68 presentations of the meeting in Nicosia. The editorial board collected the papers and organized their review and editing. We are very grateful to Sarah Kansa (and Open Context), Justin Lev Tov, and Lockwood Press for their constant support in bringing this volume to fruition.

Julie Daujat
Angelos Hadjikoumis
Rémi Berthon, Jwana Chahoud
Vasiliki Kassianidou
Jean-Denis Vigne

3.3 | Animals and Ceremonies

New Results from Iron Age Husn Salut (Sultanate of Oman)

Laura Strolin,* Jacqueline Studer,† and Michele Degli Esposti‡

Abstract

This paper presents new results of the study of the faunal remains from the Iron Age site of Husn Salut (Oman). The archaeofauna from one specific building—named Basement—was analyzed. This building was occupied during the last quarter of the second millennium BC and hosted collective activities. Our research focused on the remains discovered inside a pit (Husn Salut–US35) interpreted by the excavators as evidence for a ceremony connected with the architectural renewal of the area: pottery shapes belong to types usually related to banquets and possibly rituals. The pit contained remains of at least fourteen goats (mainly females) four sheep, and two caprines. Adult animals predominate and butchery marks attest to the dismemberment and filleting of carcasses. The assemblage documents that collective consumption of mainly goat and some sheep meat was part of the ceremony. However, compared to the faunal remains from the entire Basement, the fauna from the pit shows no major differences: as such, the interpretation of the pit must derive from a comprehensive study of the context. These results indicate that the assemblage from the pit mirrors local herd management, aimed at secondary products, rather than a specific selection of animals for ceremonial activities.

Keywords

Iron Age, Arabia, Oman, Husn Salut, animal exploitation, ceremonial deposit, pit, banquet, sheep/goat, butchery

Archaeological Context

This contribution reports the results of the archaeozoological study conducted on a specific context excavated at the prominent Iron Age site of Husn Salut, in central Oman. The results of the broader study of faunal remains from the site are published in Strolin and Studer 2018; see here for the methodology applied.

The extensive research program was carried out as a collaboration between the Natural History Museum of Geneva (MHNG) and the Italian Mission to Oman (IMTO) of the University of Pisa.

Husn Salut is a fortified site in central Oman (al-Dakhiliyah governorate), which, due to its position on an outcrop, dominates the plain of an inland oasis near the modern town of Bisya (Figure 3.3.1). Archaeological investigations in the fortress of Husn Salut were conducted by the Italian Mission to Oman (IMTO) of the University of Pisa between 2004 and 2014 under the direction of Prof. A. Avanzini, with the invaluable support of the Office of His Excellency the Advisor for Cultural Affairs to His Majesty the Sultan of Muscat.[1]

Recent excavations have shown that the site is connected with a large settlement that extends onto the surrounding plain (Tagliamonte and Avanzini 2018). Its position is favorable for settlement as

1 For an overview of the IMTO works in the Salut area see Phillips et al. 2015; a more detailed report on Husn Salut excavation can be found in Degli Esposti and Condoluci 2018.

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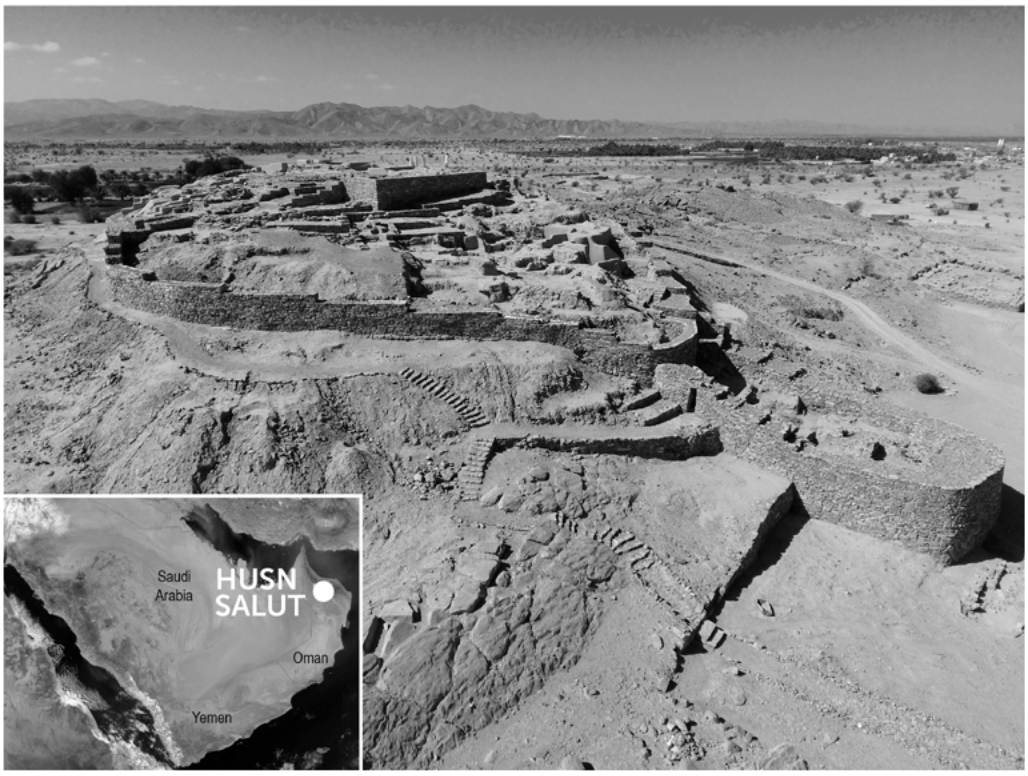

Figure 3.3.1. View of Iron Age Husn Salut and its geographical location in the Sultanate of Oman. The fortress is pictured from the east. (Photograph courtesy of IMTO.)

it is located near the junction of Wadi Saifam with Wadi Bahla, in the eastern piedmont of the Al-Hajjar mountains. The climate is arid with seasonal rainfall; palaeobotanical studies have reconstructed an ancient landscape dominated by shrubby vegetation (Bellini et al. 2011). While the mountain slopes are mostly rocky, the ancient occupational surfaces lie below the sandy topsoil and comprise silty-clayey soils.

The main occupation at the site is dated between 1300 and 300 BC, with a later reoccupation during Islamic times. Three chronological phases were distinguished: HSI (ca. 1300–1050 BC) and HSII (1050–650/600 BC) are characterized by typical southeast Arabian IA II material culture; while HSIII (650/600–300 BC) is characterized by an IA III assemblage (Degli Esposti and Condoluci 2018). The site, enclosed by massive fortification walls, mainly comprises a system of terraces with three buildings located in its uppermost part: the Basement and the Burnt Building belong to the original layout of the site (Figure 3.3.2a), while Building 1 was erected during the HSII phase above the buried remains of the Basement.

The site was likely self-sufficient in terms of subsistence, based on animal husbandry (Strolin and Studer 2018)[2] and on the agricultural exploitation of the plain. This was made possible by water wells and, at least in the later part of its existence, by at least one subterranean water channel, locally known as *falaj* (plural: *aflaj*), that is typical of the region (see Cremaschi et. 2018). Indications exist also for small-scale metalworking (Degli Esposti et al. 2016).

Husn Salut hosted communal activities, while the residential area—Qaryat Salut—was located along the adjacent hill slopes and in the adjacent plain (Tagliamonte and Avanzini 2018). The fortress's architectural features and material culture are associated with collective activities largely endowed with some type of ritual significance (Condoluci and Degli Esposti 2018). Specifically, representations of snakes are numerous as decorations on pottery and as bronze figurines: snake worship was a rele-

2 Previous preliminary archaeozoological studies concern material from other selected contexts. Wilkens 2007 (unpublished internal report) examined the remains from Husn Salut–US75 (NISP = 841) in the Burnt Building. Rasile (2011) studied remains from Area 4 (NISP = 1,150), but this research would require a revision of species identification. Due to different analytical procedures, these studies are not directly comparable with the results of the present research.

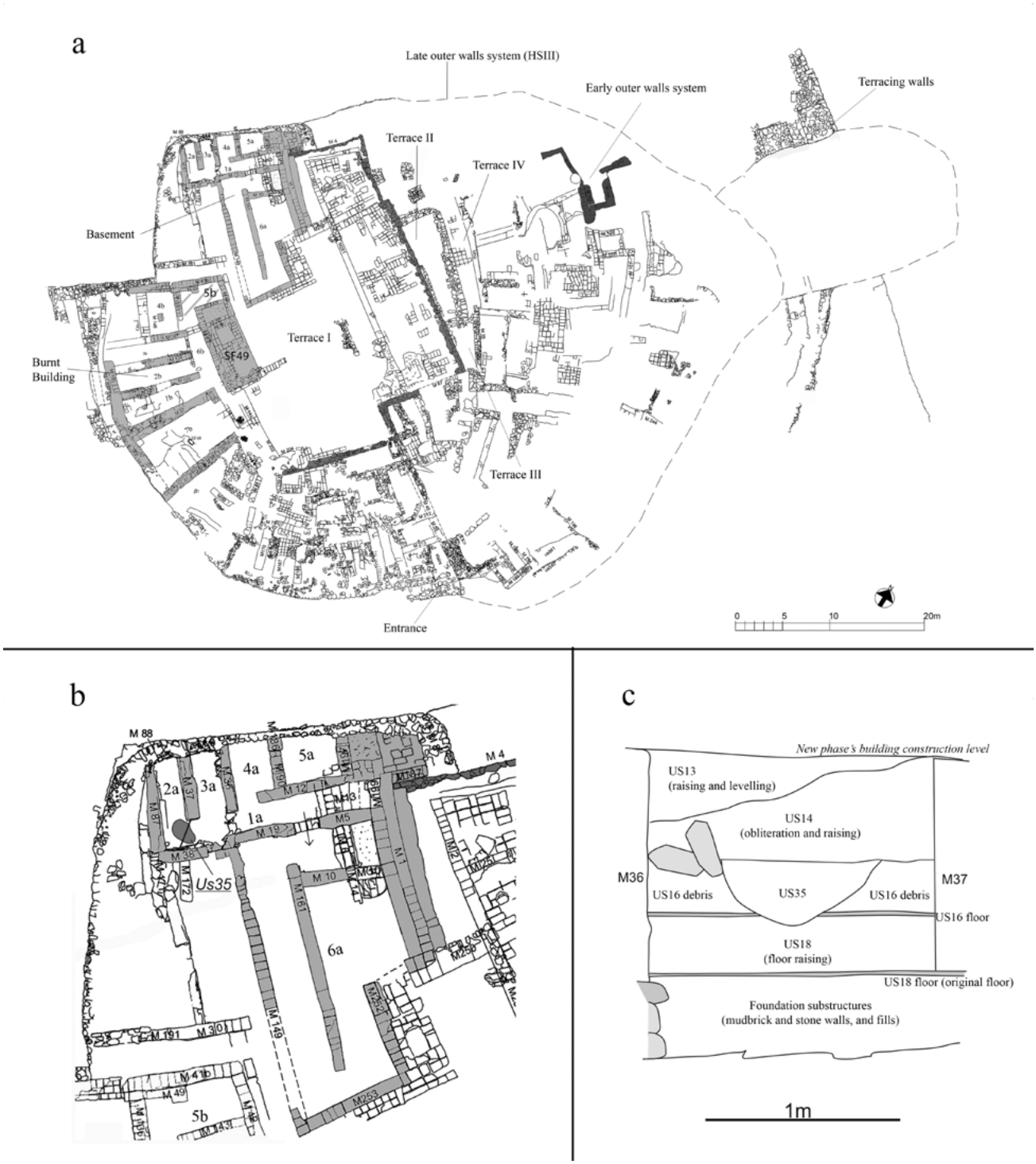

Figure 3.3.2. (a) General plan of Husn Salut HSI phase, showing the main buildings and the outline of the later outer stone wall; (b) detailed plan of the Basement, with location of pit Husn Salut–US35; (c) schematic section showing the stratigraphic position of Husn Salut–US35. (Plan courtesy of IMTO.)

Figure 3.3.3. A selection of archaeological finds from pit Husn Salut–US35: Basement. Top left: the snake-shaped handle in shape of a snake of a long-handled bowl (N. SL2005 A US 35 Cl12); bottom left: spouted jar (SL05A, US35, 2); right: goat skull fragment, right frontal bone and horn-core. (Photograph courtesy of IMTO.)

vant part of the ceremonies. This is consistent with the available documentation for Southeast Arabia, where the snake cult is widely attested in the IA and was associated with water and metallurgy (Benoist et al. 2015). However, in the absence of written sources, its precise nature remains elusive. In addition, several ceramic types among those found at Husn Salut are related to collective ceremonies, notably banquets: simple and carinated cups, spouted jars, and long-handled bowls used as censers or lamps (see Condoluci et al. 2018; Degli Esposti and Condoluci 2018).

The present study concerns the faunal remains recovered from Husn Salut–US35, a specific context excavated inside the Basement, one of the buildings mentioned above (Figure 3.3.2b). Calibrated radiocarbon dates indicate that this building was erected before 1250 BC and, after a first raising of the original floors (Figure 3.3.2c), remained in use until a large fire caused its partial collapse. Intentional obliteration of the structure took place before 1000 BC, when Building 1 was erected above it (Degli Esposti et al. 2018:373–376). Prior to this new construction, a pit, Husn Salut–US35 (1 m × 1.30 m in extension and 30 cm deep), was cut through the debris left by the fire-related collapse—Husn Salut–US16. The pit was not sealed, but substantial deposits—Husn Salut–US13 and US14—were laid above it to raise the floor level and provide a flat surface for the erection of Building 1 (Condoluci et al. 2018).

The pit contained a remarkable pottery assemblage, including twenty-five carinated cups, five spouted jars, seven bowls, five jars, one of which had a snake decoration, and five long-handled bowls. Two bowls had handles representing the body of a snake. One other bowl had the handle shaped into a ram's head and decorated with an axe and two fish shapes in relief. The pit also contained faunal remains (Figures 3.3.3 and 3.3.4). Only occasional coarse ware or storage jar fragments were found inside it. This rich and selected repertoire led to the interpretation of the pit as a (re)foundation ceremony that took place between the demise of the original building, the Basement, and the construction of a new, completely different one, Building 1 (Condoluci et al. 2018:104–105).

Faunal Remains

This archaeozoological study investigates the possible exploitation of animals during ceremonies and/or rituals as well as subsistence strategies in the IA levels of the fortress. With this in mind, we examined whether there was any selection of animals that were eaten and/or sacrificed. We compared the faunal remains recovered from the closed context of the pit Husn Salut–US35 in the Basement with those recovered in the adjacent contexts within the same building. This approach also aims to elucidate whether an archaeozoological study is sufficient in itself to distinguish ceremonial deposits, or whether more variables must be taken into account.

The Pit Husn Salut–US35—Early Phase HSII

Together with the ceramic assemblage mentioned above, a total of 448 identified faunal remains were collected by hand from the deposit Husn Salut–US35 (Figure 3.3.3). They comprise almost exclusively domestic caprines—the term here refers to domestic sheep and goat without distinction—with a NISP count of 443 bones (98.9% of the total; Table 3.3.1). Goats are dominant, as they amount to 72.8% of the total NISP. Three other taxa are also present: gazelle, two bones; cattle, one bone; and rodents, two bones.

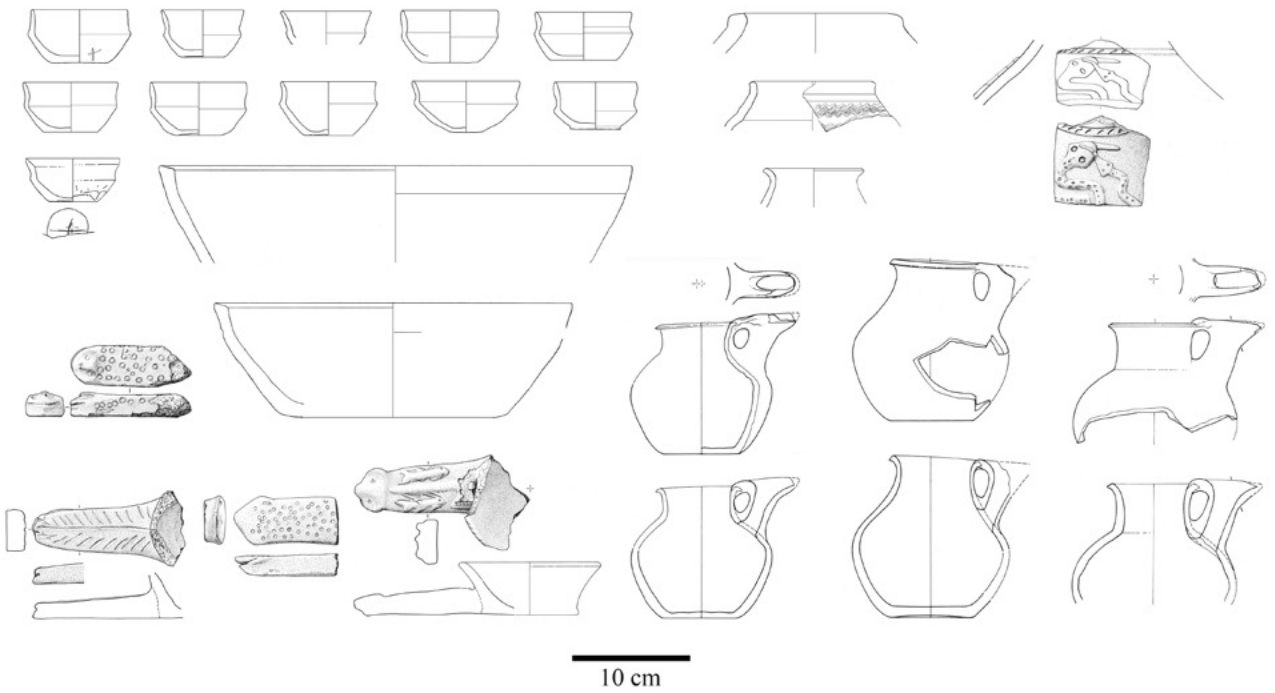

Figure 3.3.4. A representative sample of collected pottery from pit Husn Salut–US35: carinated cups (top left), long-handled bowls (bottom left), jars, including a specimen with applied snake decoration (top right), spouted jars (right). See Condoluci et al. 2018:Plates 30–33.

The pit contained an MNI (Minimum Number of Individuals) count of at least 20 domestic caprines, of which most were adults. Goats (*Capra hircus*) are represented by 14 individuals, among which 11 are females, based on counts of horn-cores, and one male, identified on a coxal bone. Sheep (*Ovis aries*) are represented by an MNI count of four individuals, among which one is female and two are males—identified with coxal bones—the latter being also attested by a right frontal with a horn-core (N. HS1605). This is one of the few ram skulls recovered at the site. The remaining two individuals from the pit are undetermined immature caprines younger than five months.

Based on 10 caprine mandibles, the mortality profile, illustrated in Figure 3.3.5, is dominated by adults; seven goats and one sheep are over three years of age, and only one goat is aged between one and two years of age (Mandible Wear Stages, MWS, after Grant 1982; see Strolin and Studer 2018:347 for details concerning methodology). Only one sheep/goat is aged around three to four months (MWS = 3). Furthermore, out of 133 remains providing information on bone fusion, 10% of the anatomical elements that fuse within the first 12 months are unfused—at least two sheep/goat are younger than five months.

Complete long bones of goats—four metacarpals and one metatarsal—indicate that withers height ranges from 52 to 57 cm (indexes calculated after Schramm 1967) and is similar to animals from other contemporaneous sites of the Arabian Peninsula, for example Qal'at al Bahreïn (Tomé 2003:257-261), Yala (Fedele 2009:Figure 10), Bithnah-44 (Skorupka and Mashkour 2013; see Strolin and Studer 2018:346 and references therein). Data for sheep are less numerous with only two complete metatarsals indicating withers height of 56 and 61 cm respectively (indexes calculated after Teichert 1975).

All body parts are represented in the pit,[3] with smaller anatomical elements present in a lower proportion, which is typical of assemblages collected by hand.

3 The values of the Minimum Number of Elements (MNE) are the following, excluding isolated teeth (MNE count/NISP count): cranium 16/71; hemimandible 26/47; atlas 3/3; axis 4/4; other cervical vertebra 9/9; thoracic vertebra 9/13; lumbar vertebra 13/14; sacrum 2/2; rib 9/22; scapula 25/59; humerus 7/13; radius 11/12; ulna 3/9; metacarpal 11/13; coxal bone 11/11; femur 14/19; patella 2/2; tibia 11/21; calcaneus 3/3; metatarsal 13/14; phalanx 4/4. MNE estimations after Lyman 1994.

Table 3.3.1. Quantification of identified faunal remains recovered at Iron Age Husn Salut in the building named Basement. NISP = Number of Identified Specimens; MNI = Minimum Number of Individuals. Malacofauna not yet studied.

Loci	**Building**									**Pit**			**Building + pit**		
Phases	**HSI (1300-1050 BC)**		**HSII (1050-650/600 BC)**		**HSIII (600-300 BC)**		**Total**			**US35 (HSII)**			**TOTAL**		
Quantification	**NISP**	**%**	**NISP**	**%**	**NISP**	**%**	**NISP**	**%**	**MNI**	**NISP**	**%**	**MNI**	**NISP**	**%**	**MNI**
Malacofauna total	7	<1	4	<1	7	<1	18	<1	.	0	0	.	18	<1	.
Fish total	1	<1	0	0	0	0	1	<1	1	0	0	0	1	<1	1
Kawakawa –*Euthynnus affinis*	1	<1	0	0	0	0	1	<1	1	0	0	0	1	<1	1
Reptiles total	0	0	1	<1	0	0	1	<1	1	0	0	0	1	<1	1
Spiny-tailed lizard –cf. *Uromastyx*	0	0	1	<1	0	0	1	<1	1	0	0	0	1	<1	1
Birds total	2	<1	0	0	1	<1	3	<1	2	0	0	0	3	<1	2
Sandgrouse –*Pterocles* sp.	1	<1	0	0	0	0	1	<1	1	0	0	0	1	<1	1
Dove –cf. *Streptopelia*	0	0	0	0	1	<1	1	<2	1	0	0	0	1	<1	1
unidentified bird	1	<1	0	0	0	0	1	<3	0	0	0	0	1	<1	0
Mammals total	1,587	99.4	701	99.3	189	95.9	2,477	99.1	73	448	100	23	2,925	99.2	96
Rodents	5	<1	0	0	0	0	5	<1	2	2	<1	1	7	<1	3
Red fox –*Vulpes vulpes*	21	<1	1	<1	2	1	24	<1	3	0	0	0	24	<1	3
Gazelle –*Gazella* sp.	17	<1	4	<1	4	2	25	1	2	2	<1	1	27	<1	3
Dog –*Canis familiaris*	3	<1	1	<1	5	2.5	9	<1	3	0	0	0	9	<1	3
Camel–*Camelus* cf. *dromedarius*	10	<1	7	1	7	3.5	24	<1	4	0	0	0	24	<1	4
Equids –*Equus* sp.	1	<1	0	0	0	0	1	<1	1	0	0	0	1	<1	1
Pig/wild boar –*Sus* sp.	0	0	0	0	1	<1	1	<1	1	0	0	0	1	<1	1
Sheep/goat–*Ovis aries*/*Capra hircus*	1,494	93.6	659	93.3	168	85.3	2,321	92.8	53	443	98.9	20	2,764	93.8	73
Cattle –*Bos taurus*	36	2.3	29	4.1	2	1	67	2.7	4	1	<1	1	68	2.3	5
TOTAL	**1,597**	**100**	**706**	**100**	**197**	**100**	**2,500**	**100**	**77**	**448**	**100**	**23**	**2,948**	**100**	**100**

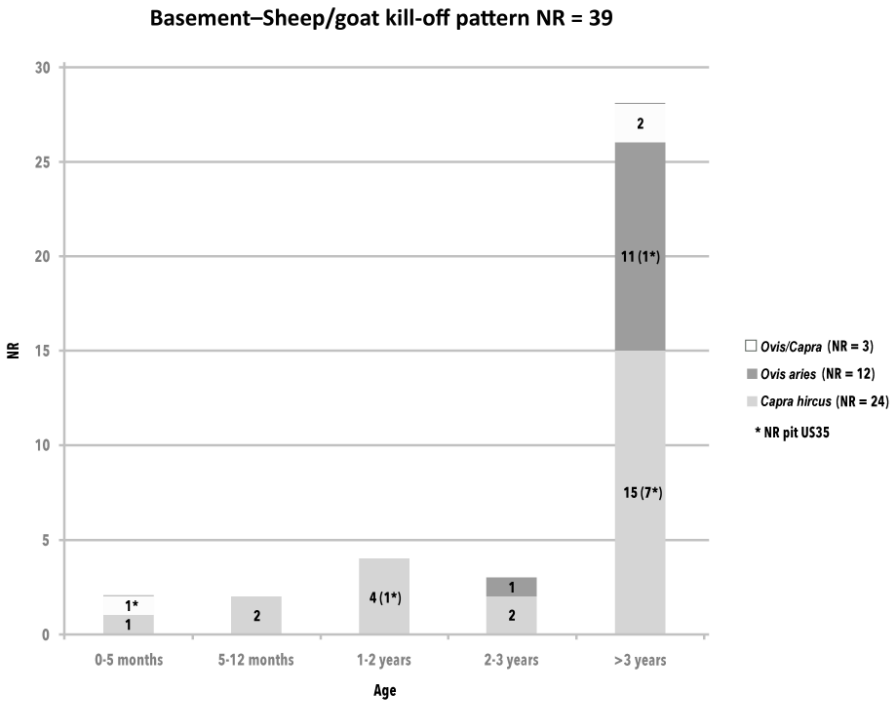

Figure 3.3.5. Histogram of sheep and goats mortality profile based on 39 mandibles from the Basement of Husn Salut (based on mandible wear stages MWS, after Grant 1982). NR = number of mandibles.

Chop and cut marks were observed on 6.3% of the remains. Both sheep and goats underwent the same carcass processing. Chop marks testify that carcasses were severed longitudinally down the spinal column and then portioned transversally. All joints exhibit disarticulation cuts. Long-bone shafts, ribs, and vertebrae underwent filleting as shown by the presence of numerous fine cut marks. Butchered skulls form a set of nine specimens (32.1% of butchered remains). Six female goat skulls have chop marks on their frontals. It is not clear if these marks are related to killing methods or to brain extraction. In addition, two fragments show cut marks characteristic of skin detachment as well as the above-mentioned ram skull, which bears a chop mark and thin cut marks between the horns. Only three bones exhibit burning traces from partial carbonization.

Skeletal anomalies are evident only in mandibles: seven elements (1.6%). A left mandible shows extended *ante mortem* tooth loss; a severe case of a partially healed fracture affects a goat's right mandible in its second year of life. These two injury cases would certainly have affected mastication and may have motivated the selection of these individuals for slaughter. The rest of anomalies seem to be age-related: one sheep and three goat mandibles have tooth wear irregularities, and another goat mandible shows light exostosis.

Besides caprines, one gazelle is represented by a fragmented right mandible and by a coxal bone (female), which exhibits chop marks produced to disarticulate the femur. In addition, only a small fragment of scapula blade belongs to cattle. Finally, rodents, which are represented by two bones, are most likely intrusive.

Altogether, pit Husn Salut–US35 can be considered as the result of the consumption of at least twenty caprines, mainly adult female goats, together with a few sheep—the latter with a more balanced sex ratio—as well as juvenile animals. The homogeneity of the faunal assemblage's composition in the treatment of carcasses, the good preservation of the remains, and the concentration of at least twenty individuals deposited together as dietary residue, confirm the archaeological interpretation that this pit is the result of a single event. The associated pottery finds suggests that this event was a kind of ceremonial gathering, in all likelihood a banquet, whose faunal leftovers were buried together with the vessels. Besides, the caprine aged three to four months provides an indication on the season during which this ceremony was held. In fact, according to information from local herders in Bisya, the present-day caprine birth season is in March–April. Animals in pit Husn Salut–US35, therefore, would have most likely been slaughtered between June and August.

The Basement, Excluding Pit Husn Salut–US35—Phases HSI, HSII, and HSIII

Faunal remains from the rest of the building presumably also derive from collective activities and gatherings. As archaeological evidence indicates, this area of the fortress had indeed no residential function (see Condoluci and Degli Esposti 2018). The archaeozoological assemblage consists of a total of 5,936 remains, half of which were identified to species (NISP = 2,948; Table 3.3.1). All chronological phases show comparable features and will therefore be presented together. The assemblage is dominated by domestic species, in particular caprines followed by cattle, while the other 11 identified taxa are represented by less than 30 remains each.

Sheep and Goats. Both domestic sheep and goats occur in the assemblage (NISP = 2,321; 92.8% of identified remains) in every chronological phase with a total estimated MNI of 53 individuals—29 goats, 17 sheep, and 7 sheep/goat. Distinction between the two taxa reveals that goats largely outnumber sheep: out of a total of 655 caprine remains that could be identified to species, 457 (69.8%) belong to goats, and 198 (30.2%) to sheep. This proportion reflects a local specificity in goat herding that can be seen as the most efficient choice of species in an arid and rocky landscape.

Regarding sex profiles, goats are essentially represented by females with twenty-two females for one male (95.7% of sexed caprines). Female sheep amount to 57.4% of sexed animals with four females and three males. Although the sample size of sexed sheep is small, these results suggest a difference in exploitation: goat herding was mainly aimed at secondary products—milk, hair, skin—and reproduction, while sheep herding was probably less focused on milk and more on meat as well as wool.

Mortality profiles based on 29 mandibles (Figure 3.3.5)—16 goats, 11 sheep, and 2 sheep/goat—show that adult animals over three years of age were preferentially selected in both species, further supporting the management strategies outlined above. Data on caprine bone fusion document more young individuals in their first year of life (NISP = 43), including 30 bones from both sheep and goats in the first five months of life. A total of 10 bones of perinatal age, corresponding to at least five caprines, demonstrate that local herding was practiced. Mortality of individuals in the first weeks of life may be due to natural causes—thus attesting to the presence of live animals being raised at the site—or be a consequence of selection connected to the ceremonial function of the site (as previously observed by Wilkens 2007; see Strolin and Studer 2018:347–348).

Withers height based on fifteen metacarpals and two metatarsals for female goats ranges from 51 to 58 cm. The goat population is small in size and corroborates observations made on the remains from the pit. Information for sheep size is less reliable since only based on two complete metacarpals that give a size of 58 and 68 cm.

Butchery marks are visible on 7% of caprine remains. They are highly patterned and occur equally on remains of both sheep and goats. Cut marks near joints attest to disarticulation and filleting, while chop marks (15% of traces) concentrated on the axial skeleton are evidence for longitudinal and transversal portioning. Head treatment is documented in twenty-four specimens (15% of butchered remains) and includes butchery relating to its disarticulation—visible on two caprines younger than four months—as well as skinning and chopping of the skull. Burnt bones amount to 3% (NISP = 77) and were mostly found in hearths.

Caprine skeletal pathologies reflect an overall picture of healthy animals (descriptions after Bartosiewicz and Gál 2013). We observed pathologies on only fourteen caprine bones (0.6% of caprine remains), including healed fractures (six cases), linear enamel hypoplasia (four cases), stress or pregnancy-related depressions on female goat horn-cores (two cases), periodontal disease (one case), and irregular teeth abrasion (one case).

Cattle. Cattle remains (*Bos taurus*) are present in all phases of the Basement but in a low proportion; NISP counts 67 remains corresponding to 2.3% of the total identified assemblage, giving an estimated MNI of five animals. The low frequency of cattle is typical of IA faunal assemblages in this arid geographical area.[4] One coxal bone is attributed to a female; dental wear and bone fusion testify to animals culled at

4 For example: Muweilah (Uerpmann and Uerpmann 2017:Table 21.1), Mleiha (Gautier and Van Neer 1999:112), Qal'at al Bahrein (Tomé 2003:Table 48 and 49), Yala (Fedele 2009:Figure 6); see Strolin and Studer 2018:349–350, Table 2 and references therein.

one to two years old or later, and at least one animal over four years of age. Cut marks appear on 6% of cattle remains and indicate alimentary use. Exploitation as draught or labor animals is also possible, but no deformation typical of overwork was observed on the bones.

Other Taxa. Camels are attested in all phases (total NISP = 24), representing less than 1% of the total identified faunal assemblage. At least four individuals were identified—three adults and one individual younger than 15–18 months old (in phase HSI). An anterior phalanx II from phase HSIII matches the criteria for *Camelus dromedarius* (see discussion in Strolin and Studer 2018:342–343). Skeletal elements belonging to different parts of the body are represented. Both chop and cut marks are visible on 12.5% of camel bones, attesting to exploitation for meat.

The only evidence of an equid—*Equus* sp.—is a femur with asinine features (HSI). Despite a certain caution, an attribution to donkey is plausible and may be consistent with long distance transport.

Nine bones of *Canis familiaris* belong to at least three different individuals. The first is estimated to be six to nine months (from HSI), the second is an adult (from HSII), and the third is from a one-month-old (from HSIII).

Two other taxa represent food items imported by trade. Firstly, sea fish represented by a caudal vertebra of Kawakawa—*Euthynnus affinis* (HSI). This species is distributed in the Arab-Persian Gulf as well as the Sea of Oman and the Arabian Sea (Froese and Pauly 2017). Its presence indicates contacts with the coast. The second taxon is a wild or domestic pig, represented by a fragment of humerus that shows filleting cut marks. The rarity of *Sus* finds at Husn Salut and in IA Southern Arabia more generally, together with the arid climatic conditions of the region, suggests this specimen reached the site through trade exchange (see, for instance, Tomé 2003:283–284).

Evidence for hunting is also attested in all phases by a total of 27 remains of small-sized gazelles, which represent less than 1% of the identified fauna. Hunting seems therefore to have only seldom been practiced. Cut marks observed on 11% of gazelle remains suggest food processing and eventually skinning as well as horn separation. Capture of reptiles and probably birds is also documented. An *Uromastyx* sp. left dentary (from HSII) exhibits a cut mark testifying to the exploitation of this species already during the IA. A sandgrouse (*Pterocles* sp.) humerus and another from a dove (cf. *Streptopelia*) are the identified birds. It seems probable, though not certain, that these birds were caught and exploited by humans.

Two more wild taxa are considered non-anthropogenic. In particular, 24 red fox—*Vulpes vulpes*—remains do not bear any anthropic traces. Eighteen remains were in anatomical connection—belonging to a single mature individual—and were found in the last level of phase HSI. They could attest to the building abandonment, as also suggested by archaeologists based on stratigraphy. Gnaw marks caused by carnivores—foxes and/or dogs—appear on 17% of the assemblage. An intrusive origin also explains the occurrence of rodent remains, rodent activity (gnawing) affecting 4% of the bone assemblage.

Discussion

Samples from pit Husn Salut–US35 and all remaining IA phases within the Basement show strong similarities. In fact, the preponderance of caprines (98.9% and 92.8% respectively), and notably among them goats (72.8% and 69.8% respectively of the total of identified caprines), is relatively constant. Age profiles are also comparable between the two contexts, with a majority of adult goats being older than three years of age (60% and 69% in the pit and in the Basement respectively based on mandible attrition). Sex proportions are similar too. Female goats outnumber males: 92% for a total MNI of 12, and 95.7% for a total MNI of 23. Sheep seem to present a different sex distribution: females represent 33% of a total estimated MNI of 3 in the pit and 57.4 % for a total MNI count of 7 in the Basement sample. Data for goats are more reliable as the sexed sheep sample is small. Nevertheless, both contexts show the presence of rams. Interestingly, the pit contained a long-handled bowl with the distal end configured as a ram (Condoluci et al. 2018:Plate 33/3; Degli Esposti and Condoluci 2018:52), and ram presence in the same pit was also attested by a skull fragment. The processing of caprine carcasses is characterized by a recurrent pattern both inside the pit and in the remaining Basement contexts.

Based on the above, the archaeological interpretation of pit Husn Salut–US35 as an intentional deposit related to a foundation ceremony must be

mainly based on the specific ceramic assemblage. Faunal evidence supports this hypothesis but cannot prove it by itself. The twenty caprines recovered in the pit likely document a banquet for a large community as part of a ceremony that occurred between June and August. The season is indicated by the find of a caprine aged three to four months and by the absence of neonatal individuals that otherwise do occur in the Basement assemblage. The Basement fauna represents communal meals that occurred throughout the year or at other times in the year, in which refuse is not concentrated inside well-defined pits. One last difference concerns the faunal spectrum: only four identified species are represented in the pit compared to 13 in the rest of the building.

As a general comment, it is interesting to note that the presence in the Basement of neonatal caprines attests to pregnant females being kept and raised at the site. These females seem not to have been selected for culling. Nevertheless, we cannot exclude that they were part of special activities given the presence of neonatal remains in the assemblage.

Other Evidence of Ceremonial Contexts in Southeast Arabia

Archaeozoological evidence is also available for another context at Husn Salut interpreted as a ceremonial deposit—Husn Salut–US75 in the Burnt Building. This building was flanked by a raised platform, Husn Salut–SF49 (Figure 3.3.2a). At the beginning of the HSII phase, Husn Salut–SF49 was enlarged with the obliteration of Room 5b and the deposition of Husn Salut–US75 (Condoluci et al. 2018:101). Thus, this deposit was also significantly related to a substantial architectural renovation. From this layer a remarkable variety of materials was recovered, including a long-handled bowl with snake decoration, bronze ladles probably used as banquet implements, a bronze snake figurine, a miniature bronze axe,[5] outstandingly preserved woven baskets, and animal remains (Condoluci 2018:227–233). Indeed, pottery represented only part of the offering. Radiocarbon dating on charred dates (*Phoenix dactylifera*) from Husn Salut–US75 ranges between 795 and 542 BC (95.4% probability, see Degli Esposti and Condoluci 2018:Figure 27). Faunal remains from Husn Salut–US75 are in part described by Wilkens (2007). Out of a total NISP count of 449 bones, 403 remains (90%) belong to caprines and correspond to an estimated MNI of nine: five adults and four juveniles under five months of age.[6] Only 39 remains are attributed to species and of these 58% are identified as goats. Approximately all body elements are represented but in different proportions. Epiphyseal fusion is documented for 160 bones: 51% of the 49 bones in the first year of life are unfused. Traces of burning are exhibited on 12% of the remains. Therefore, this IA deposit also seems to be connected with some kind of ceremonial events at Husn Salut and mirrors the involvement of sheep and goats of different ages as reported from the pit Husn Salut–US35.

Two other coeval sites provide evidence on the role of caprines in IA societies in the area. These examples should not be viewed as strict archaeological or functional comparisons. Rather, they indicate that caprines were endowed with symbolic value beyond their subsistence-related importance. The first site is Bithnah-44, located in the northern Al-Hajjar mountain range in the Emirate of Fujairah (U.A.E.). The site is part of a complex network of IA sites, each one distinguished by a preferential function,[7] with Bithnah-44 defined as a ceremonial/religious site strongly connected with the widespread snake cult that characterizes the region (e.g., Benoist et al. 2015). Twenty-three votive pits, excavated over four stratigraphic phases in the site's central area, contained animal bones deriving from sacrifices; some of the pits were lined with stones and some accurately sealed (Benoist 2007:40–42). Pottery with snake representations, long-handled bowls, and copper offerings are also part of the archaeological corpus. Faunal remains from eighteen pits were studied (Skorupka et al. 2013), and a total NISP of 8,699 remains were identified, almost exclusively attributed to caprines. With the exception of three pits, sheep bones predominate in comparison to goats. The MNI per pit corresponds to 1–3 individuals in small pits, 7–10 in medium ones, and 18–43 in large ones. These

5 A ritual axe is also depicted on the long-handled bowl from Husn Salut–US35 cited above (Condoluci et al. 2018:Plate 33/3).

6 The rest of the assemblage counts: cattle bones (3 remains), fish (6 remains), birds (4 remains), unidentified reptiles (28 remains), and molluscs (5 remains). Rodent remains are considered intrusive.

7 A fortress, funerary areas, and a site of copper extraction are also attested (see Benoist 2013).

are considered the result of cultic gatherings, probably banquets. Different age classes are represented as well as a wide range of anatomical elements, with some pits mainly containing head portions and others limb portions. Cut and chop marks occur on 1.7% of the remains, and burning on 11.1% record the anthropic impact on carcasses, including disarticulation and filleting, followed by combustion.

Another site that can be considered here is the funerary complex of Daba, in the Musandam Peninsula, at the border between Oman and the U.A.E. The analyzed fauna belongs to ritual deposits from a typical, long chambered tomb that can be dated to the IA (LCG–2; Maini 2017). The animal assemblage documents meat offerings, mainly of caprines, made during funerary practices with 85.4% of the 725 collected remains representing terrestrial mammals. Of these, 79.1% comprise caprine bones—mainly goats—of all age classes.

The evidence from the above-mentioned sites indicates that Husn Salut–US35 is not unique in Southeast Arabia with regard to its display of special relationships between animals—namely, caprines—and IA human communities, as manifested in ritual/ceremonial contexts. The case of Bithnah-44 is particularly interesting since this site has several common traits with Husn Salut (Benoist et al. 2015) and is part of the same cultural and chronological context.

Final Remarks

The faunal remains recovered in pit Husn Salut–US35 and Basement loci provide a first picture on human-animal associations at IA Husn Salut. Taken together, the faunal composition is restricted to local species, mainly domestic caprines, hinting at a self-sufficient economy that relied on supplies available in the surroundings of the site. In particular, goats occupy the most salient place in these subsistence strategies. This is probably not a specific choice, but it reflects local herding practices that focused on goats, which are best suited to the arid and rocky environment, a pattern still observable today. Imported food items are represented by marine fish and pig, but these are exceptional finds. The features of the assemblage reflect butchery practices that were employed in processing whole animal carcasses, locally, for consumption.

Against this general background, the faunal remains recovered in the pit Husn Salut–US35 highlight the role of animals during ceremonial activities held at IA Husn Salut. The pit is in fact a closed context that preserved archaeological traces of a specific foundation ceremony. Therefore, the faunal evidence documents that caprines were the preferred and almost exclusive species used in this ceremony. The age and sex profiles seem to reflect the available herd composition, rather than a preferential choice. The only suspected selection concerns some female adult goats with pathologies and possibly an adult ram.

Archaeological comparisons between the Husn Salut fauna and those from other IA sites in Southeast Arabia are consistent with the selection of caprines for special occasions of ritual or social relevance. There is a tight connection in these examples that, perhaps significantly, is mirrored in the biblical episode of Isaac's sacrifice, and still informs present day Islamic festivities, such as *ʿīd al-aḍḥā*—the sacrifice feast—which in Islamic theology is also linked to that event.

Concerning the effectiveness of archaeozoological analyses in themselves being able to recognize ceremonial deposits at this site, no evident markers could be detected. In the case of Husn Salut–US35 and the Basement, indeed, no major differences were noticed between these assemblages except possibly for the greater focus on caprines in the pit assemblage, the faunal spectrum being wider in the rest of the building.

From what can be inferred so far, it seems that overall dietary habits—and probably activities linked to the Basement—were rather homogeneous. When animal consumption was related to collective or ceremonial occasions, mostly adult caprines were eaten. However, since caprines are common domestic species and since ceremonies included meat meals, the identification of banquet's remains cannot, in our case, only rely on archaeozoological analyses and requires a broader archaeological approach.

These conclusions strongly encourage further archaeozoological investigations not only of other ceremonial contexts at Husn Salut but also of contexts in the nearby settlement of Qaryat Salut. These will provide information about the daily animal economy and help define any possible features that distinguish it from ceremonial activities observed at Husn Salut.

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