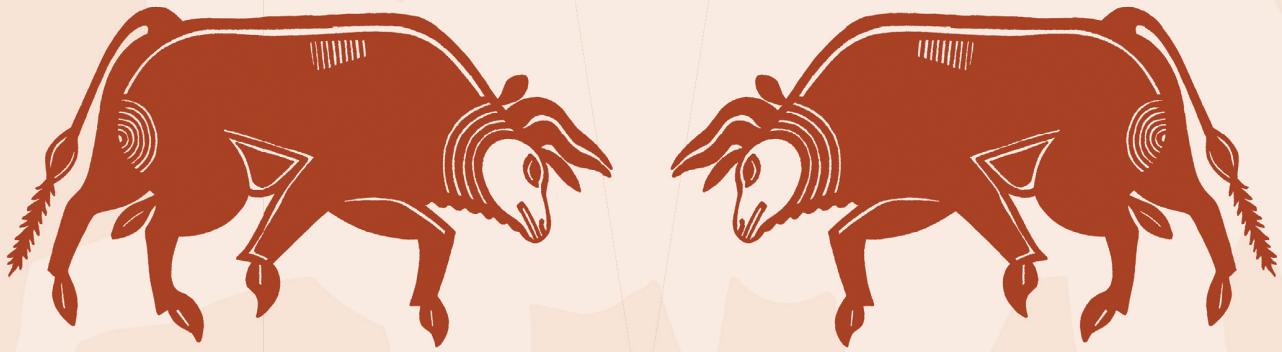
Archaeobiology 3

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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Group photo of the 13th ASWA[AA] meeting June 8th 2017
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CONTENTS

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

2.5 | Animal Exploitation in the Samarkand Oasis (Uzbekistan) at the Time of the Arab Conquest

Zooarchaeological Evidence from the Excavations at Kafir Kala

Eleonora Serrone*, Elena Maini,† Antonio Curci,† Simone Mantellini,* and Amriddin E. Berdimuradov‡

Abstract

Since ancient times, Central Asian economy has been based on a combination of irrigated agriculture and pastoralism. While research on ancient irrigation systems is relatively abundant, zooarchaeological studies in Central Asia are rather scarce. This paper presents the results of the zooarchaeological study of animal bones found at the citadel of Kafir Kala during the Uzbek-Italian excavations. In the Early Middle Ages (sixth–seventh centuries AD), this site was a major administrative center located along the local Silk Road routes. After the Arab conquest at the beginning of the eighth century AD, the site was settled for residential purposes. Preliminary zooarchaeological analysis was conducted on over 6,000 faunal remains retrieved from the 2001–2014 excavation seasons. Domestic animals were predominant. Sheep and goats represent ca. 80% of the total, followed by cattle and a small number of equids, pigs, dogs, and cats. A limited number of bird bones—Galliformes—were also recognized. Among the wild animals, fox is the most common, followed by wild boar and scant remains of small to medium ungulates. Evaluation of the age-at-death provides important information about the diet and the production/processing of secondary products.

Keywords

Samarkand, Uzbekistan, pre-Islamic, Islamic, caprids, Silk Road, Middle Zeravshan Valley, Kafir Kala

The Site of Kafir Kala

The archeological site of Kafir Kala covers ca. 20 ha along the middle section of the Dargom canal, 12 km from Afrasiab, that is, ancient Samarkand. According to its size and layout it is one of the most impressive earthen-built settlements in the entire Middle Zeravshan Valley. The citadel rises 25 m from the ground, making Kafir Kala a landmark in the cultivated and flat flood plain, which is irrigated by the Dargom and other canals diverted from the Zeravshan (Masson 1928). Following the main road that connects Samarkand with Shahrisabz—ancient Kesh—in the Kashkadarya Valley through the pass of Amankutan in the Karatyube Mountains, one had to cross the Dargom close to Kafir Kala (Berdimuradov et al. 2009; Mantellini and Berdimuradov 2005). The strategic location of Kafir Kala and its fortified monumental architecture were certainly related to the role this settlement played in the economic and sociopolitical context of ancient Samarkand, especially to control the passage along the local Silk Road routes.

After intermittent investigations during the entire nineteenth century by different Soviet archaeologists, Kafir Kala was first excavated by a team of the Institute of Archaeology of Samarkand in the early 1990s. The excavation of the upper citadel provided

* *Department of History and Cultures, Alma Mater Studiorum, University of Bologna ([eleonora.serrone@studio.unibo.it], corresponding author)*
† *ArcheoLaBio, Research Center for Bioarchaeology, Department of History and Cultures, Alma Mater Studiorum, University of Bologna*
‡ *Institute of Archaeology, Uzbek Academy of Sciences*

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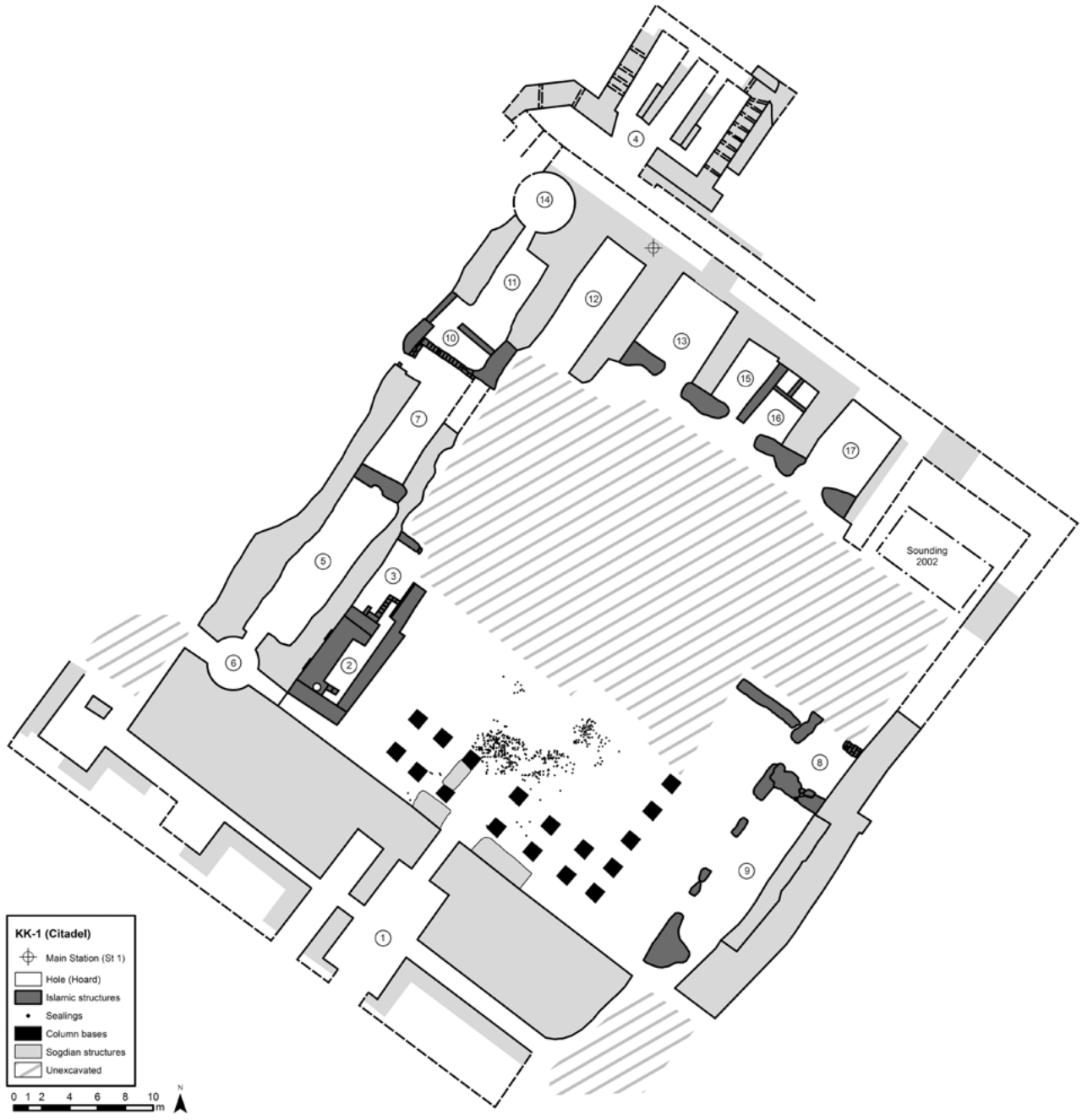

Figure 2.5.1. General plan of Kafir Kala's citadel. Number within circle refers to room number. (Photograph courtesy of the Uzbek-Italian Archaeological Expedition.)

evidence for a systematic occupation during the so-called Sogdian period, which in the Zeravshan Valley usually refers to the centuries (fifth–early eighth century) before the Arab conquest of Central Asia (first half of the eighth century). A new program of systematic research at Kafir Kala began in 2001 with the Uzbek-Italian Archaeological Project "Samarkand and Its Territory." During nine field seasons, between 2001 and 2014, the early excavations in the citadel were resumed and soundings in the lower settlement were opened to understand the settlement's natural setting and its relationship with the Dargom canal (Malatesta et al. 2012).

Archaeological excavations revealed two major periods of occupation (Figure 2.5.1). The earliest dates to the pre-Islamic period (late seventh–early

eighth century) and is characterized by the exceptional discovery of a set of ca. 650 clay sealings,[1] which suggest the presence of an important administrative center (Cazzoli and Cereti 2005). The sealings were discovered on a beaten-earth floor covered by a thick layer of collapsed burnt wooden beams. The presence of eighteen wooden column bases on the same floor suggests that there had been an inner courtyard, surrounded by a portico. According to pottery and coins, the fire occurred in the early eighth century and was possibly connected to the Arab conquest of Samarkand in 712 AD, as the name of the site itself—Kafir Kala = "nonbelievers" castle—also seems to suggest.

The upper citadel was then abandoned for a short period. Subsequent changes were significant. The administrative center gave place to a residential unit with many rooms and cooking installations. The pre-Islamic monumental architecture was reused to set up new rooms. The building technique for the construction of the Islamic walls is remarkably inferior in skill and quality of materials compared to the previous one and mud bricks from the previous period are often recycled. The inner central courtyard was left empty and used to discard pottery, animal bones, and architectural remains, including baked bricks and tiles. Nevertheless, the discovery in Room Two (season 2006) of a hoard containing 132 coins, most of which were silver Abbasid *dirhams* dated to the eighth century (Berdimuradov et al. 2012), suggests that the site was still occupied by someone important.

Kafir Kala Faunal Analysis

A total of 6,009 animal bones has been retrieved from Kafir Kala (Mantellini et al. 2016). All the animal remains recovered during the excavations have been analyzed and are presented here by chronological period. This subdivision was possible due to the presence of destruction layers, composed of charcoal, ashes, and combustible woods, which were generally spread over the entire citadel's area and may be associated with the Arab conquest of Samarkand in 712 AD.

Anatomical and species determination was possible only for 2,140 remains, corresponding to 35.6% of the total. Most of these bones come from the Islamic strata (eighth–twelfth century AD).

The assemblage is dominated by caprines—sheep and goats—which represent 80% of the total Number of Identified Specimens (NISP).[2] In a few cases, it was possible to distinguish between sheep and goat. For the distinction between sheep and goat we used Boessneck (1969), Halstead et al. (2002), and Zeder and Pilaar (2010). Cattle are the second highest represented domestic taxon, though with a NISP far smaller than that of sheep/goat, followed by equids. Remains of pigs, dogs, and cats are relatively rare.

Among the wild animals, fox is the most common (3.6% of the assemblage), followed by wild boar, roe deer, ibex, and red deer. Additionally, although bird and microfaunal remains have been found, they have not been studied yet in detail.

Faunal Composition of the Pre-Islamic Period (Late Seventh–Early Eighth Century AD)

A total of 2,033 remains were found in the pre-Islamic layers, but identification to species level was possible only for 617 specimens (28%, Table 2.5.1). In the faunal composition of this period, caprines have the highest representation among the domestic animals (with a NISP of 460), followed by cattle with 73 remains. Equids are only represented by six specimens, while pigs and camelids are represented by very few remains: three and two fragments, respectively. Birds, including Galliforms and Columbids, represent a high NISP compared to larger animals, even though there are only 35 remains.

Wild animals are very rare; among them foxes are the most abundant with 22 specimens (3.6% of the total determined species). Finally there are also 3 unidentified microfaunal remains.

Domestic Animals

Within the domestic fauna, caprines are the most abundant with 460 remains of which 28 could se-

1 This amount refers to the clay sealings discovered by the Uzbek-Italian excavations. Other sealings have recently been discovered by the Uzbek-Japanese Expedition.

2 For anatomical determination of species, we used the following comparison atlases: Schmidt (1972), Barone (1976), and the reference collection of ArcheoLaBio–Research Center for Bioarchaeology, Department of History and Cultures, Alma Mater Studiorum–University of Bologna, located in Ravenna.

Table 2.5.1. Faunal composition of pre-Islamic period.

Taxa & animal groups	NISP	% NISP	MNI	% MNI	Animal groups	NISP	% NISP	MNI	% MNI
Equus caballus	6	1.0	2	3.4	Equids	13	2.1	6	11.3
Equus asinus	1	0.2	1	1.7					
Equus sp.	6	1.0	3	5.2					
Sus domesticus	3	0.5	1	1.7	Pigs	3	0.5	1	1.9
Caprines	422	68.4	26	44.8	Caprines	460	74.6	37	69.8
Ovis aries	28	4.5	8	13.8					
Capra hircus	10	1.6	3	5.2					
Bos taurus	73	11.8	8	13.8	Cattle	73	11.8	8	15.1
Camelus sp.	2	0.3	1	1.7	Camels	2	0.3	1	1.9
Small-medium wild ungulates	5	0.8	2	3.4	Others	66	10.7	-	-
Cervus elaphus	1	0.2	1	1.7					
Vulpes vulpes	22	3.6	2	3.4					
Aves	35	5.7	-	-					
Micromammal	3	0.5	-	-					
Total	**617**	**100**	**58**	**100**	**Total**	**617**	**100**	**53**	**100**

curely be attributed to sheep and only 10 to goats. Age-at-death was assessed on jaws, maxillae, and isolated teeth.[3] To determine the Minimum Number of Individuals (MNI), we based our calculations on the number and sides (left and right) of humerus, ulna, scapula, and tibia—the most abundant anatomical elements in the sample. The MNI shows the presence of at least 37 individuals of which eight are sheep and three goats. Amongst the individuals belonging to this group we found one foetus, one young, one young adult sheep, one young adult between 12 and 18 months, and two other young adults between 18 and 24 months. Among the adult individuals, five were slaughtered between 2 and 3 years of life, one between 3 and 4 years, and one between 4 and 6 years. Three adult goats and seven adult sheep show undetermined age.

Cattle are represented by 73 specimens, which came from at least eight individuals. The majority of cattle bones belong to limbs. We estimated age-at-death using mandibles, maxillae, and tibiae, which were the most numerous bones represented (Figure 2.5.2).[4] Our MNI calculations indicate that these remains represent at least one calf around 5–6 months of age, one young individual of undeterminable age, one young adult, one adult between 3 and 4 years old, and four adults of undetermined age.

Equids were identified from 13 specimens from at least six different individuals. It was possible to identify three horses (one subadult and two adults, of which one was less than 42–48 months old), one donkey, and two equids of undetermined age (Baxter 1998).

Pigs are only represented by three remains, all belonging to a minimum of one adult male. Sex was determined due to the presence of a lower canine tooth (for the slaughtering trends of pigs, see Bull and Payne 1982).

Two camel remains—a fragment of a radius and a partial first phalanx—could be attributed to only

3 Age-at-death based on sheep/goat tooth eruption/wear was estimated following the method developed by Payne (1973); see also Silver (1969) and Grant (1982).

4 Age-at-death for cattle was estimated based on the degree of long-bone fusion and on tooth eruption/wear following the methods developed by Barone (1976) and Grant (1982).

Figure 2.5.2. Bovine left lower jaw with cut marks—SU 22, pre-Islamic period. (Photograph by E. Maini.)

one individual, probably from an adult judging by size and thickness of the anatomical elements (Steiger 1990).

Wild Animals

Fox is the most represented species in the wild faunal sample, with 22 skeletal remains attributable to two different individuals. Bones were identified with the distal end of limbs and show cut marks consistent with skinning (Figure 2.5.3).

In addition to fox remains, a third phalanx belonging to red deer was also found. Five additional specimens come from two different individuals of small–medium ungulates. The morphology of the bones is different than that of domestic taxa and appears compatible with various wild ungulates, such as gazelle, roe deer, ibex, saiga, chamois, and others (Geptner 1988). However, a specific determination requires further and more detailed study. For the moment, we can only recognize the presence of wild, small–medium ungulates according to the size, shape, and thickness of bone fragments.

Faunal Composition of the Islamic Period (Early Eighth–Early Twelfth Centuries AD)

Remains from the Islamic period total 3,983, of which 1,523 (38.2%) were identified to species level (Table 2.5.2). Caprines are still the most abundant group with 1,151 remains and a sheep-to-goat ratio of three to one. Also during the Islamic occupation,

Figure 2.5.3. Fox paw with cut marks on the metapodials—SU 683, pre-Islamic period. (Photograph by E. Maini.)

the second most represented species is again cattle with 189 remains. Equids are more numerous than during the previous period, while pigs and camel are still very scarce. Finally, there is evidence for the presence of dogs and cats, which were not attested in the pre-Islamic period.

The wild fauna in this phase is again scarcely represented, and, similarly, only foxes seem to have drawn the interest of Kafir Kala inhabitants to a certain extent. Birds are present with 88 specimens, for the most part attributable to Galliforms and Columbids, while for the microfauna six long-bone diaphyses could not be identified to species.

Domestic Animals

As in the pre-Islamic sample, caprines' remains are the most abundant (1,151 remains), with 111 attributed to sheep and 39 to goats. The estimated MNI shows the presence of at least 107 individuals, among which 25 were identified as sheep and 10 as goats. The ages represented by this assemblage of sheep and goats are as follows: one foetus/newborn; at least 20 young individuals, one of which is extremely young (between 0 and 2 months old), ten that are between 2 and 6 months of age (two goats

Table 2.5.2. Faunal composition of Islamic period.

Taxa & animal groups	NISP	% NISP	MNI	% MNI	Animal groups	NISP	% NISP	MNI	% MNI
Canis familiaris	7	0.5	3	1.9	Canids	7	0.5	3	2
Equus caballus	17	1.1	6	3.8	Equids	37	2.4	11	7.3
Equus asinus	6	0.4	2	1.3					
Equus sp.	14	0.9	3	1.9					
Sus domesticus	7	0.5	5	3.1	Pigs	7	0.5	5	3.3
Caprines	1,001	65.7	72	45.0	Caprines	1,151	75.6	107	71.3
Ovis aries	111	7.3	25	15.6					
Capra hircus	39	2.6	10	6.3					
Bos taurus	189	12.4	22	13.8	Cattle	189	12.4	22	14.7
Camelus sp.	3	0.2	2	1.3	Camels	3	0.2	2	1.3
Sus scrofa	4	0.3	2	1.3	Others	129	8.5	-	-
Small–medium wild ungulates	3	0.2	2	1.3					
Cervus elaphus	2	0.1	1	0.6					
Vulpes vulpes	22	1.4	3	1.9					
Felis catus	3	0.2	1	0.6					
Felid	1	0.1	1	0.6					
Aves	88	5.8	-	-					
Micromammal	6	0.4	-	-					
Total	**1,523**	**100**	**160**	**100**	**Total**	**1,523**	**100**	**150**	**100**

and four sheep), and nine individuals slaughtered between 9 and 12 months of life; at least 15 young adults (including two goats and four sheep aged between 12 and 24 months old); at least 69 adults, 26 of which are between 2 and 4 years of age (six sheep and four goats) and thirteen of which are aged between 4 and 6/8 years (including two sheep); and two sheep butchered at senile ages between 8 and 10 years of life (Figure 2.5.4). For an additional 30 adult individuals, whose presence is inferred based on counts and size of the long bones, it was not possible to estimate the exact age-at-death.

The 189 cattle remains belong to at least 22 individuals. Among them were one calf less than 4 months old, one calf less than 12 months of age, one young individual 1 year old, three subadults around 2 or 3 years old, one adult aged between 4 and 6 years, two adults more than 6 years old, nine adults of undetermined age, and one senile individual that could have been more than 8 years old. On the basis of measurements made following von den Driesch's (1976) methodology, the following indexes were calculated: Nobis 1: 26.44 = female; Nobis 2: 15.43 = female/castrated. Withers heights, calculated with the Matolcsi's (1970) indices, resulted in a value of 118.7 cm.

The 37 equid remains attest to an MNI of 11 individuals. There were at least two donkeys—a young one between 12 and 24 months old and one adult of undetermined age. Six horses—two aged between 3–4 years and four adults of undetermined age—were also identified. Two other equid individuals remain of undetermined age and species.

In the Islamic phase, pigs are represented by only seven specimens from at least five individuals—one 4–6 month old piglet, one young adult less than two years old, one adult male, and two adults of undetermined age. The age of these individuals was calculated based on the fusion of the proximal

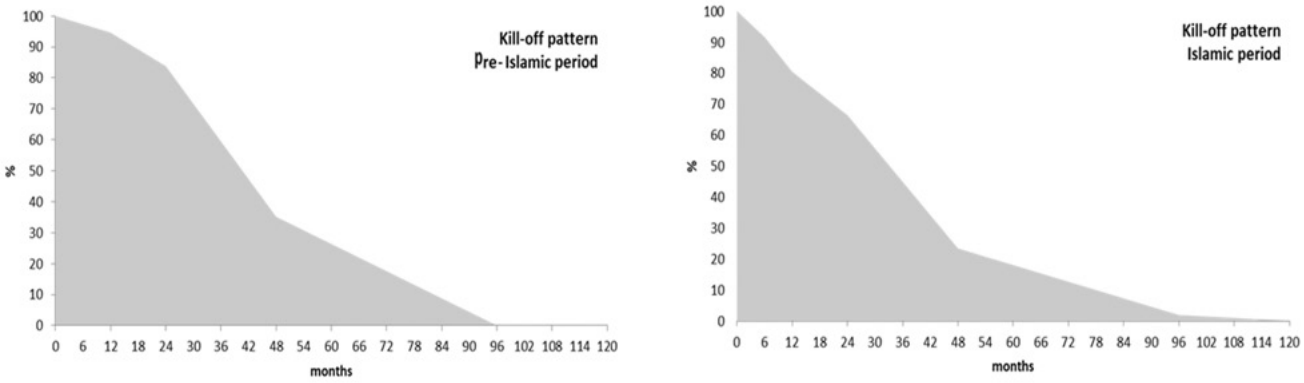

Figure 2.5.4. Sheep/Goat kill-off pattern—based on MNI: comparison between pre-Islamic (left) and Islamic (right) periods.

and distal epiphyses of the long bones and on the presence of a left maxilla. Sex was assessed based on the presence of a canine, which could securely be attributed to a male.

The three camel remains belong to two adult individuals of indeterminate age. Unfortunately, the high degree of fragmentation did not allow us to obtain further information.

As previously mentioned, during the Islamic phase dogs and cats are represented by seven and three specimens, respectively. Our MNI calculation indicates the presence of at least three dogs, including two adults of undetermined age and one elderly individual with worn teeth, and only one adult cat of undetermined age.

Wild Animals

Foxes comprise the majority of the wild fauna from the Islamic period, with 22 remains belonging to at least three individuals of undetermined age. In particular, there are partial limbs and two hemi-mandibles. During this phase more wild animals were present when compared to the previous phase, including two wild boar specimens from at least two different individuals and three fragments from small to medium wild ungulates. On the basis of their appearance and size, one of these fragments may have come from a chamois. Further research is needed to attest the presence of this animal during the Middle Ages in Uzbekistan. Finally, a large felid humerus with cut marks has been identified in the Islamic period assemblage. Although we have not yet identified the felid remain at the species level, given the size of the skeletal element, we are considering a possible attribution to Pallas's cat (*Otocolobus manul*) a rare animal native of Central Asia.

Taphonomic Analysis

Only 198 remains (ca. 9% of the determined assemblage) show relevant taphonomic markers. Ninety-six remains show butchering traces, 66 bear burning traces, and 20 specimens show gnawing marks made by rodents and carnivores.

The butchering marks are, for the most part, deep and thin subparallel striae, mostly located close to the joints. Such marks are related to carcass butchering, skinning, dismembering, and preparation of meat portions.

Cut marks are most evident on the bones of caprines, the group that dominates the assemblage (Figure 2.5.5a). Cut marks were also found on cattle, equids, and wild animals, especially foxes. On the latter, cut marks were found on the distal part of the extremities and are consistent with skinning.

The few burnt remains, especially limb bones, do not enable us to recreate details related to cooking practices or disposal of food waste. Given the presence of gnawing on part of the osteological sample, it is possible that domestic waste was abandoned in open-air areas accessible to scavenging animals. Sixteen fragments show evidence for bone-working, particularly sheep and goat astragali, which show abrasions and/or holes. One astragalus has a metal ring wraped around it and a pierced hole probably for suspension (Figure 2.5.5b). The use of knucklebones as pendants, dices, or tokens is well attested from the prehistoric up to the historic periods throughout the Eurasian continent (Gilmour 1997).

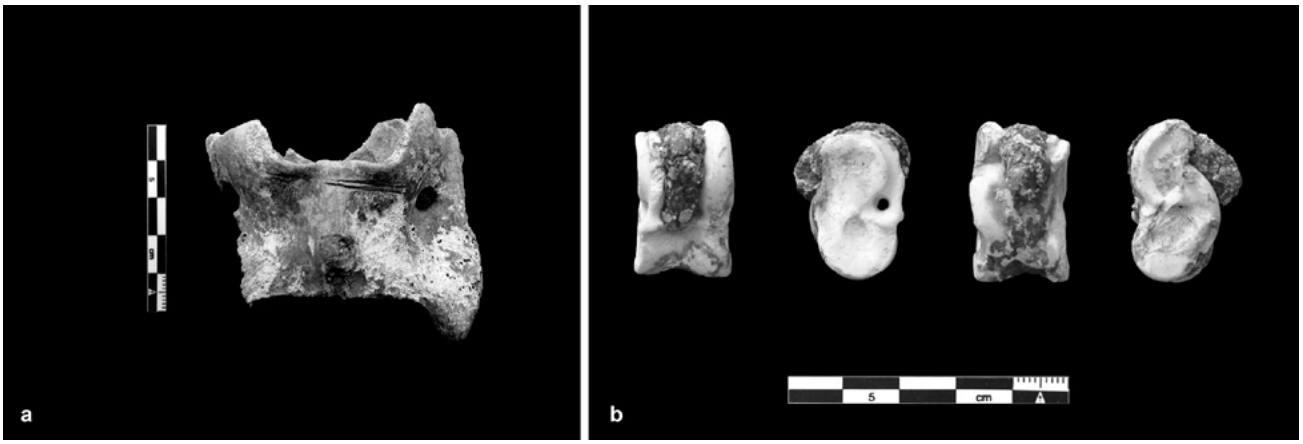

Figure 2.5.5. (a) Sheep atlas with cut marks—SU 681, pre-Islamic period; (b) worked sheep/goat astragalus—SU 5, Islamic period. (Photograph by E. Maini.)

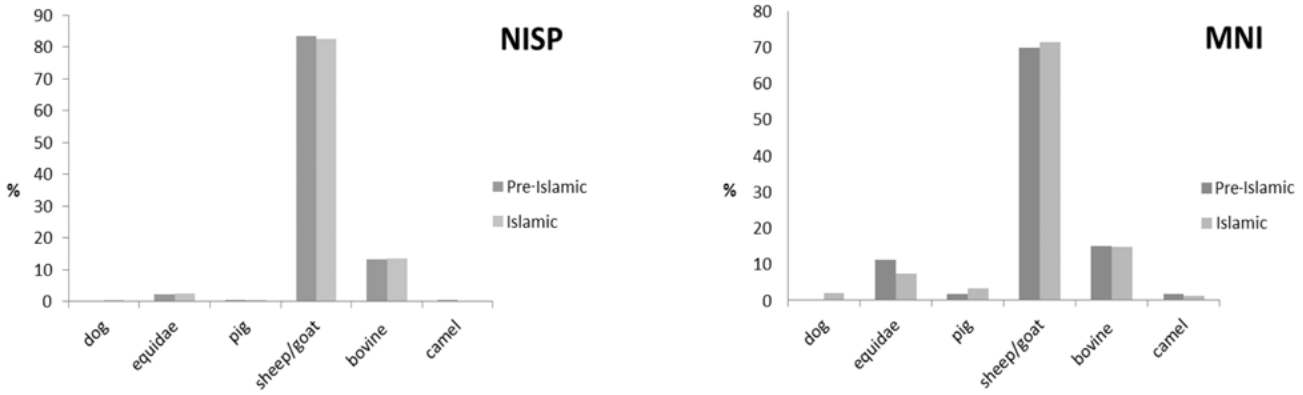

Figure 2.5.6. Number of Identified Specimens (NISP) of domestic animals: comparison between pre-Islamic/Islamic (on the left); Minimal Number of Individuals (MNI) of domestic animals: comparison between pre-Islamic/Islamic (on the right).

Final Remarks

Despite the fact that the faunal assemblage dated to the Islamic occupation is much larger than the assemblage from the pre-Islamic phase, it is nevertheless possible to propose a reliable reconstruction of the animal economy at Kafir Kala during the Islamic transition. The faunal analysis suggests a substantial continuity in the exploitation of domestic animals with an almost exclusive exploitation of sheep and goats (Figure 2.5.6).

As attested elsewhere in Central Asia, wild animals still represented an important—though limited—resource evidently linked to environmental needs and their adaptability to a particular ecosystem (Lhuillier and Mashkour 2017). Occasionally, the inhabitants of Kafir Kala must have hunted ungulates to procure meat and skins, as well as possibly for prestige. Nevertheless, there is no evidence of stags or their antlers, which could have possibly been used as raw material for making instruments and jewelry or as hunting trophies. Foxes appear to be the most hunted animals, most likely for pelts, as suggested by the skinning marks found on the diaphyses of their metapodials.

The general increase in meat consumption during the Islamic period can be explained by the shifting of Kafir Kala's citadel from an administrative center to a residential area. The appearance of animal species, which are not related to meat con-

sumption—dogs and cats—must also be seen in connection with the residential function of the citadel during the Islamic centuries.

The historical transition following the Arab conquest of the Samarkand region in 712 AD does not seem to have altered the animal economy at the site, which was essentially based on pastoralism during both occupation phases. Flocks provided not only meat, but most likely other products, such as wool, leather, and milk. Likewise, cattle were used as a food source and probably as traction animals. As indicated by a paucity of remains, pigs were evidently only an occasional source of meat.

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