

RAMESSIDE AND THIRD INTERMEDIATE PERIOD BONE REMAINS FROM TELL EL-RETABA¹

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The subject of this paper is the osteological material consisting of 9202 animal remains recovered during the excavations in 2011, 2012 and spring 2014 in area 9 in Tell el-Retaba (see fig. 1 in MALLESON in this volume)². The stratigraphic layers and artefacts which were associated with animal bones come from several chronological phases during which the site was occupied, dated to the beginning of the Hyksos period until the Late Period (table 1). The present report concerns only the material from area 9, where Ramesside and Third Intermediate Period remains are abundant, while Hyksos remains have been so far uncovered in a single, small trench only, and the Late Period remains are almost completely gone due to the denudation of the site. Excavations in areas 4 and 7, in the western part of the site, have delivered rich materials from the Hyksos Period and the 1st half of the 18th Dynasty – these materials will be a subject of a separate study.

The archaeozoological examination was performed according to standard rules and procedures. The bird and mammal remains were identified zoologically to the lowest possible taxonomic level (species, genus or order). In the case of examination of bones and teeth of sheep and goat, identification guidelines provided by zoologists and archaeozoologists were used³. Equids were identified according to the diagnostic features described in Baxter's work⁴. Bird bones were identified zoologically and anatomically by Professor Teresa Tomek (Institute of Systematics and Evolution of Animals of the Polish Academy of Science in Cracow) on the basis of comparative collection and references⁵. Mollusc shells and fish bones were separated from the material and counted, and in the future they will be the subject of another study. The age of domestic mammals was estimat-

ed on the basis of the stage of development of the bones, as well as the stage of development and wear of the teeth⁶. The sex was estimated on the basis of sexual dimorphism features visible on bones and teeth such as the shape of canines and canine dental alveoli for pigs and the presence of canines for equids. Bones were measured according to the unified method⁷. Kiesewalter and Koudelka coefficients⁸ were used to calculate wither heights of horse and dog. In addition to that, anthropogenic and post-depositional marks on the bones were analyzed⁹. The state of preservation of faunal remains was rather bad. Some bones showed marks of gnawing by carnivores, most likely dogs, and weathering marks formed when the remains were exposed on the surface of soil or after they were placed in the deposit. For this reason, a significant part of the material (21.61 %) was not identified zoologically, nevertheless, it seems that a large number of small unidentified fragments came from the skeletal elements described in detail.

Generally, the analyzed osteological material consisted mainly of mammal remains, which accounted for 64.00 % of the assemblage. Another relatively large group included skeletal elements of fish (32.49 %). There were much fewer fragments of birds and shells of mussels and snails (table 1).

The bone material was divided according to chronological phases and archaeological context (tables 1–4).

1. Hyksos Period
2. 19th Dynasty (phase E2)
3. 20th Dynasty (phases D1-D3)
4. Third Intermediate Period (phases C1-C4)
5. Late Period

The chronological phases were represented by a varied number of remains. Assemblages dated to

¹ The present study was carried out in the framework of the project financed by the Polish National Science Centre, grant no 2012/05/B/HS3/03748.

² For the excavation reports see: RZEPKA *et al.* 2014, esp. 64–93 and RZEPKA *et al.* in the present volume.

³ SCHRAMM 1967, ZEDER and LAPHAM 2010.

⁴ BAXTER 1998.

⁵ WOELFLE 1967 and GRUBER 1990.

⁶ SILVER 1970.

⁷ VON DEN DRIESCH 1976.

⁸ VON DEN DRIESCH and BOESSNECK 1974.

⁹ LYMAN 1994.

Table 1 Bone remains (number of identified specimens) from Tell el Retaba, area 9, excavations in 2011, 2012 and Spring 2014

Taxa	Hyksos Period	19th Dynasty	19-20th Dynasty	20th Dynasty	TIP	Late Period	Total
Cattle		22	22	190	347		581
Pig			49	19	464		532
Sheep		2	9	20	68	3	102
Goat		1	5	33	70	1	110
Sheep/goat	2	15	59	126	359		561
Horse					357	1	358
Donkey			17	28	377		422
Mule				7	68		75
Eguids		7		12	272		291
Dog					632		632
Cat				13			13
Carnivores			3	1	9		13
Red fox		2					2
Gazelle			3	22	34		59
Medium size ruminant			2	65	21		88
Hare					2		2
Hedgehog				3	2		5
Rodent	1						1
Mammals	3	49	169	539	3082	5	3847
Birds	3	3		25	30		61
Fish	8			82	2900		2990
Bivalve	3		40	100	118		261
Snails			1	7			8
Unidentified	1	110	49	207	1657		2024
Homo			1		10		11
Total	18	162	260	960	7797	5	9202

the Hyksos Period and the Late Period were excluded from further analysis due to very limited sample sizes as they include 18 and 5 fragments respectively (table 1).

Ramesside Period

The assemblage dated to the 19th Dynasty consisted of 162 remains, 52 of which were identified (tables 1–2). Most of them belonged to domestic mammals (cattle, sheep, goat and equid). In addition to that, two fox bones were found; on the basis of the measurements they could be attributed to Red fox (*Vulpes vulpes*). Three bones came from birds: Eurasian coot (*Fulica atra*) and the Anatidae (table 4).

The assemblage from layers dated to the 20th Dynasty (phases D1–D3) consisted of 960 faunal remains (tables 1–2). Mammal bones dominated

among the identified elements. Sheep and goat remains had the biggest share of domestic animal bones (39.87%), followed by cattle, then bones and teeth of equids (including donkey), pigs and cat. 87 fragments probably belonged to gazelle and represented two species which differed in size – Dorcas gazelle and another, bigger species. There were 25 bird bones (table 4): common ostrich, great black cormorant (*Phalacrocorax carbo*), European shag (*Phalacrocorax aristotelis*), ducks (garganey and mallard), Eurasian coot (*Fulica atra*) and snakebird (*Anhinga anhinga*). Apart from that, there were fish bones (82 fragments), mussel shells (100 fragments) and snail shells (7 fragments).

Another assemblage contained bones dated to the 19th – 20th Dynasties. This one also consisted mainly of domestic mammal bones with the largest share being sheep and goat, followed by pig (tables 1–2).

Table 2 Animal bone remains in the archaeological context from the Ramesside Period

Taxa	19th Dynasty, phase E2	19th-20th Dynasty, phase E1, building [815/825], ¹⁰ room 3	19th-20th Dynasty, phase E1, dumping place	20th Dynasty	20th Dynasty, phase D4, building [1247] ¹¹ , floor	20th Dynasty, phase D4, building [1247], filling	20th Dynasty, phase D4	20th Dynasty, phase D3, street along "Wall 3" ¹²	20th Dynasty, phase D3, building [834/838], room XIII.5, floor	20th Dynasty, phase D3, building [834/838], room XIII.5, filling	20th Dynasty, phase D3, building [834/838], room XIII.6	20th Dynasty, phase D3, building [834/838], rooms IV.5 and IV.6, floors	20th Dynasty, phase D3, building [834/838], rooms V.1 and V.6	20th Dynasty, phase D3, building [834/838], unit VII, floors and fillings	20th Dynasty, phase D2, deposits related to the annex of the building [834/838] ([793], [797], [798]) ¹³	20th Dynasty, phase D2, building [843/838], ¹⁴ unit VI+VII+VIII, floors and fillings	20th Dynasty, phase D2, building [843/838], room V.1+6, floor	20th Dynasty, phase D2, building [843/838], room XII.2, filling	20th Dynasty, phase D2, building [834/838], room XII.4	20th Dynasty, phase D2, building [834/838], room XIII.2, floor	20th Dynasty, phase D2, building [834/838], room XIII.6	Total	
Cattle	22	2	20	9		3	121		2	36		1		3	13	2							234
Pig		1	48	5					3	1	1				4					4	1		68
Sheep	2		9			2	10					2			5	1							31
Goat	1		5	1			8				18		1		1	4							39
Sheep/goat	15	4	55	12	3	20	19	6		3		4	1		20	33		4			1		200
Donkey		4	13			15				3		10											45
Mule				7																			7
Eguids	7												1										19
Cat																					13		13
Carnivores		1	2									1											4
Red fox	2																						2
Gazelle			3												12					10			25
Medium size ruminant			2	33			31			1													67
Hedgehog													3										3
Mammals	49	12	157	78	3	40	189	6	5	44	19	18	6	3	55	40		4	10	18	1		757
Birds	3								2	3			3			8	9						28
Fish				22									17		40			3					82
Bivalve		1	39	12								2	3		32	31	10	3			7		140
Snails		1											1		1		5						8
Unidentified	110	2	47	35				10		1			2		140	15		4					366
Homo			1																				1
Total	162	16	244	147	3	40	189	16	7	44	23	20	32	3	268	94	24	14	10	25	1		1382

¹⁰ Cf. RZEPKA *et al.* 2014, 65–67, fig. 48,

¹¹ Cf. RZEPKA *et al.* in this volume.

¹² Cf. RZEPKA *et al.* 2014, 75–76.

¹³ Cf. RZEPKA *et al.* 2014, 79, fig. 73 ; 82–83.

¹⁴ Cf. RZEPKA *et al.* 2014, 75–82; also: RZEPKA *et al.* in this volume.

Table 3 Animal bone remains in the archaeological context from the Third Intermediate Period

Taxa	TIP, phase C4, building [771] ¹⁵	TIP, phase C1-C4, structure. [1149] ¹⁶	TIP, phase C4, building [1082] ¹⁷ , room 1, floor and filling	TIP, phase C4	TIP, phase C3, building [991], room 2	TIP, phase C2, building [765] ¹⁸	TIP, phase C2, building [991], room 2	TIP, phase C1, deposits connected with structures [999] and [1002] ¹⁹	TIP, phase C1, building [991] ²⁰ , room 1	TIP, phase C1, building [991], room 3	TIP, phase C1, building [991], room 4	TIP, phase C1, building [991], room 2	TIP, phase C1-C4, building [1150] ²¹ , floor	TIP, phase C1-C4, building [1150], filing	TIP, phase C1-C4	Total
Cattle	8		54	63	6	4	100	4	69	22	1	16				347
Pig	78		39	96		39	131	1	56	5		1	8	7	3	464
Sheep	9		4	5	2	5	38	1	2	1					1	68
Goat	3		3				27		34	1			1	1		70
Sheep/goat	36		23	48	3	27	97	8	59	32		4	12	9	1	359
Horse			1	32	4		282		19		8		8	3		357
Donkey	10		14	24			278	13	11	1		8	1	17		377
Mule							63	5								68
Eguids	3			3			188	5	42			2		29		272
Dog	12		6	7	7	1	570					30				632
Carnivores						3			3	3						9
Gazelle			7	3			23			1						34
Medium size ruminant			2	1			15	1	2							21
Hare			1				1									2
Hedgehog				1	1											2
Mammals	159		153	283	23	79	1813	38	297	66	9	61	30	66	5	3082
Birds				3	17		1		7					2		30
Fish	38		172	88	65	163	366	480	1068	415		45				2900
Bivalve	2	3	16	4		6	20	55	12							118
Unidentified	9		87	147		46	704	3	530	93	20	13			5	1657
Homo							7								2	10
Total	208	3	428	526	105	294	2911	576	1914	574	29	119	30	68	12	7797

¹⁵ Cf. RZEPKA *et al.* 2014, 86–87, fig. 87; described there as belonging to “Phase 6”.¹⁶ For plan and description of this structure cf. RZEPKA *et al.* in this volume.¹⁷ Cf. RZEPKA *et al.* 2014, 86–87, fig. 87; described there as belonging to “Phase 6”.¹⁸ Cf. RZEPKA *et al.* 2014, 87, fig. 87; 90; described there as belonging to “Phase 4”.¹⁹ Cf. RZEPKA *et al.* 2014, 87, fig. 87; 90–91; described there as belonging to “Phase 3”.²⁰ Cf. RZEPKA *et al.* 2014, 87–91.²¹ For plan and description of this structure cf. RZEPKA *et al.* in this volume.

Table 4 Bird bones in archaeological context

Taxa	19th Dynasty, phase E2	20th Dynasty, phase D3, building [834/838], room XIII.5, floor 834, room.XII.5 floor	20th Dynasty, phase D3, building [834/838], room XIII.6	20 dynasty phase D3, building [834/838], rooms V.1 and V.6	20th Dynasty, phase D2, building [834/838], unit VI+VII+VIII	20th Dynasty, phase D2, building [834/838], room V.1+6,	TIP, phase C4	TIP, phase C3, building [991], room 2	TIP, phase C2, building [991], room 2	TIP, phase C1, building [991], room. 1	TIP, phase C1-C4, building [1150]	Late Period	Total
<i>Struthio camelus</i>			3					2	1	1			7
<i>Pelecanus onocrotalus</i>							1						1
<i>Phalacrocorax carbo</i>						2	1	3		3			9
<i>Anhinga melanogaster</i>						4							4
<i>Ciconia ciconia</i>								1			1		2
<i>Egretta alba</i>										1			1
<i>Ardea cinerea</i>										1			1
<i>C. ciconia/E. alba/A. cinerea</i>										1			1
cf. <i>Anas querquedula</i>				1	1								2
<i>Anas platyrhynchos</i>								1					1
cf. <i>Anas platyrhynchos</i>				1	1			1					3
cf. <i>Anas penelope</i>					1								1
<i>Aythya</i> sp.	1												1
Anatidae middle size	1				4			3					9
<i>Aquila rapax/heliaca</i>						1							1
<i>Falco</i> cf. <i>tinnunculus</i>							1						1
<i>Fulica atra</i>	1							4					6
<i>Gallinula chloropus</i>				1									1
cf. <i>Crex creder</i>												3	3
Charadriiformes cf. <i>Tringa</i> sp.								1					1
<i>Columba</i> sp. (cf. <i>livia</i>)								1					1
Aves indet.		2			1	2					1		6
Total	3	2	3	3	8	9	3	17	1	7	2	3	61

Third Intermediate Period

The osteological material from the Third Intermediate Period consisted of 7797 animal remains and 7 human bones (tables 1, 3). The assemblage is dominated by mammal remains, with the majority

of skeletal elements belonging to staple livestock species i.e. cattle, sheep, goat, pig and equids (table 1). Remains of equids were the most numerous, approximately 75% of which were found in one deposit formed in phase C2 in room 2 of building [991]¹⁰ (table 3). They included bones of at least four

¹⁰ Description and plan of the building can be found in: RZEPKA *et al.* 2014, 87–91.

individuals and represented different parts of the skeleton, with a high number of cranium and mandible fragments. According to identification criteria for equids,¹¹ based on tooth enamel pattern the remains belonged to the head of a horse, two mules and a donkey. The horse was a 13-year-old male and one of the mules was a male aged 7 to 8 years. The size of certain elements (e.g. phalanges) also implies that the animals found in the assemblage were of different body sizes. Very few complete bones or their measurable parts were preserved, therefore, a significant part of the assemblage cannot be reliably identified to the level of species and were classified as belonging to the Equidae family. One metacarpal (GL1 229.1 mm.) was used to calculate the withers height of the horse, which reached 142 cm. The state of preservation of the bones, their high level of fragmentation probably resulted from the unfavourable conditions they were exposed to after being deposited. There were no remains which bore anthropogenic marks.

The assemblage from room 2 in building [991]¹² also included a high number (570 fragments) of dog bones, which belonged to at least three individuals of different ages. One was very young, below 5–6 months old, another was below 3 years old as indicated by unfused humerus, and the third one was a mature adult, approximately 56 cm tall. This deposit is exceptional as in most other assemblages of that period there were mainly remains of animals raised for consumption.

Sheep and goat remains were the third most frequent among the domestic mammal bones (16.50%) in the whole material, followed by pig (15.39%) and cattle (11.51%). The remains of wild species accounted for approximately 2% of mammal fragments and represented mainly gazelles. Measurements of a gazelle tibia preserved complete fall within the range relevant for dorcas gazelles. Apart from remains of animals of similar sizes, 21 bone fragments were identified as belonging to a “medium-sized ruminant”, which could also represent gazelles. In addition to that, two bones of hare and hedgehog were identified. 9 fragments which came from animals of the order carnivora possibly belonged to wild species.

Anatomical distribution of cattle, sheep/goat and pig shows that all parts of skeleton were repre-

sented, including phalanges, which means that the animals were slaughtered at the site, or whole carcasses of slaughtered animals were delivered there. In many cases, fills found in different rooms contained skeletons of single animals. A significant number of bones came from morphologically immature individuals. Cattle were slaughtered at a relatively young age (5–6 months, 15–18 months and around 2.5–3 years old). Few bones implied breeding longer than until the individuals were 3.5–4 years old. Sheep and goats were also killed mainly before they reached the age of 2 years. Analysis based on the tooth eruption and wear indicated high frequency of killing of the animals aged 4–6 months and 8–12 months. Apart from that, more than 10 metapodia of the two species belonging to individuals aged about 2 years were found, and approximately 20 fragments of humeri, radii, femurs and tibias belonging to animals older than 3–3.5 years. Pig remains also represented young and very young individuals (aged 4–6 months, 8–12 months and 12–16 months). Very few pigs had fully formed M3 teeth, which appear between 17 and 22 months of age. One long bone belonged to a morphologically mature animal (aged more than 3.5 years).

Fish bone remains were the second most frequent (2900 elements), following mammal bones. There were also some fragments of Bivalvia shells (118 pieces) and bird bones (30 fragments) representing 11 taxa: great black cormorant (*Phalacrocorax carbo*), common ostrich (*Struthio camelus*), great white pelican (*Pelecanus onocrotalus*), white stork (*Ciconia ciconia*), great egret (*Egretta alba*), grey heron (*Ardea cinerea*), mallard (*Anas platyrhynchos*), an individual from falcon family, possibly common kestrel (*Falco cf. tinnunculus*), Eurasian coot (*Fulica atra*), an individual from Charadriiformes order, possibly Tringa genus and a bird of Columba genus, possibly rock dove (*Columba cf. livia*).

The osteological material bore different categories of marks. Most of them were butchery marks related to division of carcass and preparation of meat for consumption, and came from different stages of the processes. There were traces of skinning, division of carcass, i.e. separating parts of joints and cutting bones in different places and dif-

¹¹ BAXTER 1998.

¹² A general photo of this assemblage can be found in: RZEPKA *et al.* 2014, 90, fig. 94.

¹³ For plan and description see: RZEPKA *et al.* 2014, 86–87, fig. 87.

ferent directions – longitudinally, transversely, or diagonally. The marks were found on cattle, sheep and goat, pig and gazelle bones. They were noticed on different skeletal elements – vertebrae, mainly the atlas, long bones of limbs, scapulas and pelvises – however, on fairly low number of remains (below 10%). A dog humerus discovered inside building [771]¹³ in C4 phase layers is an exception: it shows cutting marks below the proximal epiphysis and above the distal epiphysis.

The analyzed assemblage included some simple bone tools, some of them damaged. Most tools were “spatulae”¹⁴ probably fashioned from longitudinally-cut ribs.

Two donkey mandibles which belonged to a single individual showed pathological changes resulting from inflammation of the area of the temporomandibular joint.

Summary

Remains found in area 9 can be divided into two groups. One consisted of material left after meat consumption, which was analyzed in order to reconstruct the meat diet of the people who lived at Retaba. The other includes remains of animals raised for secondary products, mainly for transportation. Bones of synanthropic species (rodents) or species living in the vicinity, whose remains could have been deposited without human actions (some birds), formed a minor addition to those groups.

Distributions of species in assemblages of different chronologies suggest the major role of mammals as providers of protein and fat, as well as the importance of fish and molluscs in the diet. Most mammal bones belong to domestic species, which indicates husbandry as the main source of meat. The statistics of the bones of the four livestock species (sheep, goat, cattle, pig) show certain variety in food preferences that the people living in Tell el-Retaba had in different periods. The two largest bone assemblages, from the times of the 20th Dynasty and the Third Intermediate Period, provide the most reliable material for analysis. In the times of the Ramessides (20th Dynasty), mutton, goat meat and beef were ranked fairly equally, with a lower share of pork. In the Third Intermedi-

ate Period, mutton and goat meat constituted the basis of the meat diet, however, pork gained similar importance, as it was eaten in bigger amounts than beef. That indicates an increase in pig raising over time. Pigs, which are omnivorous, do not require grazing land; they can be fed with kitchen waste. Moreover, breeding of pigs is typical of meat production due to the high fertility and fast weight gain of these animals. For these reasons, pigs can be exploited for feeding a large number of people with a relatively low input of human effort. The species also proves exceptionally good when consumption needs are high and the possibility of animal raising limited. Pigs were maintained in ancient Egypt as a protein back up by rural and urban populations.¹⁵

The significance of hunting was much lower, or even negligible. Gazelles were most frequently hunted, hares much less often. Perhaps one fox was also killed by hunters, two bones of this species were found in area 9. Nevertheless, fox, as well as bird remains, bore no marks left by human activity, which poses doubt if the bones came from hunted animals or were deposited there accidentally.

It is possible that some of the birds were bred. This hypothesis is most likely in the case of ostrich. The range of its habitat does not include the Nile delta now; therefore it could be concluded that either its range comprised this territory in the period under discussion or that it was imported for breeding. It must be observed that apart from the 7 ostrich bones found in several rooms in buildings [834/838]¹⁶ and [991] in the layers dated to phase D3 of the 20th Dynasty and to phases C1, C2 and C3 of the Third Intermediate Period, shells of at least 10 ostrich eggs were discovered in the material dated to phase D2 of the 20th Dynasty (building [793])¹⁷ and to phases C2, C4 and C1 – C4 of the Third Intermediate Period in deposit [767], building [1150]¹⁸, and also in the layers from the Late Period. Breeding species were possibly represented by geese and ducks: mallard (*Anas platyrhynchos*) and Eurasian wigeon (*Anas penelope*) probably domesticated in the Old Kingdom, or pigeon.

Fishing and collecting molluscs played a much more significant role than hunting, which resulted from the location of the site near a water reservoir.

¹⁴ A short summary of a discussion on possible functions of such „spatulae” see: RZEPKA *et al.* 2009, 264–265.

¹⁵ REDDING 1991.

¹⁶ For the plan, description and interpretation of this building see: RZEPKA *et al.* 2014, 75–86.

¹⁷ See: RZEPKA *et al.* 2014, 79, fig. 73; 82–83.

¹⁸ RZEPKA *et al.*, in the present volume.

The range of wild species found in the osteological material provides valuable information which can be used to reconstruct the environmental conditions of the area. In major part, there were birds living in water habitat (open waters, rivers) or wetland (marshes, floodlands, swamps drier grassy areas bordering marshes and rivers). Some of them are sedentary species (pelicans, cormorants, grey heron, common kestrel); others are migratory birds which stay in Egypt for wintering or migrate over the area after the breeding season (great egret, goose, ducks, corn crake). Other habitats were represented by synanthropic birds – pigeon, which can live in the wild in open areas, or perhaps breeding species – ostrich, which prefers open short-grass plains and semi desert, as well as birds of prey, which can occupy a variety of habitats. All species except for two (ostrich *Struthio*

camelus and snakebird *Anhinga melanogaster*) live in the area of the Nile delta at present.

To sum up, the diet of the residents whose garbage was found in the area 9 of the site was composed mainly of meat from breeding mammals and fishes. Under the 20th Dynasty, meat of three species of ruminants (sheep, goat and cattle) was of major importance, and in the Third Intermediate Period the role of mutton and goat meat was still the most significant one. However, pork was eaten more frequently than beef. The diet was supplemented with meat of wild game, molluscs and birds. Apart from the four livestock species mentioned above, equids (horses, donkeys and mules), useful for transportation, were also an important group in the animal husbandry activities undertaken either by the residents of the fortress, or by the people who provided supplies for them.

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