

Prehistoric and Medieval animal remains from the Akhtamir citadel, Armenia: some first results

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(Received 21 April 1997; accepted 9 June 1997)



ABSTRACT: Faunal remains are described, originating from the acropolis of Akhtamir 35km west of Yerevan in Armenia, dating from the last two millennia B.C. and from Medieval times. The assemblages contain a quite diverse fauna referable to various taphonomic groups, but remains of butchered sheep and cattle predominate. In Medieval times a slight increase in sheep may reflect ecological deterioration of the site catchment or a shift to small scale husbandry.

KEYWORDS: ARMENIA, AKHTAMIR, ARCHAEOFAUNA

RESUMEN: Se describen los restos de fauna procedentes de la acrópolis de Akhtamir, 35 km al oeste de Erevan en Armenia. Los niveles estudiados datan del segundo milenio antes de Cristo y de época medieval. Las muestras incluyen una relativamente diversificada fauna procedente de diversos grupos tafonómicos si bien dominan los restos de ovejas y de vacuno con marcas de descuartizado. Durante los momentos medievales el ligero incremento de ovejas podríamos asimilarlo tanto con un deterioro del entorno inmediato al yacimiento como a una deriva hacia técnicas pecuarias llevadas a cabo a pequeña escala.

PALABRAS CLAVE: ARMENIA, AKHTAMIR, ARQUEOFAUNA

In August and September 1993, excavations took place in Armenia as a first step in an interdisciplinary and international programme of archaeological cooperation, sponsored by the Belgian government, the «Centre pour l'Avancement de la Recherche Archéologique et Historique» in Geneva and the Institute of Archaeology and Ethnography of the Armenian Academy of Sciences. The long term aim of the project is to contribute to the reconstruction of the cultural history of Armenia, its ancient environments and its connections with the civilisations of neighbouring countries, particularly those which developed south of the Caucasian isthmus.

To launch the programme, the excavators chose the site of Akhtamir (Figure 1), situated about 35 km west of Yerevan, at the northern edge of the Araks plain. This locality was occupied from the Bronze Age (3rd millennium B.C.) onwards, but mainly during the later Bronze Age and the Iron Age, i.e., roughly speaking from about 1500 to 500 B.C. It is thought that excavations at Akhtamir may generate

information which, among other things, could help to formulate first answers to some specific but major problems regarding the prehistory and history of the Near East. One concerns the circulation and trade in metals and particular rock types; the other is much more complex and concerns the migrations of Indo-European populations.

Four areas were excavated, of which two (areas A and B) are located on the acropolis (Figure 2), the other two (N1, N2) in a necropolis at the northern boundary of the site. The excavators collected most of the animal remains in area A, and only a few samples originate from area B; the necropolis yielded some intrusive microfauna in a tomb, which will not be discussed. Unfortunately the remains and deposits of the acropolis have been much disturbed and reworked during the so-called Armenian Middle Age, when remaining walls were re-used and several parts of the surface modified for general agricultural purposes, wine-growing and other activities. Moreover, the cultural chronology of the



FIGURE 1
Location of Akhtamir.

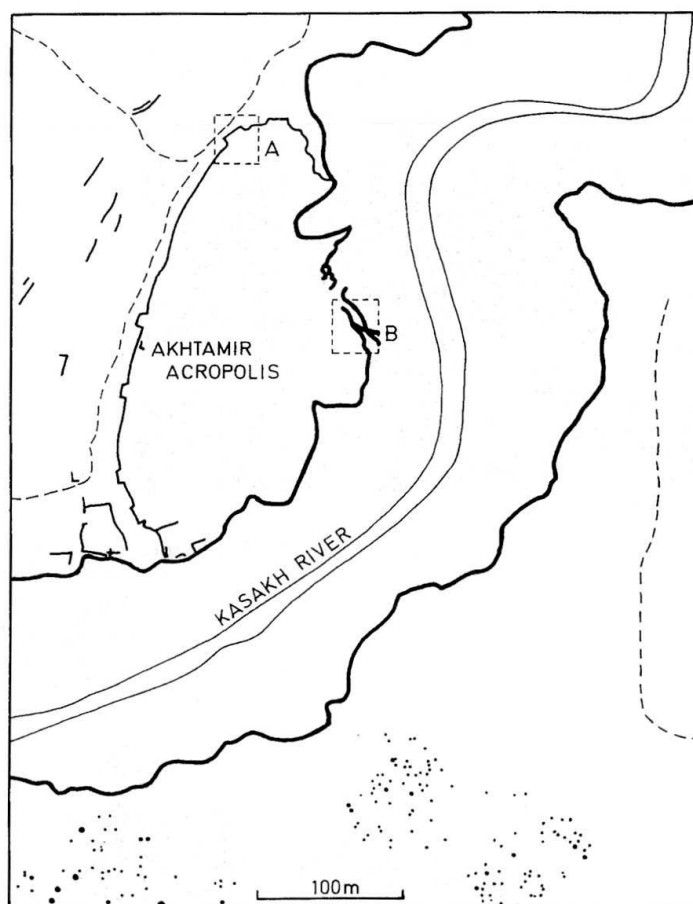


FIGURE 2

The citadel of Akhtamir and excavations areas A and B. Dashed line: roads; thick full line: boundary of the cliffs bordering the deeply entrenched Kasakh River; thin full lines: walls; dots: tumuli (map derived from the general map established by J. Vertriest, Vlaamse Gemeenschap, Leefmilieu en Infrastructuur, Brussels).

southern Caucasus still poses several dating problems. For the two reasons given, the remains excavated during the first campaign can be dated only very broadly, but it may be possible to present a more precise archaeofaunal sequence when dating problems have been solved and more material becomes available. For the moment, we have divided the finds into the following assemblages.

A and B: areas A and B, material of uncertain age, mainly in the upper, much disturbed deposits.

A.MED and B.MED: same locations, but attributed to the Medieval period, which in Armenian archaeological terminology covers c. A.D. 800 to 1600. These layers show much disturbance and no doubt contain reworked older material.

A.1 MILL.: area A, most probably first half of the first millennium B.C.

A.1/2 MILL.: idem, most probably end of second millennium and early first millennium B.C.

A.2 MILL.: idem, most probably dated from the four or three last centuries of the second millennium B.C.

The acropolis is situated on the right bank of the Kasach, a tributary of the Araks; the steep walls of the deep Kasach valley formed a natural protection for the settlement (Figure 2). According to the few maps available to us at this writing, Akhtamir is characterized by a dry continental climate with some 300 mm annual precipitation, with major rainfall in April and May, the driest months being July, August and September. In August, the temperature can go up to 45°C, while in January minima of 10°C are experienced. Viniculture is an important activity, but cereals and other crops are also grown. Cattle (Figure 3) and sheep (Figure 4) are the main livestock.

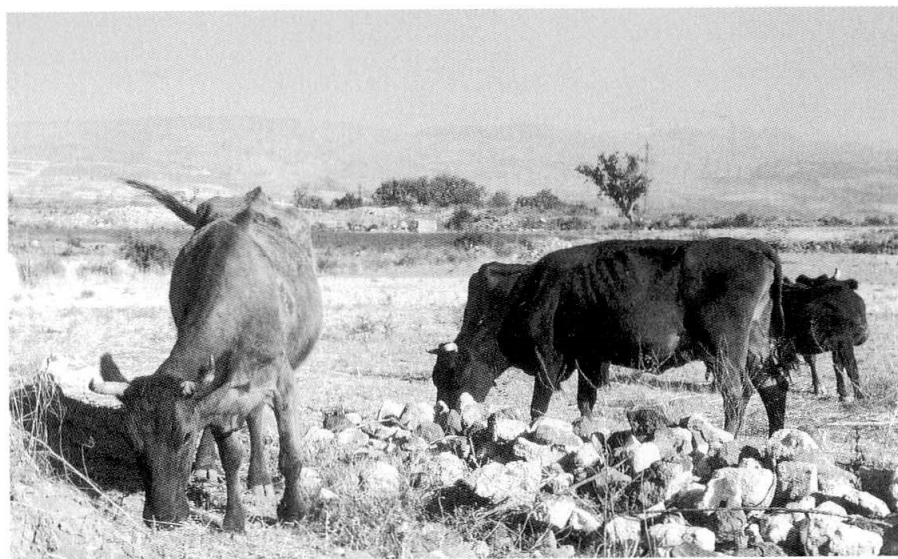


FIGURE 3

Cattle in the vicinity of the Akhtamir site (photo: Gautier).



FIGURE 4

Fat-tailed sheep on the upper slopes of the Aragats (photo: Vandenbruaene).

As to the archaeozoological record of Armenia, one of the aims of the senior author was to collect information on the data already available and to contact archaeozoologists in the country to establish cooperation. Much work appears to have been done in the past decades by Dr. S.K. Mežlumjan, but she could not be contacted because of a serious contagious disease, followed later by her death. As a result, the authors had access only to an older study by the deceased, dealing with Eneolithic, Bronze Age and Iron Age fauna (Mežlumjan, 1972). At a recent conference of the International Council for Archaeozoology in Konstanz, Germany, the senior author met with Dr. N. Manaserjan, who presented data on pig remains in Bronze Age graves and on the Medieval archaeofauna of the country (Manaserjan, 1994 a, b). Faunal data on Middle Palaeolithic archaeofaunas from Armenia are summarised in Ljubin (1989). Some archaeozoological finds are dealt with cursorily in reviews on the Urartian town of Kamir Blur (Barnett & Watson, 1952) and on the Early Bronze Age and Early Iron Age at Horom (Badaljan *et al.*, 1990, 1993). A critical bibliography of the archaeozoological literature dealing with Armenia would provide a useful background for the analyses to be carried out in the future. Access to analyses in adjacent countries would also be helpful. Such work was carried out by the Munich School on the late prehistoric and historic sites at Bastam (Figure 1), Zendan-i Suleiman and Takht-i Suleiman in the province of Azerbaidjan, Iran (Kolb, 1972; Boessneck, 1973; Boessneck & Krauß, 1973; Krauß, 1975; Steber, 1986).

During the excavation at Akhtamir, the osseous remains were collected by hand. The identification ratio, i.e., the ratio identified remains/total number of remains is about 29.3%, which indicates that small remains have often not been collected, thus biasing the collection in favour of larger animals. What has been collected is generally well preserved, but crumbling specimens have been found in several samples, indicating that collagen destruction has occurred. Most of the material has light orange-yellowish colours and may be fragmented by desiccation cracks (weathering stage one *sensu* Behrensmeyer, 1978).

Most of the sorting and identification was done by both authors during the excavation campaign. Only a limited number of remains that could not be assigned immediately were identified in the Ghent laboratory. The results are given in Table 1 and some notes on the identifications follow in the next paragraphs. Considerations on geographical

ranges of the mammals are based on the taxonomic review of the Palaearctic mammals by Corbet (1978). The Latin names of the domestic animals are given according to the system proposed by Bohlken (1961), Gautier (1993). Size estimates of domestic mammals rely on von den Driesch & Boessneck (1974) and on the extensive osteometric data from Manching (Boessneck *et al.*, 1971).

Fragmentary remains of freshwater molluscs pertain to small unionids (Unionidae). We identified most of these on the basis of their outline as *Unio sieversi* following Zhadin (1965). This form would be restricted to the rivers and brooks of Transcaucasia. A few smaller unionid remains may pertain to other species, such as the other endemic, *U. mingrelicus*, or a more widely distributed unionid such as *U. pictorum*. Other freshwater organisms are represented by a few fish remains, for which Dr. W. Van Neer (Royal Museum of Central Africa, Tervuren) provided preliminary identifications. One is a pharyngeal toothplate of a barbel (*Barbus* sp.), the other a caudal vertebra of a cyprinid (Cyprinidae). No doubt, both freshwater fishes come from the Kasakh River.

The herpetofauna includes only postcranial remains of limited diagnostic value, probably derived from frogs and toads (*Bufo* sp.), and a small lizard. We need much more recent comparative material if we want to attempt to put labels on these scanty remains.

Most of the bird remains are derived from domestic fowl. Among the wild birds, some have not yet been identified, because the comparative collection in Ghent is too restricted. One is a skull fragment, which on the basis of its dimensions can be assigned to a medium large predatory bird in the size range of the tawny eagle (*Aquila rapax*) or perhaps the lesser spotted eagle (*A. pomarina*); Krauß (1975) records the latter species from prehistoric layers at Bastam. At least two other not yet identified species occur in the collection (A.MED): one is a small form not belonging to the passeriform group, the other falls in the size range of geese. The duck remains are attributable to the common mallard, but it cannot be ruled out that primitive domestic ducks, which are derived from the mallard, are present.

A small insectivore is represented by a skull fragment with incomplete tooth rows; the tooth tips are not coloured. On the basis of tooth morphology, size and the present day ranges of various *Crociodura* species, our find can be assigned to *C. suavevolens* or *C. pergrisea*.

ANIMAL GROUP	PROVENANCE	A	A. MED.	A. 1 MILL.	A. 1/2 MILL.	A. 2 MILL.	B. MED.	TOTAL
FRESHWATER BIVALVES								
freshwater mussel (<i>Unio sieversi</i>)		1	7	3	-	-	-	11
FRESHWATER FISH(b)		1	2	-	-	-	-	3
AMPHIBIANS								
frog/toad (<i>Anura</i> sp. indet.)		2	1	1	-	3	-	7
REPTILES								
small lizard (<i>Lacertilia</i> sp. indet.)		1	1	-	-	-	-	2
WILD BIRDS								
large predatory bird		-	-	-	-	-	1	1
mallard (<i>Anas platyrhynchos</i>)		1	3	-	-	-	-	4
goosander (<i>Mergus merganser</i>)		-	1	-	-	-	-	1
crow (<i>Corvus corone</i>)		-	-	-	-	1	-	1
unidentified (<i>Aves</i> sp. indet.)		-	12(c)	-	-	-	-	12
WILD MAMMALS								
shrew (<i>Crocidura</i> sp.)		-	1	-	-	-	-	1
hare (<i>Lepus capensis</i>)		-	3	1(d)	-	-	-	4
gerbil (<i>Meriones</i> cf. <i>persicus</i>)		4	7	-	1	-	-	12
grey hamster (<i>Cricetulus migratorius</i>)		2	-	-	-	-	-	2
house mouse (<i>Mus musculus domesticus</i>)		-	1	-	-	-	-	1
unidentified small rodents (<i>Rodentia</i> sp. indet.)		7	29	-	-	-	-	36
red fox (<i>Vulpes vulpes</i>)		-	4	-	-	-	-	4
badger (<i>Meles meles</i>)		-	1	-	-	-	-	1
bear (<i>Ursus arctos</i>)		-	-	1	-	-	-	1
wild boar (<i>Sus scrofa</i>)		-	-	1?	-	-	-	1?
maral (<i>Cervus elaphus</i>)(e)		-	1+1	-	1	1	-	1+3
DOMESTIC ANIMALS								
fowl (<i>Gallus gallus</i> f. <i>domestica</i>)		2	25	-	-	-	1	28
dog (<i>Canis lupus</i> f. <i>familiaris</i>)		-	5	3	1	1	-	10
horse (<i>Equus przewalskii</i> f. <i>caballus</i>)		6	28	9	1	-	-	44
donkey (<i>Equus africanus</i> f. <i>asinus</i>)		-	2	1	-	-	-	3
pig (<i>Sus scrofa</i> f. <i>domestica</i>)		2	8(f)	7	1	-	1	19
cattle (<i>Bos primigenius</i> f. <i>taurus</i>)		187	706	279	27	6	52	1,257
sheep/goat(g)		216	815	230	48	14	8	1,311
TOTAL IDENTIFIED VERTEBRATES		430	1,657	533	80	26	63	2,790
NOT IDENTIFIED								
medium sized vertebrae		24	119	28	5	1	3	180
large vertebrae		28	112	43	12	3	18	216
medium sized ribs		59	261	33	17	5	3	378
large ribs		44	253	68	20	1	16	402
varia		714	3,488	1,103	129	42	90	5,566
TOTAL NOT IDENTIFIED		869	4,233	1,275	183	52	130	6,742
TOTAL BONE REMAINS		1,299	5,900	1,808	263	78	193	9,532
HUMAN REMAINS (<i>Homo sapiens</i>)		1	8	-	-	-	-	9

TABLE 1

Faunal remains of Akhtamir.

(a) mostly fragment counts; (b) identifications are given in the text; (c) many fragments of egg shell in one of the samples; possibly domestic fowl; (d) remains of one juvenile animal; (e) second numbers concern worked antler remains; (f) including remains probably from one piglet; (g) *Ovis ammon* f. *aries*/*Capra aegagrus* f. *hircus*.

Three rodents of different size were collected. The largest are mostly assigned to gerbils of the genus *Meriones*. These finds comprise more or less complete crania and mandibles as well as associated postcranial bones; since we have no comparative data on the postcranial skeleton of *Meriones*,

we put the postcranial finds in the category of the not identified rodents. Most likely, the gerbils found belong to *M. persicus*, which is said to be frequent in Transcaucasia. The ranges of other *Meriones* such as *M. tristami*, *M. vinogradovi* or *M. lybicus* seem to reach into the central Transcauca-

sus, but these gerbils would be much less common. We have not yet found out how the different species can be distinguished on the basis of cranial and dental characters therefore we use the label *Meriones cf. persicus*. The medium-sized rodent remains comprise a fragmentary skull and a mandible of *Cricetulus migratorius*; as in the case of the gerbils, the few associated postcranial remains have been put in the category of the unidentified rodents. The smallest rodents are represented by two edentulous mandibles of the same individual, again accompanied by some postcranial remains listed with the unidentified remains. The alveolar pattern suggests that we are dealing with an individual of the very polymorphous *Mus musculus* group. Probably the find can be attributed to *Mus m. domesticus*, the typical house mouse of the south-eastern Old World (Boursot *et al.*, 1993), which occurs both as a wild form and as a commensal.

Among the large wild mammals, only the fox is quite well represented. A fragment of a humerus shaft could pertain to a small badger, while a distal metapodial has been attributed to a bear, also of rather small size. Among the suid remains, a proximal half of a femur could represent a small wild boar. Its morphological features are clearly expressed, the bone tissue appears to be rather compact and the proximal transverse diameter of the bone (58.5 mm) is quite large in comparison with the dimensions of the other suid remains. Alternatively, this specimen may represent a large male domestic pig. The maral deer finds comprise a few antler fragments with working traces and a distal metacarpal (Plate 1, fig. 4; TR.D. dist.: 51.0 mm); in size it falls in the upper range of Turkish late prehistoric red deer (Pietschmann, 1977: 12).

The domestic archaeofauna contains several of the species generally found in later Old World archaeofaunas. The dog remains are very fragmentary and half of them are derived from pups and not fully grown animals. All of these remains can be assigned to dogs growing to large size. The height at the shoulders of two individuals from Medieval contexts in locus A, estimated on the basis of transverse diameters of subadult or adult long bone parts, may have been 60 cm and more. The equid remains clearly fall into two distinct size groups. The larger remains represent horses measuring probably between 125 and 135 cm at the shoulders, while the few much smaller remains pertain to small donkeys (Plate 1, fig. 3). As to the remains attributable to domestic pigs, half of these

are derived from juvenile or subadult animals. The few measurable items suggest animals in the upper size range of those from Manching. As already noted, one rather large proximum of a femur has been identified tentatively as derived from a small wild boar, but could represent a large domestic male; traditionally, such animals were retained until an advanced age for breeding purposes.

The bovid remains are assignable to cattle and sheep or goat. The measurements suggest that the height of the withers of the Medieval cattle falls within the upper range (± 110 -125 cm) of the Manching cattle, but some animals of distinctly larger size seem to be present. Estimates of stature based on the complete cannonbones follow.

	L	TR.D. diaph.	sex	withers	height at provenance
mc	174 mm	29.5 mm	?	107 cm	Medieval
	180 mm	30.5 mm	?	111 cm	1-2 millennium
	196 mm	30.0 mm	f?	118 cm	Medieval
mt	227 mm	24.0 mm	f?	120 cm	Medieval

The few larger remains may represent bullocks. A distum of a large posterior cannonbone (TR.D. dist.: 62 mm) shows slight pathological changes (Plate 1, fig. 8), which one might attribute to the use of the animal for draughting. Some mandibular and dental remains derive from animals of advanced age (Plate 1, fig. 2) and might pertain to draught animals also. The cattle remains from the older occupation phases do not seem to differ appreciably from the Medieval collection.

The ovicaprid sample consists mainly of remains attributable to sheep, according to the diagnostic features given by Boessneck (1969). Only four fragmentary horncores were found in the Medieval samples from locus A. One is a remnant of a female caprine horncore, another is decidedly derived from a ram with well developed horns. Two are of pseudo-caprine type and represent therefore most probably ewes or wethers. A skull fragment with complete horncore of unknown provenance at the same locus carries a similar horncore (Plate 1, fig. 1). In the light of the senior author's experience based on various sites in Europe and Africa, the foregoing suggests that ewes were probably mostly hornless or with weak horns only, males being much better equipped but not well represented in the samples because only few of them were retained for reproduction. Most of the remains seem to fall in the size range of «normal» primitive ovicaprid breeds. A small posterior caprine cannonbone measures only 104.5 mm and would represent a small

female goat of about 56 cm at the withers. Some rather large remains may be derived from wild sheep (*Ovis ammon*). They include a proximal radius with a width of 39.2 mm (assemblage A) and a proximal tibia with a width of 45 mm (A.1/2 MILL.). We think, however, that these finds most likely represent large domestic rams. Sheep are well represented in the collection and the above-mentioned finds would be derived from animals at the upper size limit of the ovine palaeopopulation(s).

Many bones show chopping marks, cut marks being much less frequent. Bones discoloured by the action of fire are quite common, but few remains show evidence of prolonged exposure to fire (Plate 1, fig. 7). All the deer antler remains show evidence of working, as already mentioned. Carnivores, presumably dogs, left extensive gnawing marks on some bones and a few small bones of sheep and goat (astragalus, calcaneum, phalanges), all from locus A (all periods), show clear etching traces resulting from their passage through the digestive track of a carnivore, no doubt dog. A rodent (a hamster?) left the very characteristic traces of its incisors on a first phalanx of a sheep (locus A, unknown provenance).

For completeness' sake, we added the few human remains found as a separate category in Table 1. All these remains come from locus A. A find of unknown provenance is a single second right molar with lingual caries and buccal tartar. All the other remains are attributed to the Medieval assemblage and include a right humerus and tibia of a probably eight-month old foetus, a left femur of a newborn, a few skull fragments of a little child, and a skull fragment, a right femur and a right talus, perhaps all from the same young adult. Apparently the site of the acropolis was sometimes used in Medieval times for the burial of people; this was another activity causing disturbances of the deposits.

As is generally the case, we can distinguish several taphonomic groups as defined by the first author (Gautier, 1987). Most of the remains derive from animals killed for consumption: freshwater fish, some wild waterbirds, hare, perhaps wild boar, maral, pig, cattle, sheep and goat. Carnivores, such as fox, badger and bear, may have been killed for their pelts, but their meat may have been eaten also. If not, their remains may constitute a second taphonomic group comprising remains resulting from the human use of particular animal materials (workshop refuse). This same group is well exemplified by the worked antler fragments; people may have collected antlers after they were shed. Dogs, donkeys and horses were probably not regular fare and the remains found could be derived from carcasses of animals that died on the site. Unfortunately, what has been found does not allow to decide whether these finds belong to the taphonomic group of carcasses; however, the latter occurs in many sites. The main group of intrusives, i.e., animal remains that do not result from intentional behaviour of people includes the anurans and lizards, probably some of the birds, such as the crow, the shrew and the rodents. All these animals lived on or near the site and met with death on the site. The remains of a juvenile hare (A.1 MILL.) could belong in the same category as part of a litter born on the site. Probably the category comprises penecontemporaneous intrusives as well as late ones: some intrusives would date from about the periods of occupation distinguished, others may be animals that colonized or visited the site much later. It goes without saying that the taphonomic status of the not identified bird remains is difficult to assess. The taphonomic status of the freshwater bivalves is also problematic. They are all of rather small size and, therefore, would not have been collected as food. How and why they were brought to the site from the Kasakh River remains a problem.

	pig		cattle		sheep/goat		totals
	n	%	n	%	n	%	
A, unknown provenance	2	0.5	1.879	46.2	216	53.3	405
A, Medieval	8	0.5	706	46.2	815	53.3	1.529
B, Medieval	1	1.7	52	85.2	8	13.1	61
A&B, Medieval	9	0.5	758	47.7	823	51.8	1.590
A&B, Medieval & unknown provenance	11	0.5	945	47.4	1.039	52.1	1.995
A, 1st mill. B.C.	7	1.4	279	54.0	230	44.6	516
A, 1st or 2nd mill. B.C.	1	1.3	27	35.5	48	63.2	76
A, 2nd mill. B.C.	-	0	6	30.0	14	70.0	20
A, total 1st-2nd mill. B.C.	8	1.3	312	51.0	292	47.7	612
Totals all assemblages	19	0.7	1.257	48.2	1.331	51.1	2.607

TABLE 2

Absolute and relative frequencies of the most important domestic animals at Akhtamir (based on fragment counts).

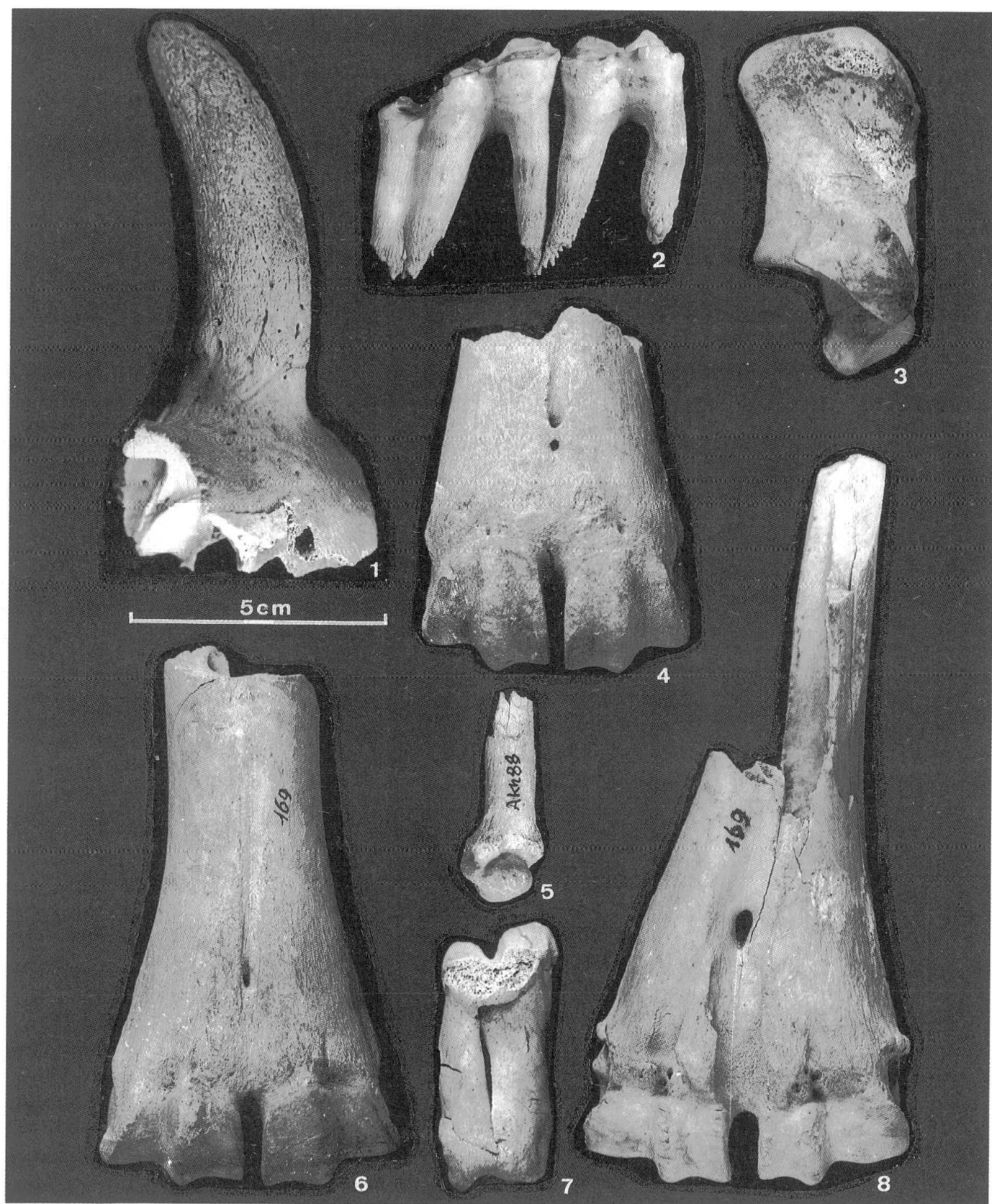


PLATE 1

fig. 1: Skull fragment with horncore of sheep, ewe or wether; locus A, unknown provenance; fig. 2: M3 and M2, of a very old individual of cattle; locus A, 1 millennium B.C.; fig. 3: Calcaneum, donkey; locus A, 1 millennium B.C.; fig. 4: Distal metacarpus, maral; locus A, 1/2 millennium B.C.; fig. 5: Distal metapodial, bear; locus A, 1 millennium B.C.; fig. 6: Distal metacarpus, cattle; locus A, unknown provenance; fig. 7: Calcinated first phalanx, cattle; locus A, Medieval; fig. 8: Distal metatarsus with pathological changes, cattle; locus A, unknown provenance.

Table 1, summarising the absolute quantitative composition of the various assemblages and Table 2, summarising the absolute and relative frequencies of domestic pig, cattle and ovicaprids (mainly sheep), indicate that the assemblages show no major differences. Hunting was apparently of little or no importance and cattle and sheep are the dominant meat providers during the periods under consideration. Table 2 furthermore suggests that the assemblage of unknown provenance probably dates from Medieval times, as was to be expected in view of its stratigraphical provenance. It would also seem that small livestock became more important in Medieval times. This change may be due to the ecological deterioration resulting from overgrazing and other forms of overexploitation of the site catchment area, or may reflect a shift towards a small scale economy with limited production units preferring small livestock.

The comparative data on other Armenian sites available to us, suggest similar faunal spectra. Mežlumjan (1972) summarises the quantitative composition (fragment counts) of some twelve sites dating from the 5th to the 1st millennium B.C.. They yielded limited numbers of remains of hare, fox, wolf (*Canis lupus*), pine marten (*Martes martes*), bear, wild boar, sand or goitered gazelle (*Gazella subgutturosa*), roe deer (*Capreolus capreolus*), red deer, bison (*Bison bonasus*), wild sheep (*Ovis ammon*) (the ones cited only with their vernacular name have also been found at Akhtamir). Fish were retrieved from one site. Domestic animals dominate all the assemblages and generally cattle or sheep are much more important than pig. The few data on the Medieval archaeofauna extractable from the abstract by Manaserjan (1994b) suggest that the spectra show little change from the 4th millennium before our era to Medieval times. Cattle and sheep are dominant and game is of little or no importance as a meat provider, although such animals as goitered gazelles were still present in Medieval times. The few faunal spectra from Azerbaijan, Iran, known to us and mentioned earlier in this paper, show comparable faunal spectra. It would furthermore seem that in these spectra sheep becomes also more important with time, most likely as a result of ecological degradation.

This preliminary report on the animal world around and on the Akhtamir site is dedicated to our Hungarian colleague Dr. Sandor Bökönyi, who did so much to further the study of archaeofaunas of the Near East. Written in 1994, it was to be inclu-

ded in the Festschrift for Dr. Bökönyi's 70th birthday. Meanwhile Dr. Bökönyi passed away and the Festschrift still has to go to print. For practical reasons we could no longer wait for its publication and the present paper is a somewhat updated version of our original effort. We hope that these preliminary results can be reconsidered in detail when better dates become available.

ACKNOWLEDGEMENTS

The authors thank Dr. Wim Van Neer (Musée Royale de l'Afrique Centrale, Tervuren) and Mr. Johan Deville, voluntary collaborator in the Ghent laboratory, for their help with the identification respectively of the fish and bird remains. Dr. H. Gasche, field director of the project, provided notes on the project and its first findings. Dr. V. Sittlivy (Liège) helped with data on the Palaeolithic archaeofauna of Armenia and translated some text fragments from Russian. The article presents research results of the Belgian programme on Interuniversity Poles of Attraction initiated by the Belgian State, Prime Minister's Office, Science Policy Programming. The scientific responsibility is assumed by its authors.

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