

THE ANIMAL REMAINS OF TELL SWEYHAT, SYRIA

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1. INTRODUCTION*

In the later part of the sixties and the beginning of the seventies a number of excavations took place along the Middle Euphrates in Northern Syria. The area was destined to be flooded by the completion of the Tabqa Dam and the consequent formation of Lake Al-Assad. An international rescue operation under the auspices of UNESCO made the excavation of a number of threatened sites possible.

In the years 1973-1975 Dr. T.A. Holland, a member of the British School of Archeology, excavated the settlement mound of Sweyhat (Holland, 1976; 1977). Tell Sweyhat is located c. 3 km from the east bank of the Euphrates River in the Jezireh (fig. 1) (map coordinates $36^{\circ} 17' N - 38^{\circ} 15' E$). It is situated in the centre of a basin surrounded by the high cliffs of the Syrian plateau on the high terrace of the river valley. The tell measures c. 300 x 250 m and is enclosed by an artificial earthwork of approximately rectangular shape encompassing an area of 700 x 600 m. Excavations were undertaken in 11 areas of the tell and earthworks (fig. 2). All faunal remains originate from these systematic excavations.

2. CULTURAL SETTING

The following summary of archeological data has mainly been taken from the preliminary reports of Dr. Holland (1976; 1977).

At present the evidence at Tell Sweyhat suggests a major occupation period towards the end of the third millennium B.C. A fortified town with a town-wall of 2.50 m thick with regularly spaced towers was uncovered on the western part of the tell (area IV, X and IX) (fig. 2). A large building or complex of buildings placed against this wall was excavated. A sophisticated degree of architectural planning was indicated by the building complex.

Two major phases between 2400-2000 B.C. (periods V and IV) could be recognised. At the end of the third millennium a general conflagration destroyed the town, after which

*Tables 3-5, 8, 10, 13, 15-21 have been reproduced as microfiches (I:B7-D4) in an envelope attached to the rear cover of this volume.

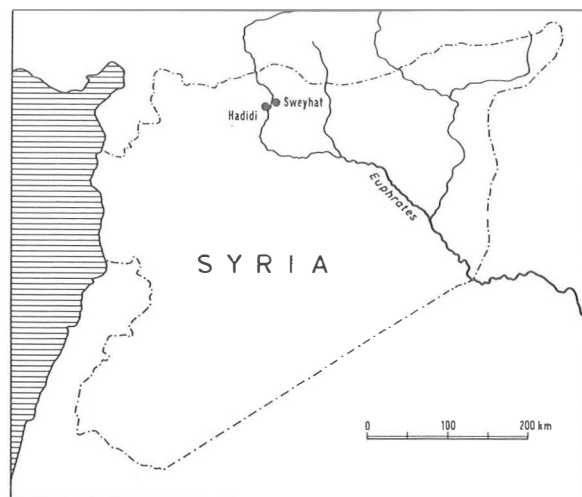


Fig. 1. Map of Syria with the location of Tell es Sweyhat.

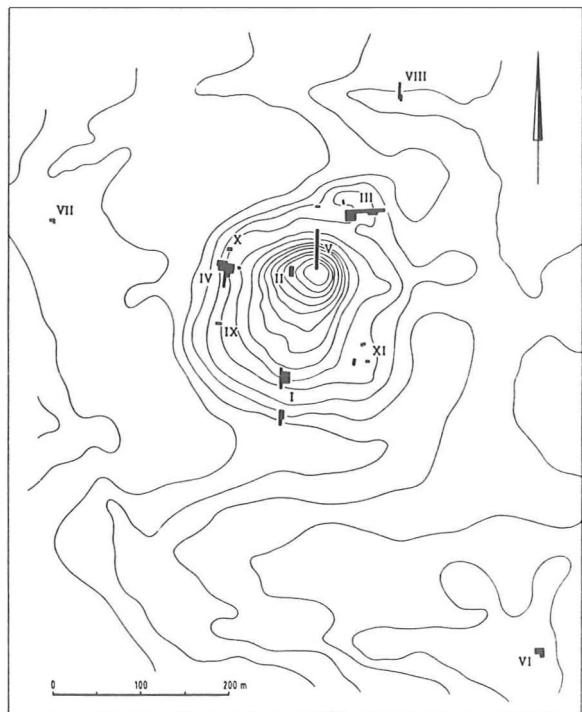


Fig. 2. Contour map of the tell with the excavation areas (I-XI).

there was some minor activity here and there on the tell at the beginning of the second millennium B.C. Subsequently, the tell appears to have been deserted until the Hellenistic period of the third century B.C., when in the

centre of the tell (area II) new occupation took place. A small Roman/Byzantine watchpost from about the 4th century A.D. was the last occupation on the tell (area I) (fig. 3).

At the moment 6 C14-datings are available (uncalibrated), 5 taken from the second phase of the occupation in the third millennium (period IV) and 1 from the Hellenistic occupation (period III).

P-2324 - carbonised grain	- 3640 ± 70 B.P. (Holland 1977, appendix I)
P - 2328 - charcoal	- 3730 ± 70 B.P. (Holland 1977, appendix I)
GrN - 10348 - charcoal	- 3880 ± 80 B.P. (Sweyhat area III B 2.6)
GrN - 10349 - charcoal	- 3675 ± 40 B.P. (Sweyhat area IV F 1.13)
GrN - 10350 - charcoal	- 3810 ± 35 B.P. (Sweyhat area IV P 1.5)
GrN - 9203 - charcoal	- 2165 ± 35 B.P. (Sweyhat area II 7.2)

Other datings are based on comparison of pottery, figurines *etc.* An inscription on a piece of pottery dated the Hellenistic occupation to the first half of the third century B.C. (Holland, 1976, appendix I).

3. ECOLOGICAL SETTING

Tell Sweyhat is situated on a Pleistocene terrace of the Euphrates, that occupies a crescentic embayment on the left bank of the present-day Euphrates in the steppe of the Syrian Jezireh. The adjacent alluvial plain is covered with a layer of sediments from the terrace and steppe, and is slightly eroded by wadis tributary to the Euphrates.

The mean annual precipitation nowadays is 300-400 mm and occurs mainly from Jan-

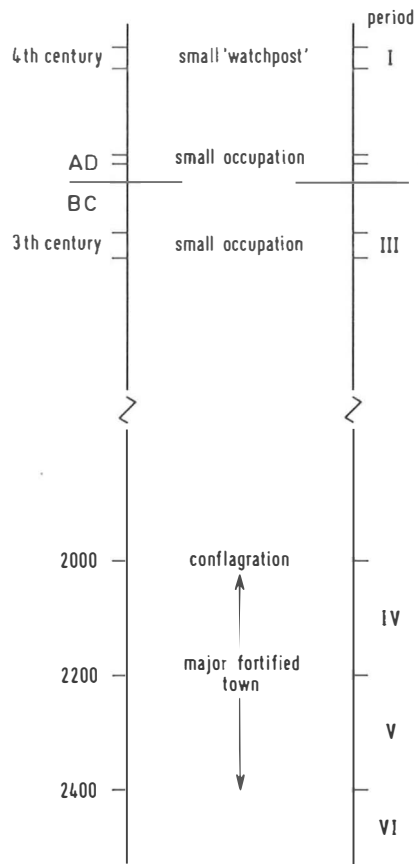


Fig. 3. Chronostratigraphic column of the successive occupation periods of Tell es Sweyhat.

uary until April. The mean summer and winter temperatures are respectively 24° and 0°C.

At present the Syrian plain of the Jezireh features a dry steppe with scattered villages. In suitable areas dry farming of wheat and barley is possible, while modern irrigation techniques have also been introduced, especially for the growing of cotton. On the dry steppe plain sheep and goat are herded, while nearer the settlements people keep a few cows and horses. Donkeys are general in the villages.

The major difference between the ancient landscape and the modern one is the almost complete absence of trees and high shrubs. Originally the Jezireh was an open parkland steppe with scattered trees and a shrub cover along wadis and in waterrich depressions. Also the marshy river plain was partly covered with poplar and tamarisk trees (Van Zeist, pers. comm.).

Table 1. Sweyhat. Division of the animal remains in the several periods per species. N = number of fragments

		Period									
		I	III	III/IV	IV	IV/V	V	V/VI	VI	?	T
		N	N	N	N	N	N	N	N	N	N
Equidae	Horse/ass/mule	—	11	9	40	—	51	2	1	2	116
<i>Bos taurus</i>	Domestic cattle	2	26	23	94	2	71	1	6	9	234
Small artiodactyla of which		249	218	74	838	19	412	51	135	103	2099
<i>Ovis/Capra</i> of which:		95	122	34	289	6	215	12	57	37	867
<i>Ovis aries</i>	Sheep	24	10	1	67	4	41	3	14	9	173
<i>Capra hircus</i>	Goat	6	6	5	35	—	31	1	9	8	101
<i>Camelus</i> cf. <i>dromedarius</i>	Dromedary	1	—	—	—	—	—	—	—	—	1
<i>Sus domesticus</i>	Pig	—	4	5	3	—	4	—	—	1	17
<i>Canis familiaris</i>	Dog	—	4	—	2	—	18	—	—	2	26
<i>Gallus gallus domesticus</i>	Domestic fowl	1	2	—	1	—	2	—	—	—	6
Domestic animals: total		253	265	111	978	21	557	54	142	117	2498
Large cervid or ovicaprid		—	1	—	2	—	1	—	—	—	4
Small cervid or ovicaprid		—	—	—	2	—	2	—	—	—	4
Wild or domestic <i>Ovis/Capra</i>		—	—	—	—	—	2	—	—	—	2
<i>Dama mesopotamica</i>	Fallow deer	—	—	—	—	—	8	—	—	—	8
<i>Dama/Cervus</i>	Fallow/red deer	—	—	—	2	—	—	—	—	—	2
<i>Capreolus capreolus</i>	Roe deer	1	1	—	6	—	4	1	2	—	15
<i>Gazella</i> sp.	Gazelle	—	1	—	1	—	—	—	—	—	2
<i>Dama/Gazella</i>		—	1	—	1	—	4	—	—	—	6
<i>Capreolus/Gazella</i>		—	—	1	6	1	1	—	—	—	9
<i>Vulpes vulpes</i>	Fox	—	—	—	—	—	1	—	—	2	3
<i>Lepus europaeus</i>	Hare	—	—	—	6	—	2	—	1	13	22
<i>Athene noctua</i>	Little owl	—	—	1	—	—	—	—	—	—	1
<i>Falco tinnunculus</i>	Kestrel	—	—	1	—	—	—	—	—	—	1
Bird of prey, unidentified		—	—	—	7	—	—	—	—	—	7
Rallidae	Rails	—	—	—	—	—	1	—	—	—	1
<i>Grus grus</i>	Crane	—	1	—	—	—	—	—	—	—	1
<i>Columba livia (domesticus?)</i>	Dove	—	—	3	—	—	3	—	—	1	7
<i>Asio otis</i>	Long-eared owl	—	—	—	1	—	—	—	—	—	1
<i>Alaudidae</i>	Larks	—	—	1	—	—	—	—	—	—	1
<i>Corvus corax</i>	Raven	—	—	1	—	—	—	—	—	—	1
Bird, unidentified		—	3	—	1	—	—	—	—	—	4
Small rodents, unidentified		—	9	5	118	17	14	—	—	1	164
Cyprinidae		—	—	—	—	—	1	—	—	—	1
<i>Unio crassus</i>		—	—	—	2	—	4	—	—	—	6
<i>Dentalium</i> sp.		—	—	—	—	—	1	—	—	—	1
Unidentified, medium size dog-Rabbit		—	—	—	2	—	3	—	—	—	5
Unidentified, medium size dog-Wild boar		58	14	21	138	7	110	4	42	23	417
Unidentified, medium size deer-Cattle		—	11	15	92	5	78	1	4	15	221
Total		312	307	160	1365	51	797	60	191	171	3415

The general opinion is that the severe degradation of the area started already in the 5th millennium B.C. Writings from later periods, however, still describe orchards and tree stands in the area. The present-day heavy erosion is fairly recent. The erosion of the river plain only took place within the last 100 years during the settling of nomadic tribes and the intensive exploitation of the plain by modern farming methods.

4. THE FAUNAL REMAINS

All material was recovered by hand during the systematic excavation of the tell. No sieving was done. This means that some remains of small animals like rodents, birds and fishes may have escaped the attention of the excavators. However, many small parts of the larger animals were collected. Our experience in this region with sieving material of other

Table 2. Relative share of the domestic animals and hunted mammals in the different periods. Excluded are birds, rodents, fish and molluscs.

		I	III	III/IV	IV	IV/V	V	V/VI	VI	?	T
Domestic animals	N	253	265	111	978	21	557	54	142	117	2499
	%	99.6	98.9	99.1	97.8	95.5	95.1	98.2	97.9	98.3	97.5
Hunted mammals	N	1	3	1	22	1	29	1	3	2	64
	%	0.4	1.1	0.9	2.2	4.5	4.9	1.8	2.1	1.7	2.5
Total		254	268	112	1000	22	586	55	145	119	2563

(proto)historic settlements seems to corroborate that collecting animal remains by hand, when done conscientiously, gives a reliable picture of the available material and that sieving does not greatly change this.

All material was analysed during three visits to England. There was no time to weigh the material and only numbers of fragments were noted and measurements taken. In the following description I have used the abbreviations introduced by Von den Driesch (1976).

In table 1 the number of fragments of each species belonging to a period is given. It is clear that the majority of the remains originates from domestic animals. A total of 97.5 % of all remains came from domestic animals and hunted mammals (table 2).

Generally the remains are kitchen and food refuse. C. 4.9 % of all fragments showed traces of burning, varying from partially burnt to completely calcined. 2.3 % of the fragments showed cut-marks or evidence of butchering.

No complete or partly complete skeletons were found, except for the remains of rodents that apparently burrowed into the tell in later periods.

4.1. Domesticated animals

Equidae — horses, asses and mules

The earliest finds of horse, *Equus caballus*, in the Near East date from c. 3000 B.C. (Gilbert, 1982; Boessneck & Von den Driesch, 1976), but in the material of Sweyhat horse cannot be identified with certainty in any period. Only a fragment of the distal end of a femur, a M³, a left and right M₁, all from period V, and a mandibular tooththrow from period IV could possibly be from horse. All other remains from equids in Sweyhat belong to ani-

mals smaller than horse. Identified with certainty was *Equus asinus*, the domestic ass, in the Early Bronze Age. The earliest occurrence of domestic ass goes back to c. 3000 B.C. (Von den Driesch & Amberger, 1981; Clutton-Brock & Burleigh, 1978). A proportion of the equid remains in Sweyhat are from animals somewhat larger than donkeys. These could be wild *Equus hemionus*, the onager, or the mule, *Equus asinus* x *Equus caballus*. Also the possibility of crossbreeding between *Equus asinus* and *Equus hemionus* has to be considered. As the remains of equids in Sweyhat are all fragmentary, the identifications are based on the comparison of the width and depth measurements of the single fragments.

These measurements are not completely reliable for identifications. There is a c. 25 % overlap of measurements between *Equus asinus* and *Equus hemionus*. Crossbreeds are also included within the range of the measurements of these animals (Buitenhuis, in prep.).

The equid remains form 4.5 % of the total remains of the domestic and hunted mammals. In the different periods they are represented in the following numbers: period VI: 2(1.7 %); V/VI: 2(3.6 %); period V: 50(8.4 %); period IV: 40(4.0 %); period III/IV: 9(8.0 %) and period III: 11(4.1 %). The highest percentage occurred during the early stage of the Early Bronze Age occupation, when Sweyhat developed into the major centre of the area. Transport of man and goods must have been important, which might explain the high percentages of mainly asses and possibly mules. If mules are present then one wonders why no clearer evidence of horse was found. The breeding of mules might possibly have taken place away from the city.

In table 3 the numbers of fragments of the skeletal elements of the equids (the possible

Table 6. Age distribution of the dentes superiores of *Bos taurus* (according to Habermehl 1975)

	III	III/IV	IV	V	?	Total	Age (years)
M ¹ lightly worn	—	3	1	—	—	4	½-1½
M ² not erupted	—	—	—	—	—	—	—
M ² in eruption	—	—	—	2	—	2	1½
M ² lightly worn	—	5	1	1	—	7	1½-2½
M ³ not erupted	—	—	—	—	—	—	—
M ³ in eruption	—	—	—	—	—	—	2¼-2½
M ³ lightly worn	2	—	5	1	—	8	2½
M ³ clearly worn	—	—	3	1	1	5	≥4
Total	2	8	10	5	1	26	

Table 7. Age distribution of *Bos taurus* in the different periods (see table 6)

	Early Bronze Age	N = 15	Total	N = 26	Total—E.B.A. N = 11
Animals					
<2½ years	5	33.3 %	13	50.0 %	8 72.7 %
Animals					
2½-4 years	6	40.0 %	8	30.8 %	2 18.2 %
Animals					
>4 years	4	26.7 %	5	19.2 %	1 9.1 %

horse bones excluded) in the different periods are given and the minimum numbers of individuals (MNI) they represent. All skeletal elements are equally represented, taking into consideration the varying chances of preservation for different bones. Therefore one might conclude that the animals died on or near the site and were not taken away.

In table 4 the single measurements bones of equids are given. The species designation is tentative (see above).

From the measurements no withers height can be established to give an indication of the actual size of the animals. As long as no specific, characteristic features of the bones of the different *Equus* species are known, we will not be able to establish the occurrence of *E. hemionus* or mules without any doubt.

Bos taurus — cattle

There is no doubt that domestic cattle, *Bos taurus*, originates from the aurochs, *Bos primigenius*. The earliest finds are from the 7th millennium B.C. settlements of Bouqras

(Clason, 1977; 1980) and Umm Dabagiyah (Bökönyi, 1973) in Syria and Iraq. An important area for the subsequent development of cattle breeding seems to be the Anatolian plateau (Mellaart, 1967; Brentjes, 1967). There are however not enough remains of domestic cattle from this period to establish more precisely where and how this development took place. It seems clear however that domestic cattle developed from locally available individuals of the aurochs and that the observed decrease in size of domestic cattle in Europe from the Neolithic to the Iron Age also took place in the Near East. In the first millennium B.C. influences of the zebu cattle — *Bos indicus* — might have obscured the direct development from aurochs to the modern Near Eastern breeds (Buitenhuis, 1983).

A total of 234 fragments (9.1 %) of *Bos taurus* was found in Sweyhat. In the different periods the remains of domestic cattle among the domestic animals and hunted mammals are respectively: VI: 6(4.1 %); V/VI 1(1.8 %); V: 71(12.0 %); IV/V: 2(9.1 %); IV: 94(9.4 %); III/IV: 23(20.5 %); III: 26(9.7 %) and I: 2(0.8 %) (table 1). There are no indications that bovid remains other than *Bos taurus*, such as pure zebu, *Bos indicus*, or water-buffalo, *Bubalus bubalis*, are present in the material.

It is clear that there is little relation between the observed MNI and reality. It is quite possible that the MNI is closer to the absolute amount of fragments than to the low MNI observed (table 5). If the observed number of fragments are the same or close to the number of individuals they represent, the dentes superiores give the largest group of single elements from different individuals. In table 6 the ages of these dentes are given as far as could be observed (Habermehl, 1975). It is clear that most of the animals they represent were killed between their 2nd and 4th year of life. The evidence is however too scanty to give an indication of the herd composition and the kill-off pattern might have been different. The long bone remains clearly indicate the fact that calves of six months of age and less were also slaughtered. Neither can any clear difference between the kill-off patterns of the different periods be seen, although it seems that more old animals were slaughtered in the Early Bronze Age than in the later periods (table 7).

Table 9. Measurability index of the identified bones of sheep and goat, indicating the state of fragmentation of the bones of *Ovis aries* and *Capra hircus*. n = number of determined fragments; x = number of measured fragments

	Ovis		Capra		Ovis Capra		Total small ruminants		Measurability
	n	x	n	x	n	x	n	x	
Scapula	11	6	7	7	65	5	103	20	19.4
Humerus	15	13	7	5	43	4	79	25	31.6
Radius	17	9	5	1	45	—	101	10	9.9
Ulna	—	—	—	—	17	15	20	16	80.0
Metacarpus	11	11	6	6	22	2	42	19	45.2
Pelvis	7	—	4	—	54	—	79	—	0.0
Femur	17	10	4	—	46	2	125	18	14.4
Tibia	3	3	1	—	70	27	94	30	31.9
Astragalus	11	10	7	7	13	2	31	19	61.3
Calcaneus	16	13	2	1	7	1	27	15	55.5
Metatarsus	9	9	6	5	30	4	54	18	33.3
Metapodium	3	3	3	2	13	—	30	11	36.6
Phalanx I	20	17	20	19	28	12	70	48	68.6
Phalanx II	5	5	6	6	11	9	22	20	90.9
Phalanx III	3	2	1	1	4	—	8	3	37.5

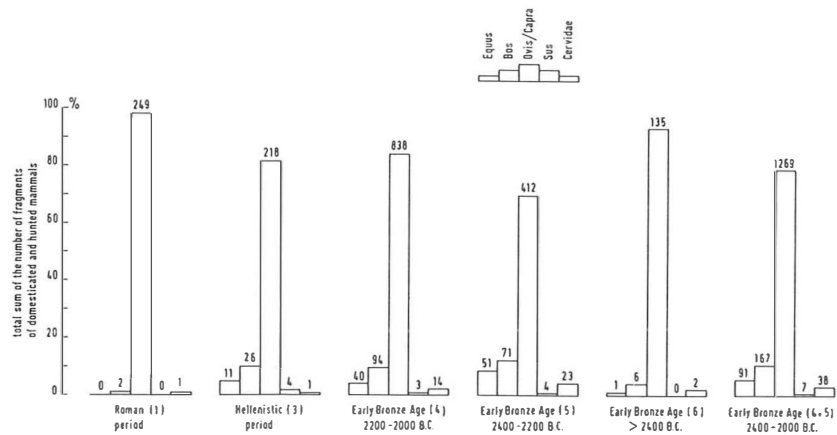


Fig. 4. Relative importance of the major food animals in the different periods.

On account of the fragmentary state of the remains it was not possible to establish the sex of the animals, so there is no evidence of the sex ratio of the slaughtered animals. Also the horn cores of the domestic cattle are so scanty and fragmentary (only four fragments) that they give no indication as to sex. The fragmentation of the bones of the extremities is also indicated by the measurability index (Boessneck & Von den Driesch, 1975): measured bones x 100 / total N determined bones

For the separate bones this index is: scapula 11.1; humerus 7.1; radius 12.5; metacarpus

33.3; pelvis 0.0; femur 0.0; tibia 20.0; astragalus 100; calcaneus 0.0; phalanx I 46.2; phalanx II 90.

It was possible to take measurements only of massive bones such as the astragali, phalanx I and II and the distal part of the metapodia and tibia. Complete bones are rare. Therefore it was not possible to establish the withers height.

In table 8 the measurements of the major single bones of *Bos taurus* are given.

Ovis aries and *Capra hircus* — sheep and goat Most of the animal remains of Sweyhat ori-

Table 11a. Age distribution of *Ovis aries*/*Capra hircus* by the eruption and wear of the dentes superiores

		I	III	III/IV	IV	IV/V	V	V/VI	VI	?	IV + V	Total
< 1 year	M ¹ not erupted											
	M ¹ in eruption											
	M ¹ erupted; M ² not erupted			1								1
1-2 years	M ² erupted; M ¹ lightly worn	2	2				2				2	6
	M ² lightly worn; M ³ not erupted	2			4		1				5	7
2-4 years	M ³ in eruption	5	7	4	18	1	10	3	3	2	29	53
	M ³ lightly worn	1			4		2	2			6	9
> 4 years	M ³ moderately worn	2	7	1	11		6	4	1	7	17	39
	M ³ heavily worn	1					2			4	2	7
		13	14	8	37	1	23	9	4	13	61	122

Table 11b. Age distribution of *Ovis aries*/*Capra hircus* by the eruption and wear of the dentes inferiores

		I	III	III/IV	IV	IV/V	V	V/VI	VI	?	IV + V	Total
< 1 year	M ¹ not erupted										1	1
	M ¹ in eruption					1				1	1	2
	M ¹ erupted; M ² not erupted		1		1		1				2	3
1-2 years	M ² erupted; M ¹ lightly worn	4	2	3	17		3	1		4	20	34
	M ² lightly worn; M ³ not erupted			2	3		2			2	5	9
2-4 years	M ³ in eruption	2	10	4	16		8		2	11	24	53
	M ³ lightly worn	1	1		5		1	2		1	6	11
> 4 years	M ³ moderately-heavily worn	3	4	2	13	1	5	2	7	8	19	45
		10	18	11	56	1	21	5	9	27	78	158

ginate from small ruminants, mainly sheep and goat. The fragmentary state of the remains (table 9) makes it impossible to establish the exact species. Only a few bones could be identified as roe deer, gazelle or fallow deer, as opposed to 30-40 % that could be identified with certainty as sheep or goat. This indicates that the bulk of the fragments of small artiodactyls are from sheep or goat. In the following discussion the remains of small artiodactyls will therefore be considered as such.

In the different periods the bones of sheep and goat are represented in the following numbers: period VI: 135(93.1 %); period V/VI: 51(91.1 %); period V: 412(69.6 %); period IV/V: 19(86.4 %); period IV: 838(83.5 %); period III/IV: 74(66.5 %); period III: 218(81.0 %); period I: 249(98.0 %); period ?: 103(88.8 %).

It is clear that only during the first stage of the major occupation in the Early Bronze Age (period V) sheep and goat are represented in lower percentages. This is caused mainly by the somewhat larger amounts of *Bos taurus* remains but also by the occurrence of more equid bones. As these equid bones were probably not the remains of kitchen and food refuse, there is less difference in the meat diet than is suggested by the percentages (fig. 4). Only in the Roman period (I) do sheep and goat remains outnumber those of other species. In all periods more sheep remains could be identified than goat remains. Our experience with material from other settlements (Hadidi, Buitenhuis, 1979; Hayaz, Buitenhuis, in print) shows that a change involving preference for goat rather than sheep had occurred at the end of the first millennium.

Table 12. Sex distribution among the skeletal elements of *Ovis aries* and *Capra hircus*. Sex determination according to Boessneck et al. 1963

	I		III		III/IV		IV		V		V/VI		VI		?		Total	
	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂
<i>Ovis aries</i>																		
Scapula							1		1	2			1				3	2
Metacarpus							3										3	—
Pelvis				1			3	2								1	4	3
Astragalus				1			3		4		1		2				1	10
Metatarsus							2										2	2
Atlas									1				2		1		5	—
Epistropheus													1				2	—
<i>Capra hircus</i>																		
Scapula							1		1								2	1
Pelvis					1		3										4	—
Astragalus							2		3						1		1	5
Metatarsus							3								1		5	—
Atlas						1	1						1				2	1
Epistropheus							1		1								1	1

In table 10 the distribution of the fragments of the skeletal elements in the different periods is given and their minimum number of individuals (MNI). As in the case of *Bos taurus* the actual number of individuals these fragments represent is probably much larger. Assuming this to be the case, I looked at the age distribution of the slaughtered animals by taking the dentes superiores and the dentes inferiores as representing the largest group of individuals from which the same element is known. In table 11a,b the results of this analysis are given (ages according to Habermehl, 1975). It can be concluded that slightly less than 50% of the animals were killed during the early stage of their breeding period. C. 30% of the slaughtered animals were more than four years old. This can only mean that the sheep/goat herds were so large that butchering did not interfere with the production of secondary products such as milk and wool. Slaughtering apparently did not affect the herd composition. Sexes of the remains were established on the basis of the criteria of Boessneck, Müller & Teichert (1964). As far as could be established there is no great difference between the number of slaughtered males and females at the subadult and adult stages (table 12).

In table 13 the single measurements of the most important bones from *Ovis aries* and *Capra hircus* are given. Only six complete

bones of the extremities of *Ovis aries* and two of *Capra hircus* could be used to establish the withers height (WH) (table 14). Two metacarpus, 1 femur, 1 tibia and 2 metatarsi gave withers heights of 57.1-68.9 cm, mean = 63.4 cm for *Ovis aries*. Except for the smallest metatarsus (WH = 57.1 cm), all remains came from the Early Bronze Age occupation remains. Disregarding the smallest metatarsus from the Roman period the range of values for withers height is 61.9-68.9 cm with a mean of 64.7 cm. As also observed in the material of Hadidi, an Early and Middle Bronze Age settlement on the other side of the Euphrates opposite Sweyhat (Buitenhuys, 1979), the withers heights of sheep in Sweyhat are somewhat larger than those of Korucutepe (Boessneck & Von den Driesch, 1975). While the width measurements of the bones of Hadidi are somewhat smaller, those of Sweyhat are somewhat larger than those of Korucutepe.

Only two complete long bones of *Capra* were found. A humerus and a metacarpus, giving respectively a withers height of 58.5 and 70.3 cm. These values also compare very well with those of Hadidi.

Camelus cf. *dromedarius* — dromedary

Only one bone of *Camelus* spec., a phalanx III, was found among the remains of Sweyhat. It was found in area I, thought to be the remains of a late Roman watch-post. It re-

Table 14. Withersheights (cm) of *Ovis aries* and *Capra hircus* according to Haak, Teichert and Schramm (Von den Driesch & Boessneck, 1974)

	Species	GL	Period	According to Haak		According to Teichert		According to Schramm		
				Faktor	WH	Faktor	WH	Faktor	WH	
Humerus	♀?	C	151.7	VI						
Metacarpus		O	127.6	IV	4.85	61.9	4.89	62.3	3.86	58.5
		O	142.1	IV				69.5		
Femur	♂?	C	122.1	VI					5.75	70.3
		O	177.1	VI	3.62	64.1	3.53	62.5		
Tibia		O	204.3	V	3.06	62.5	3.01	61.5		
Metatarsus	♀	O	145.0	IV	4.55	66.0	4.54	65.8		
	♂	O	125.5	I		57.1		57.0		

presents an adult animal. As the usual domestic breed in this region was and is the dromedary, this bone has been tentatively identified as *Camelus cf. dromedarius*.

Sus (scrofa) domesticus — pig

In Sweyhat only 19 fragments (0.7 %) of *Sus domesticus* (and none of wild boar — *Sus scrofa*) were found, including for period V: 4(0.7 %); period IV: 3(0.3 %); period III/IV: 5(4.5 %) and period III: 4(1.5 %). No bones of *Sus* were encountered in the late Roman period (I). In table 15 the distribution of the remains of the skeletal parts of pig in the different periods is given. About half of them are fragments of dentes. The remains represent a juvenile individual of unknown period, at least a subadult (1-2 years old) individual and an infantile one (less than six months) in the second phase of the Early Bronze Age occupation (IV), and a subadult animal from the Hellenistic period. No measurements could be taken, nor could the sex of the animals be established.

Canis familiaris — dog

Only a few remains of dog — *Canis familiaris* — were found among the animal bones of Sweyhat. Dog is the domestic form of *Canis lupus*, the wolf, whose domestication took place in the Mesolithic of Europe and Pre-ceramic Neolithic of the Near East (Degerbøl, 1962; Lawrence, 1967).

In Sweyhat, dog remains were found in period V with 26 fragments of which at least eight were of one young individual, and two of an adult animal (Habermehl, 1975). In

period IV only two fragments were found, representing one adult animal, while in period III four fragments represent a young and an adult animal (table 16).

In table 17 the single measurements of the most important bones of *Canis familiaris* are given. The length measurement of a radius (GL = 156.8 mm) enabled us to estimate the withers height according to Koudelka (Von den Driesch & Boessneck, 1974). It gave a withers height of 50.5 cm. This must have been a small dog, smaller than those of Korucutepe (Boessneck & Von den Driesch, 1975) and Hadidi (Buitenhuis, 1983). Also the width measurements of the remains in Sweyhat are smaller than those in Korucutepe. The dogs in these settlements were compared with the pariah dog. Which type of dog the one in Sweyhat represents is not clear. Nowadays no dogs of this small size are to be found in the area, apart from those imported from Europe.

Gallus gallus domesticus — domestic fowl

Six remains of domestic fowl — *Gallus gallus domesticus* — were found in the material of Sweyhat. The wild ancestor of domestic fowl is the Red Jungle Fowl (*Gallus gallus* subspec. *murghi*) from the Indus valley, where the earliest evidence of domestication of this bird was found in the early third millennium B.C. of Mohenjo Daro. In Sweyhat the remains date from period V: 2400-2200 B.C., one of the earliest finds of domestic fowl in Western Asia up to now. A tibiotarsus was found together with some egg shell remains. The identification of the egg shells is only tentative. In period IV (2200-2000 B.C.) only one fragment of

Gallus gallus domesticus was found: the proximal end of a tarsometatarsus. Period III (3rd century B.C.) gave two fragments: the proximal end of a humerus and the distal end of a tibiotarsus, while in period I (4th century A.D.) again some egg shells were encountered. All bones are from very small, adult animals, much smaller than those of Korucutepe. In table 18 are given the measurements of the bones of *Gallus gallus domesticus*.

4.2. Hunted mammals

Wild or domestic sheep or goat

Only two bones were found that can be considered as coming from wild ovicaprids. Both were found in the first major occupation phase of the Early Bronze Age settlement (period V). They are a diaphysis fragment of a radius and a complete left astragalus, both from adult animals. In table 19 are given the measurements of the astragalus. If this bone originates from a wild animal then it most probably comes from a female sheep. Alternatively it may come from a male domestic sheep.

Dama mesopotamica or *Cervus elephas* — fallow or red deer

Cervids are the most abundant hunted animals among the remains of Sweyhat. Ten fragments of antler were found that belonged to the larger cervids, *Dama* or *Cervus* spec. The antler fragments, eight of which belong to period V and two to period IV, are burnt and fragmented. No closer species identification is possible. Neither could it be established whether these fragments were from shed antlers or from antlers of animals that had been killed.

Capreolus capreolus — roe deer

Capreolus capreolus, roe deer was the most frequently hunted animal around Sweyhat. Fifteen fragments were found, representing seven individuals (table 20). In the Early Bronze Age 0.6 % of the remains from hunted and domestic animals are from roe deer, while in the periods III and I this figure is 0.4 %. It is clear that hunting was never an important activity in terms of food production. In table 19 the measurements of the most important bones of *Capreolus capreolus* are given.

Vulpus vulpus — common red fox

Only three remains of fox were found. A distal part of a femur was recovered among the remains of the Early Bronze Age period 2400-2000 B.C. Two other remains: a phalanx I and a metapodium fragment were found in a disturbed context (measurements table 19).

Lepus europaeus — hare

Twenty-two remains of hare were found. Thirteen of these bones form part of the vertebrate column of one animal. No period could be ascribed to this animal. The other remains date from the Early Bronze Age (measurements table 19).

4.3. Aves — birds

Twenty-one fragments of bird bones were found in the periods V, IV and III. These are:

Athene noctua — little owl

A complete, left tarsometatarsus from period III/IV is the only evidence of the little owl. Measurements are: Gl 42.0, Bp 17.2, Bd 6.8, Sc 2.8.

Falco tinnunculus — kestrel

A complete tibiotarsus testifies to the occurrence of the kestrel, still a very common bird in the Near East in period III/IV. Measurements: Gl 60.8, L art surf* 60.4, Dip 7.9, Bd 6.6, Sc 3.2, width corpus at crista 5.3.

Birds of prey — unidentified

Seven bones of a bird of prey were encountered, that could not be identified as to species. They are a proximal part of a radius from period IV, a tarsometatarsus, three phalanges I belonging to one individual, and also two phalanges III belonging to one individual all from period IV. The measurements of the tarsometatarsus are: Bp 15.1, Bd 15.1.

Rallidae — rails and crakes

An incomplete coracoid was found belonging to an individual of the family Rallidae: BF 10.8, BB 14.7 (period V).

Grus grus — crane

An almost complete tarsometatarsus confir-

med the occurrence of the crane in period III. Measurements are: Bp 23.1, Bd 24.2.

Columba livia (domesticus?) — rock dove or domestic pigeon

Seven bones of the rock dove were found. It is possible that these are the remains of domestic birds. The measurements, however, do not give any certainty (Fick, 1974). To period III/IV belong a complete humerus (Sc 4.4, Bd 9.3, GI 47.3), an ulna (Sc 2.8, Did 6.4) and a complete femur (GI 39.4, Bp 8.1, Bd 7.0, Sc 3.3, LM 37.3, width trochlea patellae 4.9, Dp 5.4). In period V were found: a distal end of a radius (Bd 4.9), a proximal and distal part of an ulna, possibly one bone (Bp 9.5, Bd 6.0). Undated is a proximal part of a humerus (Bp 17.0).

Asio otis — long-eared owl

A distal part of the ulna of a long-eared owl was found among the remains of period IV (Bp 7.9).

Alaudidae — larks

A complete

family Alaudidae was found in period III/IV (Bp 9.4, Sc 2.7, Bd 6.2).

Corvus corax — raven

A proximal part of the humerus of an individual of the family Corvidae was found in period III/IV. On the basis of its measurements it was identified as *Corvus corax* (Bp 14.8).

Apart from these identified remains, four fragments of birds that could not be identified were found.

Except for the Rallidae and cranes, that prefer the marshy river-plain, all the other birds identified belong to the steppe. They are still quite numerous except for the crane (Heinzel, Fitter & Parslow, 1972). Interesting is the complete absence of birds of the wet areas such as ducks and geese.

4.4. Fishes and molluscs

Only one vertebra of a cyprinid fish was found among the remains of period V. Molluscs are also scarce. Only in period V (N = 4) and period IV (N = 2) remains of the edible fresh-water

mollusc, *Unio crassus*, were found. Also one shell of *Dentalium* spec. was found; this is a marine shell and was probably imported to be made into a bead.

5. DISCUSSION

Tell Sweyhat was occupied during three major periods. The first and most extensive occupation took place during the second half of the third millennium B.C., when a fortified town came into existence, surrounded by a large wall with regularly spaced towers. During this period major architectural structures were erected, part of which were excavated in the squares IV, IX and X. The period could be divided into four phases. The oldest (period VI) was only touched in two places in squares II and I, and is apparently the phase before the major town-wall was constructed. The periods V: 2400-2200 B.C. and IV: 2200-2000 B.C. are those of the fortified town with its complex system of buildings. In those periods there was a continuous occupation with a phase of rebuilding around 2200 B.C. The city was destroyed by a general conflagration. Afterwards only sporadic activity occurred on the tell.

The faunal remains of these periods indicate a complete dependence on animal husbandry for the procurement of meat. Remains of hunted mammals and birds form only 2.5 % of the total amount of animal remains. The major food producing animals are sheep and goat. Young as well as old animals were killed. Apparently they were kept for meat and for secondary products such as milk and wool, that could be had in sufficient quantity without a special butchering regime. There was a preference for sheep rather than goats. The animals are long-legged, apparently well-adapted to the flat steppe area on which they must have been herded. Cattle and pig were also kept, but were of lesser importance.

A remarkable feature of these periods is the rather high percentage of equid remains among the domestic animals. Of 94 fragments only a few showed traces of burning and none had any cut-marks. One may conclude that the animals were not eaten and that the large numbers found are from animals that were kept for traction and transport. Donkeys and

possibly mules were apparently kept. It is known that long distance trade occurred mainly by means of donkey caravans between Mesopotamia and Anatolia and the Mediterranean coast (Van Loon & Meyer, 1982). Sweyhat might have been an important station on these routes.

The analysis of the faunal remains per area for the periods IV and V showed a clear distinction between the rooms of square IV. Those rooms that lay close to the courtyard (area N) contained large numbers of animal bone fragments. These are the areas X, M, F, K, L and J. So did the areas Z and A, that lay outside the building complex. The areas P, Q, R and S lay further away and contained hardly any animal remains. According to the excavator this complied with a difference in function between the areas. Those with large numbers of fragments were activity areas: a courtyard and cooking area (N), metalwork (L), cult room (K), storage room X, M, F and J. The rooms that lay further away and had hardly any animal remains were presumed to be living quarters. There is no great distinction between the period V and IV, showing a continuation of activities in these areas.

The second major occupation was in the third century B.C. during Hellenistic times. Notably in square II a deep pit with overlying occupation debris dating from this period was excavated. The settlement was apparently much smaller in the Hellenistic period than in the Early Bronze Age. Only in squares I, II, III, in the centre of the tell, were remains from the later periods encountered. Again the inhabitants were completely dependent on animal husbandry. Hunting was even less important. Only seven fragments of hunted mammals and birds were collected from this period. Sheep and goat were again the most important animals, while cattle and pig also occurred. The last occupation of which animal remains are known was a small Roman watchpost dating from the fourth century A.D., excavated in area I. An almost complete dependence on sheep and goat could be established.

It is clear that in none of the periods exploitation of the wild animal resources was of any importance. Even during the first major occupation in the Early Bronze Age hunting

was practised only incidentally. Fallow or red deer, roe deer, gazelle, fox and hare were caught, also some birds. The potentially rich river-plain was not exploited at all, considering the very few remains of waterfowl, fishes and molluscs. In the later Hellenistic and Roman period this exploitation apparently ceased completely.

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8. KEYWORDS

Near East, Syria, Euphrates, Bronze Age, Tell Sweyhat, faunal remains.