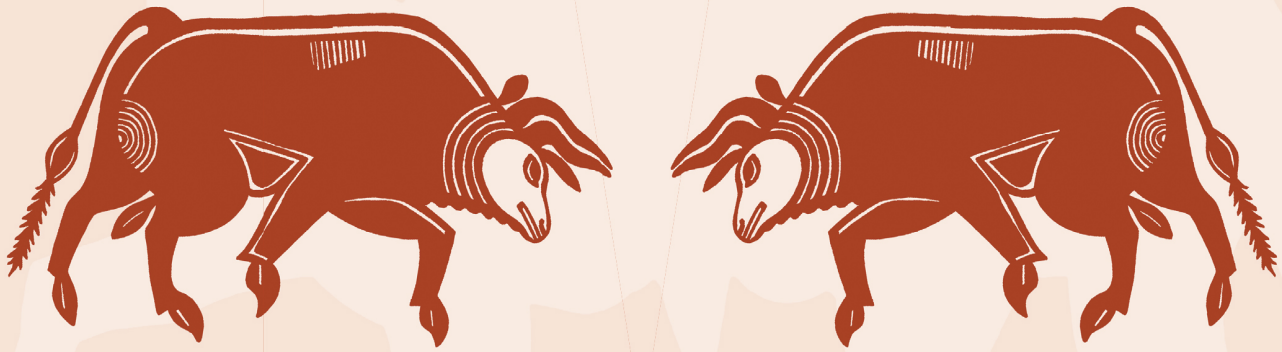
Archaeobiology 3

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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Series Editors

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Number 3

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LOCKWOOD PRESS
Atlanta • 2021

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ISBN: 978-1-948488-29-7

Cover design by Susanne Wilhelm
Cover art by Helena A. Kansa

Library of Congress Cataloging-in-Publication Data

Names: International Symposium on the Archaeozoology of Southwest Asia and Adjacent Areas (13th : 2017 : Nicosia, Cyprus), author. | Daujat, Julie, editor. | Hadjikoumis, Angelos, editor. | Berthon, Rémi, editor. | Chahoud, Jwana, editor. | Kassianidou, Vasiliki, editor. | Vigne, Jean-Denis, editor.
Title: 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.
Identifiers: LCCN 2021049118 (print) | LCCN 2021049119 (ebook) | ISBN 9781948488297 (hardcover) | ISBN 9781948488983 (pdf)
Subjects: LCSH: Animal remains (Archaeology)--Middle East--Congresses. | Domestication--Middle East--History--Congresses. | Human-animal relationships--Middle East--History--Congresses. | Middle East--Antiquities--Congresses.
Classification: LCC CC79.5.A5 I58 2017 (print) | LCC CC79.5.A5 (ebook) | DDC 930.1/0285--dc23/eng/20211108
LC record available at https://lccn.loc.gov/2021049118
LC ebook record available at https://lccn.loc.gov/2021049119

Printed in the United States of America on acid-free paper.

Group photo of the 13th ASWA[AA] meeting June 8th 2017
in the hall of the University-House Anastasios G. Leventis of the University of Cyprus.

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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

2.3 | Animal Economy at Karkemish from the Late Bronze to the Iron Age

A Preliminary Assessment

Elena Maini* and Antonio Curci*

Abstract

The systematic zooarchaeological study of faunal assemblages from the excavations carried out between 2011 and 2016 by the Joint Turco–Italian Archaeological Expedition at Karkemish (province of Karkamış, Gaziantep, Turkey) is based on a sample of about ten thousand osteological remains. Data derive from different sectors of the urban settlement, including administrative, cultic, productive, residential, and funerary areas from the beginning of the Late Bronze Age down to the Iron IV/Achaemenid period. The faunal assemblage presents a good level of preservation with 30% of the sample determined to species level. Domestic animals were predominant in all periods, with sheep and goats covering almost half of the Number of Identified Specimens (NISP), followed by cattle and equids—both donkeys and horses—while pigs, dogs, and camels are rather scarce. The animal economy of Karkemish was evidently based on pastoralism, including the exploitation of both primary and secondary products as showed by the estimation of age-at-death. Wild animals were rare but included deer, fallow deer, and gazelle, and some exceptional examples of exotic animals.

Keywords

Bronze Age, Iron Age, Hittite, Turkey, Karkemish, sheep and goat, gazelle, exotic animals, pastoralism, ancient diet

Introduction

This preliminary zooarchaeological study concerns the faunal remains excavated by the Turco–Italian Archaeological Expedition at Karkemish (Karkamış province, Gaziantep, Turkey) from excavations carried out starting in 2011 and continuing. The study is based on a sample of nearly eighteen thousand animal osteological remains (17,906).[1] The materials pertain to different sectors of the urban settlement, including administrative, cultic, productive, residential, and funerary areas dated from the Middle Bronze Age to the Islamic period (for a general introduction to the site, see Marchetti 2014, 2015a, 2015b, 2016; Figure 2.3.1). In general, even if there was a high degree of fragmentation due to different anthropogenic causes, bone surfaces show a good level of preservation. Here we discuss the preliminary archaeozoological analysis of some of the sectors analyzed to date, a sample size of 10,568 bone fragments with 29.9% of this sample identified to species level (3,159 fragments, Tables 2.3.1 and 2.3.2).[2]

At the moment, the zooarchaeological analysis is primarily focused on materials dated between the Late Bronze Age (LBA) I and Iron Age (IA) IV/Achaemenid period—sixteenth–fourth century BC—as determined by the pottery studies. Zooarchaeologi-

1 The Turco–Italian Expedition at Karkemish is carried out in partnership between the University of Bologna, the University of Gaziantep, and the University of Istanbul, with additional funding from the Italian Ministry of Foreign Affairs and the Sanko Holding, A.Ş.

2 Faunal remains were collected together with other archaeological finds from stratigraphical excavations without applying any sampling strategy, but no sieving was carried out.

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DOI: http://dx.doi.org/10.5913/aswaxiii.0130203

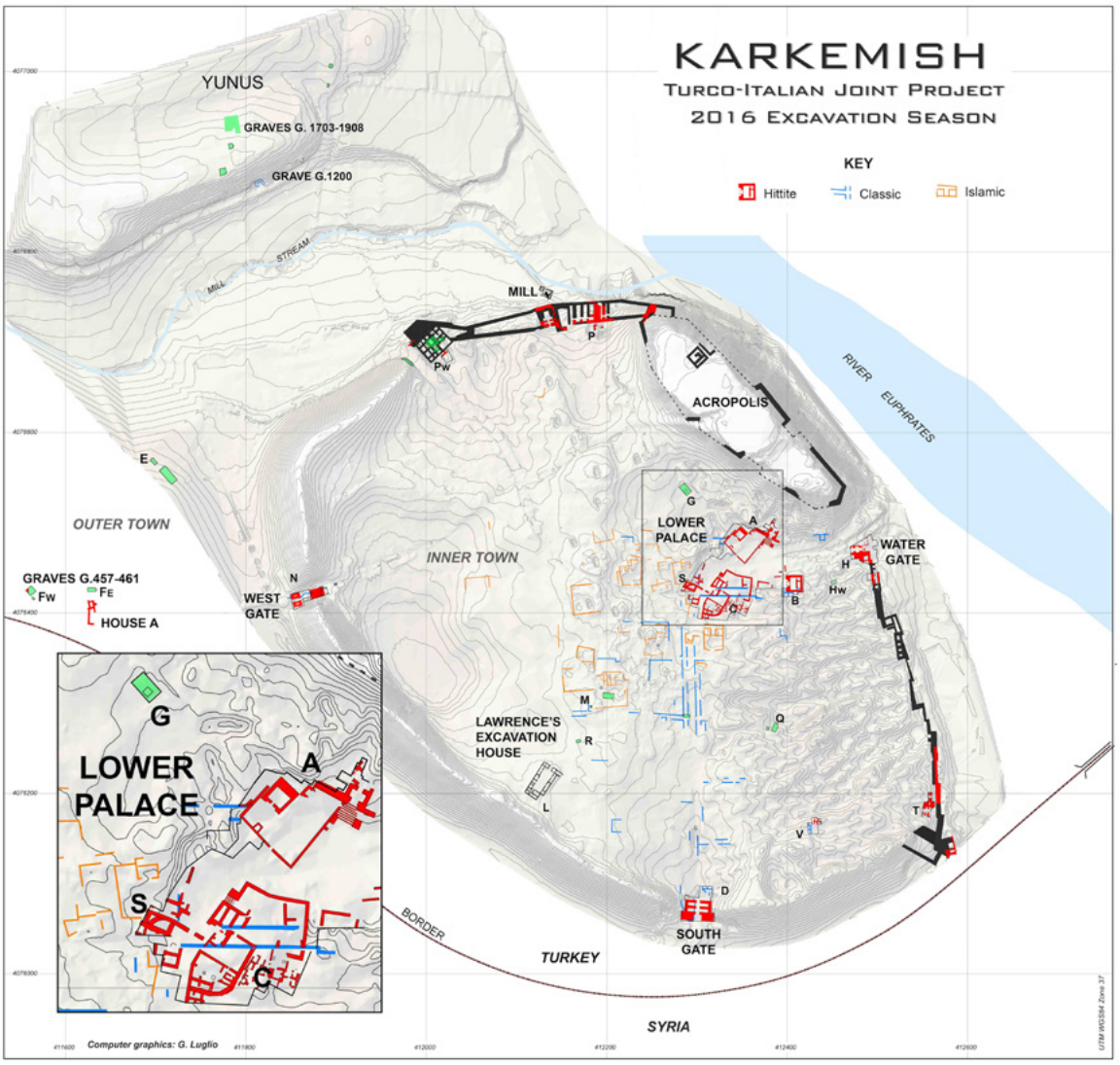

Figure 2.3.1. Topographical map of Karkemish—oriented north–south with UTM geographic coordinates—with the areas mentioned in the text inside the box. (Courtesy of the Turco–Italian Archaeological Expedition at Karkemish.)

cal study, as well as the archaeological excavation, of Area G and Area A has now been completed, while samples from the entire Lower Palace Area—Area S, Area C East, and Area C South—have been only partially analyzed.[3] In fact, zooarchaeological research advances seasonally synchronously with the progress of the archaeological excavations.

3 Zooarchaeological study of the site's other sectors has also been completed; however, the dating of these areas falls outside the chronological range considered in this contribution. The additional sectors will be presented in subsequent papers.

Late Bronze Age

LBA levels at Karkemish yielded a rather limited faunal assemblage compared to the later periods for a total sample of only 1,235 fragments analyzed (compared to almost 10,000 fragments from the IA; Table 2.3.1).

Area A—Late Bronze Age I (Sixteenth–Fifteenth Centuries BC)

The majority of faunal remains dated to the LBA belong, so far, to Area A. This area is located in the Lower Palace Area. Excavations during the 2014

Table 2.3.1. Preliminary faunal composition of the Late Bronze Age levels in Area A and Area C East at Karkemish (updated to the 2017 field season). NISP = Number of Identified Specimens.

Taxa & animal groups	Area A			Area C East			Total LBT	
	NISP	%NISP	%NISP groups	NISP	%NISP	%NISP groups	NISP	%
Equus caballus	-	-	-	-	-	**0.7**	**1**	**0.3**
Equus asinus	-	-		-	-			
Equus sp.	-	-		1	0.7			
Canis familiaris	14	8.4	**8.4**	2	1.5	**1.5**	**16**	**5.7**
Sus domesticus	16	9.6	**9.6**	8	5.9	**5.9**	**24**	**7.9**
Sheep/goats	66	39.5	**52.1**	76	55.9	**60.3**	**169**	**55.8**
Ovis aries	14	8.4		3	2.2			
Capra hircus	7	4.2		3	2.2			
Small ungulates	11	6.6	**8.4**	10	7.4	**22.1**	**44**	**14.5**
Small–medium ungulates	3	1.8		20	14.7			
Bos taurus	18	10.8	**10.8**	3	2.2	**2.2**	**21**	**6.9**
Large–medium ungulates	1	0.6	**6**	-	-	**1.5**	**12**	**4.0**
Large ungulates	9	5.4		2	1.5			
Gazella sp.	-	-	-	1	0.7	**0.7**	**1**	**0.3**
Lagomorphs	1	0.6	**0.6**	1	0.7	**0.7**	2	0.7
Birds	4	2.4	**2.4**	5	3.7	**3.7**	**9**	**3.0**
Reptiles	1	0.6	**0.6**	-	-	-	**1**	**0.3**
Fish	2	1.2	**1.2**	1	0.7	**0.7**	**3**	**1.0**
Total	**167**	100	**100**	**136**	100	**100**	**303**	**100**
Indeterminate bones	550			442			992	
Total	717			578			1,295	

and 2015 campaigns (Marchetti 2015a) revealed the presence of LBA phases at the foot of the Acropolis. The most intriguing architectural evidence is a large building, Building 1, of which only two rooms have been excavated. On the basis of the available data, it is possible to preliminarily interpret the building as a residential structure with evidence of productive activities testified by the presence of various storage vessels, ovens, and tools used for food processing, as well as of a high number of faunal remains (717 remains; Pizzimenti and Scazzosi 2017). Most of this sample (76.7%) was not identifiable to species due to poor preservation of the bones. The part of the sample identified to species resulted in a rather differentiated range of animals represented. Sheep and goats—with sheep about twice as numerous as goats—account for 52.2% of the remains (for the distinction between sheep and goats, see Boessneck 1969; Zeder and Pilaar 2010). The evaluation of age-at-death for sheep/goats revealed the exploitation of different age classes with adult individuals between two and four years old predominating. Cattle represent only 10.8%, while pigs account for 9.6% of the entire sample. Small and large ungulates, not more

precisely identifiable, cover between 8.4 % and 6.0% of the total.[4] Dog skeletal elements—fourteen in total related to at least two different individuals[5]—were also found along with one lagomorph bone and four elements of unidentified birds. Finally, the identification of one lizard bone and two fish vertebrae is still in progress (see NISP=Number of Identified Specimens and related percentages in Table 2.3.1).

Area C East—Late Bronze Age II (Fourteenth–Thirteenth Centuries BC)

The 2017 excavation in Area C East of the Lower Palace Area uncovered two rooms dated to the LBA II, where 578 faunal remains have been found. Only 23.5% of those remains were identified to species level. The majority of identified bones are of sheep and goats (60.3%) or of small and small–medium ungulates in general (22.1%). Cattle, pigs, and other domestic and wild animals—dogs, equids, birds, fish, hares, and gazelles—are scarce (Table 2.3.1). The preliminary evaluation of age-at-death for sheep/goats revealed the exploitation of different age classes; although juvenile and very young animals are represented, adult and subadult animals were the preferred choice.

Iron Age

Iron Age (IA) contexts are better preserved at Karkemish compared to the Bronze Age ones, and, as a consequence, the faunal remains are far more abundant in these levels. To date, 9,273 faunal remains have been studied from the five areas of the site considered in this paper (Table 2.3.2), which cover the entire chronological range from the IA I to the IA IV/ Achaemenid period (twelfth–fourth centuries BC).

Area S—Iron Age I (Eleventh–Tenth Centuries BC)

Excavation in Area S of the Lower Palace Area uncovered an open area with productive and storage structures dated to Late IA I, which had later been leveled during the construction of the massive King's Gate in the IA II. The ongoing zooarchaeological analysis has so far completed analysis of 1,769 animal remains. Species determination was possible only for 455 bone fragments (ca. 25% of the total). Sheep/goats and small and indeterminate small–medium ungulates (326 remains, equal to 74.3% of the identified sample) are the most frequent, followed by cattle and large ungulates (81 elements) and equids (11 remains; Table 2.3.2). Pigs and dogs are represented by two bones each. Regarding wild animals, gazelles are the most abundant species (11 post-cranial bones and one horn core) but one element of fallow deer and another of hare are also present. Bird remains are in a very poor state of preservation and only one of the 13 fragments was positively identified to the order Galliformes.

The archaeozoological analysis of Area S also led to the discovery of four different elephant bones—cf. *Elephas maximus*, possibly *Elephas maximus asurus*—including: one distal portion of a tibia, one third metatarsal, one fragment of a distal femoral epiphysis, and another indeterminate leg-bone fragment, probably all belonging to the same subadult individual (Maini et al. 2018).

Area G—Iron Age I, II, III (Twelfth–Seventh Centuries BC)

Area G is located at the foot of the Acropolis, west of the Lower Palace Area. Excavations carried out during the 2012–2014 campaigns revealed a long archaeological sequence covering the Bronze and Iron Ages (Zaina 2018), but only the Iron Age levels included animal remains (Maini 2018).

IA I levels (twelfth–tenth centuries BC) excavated in Area G produced only 83 animal bone fragments, recovered from two different pebble floors. Species determination was not possible for about half of this sample. Indeterminate remains included mainly fragments of ribs and vertebrae from both small and large animals, while the 43 identified bone fragments testify to a differentiated sample. Nine bone fragments of adult and subadult sheep and goats represent at least three individuals, while 12 fragments of bovids came from at least two adult individuals. Three bone fragments come from one adult pig; six equid bones testify to at least one horse and one donkey (for the identification of equids according to their dental anatomy, see Baxter 1998).

4 The categories "small and small–medium ungulates" (e.g., sheep, goats, and gazelles) and "large and large–medium ungulates" (e.g., cattle, equids, etc.) usually derive from the thickness of not well-identified bone fragments.

5 NISP includes all skeletal elements, but the presence of two different animals has been ascertained thanks to the presence of two different left hind limbs.

Table 2.3.2. Preliminary faunal composition of the Iron Age levels in Area S, Area A, Area C East, and Area C South (Well) at Karkemish (updated to the 2017 field season).

	Area S (IA I)			Area G (IA I–III)			Area C East (IA I–IV)			Area C South (Well) (IA III)			Total IA	
Taxa & animal groups	**NISP**	**%NISP**	**groups**	**NISP**	**%NISP**	**groups**	**NISP**	**%NISP**	**groups**	**NISP**	**%NISP**	**groups**	**NISP**	**%NISP groups**
Equus caballus	2	0.4	**2.4**	2	0.4	**11.3**	2	0.2	**11.0**	1	0.2	**1.5**	**221**	**7.7**
Equus asinus	2	0.4		4	0.7		9	0.7		-	-			
Equus sp.	7	1.5		55	10.2		129	10.2		8	1.3			
Canis familiaris	2	0.4	**0.4**	12	2.2	**2.2**	10	0.8	**0.8**	-	-	-	**24**	**0.8**
Sus domesticus	2	0.4	**0.4**	19	3.5	**3.5**	17	1.3	**1.3**	11	1.9	**1.9**	**49**	**1.7**
Sheep/goats	137	30.1	**37.1**	100	18.6	**35.3**	410	32.3	**40.0**	155	26.1	**52.9**	**1,181**	**41.4**
Ovis aries	20	4.4		67	12.5		64	5.0		111	18.7			
Capra hircus	12	2.6		23	4.3		34	2.7		48	8.1			
Small ungulates	35	7.7	**34.5**	76	14.1	**19.0**	72	5.7	**20.3**	133	22.4	**25.1**	**665**	**23.3**
Small–medium ungulates	122	26.8		26	4.8		185	14.6		16	2.7			
Bos taurus	62	13.6	**13.6**	109	20.3	**20.3**	202	15.9	**15.9**	33	5.6	**5.6**	**406**	**14.2**
Large–medium ungulates	7	1.5	**4.2**	9	1.7	**7.2**	16	1.3	**4.6**	3	0.5	**1.3**	**124**	**4.3**
Large ungulates	12	2.6		30	5.6		42	3.3		5	0.8			
Cervus elaphus	-	-	-	-	-	-	-	-	-	2	0.3	**0.3**	**2**	0.1
Capreolus capreolus	-	-	-	-	-	-	-	-	-	1	0.2	**0.2**	**1**	**< 0.1**
Gazella sp.	12	2.6	**2.6**	-	-	-	2	0.2	**0.2**	9	1.5	**1.5**	**23**	**0.8**
Dama sp.	1	0.2	**0.2**	4	0.7	**0.7**	-	-	-	1	0.2	**0.2**	**6**	**0.2**
Camelus sp.	-	-	-	1	0.2	**0.2**	18	1.4	**1.4**	-	-	-	**19**	0.7
Elephas maximus	4	0.9	**0.9**	-	-	-	-	-	-	-	-	-	**4**	**0.1**
Giraffa camelopardalis	-	-	-	-	-	-	1	0.1	**0.1**	-	-	-	**1**	**< 0.1**
Pantera sp.	-	-	-	-	-	-	-	-	-	1	0.2	**0.2**	**1**	**< 0.1**
Felis sp.	-	-	-	-	-	-	1	0.1	-	-	-	-	**1**	< 0.1
Vulpes vulpes	2	0.4	**0.4**	-	-	-	-	-	-	-	-	-	**2**	**0.1**
Lagomorphs	1	0.2	**0.2**	1	0.2	**0.2**	9	0.7	**0.7**	15	2.5	**2.5**	**26**	**0.9**
Other mammals	-	-	-	-	-	-	20	1.6	**1.6**	15	2.5	**2.5**	**35**	**1.2**
Birds	13	2.9	**2.9**	-	-	-	20	1.6	**1.6**	22	3.7	**3.7**	**55**	1.9
Reptiles	-	-	-	-	-	-	1	0.1	**0.1**	1	0.2	**0.2**	**2**	**0.1**
Fish	-	-	-	-	-	-	5	0.4	**0.4**	3	0.5	**0.5**	**8**	**0.3**
Total	**455**	100	**100**	**538**	100	**100**	**1,269**	100	**100**	**594**	100	**100**	**2,856**	**100**
Indeterminate bones	1,341			492			2,986			1,598			6,417	
Total	1,796			1,030			4,255			2,192			9,273	

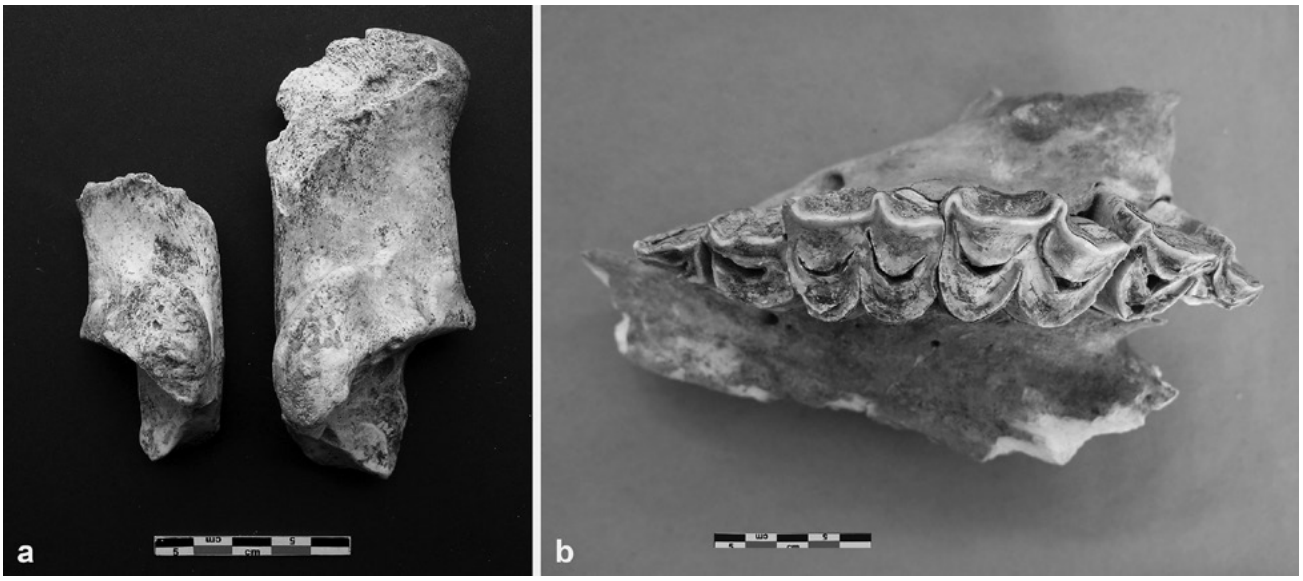

Figure 2.3.2. Animal bones from Area G: (a) Iron Age II, ventral views of equid calcanea, that is, donkey (left) and horse (right); (b) Iron Age III, left camel upper jaw, maxillary. (Photographs by E. Maini.)

Dog is represented only by one element: a mandible with traces of a traumatic pathology on a premolar (for a detailed analysis of animal remains from Area G, see Maini 2018). The sample also includes 12 bone fragments of small to large ungulates. No wild animals have been found in these levels.

Most of the faunal remains retrieved from Area G (824 fragments corresponding to ca. 82% of the entire IA sample of Area G) came from street levels dated to the IA II (tenth–eighth centuries BC). More than half of the remains from these contexts (445 fragments equaling 54.0%) were identified to the species level. Domestic animals were clearly predominant, with sheep and goats represented by 161 bone fragments, followed by cattle (89 fragments) and equids, including both donkeys and horses (Figure 2.3.2a), represented by 54 fragments. Pigs (14 fragments) and dogs (1 bone fragment only) are instead quite scarce (for a detailed analysis of animal remains from Area G, see Maini 2018).

In contrast, faunal remains are rare in the floor levels and in the numerous pits dated to the IA III (seventh century BC). In total, 123 bone fragments corresponding to ca. 11% of the entire IA sample of Area G have been found in these levels. Sheep/goats and small ungulates were represented by 29 fragments. These account for at least nine different individuals, which were preferentially slaughtered as subadults or adults between one and six years of age. Large animals are less common. The eight bovid remains indicate the presence of at least two individuals: one adult and one calf of a few months of age, identified by an upper jaw fragment with deciduous tooth. One donkey was also identified, while the two pig bones indicate the presence of a single young individual. Also present in this layer is one fragment of an adult camelid's jaw, which includes one incisor and the P^3–M^3 maxillary left tooth row (Figure 2.3.2b).[6]

Area A (Temple)—Iron Age III (Seventh Century BC)

Two distinct dog depositions were found in the IA III levels behind the temple in Area A. This type of deposition is already documented at Karkemish, where at least four more dogs were found buried in contexts dated to both the Bronze and Iron Ages. This practice was probably related to specific rituals in the context of the foundation and/or decommissioning of specific structures or areas (Figure 2.3.3).

6 Additional morphometric analyses will allow for a more precise definition of the species (Curci and Maini 2017). Indeed, both dromedaries and two-humped camels were present in Southwest Asia during this period (Becker 2008). For the distinction between dromedaries and two-humped camels, we follow Steiger (1990).

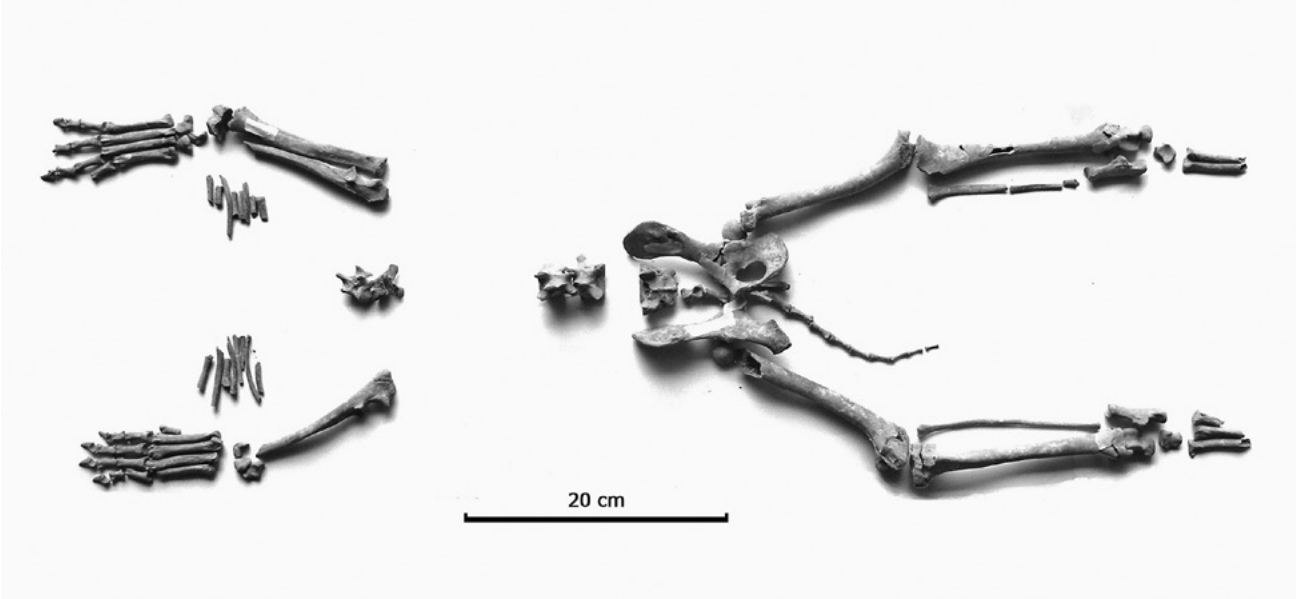

Figure 2.3.3. Area A (Temple), Iron Age III: dorsal view of the entire skeleton of a juvenile (6–7 months) dog. (Photograph by E. Maini.)

Area C East—Iron Age II to IV levels (Ninth–Fourth Centuries BC)

For Area C East, the analysis of the faunal assemblage dated to IA II–IV/Achaemenid levels from below the Neo-Hittite and Neo-Assyrian building is still in progress. However, the large number of animal remains already analyzed (4,255 fragments) allows for a preliminary evaluation of the animal economy of the Lower Palace Area and its possible evolution from the foundation of the palatial compound in the ninth century BC to its transformation with a partial reuse of the palatial compound associated with domestic buildings and some small-scale productive installations during the Achaemenid period (Pizzimenti and Zaina 2016).

In the palatial compound of Katuwa and Yariris (for a detailed historical and structural description, see Pizzimenti and Zaina 2016:364–365), 455 animal remains have been found to date in levels dating to IA II. Only 163 of these remains (36.3%) were identified to species. Sheep and goats, in accordance with the evidence from the other areas of the site, are again the most represented taxa. The percentage of sheep, goats, and indeterminate small and small–medium ungulates is very high (80.4%). Large ungulates account for less than 12% of the identified remains, with cattle represented by 13 bone fragments from at least two subadult animals. Equids are represented by four remains, all probably from the same individual, a donkey. Finally, pigs are represented by two bones only; birds and hares by one bone each.

Approximately three thousand animal remains (3,082 precisely) were recovered from levels related to the palatial complex of Sargon II, which dates to the IA III. Only 28.5% (878 bones) of this sample was identifiable to species. Although sheep/goats and small to small–medium ungulates are still the most common group with 514 remains (equal to ca. 58.5% of the NISP), the faunal composition is more diversified than in other areas of the site.

Large and medium–large ungulates—including bovids, equids, and camelids—account for 351 remains, 153 of which related to cattle and 96 to equids. Most of the equids are donkeys, but there are also some horse teeth, and one mandible possibly testifies to the presence of an onager (*Equus hemionus*; Baxter 1998). Eighteen bird remains derive from at least three different animals: one Galliform, one Columbid, and, probably, one goose. Among wild mammals, there are remains of gazelles and hares and mustelids have also been identified. Finally, the sample contained three fragments of fish bones.

The faunal assemblage from this area includes also an exceptional collection of remains from a stone-lined pit dating to the IA III. The sample, whose analysis is still ongoing, includes numerous complete skeletons of both domestic and wild spe-

cies, which show numerous butchery marks. Moreover, the femur of a subadult giraffe testifies to the presence of this exotic animal at Karkemish.

Analysis of the sample from the IA IV/Achaemenid levels is ongoing. Of the 718 remains studied to date, 230—including depositions of entire carcasses—have been determined to species. As usual, the identified remains include a majority of sheep and goats and small and medium–small ungulates (112 remains equal to 49.0%) followed by equids—both horse and donkey (40 bone fragments, 18.0%), cattle (36 remains, 16.0%), and indeterminate large ungulates (16 remains, 7.0%). Five camelid remains come from two different individuals—one subadult and one adult—and testify to the use of these large animals not only as beasts of burden but also for food: taphonomic analysis identified cut marks on the lower jaw of a camel (Figure 2.3.4).[7]

The complete skeleton of a cow—four to six years of age—was found in perfect anatomical arrangement inside a pit that cut the fill of a room located in the main building (Figure 2.3.5). The feature dates to the beginning of the IA IV/Achaemenid period, when the palace was abandoned and the area partially reused as a residential area with firing installations.

Figure 2.3.4. Area C East, Iron Age IV/Achaemenid: lateral view of a *Camelus* sp. right lower jaw. (Photograph by E. Maini.)

7 See above, n. 6.

Figure 2.3.5. Area C East, Iron Age IV/Achaemenid: entire skeleton of a female *Bos taurus* laid on its left side. (Photograph by E. Maini.)

Figure 2.3.6. Area C South (Well), Iron Age III: dorsal view of a *Pantera* sp. medial first anterior phalanx. (Photograph by E. Maini.)

Area C South (Well)—Iron Age III (Seventh Century BC)

A well dated to the IA III in Area C South contained 2,192 faunal remains. Even if the statistical analysis of this assemblage is still ongoing, some preliminary results are available. First, the number of remains not identifiable to species is particularly high (ca. 73%) probably due to the peculiar nature of the context. Sheep/goats and indeterminate small ungulates are by far the most common group, with 463 remains (ca. 78% of the NISP). Large and medium–large ungulates, including bovids and equids, account for 50 remains—33 bones of cattle and nine of equids. Pigs are represented by 11 fragments.

The few remaining bones include the exceptional discovery of a *Pantera* sp. first phalanx—probably a lion (Figure 2.3.6)—as well as of a cluster of 38 sheep and goats' knucklebones—that is, astragali—several of which were polished or pierced. Anthropic modified knucklebones were very common in ancient Southwest Asia from prehistory to the Roman period and even later, they were commonly used in divination practices or as gaming dice (Affanni 2008; Gilmour 1997; Minniti and Peyronel 2005).

The Animal Economy at Karkemish from the Late Bronze Age to Iron Age IV

In general, sheep/goats are by far the most abundant taxa in all the occupational phases and areas of Karkemish from the Late Bronze Age to Iron Age IV/Achaemenid period (sixteenth–fifth centuries BC). Small–medium size ungulates, mainly domestic sheep and goats, make up most of the faunal assemblage. Large ungulates, such as bovids and equids, are consistently less abundant, while pigs are very rare (see Tables 2.3.1 and 2.3.2).

Even if domestic animals were clearly predominant in the site's subsistence strategy, wild animals were occasionally present throughout the different phases including ungulates such as red deer, fallow deer, and gazelles and occasionally also lagomorphs.

Of particular interest are the remains of camelids discovered in IA III levels of Area G and in IA IV/Achaemenid levels of Area C East. Detailed morphometric analyses to determine the species is ongoing. However, this evidence confirms the use of camelids in southeastern Turkey for food as well as for transport during the IA. Moreover, there are some exceptional discoveries from the Lower Palace Area, including a lion bone found inside the filling of a well in Area C South and dated to the IA III, four elephant bones discovered in the IA I levels of Area S, and one giraffe bone from the IA III levels of Area C East.

Considering the general trend suggested by the preliminary evaluation of animals' age-at-death, the animal economy at Karkemish was evidently based on pastoralism including the exploitation of both primary and secondary products.

As for the age at slaughter of the different species, there was a general trend towards the exploitation of animals at the end of their growth cycle, as evidenced by the relative abundance of remains from subadult or adult individuals. Equids, including both horses and donkeys, were killed mainly as adults. They were not primarily exploited for food but instead mainly functioned as beasts of burden and possibly also as status symbols. In contrast, sheep/goats show a diversified killing strategy due to their exploitation not solely for meat consumption but also for secondary products such as wool, milk, and skin for leather. Cattle were also killed as subadults, when they still provided good-quality meat, or as adults to maximize meat production and prolong as much as possible their role in plowing and pulling vehicles. The few pigs were instead usually slaughtered young to obtain better-quality meat.

The ratio between NISP and MNI (Minimum Number of Individuals) of species relevant to food

consumption, calculated to obtain information about animal exploitation for secondary products, further stresses the economic importance of sheep and goats in contrast to the insignificant amount of protein contributed by pigs.

A comparable exploitation strategy of faunal resources has been proposed for IA levels of other sites in the region and for sites located in comparable agroecological zones. A similar distribution of taxa to that identified at Karkemish was documented at Tell Ta'yinat, where sheep/goats accounted for more than 80% of the protein demand during IA II (Lipovitch 2008). Sheep/goats were also dominant in IA I and II assemblages from Tell Shiukh Fawqani (Vila 2005). However, it is possible to note minor variations in animal exploitation within the dominant trend for a pastoral economy.

At Karkemish, all taxa were generally exploited until the end of their growth cycle and young animals are scarce compared to adults. However, the faunal assemblages from the IA levels at ʿAin Dara (Frey and Marean 1999), Tell Afis (Wilkens 1992), Tell Mastuma (Tomé and Nishiyama 2005), and Tell Shaikh Hamad/Dur-Katlimmu (Becker 2008) in Syria included a higher proportion of young individuals, mainly sheep/goats. The site of ʿAin Dara also yielded a larger number of pigs, which—in contrast to the situation at Karkemish—represented the second most exploited meat resource (Frey and Marean 1999:126, Table 4). The same trend, with a higher proportion of pigs, is documented also in IA levels of Tell Mastuma (Tomé and Nishiyama 2005:105) and Tell Afis (Wilkens 2002:58–60). These variations between comparable contexts are probably related to the availability of water and the consequent degree of humidity in the rural areas surrounding the cities, where herders and animals roamed.

Finally, the scarcity of bird and fish bones in the faunal assemblage at Karkemish might be due to taphonomic and methodological factors leading to their underrepresentation.[8] In fact, considering the site's proximity to the Euphrates River and the presence of numerous other freshwater sources in the area, such resources should have been exploited at Karkemish as frequently as at other comparable sites.

8 See above, n. 2.

Acknowledgments

We would like to thank the director of the Turco–Italian Expedition at Karkemish, Prof. Dr. Nicolò Marchetti (Department of History and Cultures, Alma Mater Studiorum, University of Bologna) and we express to him our gratitude for his guidance, support, and complete data sharing. We also thank all our Turkish and Italian colleagues and friends for their help and support, in particular Ms. Eleonora Serrone.

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