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Categorization, Taxonomy, and Analysis of Bony Faunal Remains of Qara Tepe of Sagzabad, Iran

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Abstract

The collection of faunal remains considered in this study was obtained from excavations at Qara Tepe, Sagzabad, in 2013, 2014, and 2015, with a particular focus on the Iron Age II and III. A large part of the faunal assemblages was successfully identified. The collection is formed by a range of species, among them being small ruminants (Capra aegagrus, Ovis Aries, Gazella subgutturosa), large ruminants (Bos Taurus, Cervidae, Equidae (Equus caballus, Equus africanus asinus), Carnivora (Canis lupus familiaris, Sus scrofa), Rodentia, Muridae, Lagomorpha, Aves, and Camelidae (Camelus dromedarius). The total of 1200 identifiable pieces belongs to 16 discrete species. The most frequent category is small ruminants, i.e. goats and sheep, a fact indicating that a climate favorable for the breeding of these species characterized the region during the Iron II–III. The observation also highlights the significant role these animals played in the local subsistence economy during the relevant period. Related remains are profusely associated with human skeletal remains and cemetery burials at Sagzabad. Some are pretty complete, lacking any indications of cutting or butchery. Potential reasons for the abundance of these species were their adaptation to the landscape and their ease of breeding.

Keywords: Osteological Faunal Remains; Subsistence Economy; Zooarchaeology; Iron Age; Sagzabad.

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Introduction

Zooarchaeology, as a branch of ecology, analyzes faunal remains from ancient sites to determine the role of animals in human life and thus the human-environment interaction. Taxonomic classification and examination of faunal finds provide insights into climate changes, faunal variations, populations, and subsistence strategies in antiquity, as the types of fauna living in a given landscape are contingent upon regional environmental and biological conditions. With a precipitation rate fluctuating between 200–300 mm, the Qazvin plain falls into the semi-arid zone (Varjavand, 1998: 2, 3). Goopen's climatic classification places it in the intense semi-arid class and among the regions with a dry cold climate (Nasabpoor, 2017). The statistics from the present study indicate higher frequencies for domesticated animals, such as sheep and goats, compared to other species. Therefore, one may safely conclude that the regional climatic conditions encouraged the rise of such species.

Today, a range of scientific methods is used to examine the findings from archaeological sites. Notable among these are interdisciplinary approaches such as zooarchaeology, archaeobotany, genetics, and archaeometry, which are invoked to help archaeologists identify the exposed spaces and recovered finds. zooarchaeology seeks to understand the relationships between humans, animals, and the environment in past periods. Questions of interest may include diet-based anthropological relationships, subsistence economies, shared human-animal diseases, cultural patterns (such as burial traditions), vegetation, and climate (Reitz and Wing, 2015: 1).

Human settlements throughout the Iranian plateau reveal cultural and economic relations from the Iron Age II and III. Lying some 7 km north of the Sagzabad town of Buin Zahra County in the Qazvin plain, Qara Tepe is one of the most critical sites from this span of time (Malek Shahmirzadi, 1979: 50–51). M. Mashkour's work on the faunal remains from Sagzabad furnished significant insights into the site (see Mashkuor *et al.* 2002). Three seasons of excavations concentrated on the Iron II and III levels to evaluate the reasons for the site's decline and final desertion. Faunal remains were among the important finds from residential, burial, and sedimentary contexts. Relative chorology, based on associated finds including architecture, pottery, personal ornaments, cylindrical seals, and weaponry, as well as absolute radiocarbon dates, places those faunal remains in the Iron Age II and III (850–550 BC). The Sagzabad Project has raised several questions about the cultural and economic ties of the site with neighboring centers and regions during the Iron Age II and III across the central northern Iranian plateau and the northern and northwestern cultural spheres (Dehpahlavan, 2015; 2016). Inquiry into the faunal assemblage from the site has the potential to answer many of these questions. Through a taxonomic analysis of the animal osteological remains from Sagzabad and their comparison to earlier assemblages, this paper aims to provide a straightforward elucidation of the local subsistence economy and answer related questions.

History of Excavations at Sagzabad

Qara Tepe lies at N:3964025-4157 E:405304-85 about 7 Km north of Sagzabad, a dependency of Buin Zahra County, next to the Buin Zahra-Qazvin and Buin Zahra-Takestan roads in the Qazvin plain (Dehpahlavan, 2014: 6). Sagzabad is one of the three prehistoric and protohistoric mounds that late Negahban designated for educational excavations of the Department of Archaeology of University of Tehran, which has conducted excavations there since 1970. The mound has suffered severe damage by looting activities, which were seemingly even further intensified in the wake of the deepened poverty among the agricultural communities of the region induced by the earthquake that hit Buin Zahra (Malek Shahmirzadi, 1977: 2). An outline of archaeological work at the site follows:

-Belgian expedition, before the 1970 excavations by the University of Tehran, small trenches (on the authority of Negahban's report).

- Japanese expedition, again before the University of Tehran's 1970 excavations, small trenches (Negahban 2006: 314).

- Excavation by Amir Mahani, then chairman of the Culture and Art Office of Qazvin, 1968 (Naghshineh, 1996: 20).

- Excavations by the University of Tehran in 8 or 9 seasons between 1970 and 1977 (Negahban, 1973).

- Three seasons of excavations by the University of Tehran in 1997–1999, directed by Hasan Tala'i.

- The University of Tehran's excavation in 2008 and 2009, directed by Niknami and his colleagues.

- The University of Tehran's excavation

of 2010, directed by Yadollahi and her colleague.

- Six seasons of excavations by the University of Tehran from 2014 to 2019, directed by Dehpahlavan.

- Mashkour and her colleagues studied the assemblages of faunal remains, spanning in date the Neolithic to the Iron Age, from Sagzabad and neighboring sites including Tepe Ghabrestan and Tepe Zagheh in a series of theses or dissertations and papers (Mashkour *et al.*, 2002). As stated above, the site has been excavated by Dehpahlavan since 2014. The present paper is an attempt to explore the skeletal faunal assemblages deriving from the 2014–2016 seasons.

Scientific and Educational Goals

One of the goals of the three seasons of exploration from 2014 to 2016 is to accurately document the historical period of the upper layer of Segzabad. Additionally, identifying the use (government, religious, or residential) and the type of society that has settled in the upper layers of Segzabad has been important, and identifying the regional and extra-regional economic and cultural interactions of Segzabad in the first millennium BC.

The reason for abandoning the Segzabad site and re-examining the findings from the historical period in Segzabad's excavations, conducted by Negahban and Malek Shahmirzadi, is part of the Segzabad exploration project. Another goal of the exploration is to re-examine the findings of the Qazvin Plain field survey conducted by Negahban in 1962. It was placed next to the project of teaching archeology

Table 1. Frequency of Animal Remains (NISP) from Excavation of Sagzabad Site in 2014, 2015 & 2016

Patella	Femur	Cx	Ph	Crp	Radus.Ulna	Humerus	Scapula	Rib	V	Teeth	Max.Md	Max.teeth	Cr	Bone / Specie
	1		3		2				1	5		9		Ass
	4	2	13	7	8	5	4		3	37	2	21	3	H
										2		6		Beer
2	3	4	10	4	4	7	2	10	5	19	3	30	1	Bos
				1										Buff
	24	6	35		10	21	14	3		54	9	77	2	Capra
4	10	6	47	37	8	11	28	18	99	93	14	129	1	Ovis
			2									3		Gazala
		1			1		1		3		1	2		Car
	1		1				1	3	4	4		7		Dog
									1	7	2	14		Sus
			1						2					Camel
														Ave
				1					1					Rab
				1			2	1					1	Rod
			3						1		2	2		UN
6	43	19	115	50	33	45	52	35	120	221	31	300	7	Total

students of Tehran University during three seasons of exploration.

Methodology

To ensure a precise study, the following three methods were involved:

Field Research: Faunal remains were collected and documented in the course of the excavation.

Laboratory Research: This involved photographic, morphological, and morphometric documentations of the study sample. At this stage, comparisons were drawn from the
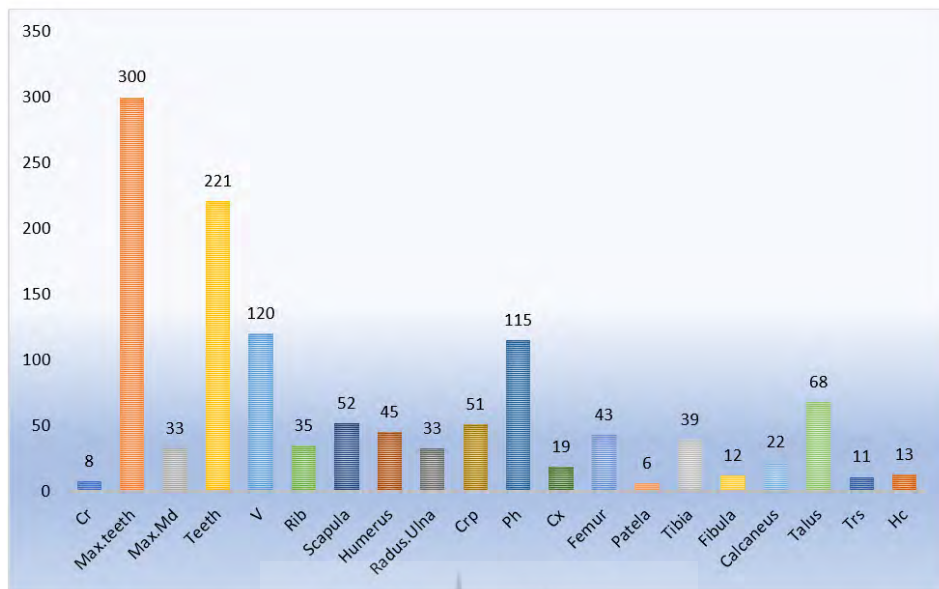
Fig 1. Frequency of Animal Bone Samples Detected in Sagzabad Area

bone bank at the dissection hall of the anatomy building of the Faculty of Veterinary Medicine, University of Tehran. Furthermore, animal atlases (Schmid, 1972; France, 2009; Hillson, 1986) were consulted for identification and comparative purposes. It should be noted that the fractured and crushed conditions of some specimens excluded distinction between species, limiting the identification only to the order level.

Library Research: Given the massive size of the available assemblage and to ensure validity and the fact that the study fits into the larger context of scientific work on this assemblage, we benefitted from the results and findings of the previous systematic zoo archaeological enquiries (e.g. Zeder and Pilaar, 2000; France, 2009; Mashkour, 2002; 2004; 2008).

Description and Analysis of Animal Bones

A first step towards the categorization and taxonomy of the faunal remains from Sagzabad was the identification of the specimens using the reference samples at the osteological bank of the Faculty of Veterinary Medicine of the University of Tehran. Given the loss of diagnostic parts distinguishing species due to breakage or erosion, a decision was made to base the taxonomy on the 16 main categories. These categories include big ruminants (cow, buffalo, and deer), equines (horse, donkey), small ruminants (goat, sheep, and gazelle), carnivores (dog), pig, camel, birds, small rodents, and rabbit (Table 1). The groups are presented below in order of frequency.

Small Ruminants

The total of 1221 bone fragments of small

Table 2. Bone Remains of Immature Animals based on Slaughter Pattern (Epiphysis Plate) in Various Animal Species of Sagzabad Area

Percent	Total	Trs	Talus	Calcaneus	Fibula	Tibia	Patella	Femur	Cx	Ph	Crp	Ulna	Radius.	Humerus	Scapula	Rib	V	Teeth	Max. Md Teeth	Max. teeth	Hc	Bone / Specie
2.50	2																	2				Ass
3.80	3				1			2														Hrs
																						Beer
5	4							1										3				Bos
																						Buff
35.9	28				1	2		4	3	1								15			2	Capra
46	38			1	3	4		2										25	1		2	Ovis
																						Gazella
3.80	3																	3				Car
2.50	2							2														Dog
																						Sus
																						Camel
																						Ave
																						Rab
																						Rod
																						UN
100	80			1	5	6		11	3	1								48	1		4	Total

ruminants in the faunal assemblage from the three seasons of fieldwork belong to sheep (45%), goat (26%), and gazelle (0.4%) (Table 4). Given the high frequency of the related remains at Sagzabad, the site appears to have been a major center for raising such species (Table 1). A comparison of the populations of these animals in the Iron Age II–I and the mid-Neolithic (Ghirshman, 1938; Malek Shahmirzadi, 1990) reveals that less than 67% of the total protein came
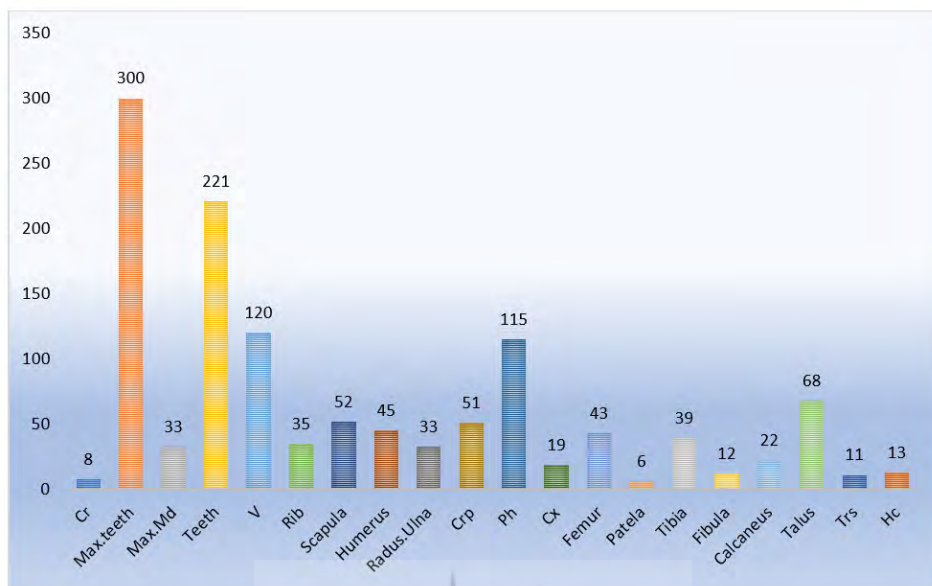
Fig 2. Abundance of Immature Animal Remains based on Epiphyseal Plate and Teeth

from domestic animals like goats and sheep. The latter were among the first meat animals exploited by the Neolithic populations (Mashkour, 2000: 10; Zehtabvar, *et al.* ,2024).

Alongside objective and comparative methods, such an analysis also required quantitative techniques, including bone morphometric analysis in terms of length, minimum, and maximum. Width, thickness, and weight to furnish more precise and measurable information (see von den Driesch, 1976: 31). Domestication subjects animals to biological pressures and changes in body parts (Mashkour, 2002: 21). Such pressures may arise from their use for transportation and agricultural activities or from their ascending to high meadows. The highest pressure will affect the vertebral column, resulting in erosion of the lower bones.

Attestation of faunal remains at settlement sites that represent the conflux of human and domestic animals may be indicative of the high population and interaction of such animals with humans. The considerable number of immature caprine bones in human burials can imply human exploitation of milk and dairy products in the considered timespan. This might point to a developed subsistence economy and improved animal husbandry practices (Fig. 2). The coeval populations probably managed to take advantage of available resources (pastures and water sources) to feed their herds to promote their subsistence. Domestic animals held a special place in the local economic and subsistence cycle, and goats and sheep were generally used as sources of animal protein as well as by-products like wool, hide, and lacticinia.

The small ruminant sub-assemblage in the study sample comprises sheep (Ovis aries), goats (Capra aegagrus), and

Table 3. Animal Bone Remains with Human Intervention Effects (Burns and Butchery Effects) in Qara Tepe Area of Sagzabad

Percent	Total	Total	Hc	Trs	Talus Calcaneus	Fibula	Tibia	Patella	Femur	Cx Ph Crp	Ulna Radius Humerus	Scapula	Rib	V	Teeth	Max.Md	Max.teeth	Cr	Specie
																			Ass
																			Hrs
																			Beer
12	3			1						1							1		Bos
																			Buff
8	2							1									1		Capra
40	10		1			1					1			1	5		1		Ovis
																			Gazella
																			Car
																			Dog
																			Sus
																			Camel
																			Ave
																			Rab
																			Rod
40	10						1				3	1			1	2		2	UN
100	25	25	1	1		1	1	1		1	4	1		1	6	2	3	2	Total

gazelles (Gazella subgutturosa) (Table 1). Related evidence occurred in almost all types of contexts at the site. The attested material consists of mandible with teeth, ulna, radius, carpus, tarsus, cranium, tibia, fibula, rib, scapula, talus, femur, Humerus, phalanx, vertebrae, calcaneus, patella, and pelvis (Table 1). Mandibles and teeth, each represented by over 300 pieces, are the most frequent (Table 1). Some contexts composed of ash, charcoal, and burnt soil yielded burnt bones of goat and sheep species (Fig. 11), which comprise approximately 48% of the entire collection (Fig 3). Apart from burning,

Table 4. Percentage of Animal Bone Remains in Sagzabad Area

Percent	Total	Hc	Trs	Talus	Calcaneus	Fibula	Tibia	Patella	Femur	Cx	Ph	Crp	Radius. Ulna	Humerus	Scapula	Rib	V	Teeth	Max. Md	Max. teeth	Cr	Specie
2	25			3	1		1				3		2				1	5		9		Ass
11	126		2	2	1	5	7		4	2	13	7	8	5	4		3	37	2	21	3	H
0.6	8																		2	6		Beer
10	121	1	2	8	1	3	2	2	3	4	10	4	4	7	2	10	5	19	3	30	1	Bos
0.08	1												1									Buff
26	325	10		31	12		17		24	6	35		10	21	14	3		54	9	77	2	Capra
45	560	2	7	24	7	4	11	4	10	6	47	37	8	11	28	18	99	93	14	129	1	Ovis
0.4	5										2									3		Gazella
0.72	9								1					1	1		3		1	2		Car
1.6	21								1		1				1	3	4	4		7		Dog
1.92	24																1	7	2	14		Sus
0.24	3										1							2				Camel
0.16	2						1							1								Ave
0.16	2														1		1					Rab
0.72	9						1				3						1		2	2		UN
%100	1246	13	11	68	22	12	39	6	43	19	115	51	33	45	52	35	120	221	33	300	8	Total

the bone fragments contain cut marks as indications of human interventions as part of butchering (Table 3; Fig 3). Based on the epiphyseal plate and tooth wear patterns, 12% of the bones of small ruminants belonged to immature
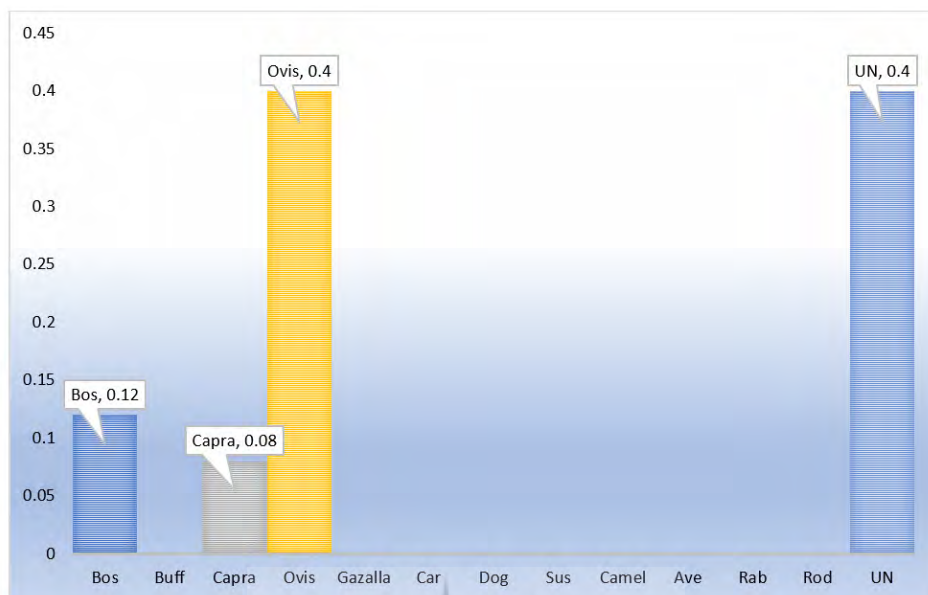
Fig 3. An Abundance of Animal Bone Remains with Human Intervention Effects in the Sagzabad Area
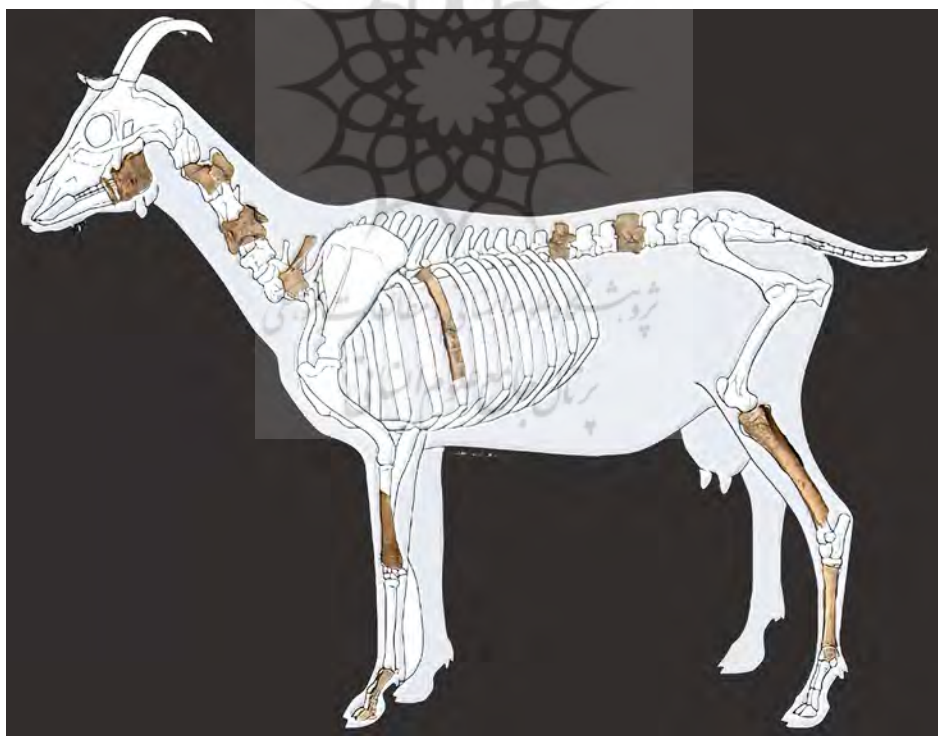

Fig 4. Remains of Goat Bones in the Context of 1104 Trench 11 Exploration in 2016
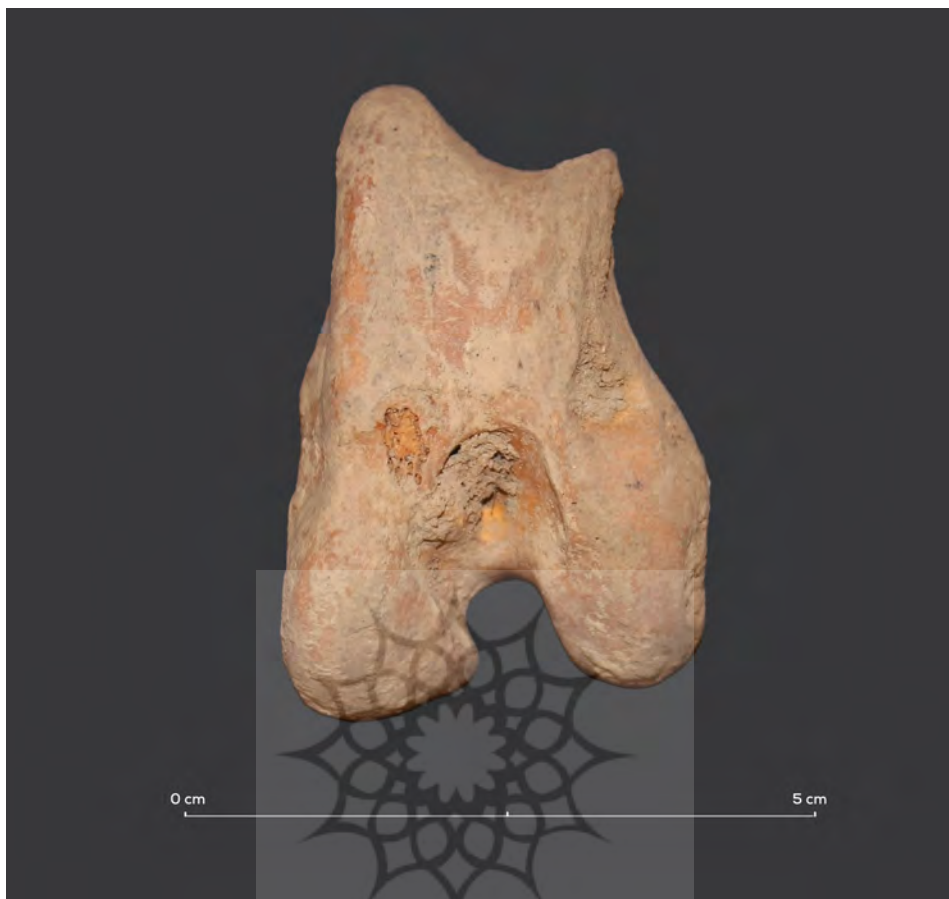
Fig 5. Distal Femur Bone of 1104 Context in 2016 with Traces of Red Pigments

animals (Fig 2). In specific contexts, the recovered bone fragments have been tentatively interpreted to belong to an animal. In particular, during the 2016 excavations of Trench 11, Context 11004 yielded goat skeletal material, including fragments of the pelvis, mandible, teeth, carpus, phalanx, femur, scapula, patella, rib, and talus. All these fragments purportedly belonged to an immature goat (Fig. 4), though the recovered evidence is far from being conclusive. Indications of red ochre and cut marks occurred on the femur, tarsus, and phalanx bones (Fig. 5). Probably, during the Taphonomy process, the bones were associated with soil containing red pigments.

Equidae

The bone fragments of the order Perissodactyla include horse (Equus caballus) and donkey (Equus Africans asinus). The poor state of preservation and the paucity of reference specimens impeded the identification process in some instances. Of the entire faunal assemblage, horse and donkey each account for 11% and 2% (Table 4). In the equine sub-assemblage, horse

Fig 6. Traces of a Step Cut for Cutting, in the Bone of the Horse's Anterior (Radius) of Context 4034

is represented by 8.3% and donkey by 5.2% (Table 2; Fig 2). This strong Perissodactyla presence at Sagzabad is significant and may indicate the symbiosis of various equine species. Mashkour pointed out that the number of equines at the sites on the Qazvin plain is considerably higher than those recorded for any other regions across Iran (Mashkour, 2002: 22). The early Iron I Equidae assemblages from the three sites of Qabrestan, Zagheh, and Sagzabad contain four wild subspecies, of which Iranian Zebra is the most frequent (Mashkour, 2002: 22). While Iranian zebra appears to be absent at Sagzabad, this situation perhaps arises from the poor state of preservation of the skeletal faunal remains. The conspicuous presence of equines in the Sagzabad faunal assemblage and their absolute lack of cut marks (except for a single case) might testify to their use as draft animals by the local people. Horse bones constitute over 4% of the assemblage of domestic animals at Sagzabad in the Iron I (Mashkour, 2002: 14). Considering the lower rate
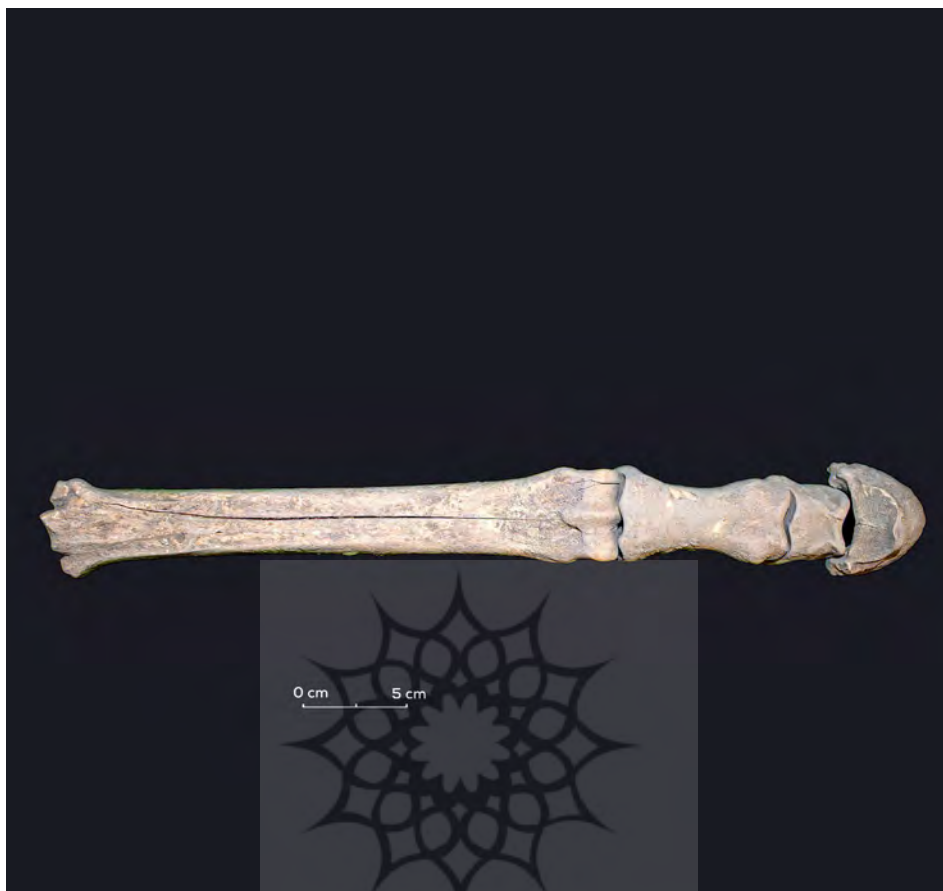
Fig 7. Metatarsal & Phalanx Bones of Donkey, in Context 1009

of immature specimens, such animals were perhaps principally domesticated and raised for their traction power. Whilst indications of step cut marks occur on the horse bones (Fig. 6), a few complete and intact pieces of the order Perissodactyla are also present. For instance, intact bones of the lower extremity, including a shinbone and three phalanxes of a donkey, come from Context 1009 of the 2016 excavation (Fig. 7).

Large Ruminants

This category encompasses cattle (Bos Taurus) and the family Cervidae (Table 1). It is noteworthy that no distinction has been made between various species of the latter family, whose anatomical differentiation requires further studies to chronicle the diagnostic features of the species living in Iran. This undertaking is beyond the scope of the present paper. Cattle and Cervidae are each represented in the assemblages deriving from the three seasons by 10% and 0.5%, respectively (Table 4). Traces of heating and baking, as well as tooth wear, occur on the bovine material (Table 4). Mashkour's analysis of the
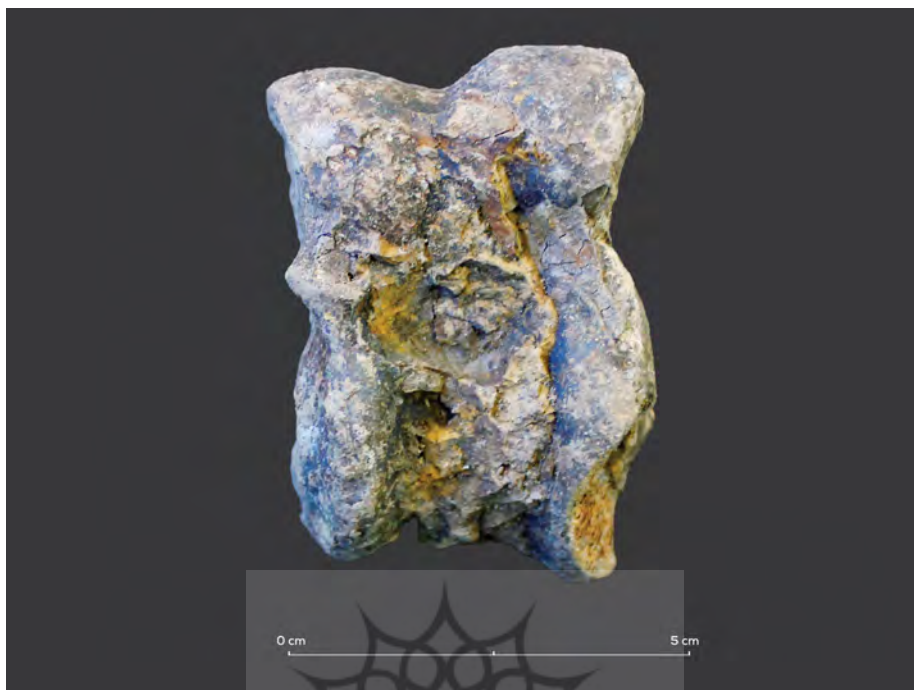
Fig 8. Talus Bone from Context 3013 of 2015 Excavation with Traces of Fat Related to Domestic Cattle

rate of the domestic cow's contribution to the post-Neolithic subsistence and economic cycle suggests a possible twofold exploitation of such species — for farming purposes alongside the traditionally established functions (Mashkour, 2002: 14). Given the almost the same results obtained from the present study on the Iron II and III material from Sagzabad, the same pattern probably persisted in these later periods as is suggested by the higher frequency of mature bovines at Sagzabad (about 5%, judging from epiphyseal closure and tooth wear). For instance, a talus from Context 1013, Trench I (Mollabeirami, 2018: 126) bears indications of burnt fat, pointing to the procurement of protein from the bovines (Fig. 8). Compared to animal atlases, the presence of buffalo in the

assemblage is indicated. Buffalos tend to live in arid and semi-arid areas and prefer to stay close to water sources. An ulna from a large ruminant (Table 1) has been attributed to buffalo based on typical differences between cow and buffalo at this part (France, 2009; Hillson, 1986; Schmid, 2012) (Fig. 9). This bovine species (Bubalus Bubalis) lives in the Azerbaijan and Khuzestan regions (Farzanpur, 1998: 305).

Carnivores

It roughly makes up 2% of the faunal assemblages from Sagzabad. Some 0.6% of the related material was identified as that of dogs (Canis lupus familiaris). At the same time, the rest remain unspecified as to the species level and were simply assignable to the order Carnivora because of breakage or poor

Fig 9. Metacarpal Bone of a Buffalo

state of preservation. A symbiosis of dogs with humans is not implausible (Mollabeirami, 2018: 128).

Suidae

Boar (Sus scrofa) comprises 1.92% of the recovered collection. The animal was present in the Qazvin plain as early as the Late Neolithic period and continued into the Early Iron Age. The meager attestation of the species suggests a trivial role in the Iron I and II subsistence systems. Earlier studies on this low rate of findings indicate that domestic pigs (Mashkour, 2002: 14, 15) are likely the cause. According to the previous works, this extremely low frequency hardly allows for its identification as a domesticated suid. If seen as a domesticated species, one might expect further related skeletal material in the future, because the meager representation of a species, potentially a rich source of protein compared to other domestic animals, will testify to the presence of its wild variety. Furthermore, the lack of cut marks on the boar material suggests usages other than protein procurement. Note that at Tepe Ghabrestan, within walking
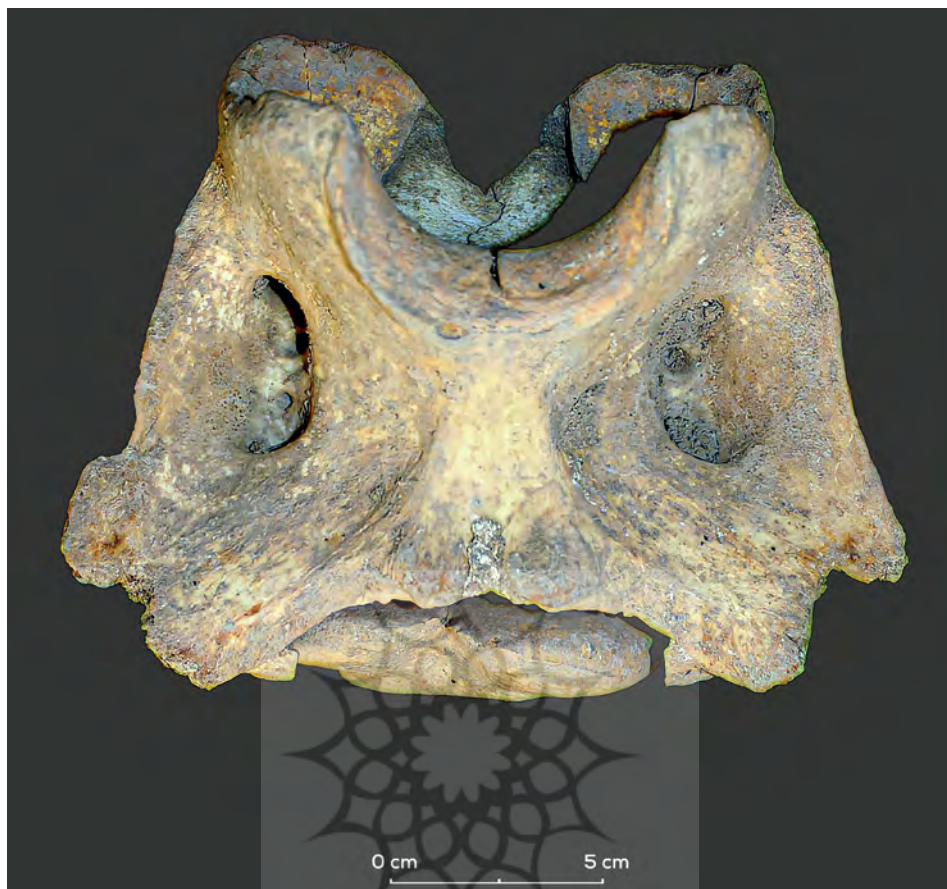
distance of Sagzabad, boras were raised and exploited as a subsistence strategy (Mashkour *et al.*, 1999).

Rodents (Rodentia) and Lagomorphs (Lagomorpha)

Rodents are represented by only a fragmentary skull and a single upper limb, tentatively attributed to a murid that had probably died in a burrow that had been excavated at the site. Lagomorpha accounts for less than 1% of the faunal collection (Table 4). Such animals are deemed interlopers. While the hunting of rodents cannot be ruled out (Mashkour, 2010: 224), there are no cut marks on those from Sagzabad. Furthermore, they are void of any implications in studies like this.

Birds (Aves)

Birds also form a small component in the faunal collection from Sagzabad, thus not contributing significantly to the resultant interpretations. For a low percentage, the sub-collection of birds does not play a considerable role. In addition, the comparanda from the reference samples at the Veterinary Medicine Faculty of the University of
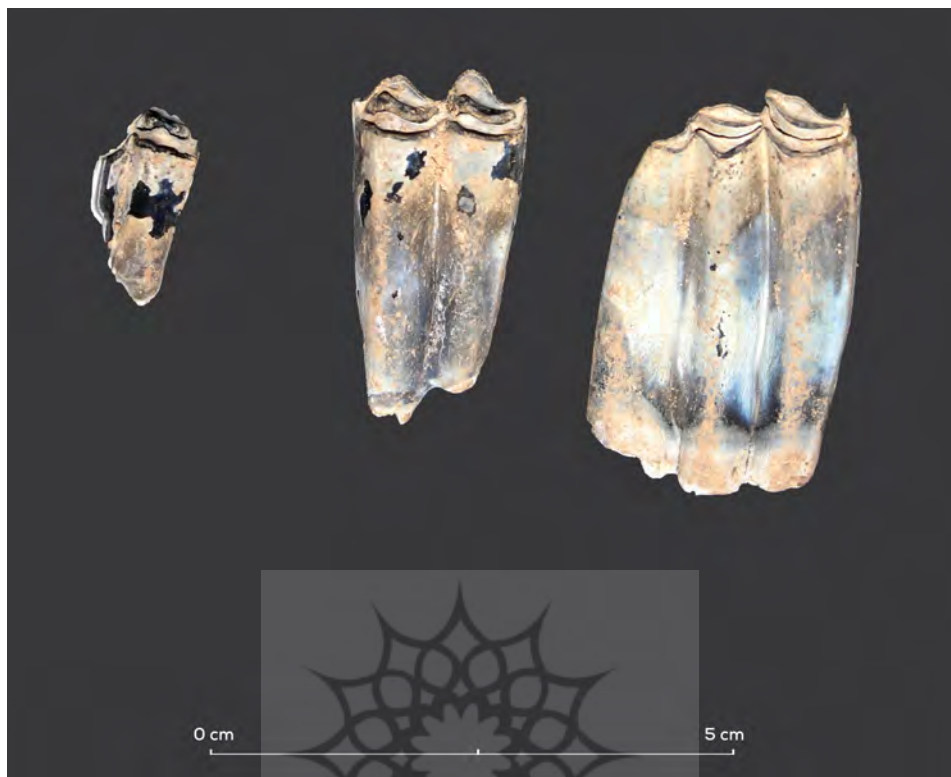
Fig 11. Small Ruminant Cheek Teeth with Burn Marks from 1107 Context

Tehran suggest that some of the attested examples belong to birds of prey that made their way onto the site in search of food.

Camels (Camellia)

The atlas and axis derived from Context 4022 of the 2015 excavation represent a dromedary camel (Camelus dromedarius), based on comparisons with modern reference materials. Both pieces are intact (Fig. 10). Also existing in the assemblage is a metacarpal of a camel, which was impossible to specify at the species level because of the fragmentary nature of the bone element (Table 1). Unlike the Bactrian camel, known from Central Asia and China (Farzanpur, 1998: 237), the dromedary is found in Pakistan, southern Iran, and throughout the Arabian Peninsula (Mashkouor, 2008: 193). Given the rarity of the species in north-central Iran, the presence of one-humped camels in the daily life of the Sagzabad residents requires further study.

Conclusion

The collection of skeletal faunal remains from Sagzabad considered in this paper comes from three seasons of excavations led by Dehpahlavan between 2013 and 2015. The collection dates back to the Iron II and early Iron III. This paper aims to conduct taxonomic and quantitative analyses of the recorded faunal profile and to present valid morphological indices based on reference specimens

Fig 12. Humerus from Context 4006 with Bone Abnormalities

and animal atlases. Among the identified 16 taxa, sheep and goats were the most prominent in terms of number, followed by cows. These species formed the main faunal component at the site, evincing the use of protein in the diet. Small ruminants, including goats, sheep, and gazelles, make up over 70% of the complete faunal collection. Cut marks on the bones attest to human intervention (Fig. 3). Therefore, the first research question dealing with the frequency of domestic animals is answered. In addition, the existence of such large populations of these species, which require a proper landscape for grazing and feeding, bespeaks the prevalence of favorable environmental conditions in the region, which furnishes the answer to the second question.
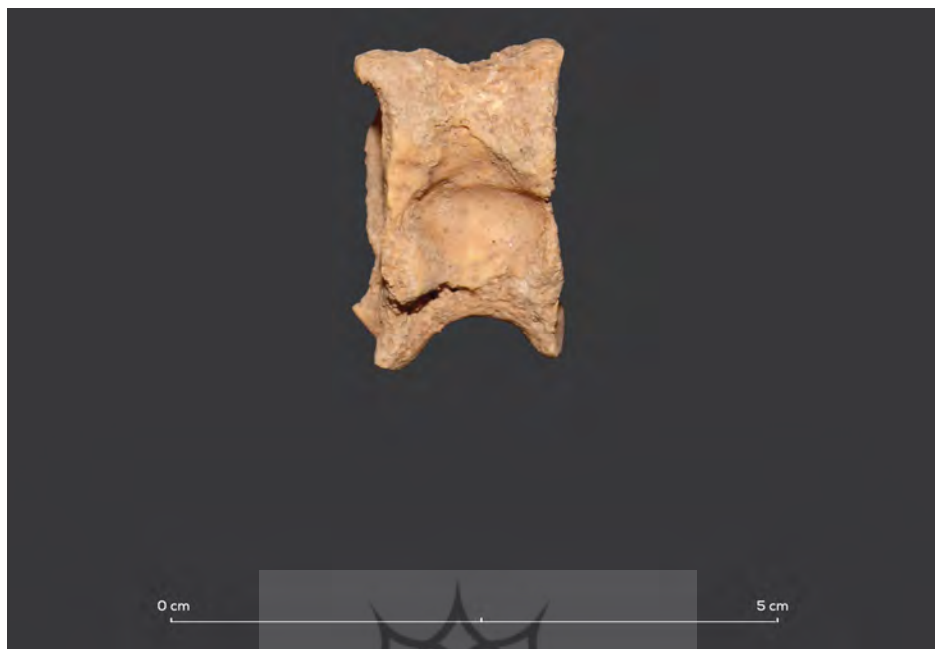
Fig 13. Talus bone with bone abnormalities

Fig 14. Toxic Jawbone and Tooth with Osteoporosis

At the same time, remains from small ruminants lacking in cut marks come from several contexts, including Context 7011 of the 2016 season, where the entire

Fig 15. Calcaneus Bone with Abnormal Traces of Ovis

material probably belonged to a single immature animal (Fig. 1). No butchering indications or cut marks were detected on these materials (albeit the recovered pieces are not complete bone elements). These bones were found close to human burials and may have been associated with them. Thus, small ruminants not only played a significant role in the local subsistence economy but were also integral to ritual practices, given their deposition within burials (Fig. 16, 17, 18). The family Equidae, particularly the horse, exhibits a stronger presence throughout the timespan in question compared to the Neolithic period and early Iron Age I, possibly an outcome of the use of horses and donkeys in farming activities and transportation (Table 5). The frequency of cows shows a drop from the previous (Neolithic and Iron Age) estimates. The absence of immature bones and cut marks in the bovine sub-assemblage indicates that

Fig. 16. Animal Remains in the Burial of Context 7011 in the Excavation of Sagzabad Area in 2016
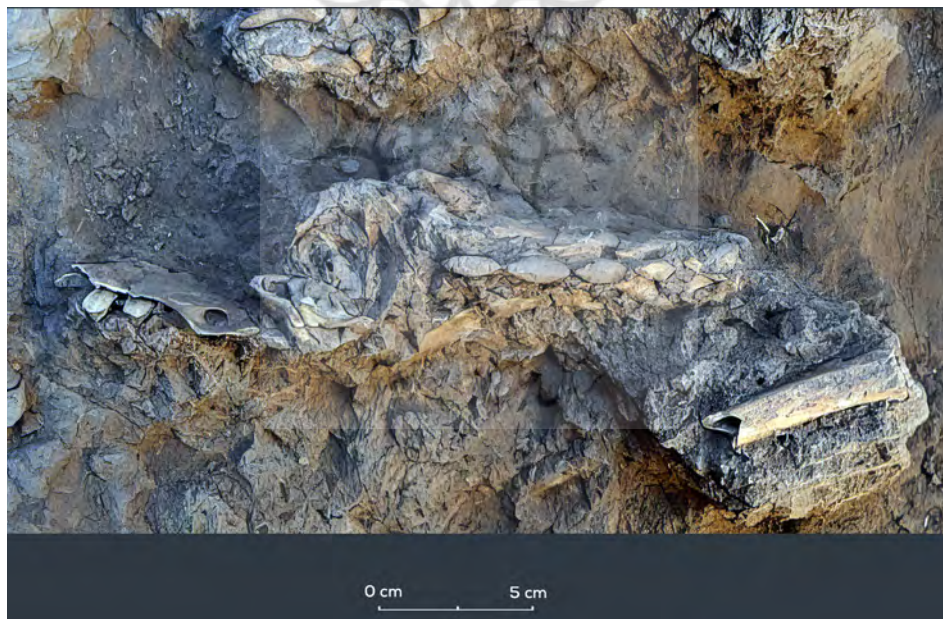

Fig. 17. Animal Remains in the Burial of Context 7011 in the Excavation of Sagzabad Area in 2016

the animals mainly served agricultural purposes, and thus did not contribute much to the protein procurement process. Furthermore, while a buffalo ulna suggests the presence of wild bovines in the region, the evidence does

Fig. 18. Animal Remains in the Burial of Context 7011 in the Excavation of Sagzabad Area in 2016

Table 5. Names and Terms of Bone Anatomy

Abbreviation	Bones
Cr	Cranium
teeth Max.	Maxilla. Teeth
Md Max.	Mandible Maxilla.
Teeth	Teeth
V	Vertebra
Rib	Rib
Scapula	Scapula
Humerus	Humerus
Ulna Radius.	Ulna Radius.
Crp	Carpal
Ph	Phalanx
Cx	Coxal
Femur	Femur
Patella	Patella
Tibia	Tibia
Fibula	Fibula
Calcaneus	Calcaneus
Talus	Talus
Trs	Tarsal
Hc	Horn corn

not necessarily entail that the species was an indigenous component, and the piece is quite likely to have been imported from elsewhere for uncertain reasons. The two vertebral bones of a camel come as no surprise given the animal's presence in the region during the Neolithic and the Iron I. What is challenging is the existence of the dromedary, as the area is purported to have hosted only the Bactrian camel in earlier periods. The tentative presence of this camelid species calls for a separate study. Also observed in the study sample were a series of malformations as well as indications of osteoporosis (Fig. 12–15). While such cases might indicate certain diseases in the faunal remains, some malformations may reflect old age rather than bone lesions. Therefore, this is the only conclusion we can draw at present regarding the last research question, namely, the possible existence of animal diseases.

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