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DATA BASE FOR TEETH AND LIMB BONES
OF MODERN HEMIONES

par

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INTRODUCTION

The members of the genus *Equus* may be reasonably assigned to 6 groups : Horses, Hemiones, Asses, Mountain Zebras, Plains Zebras, and Grevy's Zebras (Groves and Willoughby 1981). We are concerned here with the group of Hemiones.

As their very name indicates, Hemiones are supposed to be « Half Asses ». Craniological characters (Eisenmann 1980) were found to agree with this statement : Hemiones appear intermediate between Horses and Asses, but closer to Asses than to Horses. When the purely morphological resemblances were checked by a tentative cladistic approach, Hemiones remained the sister group of Asses (Eisenmann 1979b). Chromosomal studies gave similar results (Ryder *et al.*, 1978) ; trees based on mitochondrial DNA cleavage maps failed to strongly discriminate the branching order of Asses and Hemiones (Matthew and Ryder 1986). Anyway, there seems to exist a consensus as to the close relationship between Asses and Hemiones (Oakenfull and Clegg 1998, fig. 5).

Groves and Mazak (1967) and Groves (1986) split Hemiones into two specific groups : 1. Kiangs, and 2. other Hemiones. Each group is subdivided in subspecies. There are three subspecies of *E. kiang* (*E. k. kiang* in Western Tibet, *E. k. polyodon* in Southern Tibet, and *E. k. holdereri* in Eastern Tibet), and six subspecies of *E. hemionus* (the Hemippe of Syria - *E. h. hemippus* -, the Onager of Persia - *E. h. onager* -, the Kulan of Turkmenistan - *E. h. kulan* -, the Khur of India - *E. khur* -, and the two Dziggetais of Mongolia - *E. h. hemionus* - of Kazakstan, northern Mongolia, Transbaikalia, and - *E. h. luteus* - of southern Mongolia and adjacent Kansu). Thus, there are nine geographical taxa. Some confusion exists about the Hemiones found near Kichik Ulan Ussu (near Barkul, Sinkiang) which are referred to *E. h. luteus* by Groves and Mazak (1967), but to *E. h. hemionus* by Groves (1986).

In his detailed monograph, Bannikov (1981) insists on the conspecificity of Kiangs and other Hemiones. He quotes G.E. Grumm-Grijmaïlo and Prjewalski, who were not able to say to what « species » (*E.*

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kiang or *E. hemionus*) belonged the animals they have seen North-West of Nan-Shan. Moreover, he distinguishes only eight geographical forms, which are not quite the same as those distinguished by the precedent authors : *E. h. hemionus* (Mongolia), *E. h. finschi* (Kazakstan, very poorly known), *E. h. onager* (Turkmenia, Uzbekistan, Eastern Transcaucasia, Iran (excluding the South-East), Afghanistan), *E. h. khur* (Western Pakistan and Western India, South-East of Iran), *E. h. hemippus* (Syria), *E. h. kiang* (Western Tibet), *E. h. holdereri* (Central and North-Eastern Tibet, Altyn-Tag, Kuku-Nor surroundings, Western Nan-Shan), and *E. h. polyodon* (Sikkim, the nearby Tibet, North-East of Nepal). Bannikov observes that *E. h. hemionus* are closer to *E. h. kiang* than to *E. h. onager*.

A recent detailed and beautiful monograph (G. and H. Denzau, 1999) reviews extant African Asses and Asian Hemiones and provides numerous photographs, illustrations, and maps. This work is based not only on bibliographical data, but also on personal studies in the wild, in particular of Onagers, Dziggetais, Kiangs, and Khurs. The authors distinguish nine forms : *E. hemionus hemionus* (the Dziggetai, including *E. hemionus luteus* as a synonym), the extinct *E. hemionus castaneus* (the Kazakhian Kulan, including *E. hemionus finschi*), *E. hemionus kulan*, *E. hemionus onager*, *E. hemionus khur*, the extinct *E. hemionus hemippus*, *E. kiang kiang* (Western Kiang), *E. kiang holdereri* (Eastern Kiang) and *E. kiang polyodon* (Southern Kiang). In their opinion, there is no written proof for Bannikov's assertion of an unclear boundary between Kiang and Dziggetai (G. and H. Denzau, 1999, p. 22). Although the horizontal gap between the two distributions is not very big, the different elevation and the extreme dry desert belt in between are possibly effective barriers between the two populations. It is interesting, however, to note that G. and H. Denzau observe that Kiangs are closer to Mongolian Dziggetais than to Indian Khurs (1999, p. 47).

The exact relationships between all these forms are still debatable. The access to the animals is difficult, some forms have completely disappeared, many are endangered and parked in reserves or zoos (G. and H. Denzau, 1999). The material collected in the wild is scanty, and the corresponding information is not altogether reliable and frequently imprecise. When osteological and biomolecular approaches are used in parallel as in the case of the collaboration (presently in progress) initiated by the European Endangered Species Program (Eisenmann and Shah 1996 ; Schreiber *et al.*, 1996), they provide not quite concordant results, possibly because they are not based on equivalent samples. Sticking to pure craniology, principal components analyses of the 160 available skulls (personal data) show that : -Eastern Kiangs (n = 9 specimens) are larger than Western (n = 5) and Southern (n = 3) ; - there is no difference between *E. hemionus* from Northern Mongolia (n = 3) and Southern Mongolia (n = 23) ; but , obviously , these samples are much too small. It is more interesting to remark that skulls of Kiangs (n = 35) do not differ much from skulls of Dziggetais (n = 29) except by a slightly larger size, and that the only skulls to segregate well from all the other belong to Khurs (n = 27).

Hemione taxa appear in our tables (Tables 1-28) and in figure 3 with codes based on an approximate biogeographic distribution : HS (Syria), HP (Persia), HT (Turkmenistan), HI (India), HM (Mongolia) (*i.e.* the initial of Hemione followed by the initial of the country) and K for Kiangs. Our schematic map of the geographical « historic » distribution of all Hemiones (fig. 1) is mostly based on the data gathered, analysed, and commented by Matschie (1911), Solomatin (1973), Bannikov (1981), and Denzau (1999) and localised on the Atlas of Stielers (1908). It may be of interest, because it points precisely the type localities, and the easternmost, northernmost and southernmost localities of the distribution during the past two centuries. It does not give precise westernmost points because it is yet unclear whether the fossil European *Equus hydruntinus* was a kind of Hemione or an altogether different taxon (Eisenmann and Mashkour, 1999). Localities corresponding to our sample are indicated in figure 2.

ORGANIZATION OF DATA

Each individual is defined by a code (see above) followed by a number. On the next two lines appear the codes for the collection and the catalogue numbers of these collections. On the next lines appear indications on the origin, the sex, and the age.

For instance, HS 1 is an Hemippe, bearing the number 1867.12.3.1 in the collections of the British Museum, it comes from Syria, it is a female, middle aged.

COLLECTIONS AND THEIR CODES

France : Muséum national d'Histoire naturelle, Paris, Laboratoire d'Anatomie Comparée (AC), Laboratoire des Mammifères et Oiseaux (MA). Muséum d'Histoire naturelle, Lyon (LY).

Germany : Zoologisches Museum der Humboldt Universität, Berlin (BL). Museum Koenig, Bonn (BO). Naturmuseum und Forschungsinstitut Senckenberg, Frankfurt (FR). Zoologisches Institut und zoologisches Museum, Hamburg (HA). Institut für Haustierkunde, Kiel (KI). Zoologische Sammlung des Bayerischen Staates, Munich (MU).

Great Britain : British Museum (Natural History), London.

India : material collected by Dr Nita Shah, studied at Dehra Dun (Dehra Dun).

Iran : Faculty of Sciences of the University of Tehran (FSUT).

Netherlands : Zoologisch Museum, Amsterdam (AM). Rijksmuseum van Natuurlijke Historie, Leiden (LD).

Russia : Zoological Museum of the Moscow University (MS). Zoological Institute, St Petersburg (LG).

Switzerland : Naturhistorisches Museum, Basel (BA). Muséum d'Histoire naturelle, Genève (GE).

Tchek Republic : National Museum (Natural History), Praha (PR).

United States of America : Field Museum of Natural History, Chicago (CH). Museum of Comparative Zoology, Harvard University, Cambridge (MCZ). American Museum of Natural History, New York (NY). Smithsonian Institution, Washington (WA). Peabody Museum, Yale (YA).

ORIGIN, SEX, AGE

When possible, a more or less precise locality of collection is given, either by its name (Badkhyz reserve) or by its geographical coordinates (36°N 55°E). A nickname (Ortiz) or studbook number of a Zoo animal, when known, is specified. Sex is noted when it is known. Ages are either given in years (when they are known or when they can be estimated in subadults), not specified for unknown middle-aged specimens, or specified as « Old » (according to the state of the dentition). Juvenile, subadult and very worn dentitions were not measured.

COMMENTS ON THE DATA AND SAMPLES

A cursorial look at the data tables suffices to show their shortcomings. Data may be lacking not only because some teeth or bones were missing, or damaged, or pathological, but also because the measurements were not taken ; it is the case of some proximal limb bones (for example in Hamburg collections) for which, due to lack of time, only the maximal lengths were measured. Also, during the thirty

years of data collecting, several new measurements were added ; the corresponding blanks could not always be filled.

However, the major problem concerns the samples themselves. In a general way, collections include more isolated skulls than complete skeletons, therefore data on limb bones are poor.

They are dramatically few for Khurs and Hemippes. In Khurs, they can possibly be augmented because the Khurs are extant. But in the case of the extinct Hemippes, our data base may only be augmented by the addition of the specimens preserved in Vienna (Austria) which we have not yet seen.

Onagers and Kulans exemplify other problems. Nearly all Kulans come from the Badkhyz reserve in Turkmenistan : they have lived in the wild, the skeletons are few, and the restricted geographic origin may possibly cause an artificial homogenization (it is the same for the Khurs which nearly all come from the Kutch reserve). On the other hand, nearly all Onagers are zoo-bred specimens : the skeletons are relatively numerous, but both skulls and limb bones suffer from age and zoo conditions ; the variation may appear larger than it was in a normal population. Denzau (1999, p. 108) remarks that it has never been clarified whether the Onagers of Southwest Iran differ from those further Northeast, and if so, the larger variation of Onager samples might also be due to this reason.

For Dziggetais and Kiangs, yet other difficulties arise. Apart from the difficulty of tracing their exact origin, the samples are not balanced : we have no skeletons at all of « northern Mongolia-Transbaikalia » Dziggetais or of « southern » Kiangs.

COMMENTS ON THE MEASUREMENTS

Measurements are always in millimetres (Plates 1-4)

TEETH

Teeth measurements are neither precise nor utterly reliable, in part because of individual variations mostly (but not only) due to wear. Various methods have been proposed to neutralize the effect of wear but neither is satisfactory. In particular, measurements systematically taken at 1 or 2 cm from the roots do not describe the same stage of wear for all equids : in moderately hypsodont form, the crown may still function normally (with a more or less normal enamel pattern) while in animals with very high crowns no enamel at all is left at that level, and one may wonder whether the teeth could be of any use. In practice, we recommend the following ways to deal with the problem : not to take in account very worn specimens ; when possible, section and/or measure at mid-crown ; when teeth are included in maxilla or mandibles, the inevitable occlusal measurements should be « adapted ». For example, for upper cheek teeth, the relation between length of the protocone and occlusal size is better expressed not by the classic protocone index (protocone length versus occlusal length) but by relating the protocone length to the mean of occlusal length and breadth. This is possible, because there is a relatively good compensation between the two values during wear (young teeth tend to be long and narrow, worn teeth tend to be short and broad). This cannot be done for lower cheek teeth, because the compensation between length and breadth is not as simple, and because the length of the double knot and of the postflexid vary much more than the protocone length. In that case, we recommend even more caution in the choice of data : for lower cheek teeth, measurements may only be meaningful if they concern middle-worn specimens.

LIMB BONES

The system of measurements presented here has evolved since the previous proposals (Eisenmann 1979a, 1986 ; Eisenmann *et al.* 1988). Accordingly, we give another set of illustrations for each limb bone. Even though complete limb bones are rare in an archaeozoological context, total lengths are interesting to evaluate segment proportions. In relation to that point, we want to stress the importance of distinguishing anterior and posterior first phalanges : various equids have not the same ratios between these two bones. Actually, first phalanges are a good example of the fact that imprecise and arduous measurements may still be of value : supratuberosital and infratuberosital lengths are difficult to measure, but their relation is discriminant.

CONCLUSIONS

Figure 3 is a ratio diagram (Simpson, 1941) comparing the average maximal lengths of humerus (H), femur (F), radius (R), tibia (T) third metacarpal (MC), third metatarsal (MT), first anterior phalanx (PhI A), first posterior phalanx (PhI P), to the average maximal breadth of the third anterior phalanx (PhIII A 4) and to the average protocone lengths and occlusal sizes of upper P3P4 and M1M2. Note, that we use the average mean of occlusal length and breadth.

Figure 3 shows that the main differences between Hemiones are size-related. All variables belonging to Kiangs, Dziggetais, and Kulans are larger than the corresponding variables of Onagers – our reference zero line ; all the variables corresponding to the Hemippes are smaller ; Khurs are intermediate. Hemippes are so much smaller than the other subspecies that there would be room for another subspecies in between. It is interesting to note that the fossil (black square in fig. 2) *E. hemionus binagadensis* (Eisenmann and Mashkour, 1999) fills in this size gap (fig. 3 : BNG).

The relative size of different bones and teeth are not altogether identical for all Hemiones. Dziggetais exhibit relatively short proximal segments (Humerus, Femur, Radius, and Tibia) in comparison to distal (MC III, MT III, PhI A and P). They appear thus more « cursorial » than the other Hemiones.

The next obvious but perhaps not significant difference is in the third phalanges : they are relatively wide in Kiangs and Kulans, relatively narrow in Dziggetais, Khurs, and Hemippes (and in *E. hemionus binagadensis*). Relatively wide third phalanges may be an adaptation to soft ground (snow or sand) : snow and/or sand are indeed part of the environment for Kiangs (Groves, 1974, 91-92) and Kulans (Bannikov, 1981, 36, 41-42). But Bannikov (1981, 40) states that the biotopes are similar for Kulans and Dziggetais ; and G. and H. Denzau (1999, 45) illustrate a very impressive Dziggetai sand track. Accordingly, one would rather expect Dziggetais to have as wide third phalanges as Kiangs and Kulans. Our samples are, however, very small.

Figure 3 shows also that the average dimensions of the upper cheek teeth (occlusal size and protocone length) are closer than the average dimensions of the limb bones, with the exception of Hemippes.

Eventually, this data base may prove useful to compare not only different taxa inside the group of Hemiones, but also Hemiones in general to other equids, in particular to Horses, and true Asses.

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TABLE CAPTIONS

- Table 1-7** : Upper and Lower Cheek Teeth.
Table 8-10 : Humerus and Radius.
Table 11-14 : Metapodials.
Table 15-18 : First Anterior and Posterior Phalanges.
Table 19-21 : Second and Third Anterior and Posterior Phalanges.
Table 22-24 : Femur and Tibia.
Table 25 : Femur, Tibia, Talus and Calcaneum.
Table 26-28 : Talus and Calcaneum.

FIGURE CAPTIONS

- Figure 1** : Schematic map of the historic distribution of Hemiones. Type localities : A-Q. Extreme historic localities : 1-25.
Figure 2 : Provenance for data presented in Tables 1-28. Asterisks : modern Hemiones. Black square : the Middle Pleistocene *Equus hemionus binagadensis*.
Figure 3 : Ratio diagram comparing sizes of limb bones and upper cheek teeth in modern and fossil Hemiones. Codes and explanation in the text.

PLATE CAPTIONS

- Plate 1** : Lower and Upper Cheek Teeth, Humerus and Radius.
Plate 2 : Femur and Tibia.
Plate 3 : Third Metapodials, Calcaneum and Talus.
Plate 4 : First, second and third Phalanges.

Figure 1- Schematic map of the historic distribution of Hemionos.

Type localities : A-Q.

Extreme historic localities : 1-25.

- 1 Nonni river (Dauren), 48°124° (Solomatin 1973, Stielers, p. 58)
- 2 Argun river, N of Dalai nor, 50°118° (Matschie 1911, Stielers, p. 58)
- 3 Minussinsk, 54°92° (Solomatin 1973, Stielers, p. 57)
- 4 Kulundin steppe, 53°80° (Solomatin 1973, Stielers, p. 57)
- 5 Barabin steppe, 55°74° (Solomatin 1973, Stielers, p. 57)
- 6 Koktschetau mountains, 53°70° (Solomatin 1973, Stielers, p. 58)
- 7 Turgai province, 50°62° (Bannikov 1981, Stielers, p. 58)
- 8 Left bank of Ural river, 47-51°53° (Bannikov 1981, Stielers, p. 47-49)
- 9 Ust Urut, 43°56° (Bannikov 1981, Stielers, p. 49)
- 10 N of Ararat, 40°44° (Bannikov 1981, Stielers, p. 49)
- 11 Middle Arax river, 39°46° (Bannikov 1981, Stielers, p. 49)
- 12 Talsch, 38°48'30" (Bannikov 1981, Stielers, p. 49)
- 13 Kopet Dag mountains, 39°56° (Matschie 1911, Stielers, p. 61)
- 14 "Irak Arabi", 32°46° (Matschie 1911, Stielers, p. 61)
- 15 N of Kohrud mountains, 33°51° (Matschie 1911, Stielers, p. 61)
- 16 Coasts of Oman and Persian Gulf (Matschie 1911)
- 17 Hilمند = Helmand province, 31°64° (Matschie 1911, Stielers, p. 61)
- 18 Kashgar, 39°76° (Solomatin 1973, Stielers, p. 62)
- 19 W Tibet, 33°77° (Denzau 1999, p. 50)
- 20 SW Tibet, 30°85° (Denzau 1999, p. 50)
- 21 S Tibet, 28°90° (Denzau 1999, p. 50)
- 22 Central Tibet, 33°90° (Denzau 1999, p. 50)
- 23 42°99° (Denzau 1999, p. 46)
- 24 Gurbun Saikhan, south of, 43°30'105° (Andrews, 1933)
- 25 SE Mongolia, 45°114° (Bannikov, 1981)

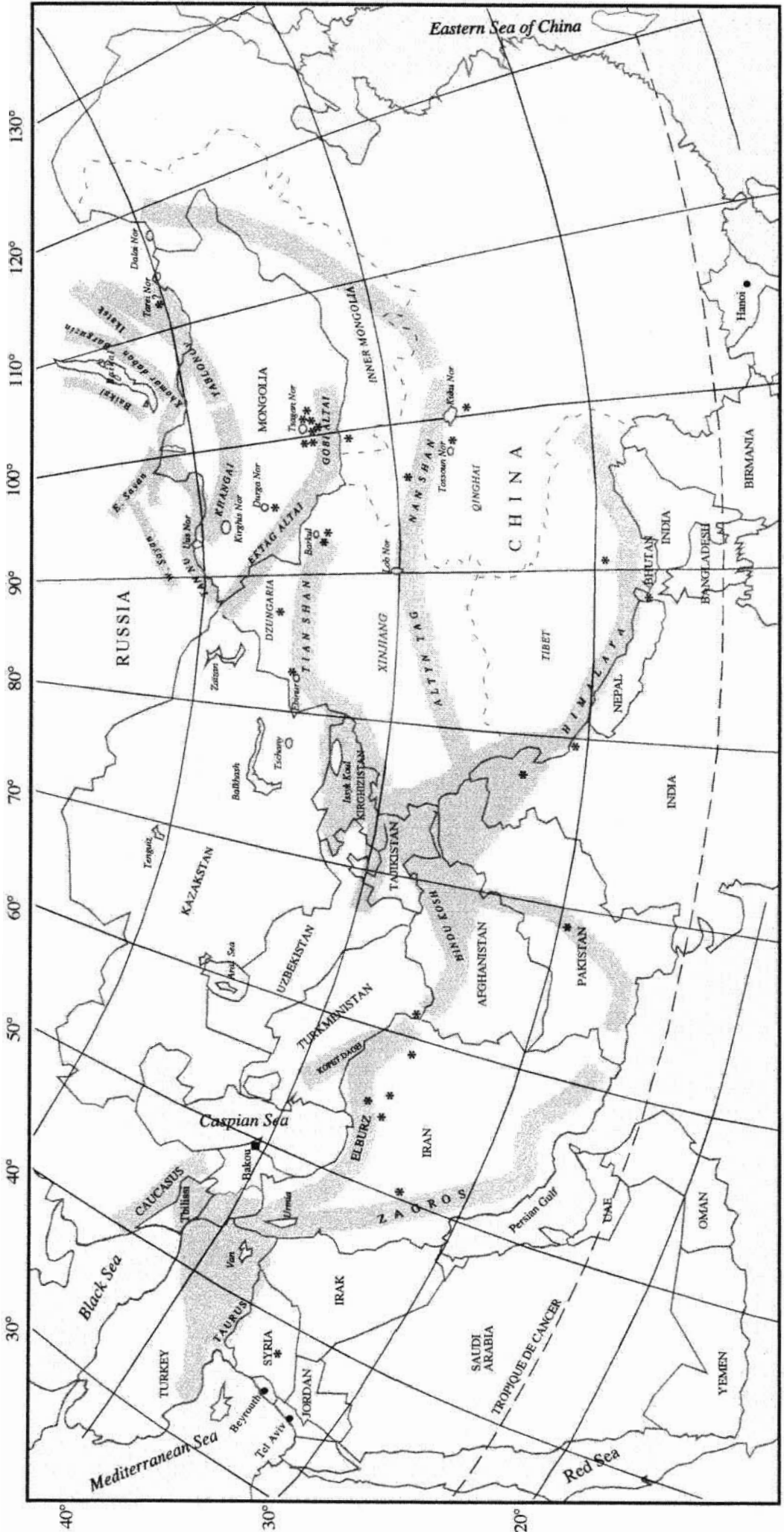
Figure 2- Provenance for data presented in Tables 1-28.

Asterisks : modern Hemionus.

Black square : the Middle Pleistocene *Equus hemionus bingadensis*.

Type localities : A-Q.

- A *E. hemionus hemionus*, Tarei nor, 50°115' (Matschie 1911, Stielers, p. 58)
- B *E. hemionus castaneus*, Kirghiz nor = Khyargas = Hyargas, 49°93' (Matschie 1911, Stielers, p. 57)
- C *E. hemionus finschii*, NE of Zaissan = Saissan nor, 48°84' (Bannikov 1981, Stielers, p. 57)
- D *E. hemionus luteus*, Suring gol, between Chami and Su-tschou, 40°30'96° (Matschie 1911, Stielers, p. 62)
- E *E. kiang tafeli*, NE of Tossun nor, 37°97' (Bannikov, 1981, Stielers, p. 64)
- F *E. kiang holdereri*, SW of Koko nor, 37°100' (Matschie 1911, Stielers, p. 62)
- G *E. hemionus bedfordi*, Kobdo province = Hovd, 49°93' (Matschie 1911, Stielers, p. 57)
- H *E. kiang polyodon*, N Sikkim, S of Himalaya, 27°89' (Bannikov 1981, Stielers, p. 63)
- I *E. kiang kiang*, Ladakh province, 33°78' (Matschie 1911, Stielers, p. 62)
- J *E. hemionus khur*, Little Ran of Kutch, 23°71' (Matschie 1911, Stielers, p. 63)
- K *E. hemionus blandfordi*, Sham Plains, 29°20'69°40' (Pocock, 1947)
- L *E. hemionus hamar*, Fars province, 29°53' (Matschie 1911, Stielers, p. 61)
- M *E. hemionus babrum*, Yazd = Jesd, 32°55' (Matschie 1911, Stielers, p. 61)
- N *E. hemionus kulan*, Badkhyz, 35°50'61°40' (Groves and Mazak, 1967)
- O *E. hemionus onager*, Qazvin area = Kaswin, 36°50' (Matschie 1911, Stielers, p. 61)
- P *E. hemionus anatolicus*, Anatolia (Haltenorth und Trense, 1956)
- Q *E. hemionus hemippus*, deserts between Palmyre and Bagdad, 34°37' (Matschie 1911, Stielers, p. 52-61).



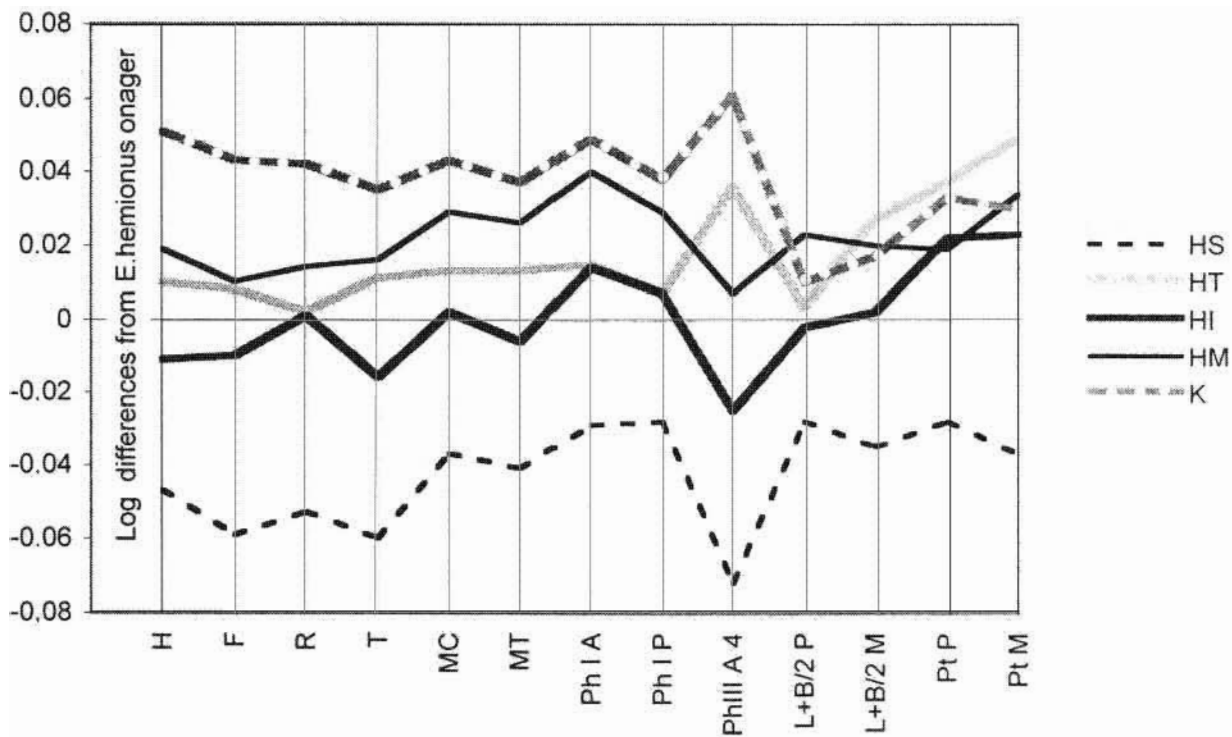
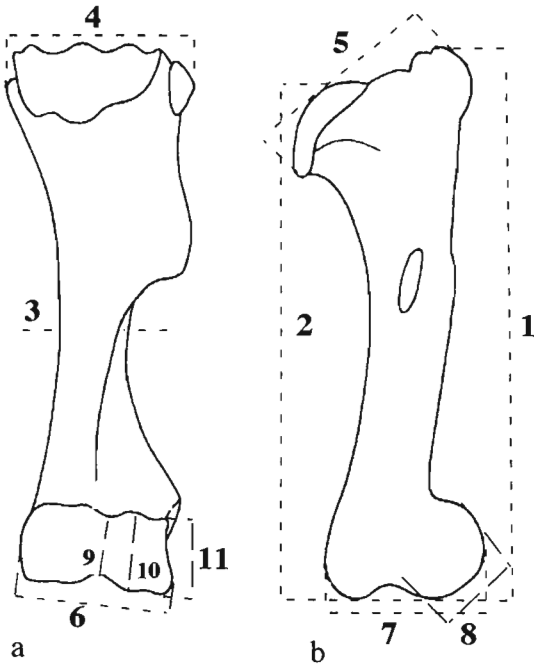


Figure 3- Ratio diagram comparing sizes of limb bones and upper cheek teeth in modern and fossil Hemionus. Codes and explanation in the text.

HUMERUS



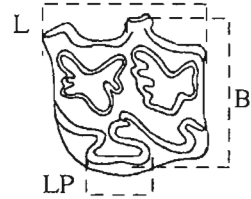
1. Greatest length
2. Posterior length
3. Smallest breadth
4. Proximal breadth
5. Proximal depth
6. Distal articular breadth
7. Distal medial depth
8. Medial height of trochlea
9. Smallest height of trochlea
10. Condylar height
11. Lateral condylar height

L. Length
 B. Breadth
 LP. Length of the protocone
 LDK. Length of the double knot
 LPF. Length of the postflexid

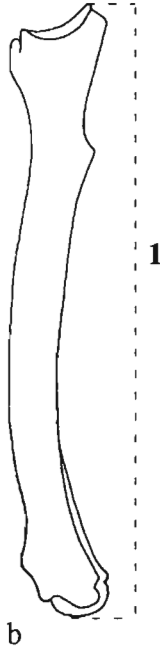
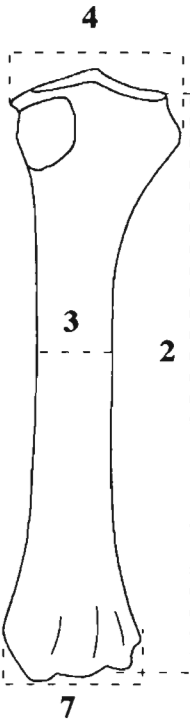
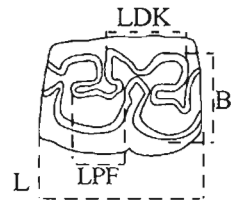
a- anterior view

b- medial view

UPPER CHEEK TEETH

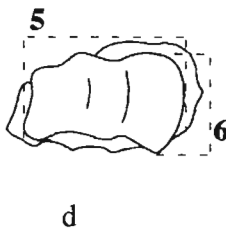
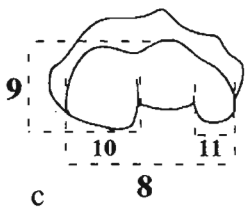


LOWER CHEEK TEETH



RADIUS

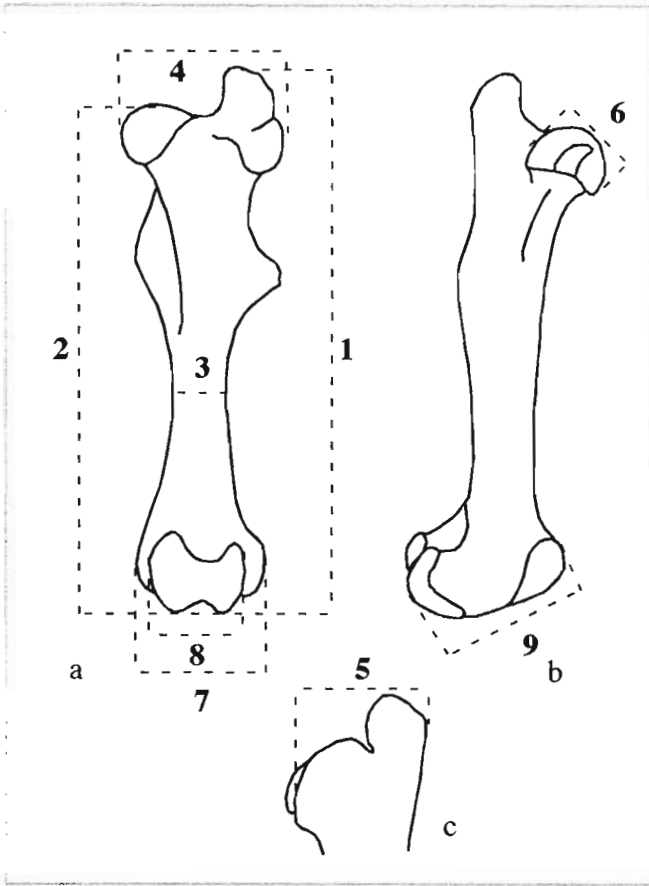
1. Greatest length
2. Lateral length
3. Smallest breadth
4. Proximal breadth
5. Proximal articular breadth
6. Proximal articular depth
7. Distal breadth
8. Distal articular breadth
9. Greatest distal articular depth
10. Breadth of radial condyle
11. Breadth of ulnar condyle



a- dorsal view
 c- distal view

b- lateral view
 d- proximal view

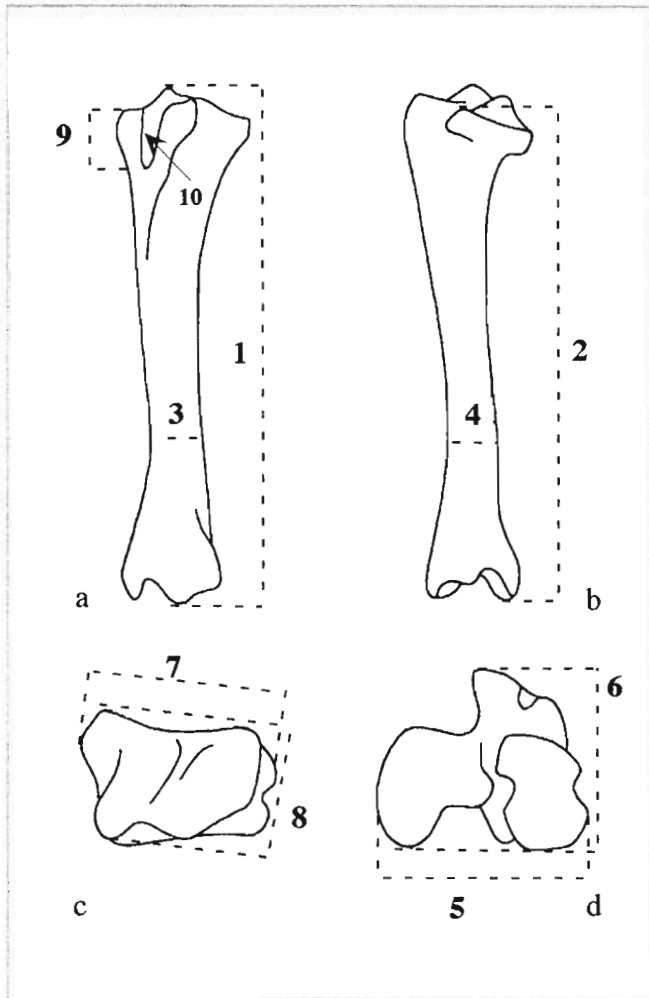
Plate 1 - Lower and Upper Cheek Teeth, Humerus and Radius



FEMUR

1. Greatest length
2. Medial length
3. Smallest breadth
4. Proximal breadth
5. Proximal depth
6. Depth of the caput femoris
7. Distal breadth
8. Distal articular breadth
9. Distal medial depth

a- anterior view
 b- medial view
 c- proximal end, caudal view

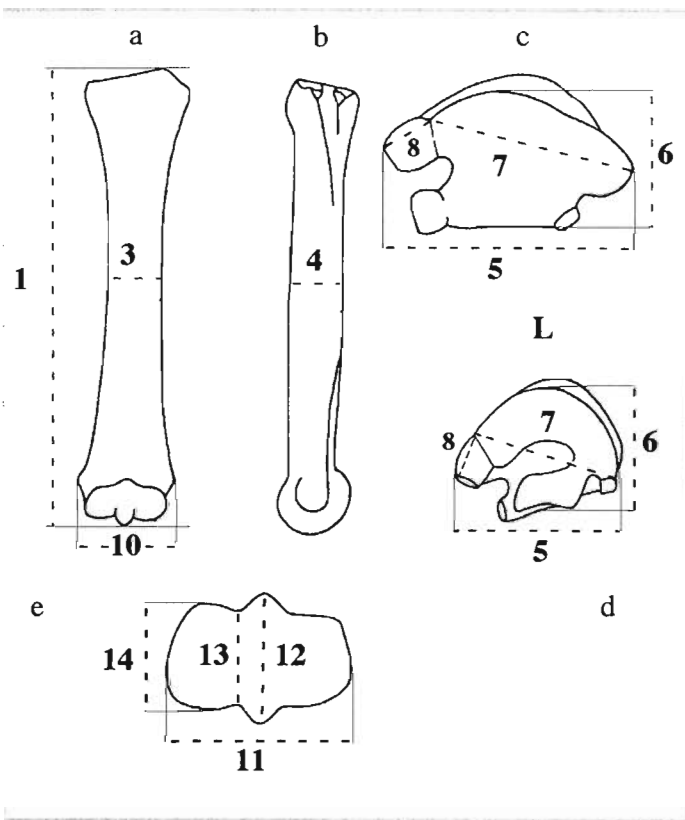


TIBIA

1. Greatest length
2. Lateral length
3. Smallest breadth
4. Smallest depth
5. Proximal breadth
6. Proximal depth
7. Distal breadth
8. Distal depth
9. Length of fossa digitalis
10. Breadth of fossa digitalis

a- dorsal view
 b- lateral view
 c- distal view
 d- proximal view

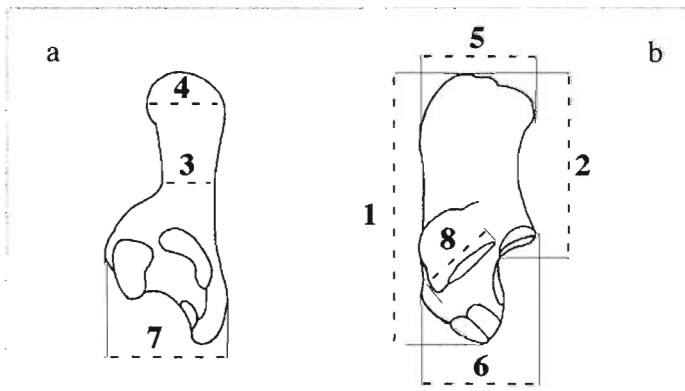
Plate 2 - Femur and Tibia



THIRD METAPODIALS

1. Greatest length
3. Breadth at midshaft
4. Depth at midshaft
5. Proximal breadth
6. Proximal articular depth
7. Diameter of articular facet for Os carpale and tarsale III
8. Diameter of articular facet for Os tarsale IV
10. Distal supra-articular breadth
11. Distal articular breadth
12. Depth of sagittal keel
13. Smallest depth of medial condyle
14. Greatest depth of medial condyle

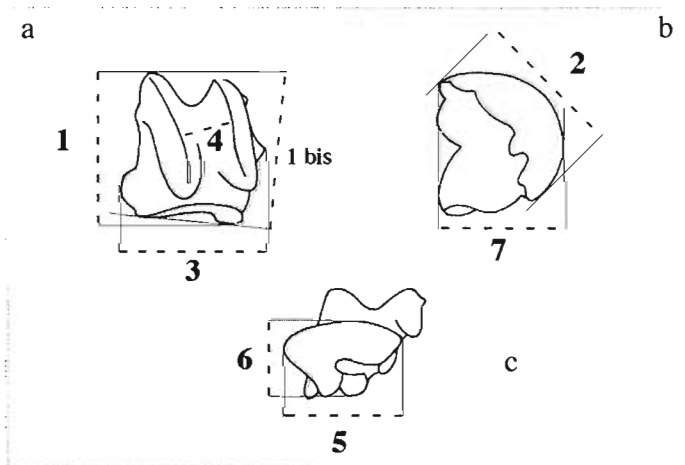
a- dorsal view
 b- lateral view
 c- metacarpal proximal view
 d- metatarsal proximal view
 e- distal view



CALCANEUM

1. Greatest length
2. Length of proximal part
3. Smallest breadth
4. Proximal breadth
5. Proximal depth
6. Distal depth
7. Greatest breadth
8. Diameter of articular facet

a- dorsal view
 b- medial view

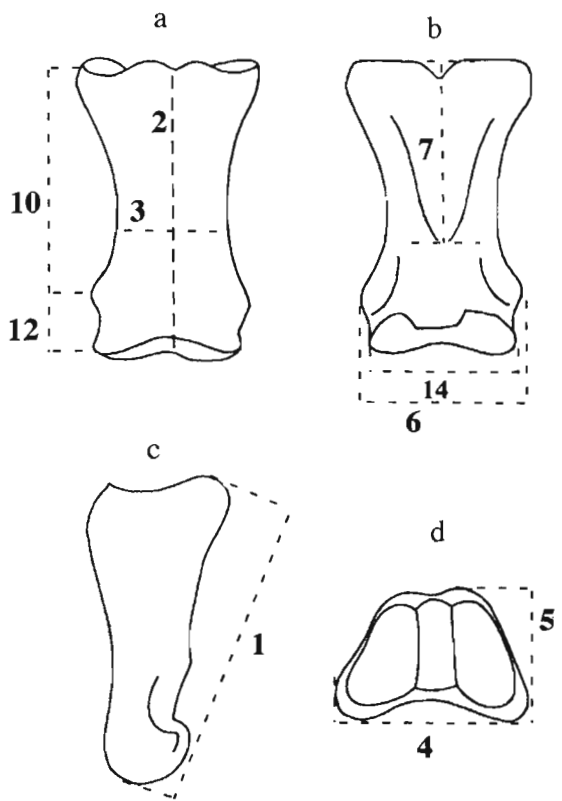


TALUS

1. Greatest length, orthogonal
- 1 bis. Greatest length, oblique
2. Medial length of the trochlea
3. Greatest breadth
4. Trochlear breadth
5. Distal articular breadth
6. Distal articular depth
7. Medial depth

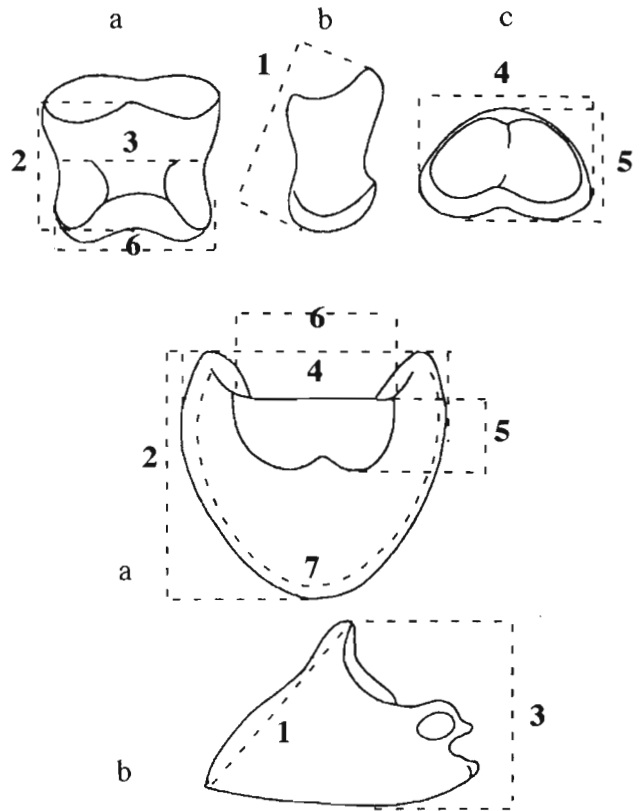
a- dorsal view
 b- medial view
 c- distal view

Plate 3 - Third Metapodials , Calcaneum and Talus



FIRST PHALANX

- a- dorsal view b- plantar view
 c- lateral view d- proximal view



SECOND PHALANGES

- a- dorsal view b- lateral view c- proximal view

THIRD PHALANGES

- a- dorsoproximal view
 b- side view

PH I & II

1. Greatest length
2. Anterior length
3. Smallest breadth
4. Proximal breadth
5. Proximal depth
6. Distal supra-articular breadth
7. Greatest length of trigonum phalangis
10. Medial supra-tuberosital length
12. Medial infra-tuberosital length
14. Distal articular breadth

PH II

6. Distal articular breadth

PH III

1. Anterior length
2. Greatest anteroposterior diameter
3. Height
4. Greatest breadth
5. Articular anteroposterior diameter
6. Articular breadth
7. Distal circumference

Codes 1 to 5 identical for first and second phalanges

Plate 4 - First, second and third Phalanges

Table 2- Upper and lower cheek teeth

Code	HP 26	HP 27	HP 32	HP 33	HP 35	HP 36	HP 38	HP 39	HP 40	HP 41	HP 48	HP 49	HP 51
Collection	GE	MS	HA	HA	BO	BO	FSUT	WA	WA	WA	MU	AC	AC
No Cat	876.21	2307	8281	8304	89482	77927	10	327091	541427	521103	1965,207	1980.67	1983.72
Origin/Std	Iran	Zoo	Std 120	Std 264?	Std 223	Std 100	36°N56°E	Iran	Zoo	Zoo	Ortiz	Std 56	Std 190
Sex	F	M	M	M	F	F	F	F	F	F	M	F	F
Age	Old	Old	Old	Old	Old	Old	Old	Old	4	4	Old	Old	F
U	P2	L	36.5	34	35.3	37.8	35.3	37.8	36.4	34.5	35	36	35.8
P	LP	B	6	8	10.5	9	5.8	8	9.5	11.4	7	7	8
P	B	L	25	21	26	24.5	26.6	24.6	24.9	24.1	25	22	25
E	L	L	26	25	27	26	29.7	28.9	28.7	27.1	28	25	28
R	LP	LP	10.1	10	13.1	11.7	11.5	12	12.8	11.1	11.5	10	11
	B	B	28	23.5	28	25.2	28.1	26	27.1	25.6	25.5	25	28
C	L	L	25.2	23.5	24	24	28.8	29	28.6	27	28	24	26
H	LP	LP	12	10.5	15	13.3	13	14	11.8	11	12	13	12
E	B	B	28	24.5	30	25	27.5	29.4	26.2	26	26	28	30
E	L	L	21	23	21	22.7	22	23.8	25.2	24.2	25	19.2	24
K	LP	LP	10	9	14	13	12.5	11.1	10.8	12	12.3	10	13
T	B	L	24.5	23	26.7	24	25	24	27	26.6	24.5	22	27
E	L	L	22.6	22	22	22	24.2	25.2	25.9	22.8	25	20	25
E	LP	LP	12.5	10.7	14.7	14.5	13	12.1	14.1	10.2	12.5	11.6	12.1
T	B	L	25.3	22.5	27	24.5	25	27.4	25.6	25.1	23.5	24	27
H	LP	LP	12.2	11.1	15.7	13	13	14.3	11.5	16.9	7.8	12	12.8
	B	L	21	21	22.7	21	22	23.6	21.2	21.3	17	20	23
L	L	L	26	25					31.5	31.3	27.8	30	29
O	LPF	LPF	12	11.5					13.7	14.7	14.8	14	11
W	LDK	LDK	12.5	11					14.7	12.3	12.6	13.5	14
E	B	L	14	14.5					16.1	16.6	15.1	14	16
R	L	L	25	24					27.8	26.2	26.5	26	26.5
	LPF	LPF	11.5	11.5					17	18.9	14.5	11.5	7.2
C	LDK	LDK	17	17					13	16.1	16	17	18
H	B	L	17	16					18.3	18.5	17.5	16	17
E	L	L	24.5	25					28.2	27	24.6	26	24.5
E	LPF	LPF	10	11					11.1	11.2	12.5	11	6
K	LDK	LDK	17	16					16.5	13.8	14.8	15	17.7
	B	L	19	17					18.8	17.8	18.2	16.5	16
T	L	L	21	23					25.4	23.5	23.1	23	18.5
E	LPF	LPF	7	7					8	9.6	9.3	10	7.5
E	LDK	LDK	13	15.6					14.9	12.4	12.9	12.5	15
T	B	L	15.2	15					17.7	16.4	16.7	16	15
H	L	L	22	22					27	23.4	23	24.5	21
	LPF	LPF	9.5	8.5					10	8.3	8.3	10	9
	LDK	LDK	13.2	12.8					12.8	12.4	12.1	11.7	14
	B	L	15	14					16	15.5	15.5	14.5	15
M3	L	L	30	27.5					31.5	29.6	28.3	28	30.5
	LPF	LPF		9					9.2	8.6	9.2		
	LDK	LDK	12.5	12.7					12.8	10.4	11.3	11.7	13.2
	B	L	14	14					13.1	12.5	13.1	13	14

Table 3- Upper and lower cheek teeth

Code	HT 16	HT 17	HT 18	HT 20	HT 22	HT 23	HT 25	HT 26	HT 27	HT 28	HT 29	HT 33	HT 35	HT 37
Collection	MS	MS	MS	MS	MS	LG	LG	LG	LG	LG	LG	PR	PR	PR
No Cat	74790	74791	74802	74793	74799	32047	32277	32279	49	47	50	46606	10699	46495
Origm/Std	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Zoo	Zoo	Zoo
Sex	M	F	M	M	M	M	F	M	M	F	F	F	F	M
Age	Old	<4	Old			Old	Old	Old	<4					<4
U	P2	L	32	35	32	37	36	35	33,5	33,5	33,1	32	34	34
P	LP	L	9,5	7	8	8	7	8	8	9	8	7	8	8
P	B	22,2	24	24	23	25	25	25	24	25	25	23	24	24
E	L	23	28	24	27	25	26,7	27	25	26	26	24,7	25	27
R	LP	10,5	14	11	11	10	12	11	9	14	13,8	11,5	9	11,3
	B	26	25	26	26	26	26	26	24	25	26,1	26	25	25,5
C	P4	L	24	26,5	25	27	25	26	27	23	25	26	24,5	24,5
H	LP	11	14	12	12,2	11,5	13,5	13,7	10	14	14,5	12,5	10	12
E	B	26	24	26	26	25,8	25,5	25	25	27	26	26	25,1	26
E	M1	L	22	25	21	22,1	22,5	22,6	22	22,7	23	22,1	22	22
K	LP	11	14	11,2	11	13	12	11	10	12,2	12,3	12	10	12
	B	23,5	23,5	25	24				23	25,5	25,8	24	23	24
T	M2	L	23	26	21,5	24	22,7	23	23	21	23,5	23,1	24	22
E	LP	11	15	11,8	11,7	13,5	13	12	12,7	13,1	12,5	13,1	11	12,5
E	B	24	24	23,1	24	23,5	23,5	22	22	26,5	24	24	23,7	23
T	L	25		22,5	23	24	24,5	22,5	24	24	24	24	27	27
H	LP	12		11,7	12	13	15	11	14		13,9	11,8	13	
	B	22	18	20	19	19	19	20	22		21	20	21	
L	P2	L	28	30	28		30	31,5	30	27,4	26	30	28	26,5
O	LPF	11,7	15,8	12,8		13	15	15	14,5	14	14,5	13	12	13
W	LDK	15,5	15	14		13,5	15	13	12	12	13	13,8	14,5	13
E	B	14	14	14		14	15	13	14	14	15	15	13,5	13
R	L	24	27	25		27	27	27,2	25	23	28,5	26	24,5	25
	LPF	9	15	13,2		14	14,7	15	11	12,7	15,2	13	14	12,2
C	LDK	17	18	16,2		17,5	17	19	17	17	18,1	17,5	18	16,5
H	B	16	15	17		15	16,5	16	15,5	15	16	16	16	16,7
E	L	25	29	24,5		26	26,5	26,3	25	24	27	25	23,5	25
E	LPF	10	15,8	11		12	12	14	10	11,7	14,7	11	12	10,5
K	LDK	17	17	16,5		18	17	17,5	17	15,5	16,9	15	17	15
	B	17	15	17		16	16,5	15	16	15	16	17	16,7	16
T	L	22	24,5	22		22	23	23		21,2	24	22,5	23	22,3
E	LPF	7	10,2	8		10,2	8,8	9		8,7	10,3	6,8	9,2	10
E	LDK	14	14	12		14	14	15		12,8	14	12,3	15	13,3
T	B	14,5	12	14,1		14	14	14		15	14,5	14,7	15	15
H	L	22,5	24	22		23	22,5	23,5		24	24,5	22,7	22,8	23,5
	LPF	8,7	11	9		10	10	10		12	11	8,5	9,2	11
	LDK	14	13	12		13	12	13,1		13	12,5	12,3	13,5	13,5
	B	14	12,1	14		12,7	14	14		14	14	15	15	12,5
M3	L	27		25		28	28	27		29,1		27,5	27	28
	LPF	10		9,5		10,5							10	10
	LDK	12,5		12		12,5	12	13,1		12		11,5	13	12,7
	B	12,5	10	12		11	12	13		12,7		12,9	14	12

HT 1	HT 2	HT 3	HT 4	HT 6
AC	BM 1846	BM 1891	BM 1940	BM 1946
A 549	1.10.5	5.13.1	3.58	5.92
Kutch	Kutch	Beluch.	Kutch	Kutch
M	M	F	M	M
	Old			
38			31	34,5
8,5			7	8,4
26			24	24,5
26			24,5	24,5
13			9	10
27			25,8	25,8
25			24	24,5
13,2			11,3	11,1
27			24,4	26,2
24,5			21,5	22,5
12,8			10,3	10,1
22			22,5	24,3
22			22	21,8
13			10	11
22			22,3	22,2
22			22	22,3
11,7			9,5	10,3
19			19	18,5
	28	26,5	26,5	27,5
	13	14	12,5	13,2
	14,5	12,5	14,3	13,4
	25	26,5	23	24,5
	13,5	14,5	11,5	12,6
	15,5	14	15,5	15,7
	24	26,5	22,5	23,2
	10,5	13,5	10	10,8
	14,5	13,5	16,5	15
	22	23,5	20,5	20,5
	9,2	10	7,5	9,5
	13	12	14,3	13,5
	22,5	24	21,5	22,5
	9,5	11,5	8	10,3
	11,5	11,5	13,5	13
	29,5	27	26	29,5
	11	11	12	12,4

Table 4- Upper and lower cheek teeth

Code	HI 7	HI 8	HI 12	HI 14	HI 15	HI 16	HI 18	HI 19	HI 21	HI 22	HI 23	HI 25	HI 26	HI 31	HI 32	HI 34	HI 35
Collection	BM 1946	BM 1946	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun
No Cat	593	594	D(4.90)14	M 26	P3(18.5)	P40	Baja 23	D2-5	P27	D38	SF 28	P1-11	G 15	P37	P34	AM 35	D10
Origin/Std	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch	Kutch
Sex	F	F	F	F	M	M	M	M	M	M	M	F	F	Kutch	Kutch	Kutch	Kutch
Age			Old	Old		Old					Old	Old	Old	Old			Old
U	P2	L	33	33	37	36.5	34	34	37	36	33	38					
P	LP	L	8.4	10	11.7	8.3	9	9	9	10.1	8	10		9	8.5	8.5	10
P	B	L	22.3	24.2	24	25	23.5	23.5	24	25.6	23.5	24		23.5	23.5	23.5	22
E	L	L	25	25.5	26.5	26.7	27	25	26.5	26.1	25	27		26.1	25.5	26	27
R	LP	L	11	12	14.5	10	12.6	13	12	12.3	9.5	13		12.2	11.2	11.2	11
	B	L	24.2	26	26	26.3	26	25	25.5	26	25.2	27		24	26	25	23
C	L	L	24	25	27	26.3	26	24	26.7	27	24	25.5		25	25.5	25	25.5
H	LP	L	11.2	14	15	11.2	13	12.7	13.1	15	9.7	14		13.5	12	14	12
E	B	L	24.2	25.4	25.5	24	24	25	26	26	26	27.7		26	25.3	25.3	24
E	L	L	22	22	22.8	22	22.7	22	24	23	23	24		22.8	23	22.8	23
K	LP	L	10	12	14	10.7	12	12.8	11	12.7	10.2	13		13	10	11	10
	B	L	22.8	23.5	25	23	23	24	23	26	25.2	25		24	24	24	22
T	L	L	21	22.5	23.5	23.7	23.3	22.6	24.5	23.5	23	23		23	22.5	23	22
E	LP	L	10	11.5	14	11.1	13	12.7	12.8	14	10.7	13		11	11	12.8	22
E	B	L	21	23	23.8	24	22.5	23.5	23	24	24	24		23	23	23	22
T	L	L	24	23.5	23.5	24	22	24	25.5	23	24	24		24	23	23.5	24
H	LP	L	10.7	11	12	10.1	11	12	13	13	10	13		12.2	11.8	12.8	11.3
	B	L	19.2	18.5	18	21	17	17	18	18	20.3	21.5		18	18	19	20.5
L	L	L	27.1	28.5	31			29	29			29		29			30
O	LPF	L	12.3	15	17			16.2	14			14		14			14
W	LDK	L		15.6	18			15.5	14.5			15		15			15
E	B	L	14.1	15	15.3				14			15.5		13.5			14.1
R	L	L	24.6	25.8	28			27	26			25.5		26			26
	LPF	L	12	14.7	14			14	13.7			12.8		14			12.8
	LDK	L			20			19	17			17		16			17
C	B	L	15.2	15.8	16.5			17	16.1			16.5		16			17.2
H	L	L	24.3	25	27			26	25			25		24			25
E	B	L	10	12.3	9			13	13.7			12		14			12
E	LPF	L			18			16	16.5			16		15			16.5
K	B	L	15.7	15.7	16			15.5	17			16		15.5			16.8
	L	L	21.5	23	24.5			25	23			22		22.5			23
T	LPF	L	8.5	9.8	10.7			11	11.8			8.5		9.5			9
E	LDK	L			13			14.1	14.5			14		13.1			14
E	B	L	14.7	15.1	15			15	16			15		15			16
T	L	L	21.3	23	24			25	22			23		22			22.7
H	LPF	L	9.5	10	12			11.1	12			10		11			11.5
	LDK	L			13			14	14			14		13			13
	B	L	12.8	14	13.5			15	14			14		13.2			14
M3	L	L	26	25.5	26.5			27	30			28		30			28
	LPF	L															
	LDK	L			12.2			11	13			12.2		11.8			11.8
	B	L	13.2	12	12			12	13.5			12		13			12

Table 5- Upper and lower cheek teeth

Code	HI 44	HI 45	HI 47	HI 48	HI 49
Collection	DehraDun	DehraDun	DehraDun	DehraDun	DehraDun
No Cat			P 2	D 19	W 1.12
Origin/Std	Kutch	Kutch	Kutch	Kutch	Kutch
Sex	M	F	M	M	M
Age	Old	Old	Old		Old
U P2	L 35	32			
P P	LP 9.5	9			
P P	B 23	23.5			
E P3	L 26.2	24.5			
R	LP 12	11			
C	B 27	26			
H E	L 25	24			
E E	LP 12.7	12			
K	B 27	26			
T	L 22.5	22			
E	LP 10	11.1			
E	B 25	24			
T	L 23	23			
E	LP 11	12			
E	B 24.2	22.5			
T	L 25.5	22.7			
H	LP 12	12.2			
L	B 19	20.7			
O	L 28	25	27	27	27
W	LPF 13	11	13.3	14	12
E	LDK 15	15.2	14	14	14.5
R	B 15	14	13	14	15.5
C	L 26.5	25	24.5	24	26
H	LPF 12	10	13.7	13	12.8
E	LDK 17	16.7	17	15.5	17.9
E	B 17	16.2		17.5	16.7
K	L 24	23	25	25	
T	LPF 11	10	13	13	
E	LDK 16	16	15	14	
E	B 16	16	16	14.5	
H	L 23.9	21	20.7	23.5	
T	LPF 9	7.5	8	9.5	
E	LDK 13.5	13.5	12.6	12.9	
E	B 14.5	17	14	13	
T	L 23	22.5	23	24	
H	LPF 11	9.5	9.5	11.3	
E	LDK 13	13.2	12.5	11.6	
E	B 14	16	14		
T	L 29	26.5	29	25	28
H	LPF				
E	LDK 12	13	11.6	11	14
E	B 13	13	12.2	11.5	14

Code	FM 1	FM 3	FM 4	FM 5	FM 6	FM 7	FM 8	FM 9	FM 11	FM 12	FM 18	FM 23
BA	<4				Old						<4	
3529	35	33	39	35.5	38	38	36	39	34.6	37	38	37
47°N94°E	9.3	8	8.5	8	8	8	6.7	8	7.1	7.2	9	8
Transbaik.	23.4	26	25	25	27.5	27.5	24	24	24	22.5	24.8	24.1
M	28	26.5	24.5	26.8	27	29	26.8	26.5	28	28	29	29
<4	16	11.5	9	10	10.5	12	9	9.8	10.8	11.2	12	10
1862	23.9	27.5	26	27	25.2	28	26	26	26.2	25.5	25	26
509	26	26	23.5	27.1	26.2	27.5	26.5	25	26.6	28	29	27
45°N102°E	13.5	13	10.5	12	13	13	12	10.8	12	13	13	10.5
Gobi	22.5	28	27	28	27	28	26.3	27	26.2	26.3	25.1	27
Dzungar.	25	23	23	24	23	25	23	22.7	23	24	27	25
GobiAltai	14	11.5	11	10	12.9	12	10	10	11	12	13	12
TatusunGol	23.8	24	24	25	25	26	23.5	24.5	24.5	24.7	24.5	24.5
N.TienChan	25.5	25	22	24.5	23.2	25	24	23.7	23	24.7	26.8	25
F	13	12	11	12	11.9	13	11	11	12	13.3	13.5	11
F	21.5	24	23	24.3	25	24.5	23.5	24.5	25	23.3	23	24
F	25.5	24	30	30	26	20	23	25	25	27		27
F	14	14	13.5	13.1	14	13	12	12	14	13.3		11
F	21	21	22	22	22.7	18	18.5	21	21.1	17.2		23
F	31.5	30	32	32	33	32.5	31.5	31	30.4	30.5	32	32.7
F	16.5	12	14	14	17	16.5	16.6	15.6	15	16	16.5	16
F	14.7	14	15	14.5	16.1	16	13.1	14.3	15	14		14.5
F	27	25	29	29	15.6	15.6	14	14.1	15		14	15
F	15	9	14	16.9	28	28	28	27.8	27.6	27.5	30	29.1
F	17.5	16	17	17	15	15	18	18	17.8		19.1	14
F	26	26	27	27	17.5	17	15	15.6	15	15	15.2	17.5
F	13.4	9	12.8	14	27	27	28.2	27	26	26.5	29	27.3
F	14.5	16.5	17	17.5	14	13	14	13.2	13	12.8	13.1	12
F	24	21	24.7	26	17	17	17	16.7	16.9			17
F	11.4	6	9	10	18	18	15	17	15.2	16.2	15	17.5
F	14.3	16	14	14.1	14	14	14	15	15.2	16.2	15	17.5
F	23.8	24	25	25	15.5	15.5	13	15.5	14.1	12.1	14.7	16
F	11	7.5	10	10.5	24.5	24.5	25	23.5	24	25.2	28	26.5
F	12.3	14	14	14	11	11.7	11	11	11	10.2	12.2	11
F		30	29.5	31	13.2	13.2	13	13	13	13.5	13.1	15
F					14	13.2	13	12.1	12.5			13
F					15	15	15	14	13	13.5	13.1	15
F					29	29	28	30	28	30	31	31
F					13	13	13	12	13			11
F					14	14	12	12	13			12
F					13.5	14	12	13.5	12.2	12		14

Table 6- Upper and lower cheek teeth 45°95'

Code	HM 24	HM 25	HM 26	HM 27	HM 28	HM 29	HM 30	HM 31	HM 32
Collection	MS	MS	MS	MS	MS	MS	MS	LG	LG
No Cat	100535	43231	110474	113005	134555	102029	94400	7192	1075
Origin/Std	EkhchiTol	GobiAltai	KhoninOus	Zoo	Mongolie	Zoo	N.TienChan	Djungar.	
Sex	M	F	M	F	F	F	F	F	F
Age			Old						Old
U	P2	L	37,1	35,5	34	38,5	33	37	
P	LP		9	8	8,5	9	8	8,3	
P	B	23	23	24	24	25	24	24,5	
E	L	28	26	25,5	29	27	28	28	26,7
R	LP	13	12	13	12,7	11		12,7	10
C	B	26	26	25	27	26		26,7	27
H	L	28	26,1	27	29	25		28	25,5
E	LP	14	12	13,3	14	11		14	11
E	B	25	27	25	26	26,1		27	28
K	M1	L	25	23,1	23	23,5	21,5	24	22
T	LP	12	11,1	14,1	11	11		10,6	11
E	B	24	24	25,1	25,2	24,5		25	26,5
H	L	25	23	24	25	23		25	22
	LP	13	12	14,5	11,8	11		13	11,3
	B	22,5	23	23	24	24		25,5	26,5
	L		22,1	24	25	26		25	28
	LP		11,8	15,5	14	13		14,7	13,3
	B		20	18	17,5	20		21	24
L	P2	L	32	30	32	29	28	32	
O	LPF	17	14	13,5	16,7	11,8	14	16	
W	LDK	13,5	12	13,5	16	12	14	16,2	
E	B	14,5	13	15,5	16	14	14	15	
R	L	28	26,5	27,5	26	28	26	29	
C	LPF	14,7	14,7	13	13	15,5	14	14,5	
H	LDK	17	17	19	17,8	20	17,5	18	
E	B	16	15,3	16	16,5	17	15	16,2	
E	L	28	27,5	27	26	29	25,5	27,7	
K	LPF	12,5	14	13	13	15	12,8	11,5	
T	LDK	15,5	15,7	17,5	17	19	16,7	15	
E	B	15	15,3	16,5	16	17,7	16	16	
T	L	24,5	24	23	23	25,5	23	22,5	
E	LPF	10	11	9,7	8,5	11,8	9	10	
E	LDK	14	14,2	14	13,8	14	14	14	
T	B	15	15	15	14,1	14,5	14	14	
H	L	26	24,5	24	23	27	23	24,5	
	LPF	12	11	10,2	9	12	10	11	
	LDK	13	13	13	12,8	13,5	13	14	
	B	14,2	12	14	13,7	14	13,1	13,7	
	L		27	29	28	31,5	27	30	
	LPF		11	11	10	9	10,2	10	
	LDK		11,2	12	11,5	11,5	11,5	12,5	
	B		11,7	13,5	11,2	11,5	13	11	

K.3	K.4	K.9	K.10	K.11	K.13	K.15	K.18
MA	MA	BM 1860	BM 1891	BM 1894	BM 1879	LD	MU 1904
1977.76	1977.75	5.4.77	10.7.176	2.8.3	11.21.182	1853	1583
		Ladakh?	Sikkim	Kokonor	Hundes?	Tibet	Tibet
F	M	M	M	F	M	M	M
			<4		<4		
36	36,5	37	33	36	34	33,5	38
9,3	10,3	8,4	9,5	8	9,3	8	7,5
24,4	24,5	25	25,5	24	24	24	26,5
28	28	28	26	26	25	25	28
13	14	11,8	13,8	11,8	10,3	11	11
25,5	27,5	28,2	25,2	26,7	24	26	26,5
26,5	26,8	27	25	25	24,5	24	25
12,6	15,6	11,9	13	11,5	11,5	12	13
23,9	26,5	28	24	26	23,9	26,5	27
25,5	23,6	25,5	24,3	22	22,5	23	23
11,9	13,3	11	11,2	10,3	10,1	11	10,5
24,6	23,7	26,9	23	24,6	23,1	24,5	24,5
25	23,7	25,9	23	22,5	22,2	22,1	23
12,7	14,7	13	12,3	11	11	12	12
22,8	23,5	26,2	22,1	24	22,1	23,5	25
	23	24		23,5	22	25	27
	14,3	12,5		11,8	12	13,5	15
	20	21,5		21	18,5	19	21,5
30,5		34	30	30	29	30	30
15,1		16	16	14,8	14,7	15	14
14							
14,1		15,3	15	15	13,8	13,5	14
28,5		28	27	27	25	27	27
13,5		14,3	14	13,7	13	15,5	10,5
18							
14,5		17	14,2	15,8	14,4	15	15,5
27		28	27	26,5	25,5	25	26
12		13,5	13	12	12,5	13	10,5
15							
14		16	13	16,1	13,9	15	18
25,5		26,5	25	23	23,5	23	23
11,7		11,5	11	10	10	10	8
15							
13		16	13,2	15,2	13,7	13,5	15
25		27	23,5	24	24,5	24	24
11		12	10,5	9,7	10,5	10	9,5
13,1							
14		14,6	12,5	14	13,5	14	15
28		30		28	27	27	32
12		13		13		12,5	13

Table 8- Humerus and Radius

Code	HS 1	HS 2	HS 3	HS 5
Collection	BM 1867	AC	YA	MCZ
No Cat	12.3.1	1863.20	1637	6345
Origin/Std	Syria	Syria	Syria	Syria
Sex	F	F	F	F
Age				
1	217	213	209	227
2	202	193	196	210
3	25	24.4	24	25
4	66	65	65	71
5	69.5	75	70	72
6	58	57	58	59
7	61.5	59.6	68	62
8				39
9	27.7	27.2	28	30
10				35.5
11				

HUMERUS

HP 1	HP 2	HP 3	HP 7	HP 8	HP 9	HP 12	HP 13	HP 15	HP 16	HP 17	HP 19	HP 20	HP 21	HP 22	HP 23	HP 28	HP 29
AC	AC	AC	LD	AM	AM	LY	KI	HA	HA	HA	NY	KI	YA	CH	AC	HA	HA
1893.509	1901.9	1902.487	12507	17667	11827	383	1576	5881	7045	7158	35670	1662	5098	97880	1978.50	7591	7621
Iran	Zoo	Iran	Iran	Std 25	Std 102	36°N55°E	Std 16	Std 40-41	Std 10	Std 93	Zoo	Std 35	Iran	36°N54°E	Std 24	Std 7	Zoo
M	F	F	M	M	M	F	M	M	M	M	M	M	F	M	M	F	F
Old	7	Old	2	18	2			3	Old		Old	2	<4		Old	Old	Old
237	227	237	214	258	242	246	235	245	232.5	242	253	239	228	245	255	242	250
220	207	224	199	233	221	230	215	219	211	219	228	214	208	230	232		
26.5	26.5	28.5	25	28	27.5	26.5	29	31	27.5	32	28	28	28	30.5	30		
77	72	75.5	71	79	77	75	79.5	83	75	79	82	78	75	82	85		
82	77.5	79.5	76	84	80	83	79	86	79	86	82	85	83	82.5	83		
63.5	59	61.5	62	64	60	60	62	67	62	66	63	64	60	64	64		
67	65.5	68	68.3	72.5	68	69	66.5	72	69	73	71	71.5	68	72	73		
42	41	41												44	43		
30	30	31	28.5	32	30.5	30	28.3	31	31	32	32	29.5	28.1	31	31		
38	37	38													39		
31	32	33													35		

RADIUS

1	2	3	4	5	6	7	8	9	10	11							
294	283	286	271	313	296.5	295	282	293	287	291	304	296	280	300	307	292	308
278	267	273	255	299.5	281	280	268	281	271	275	284.5	280	269	282	288		
30.1	28.3	30.6	28	32.5	31	32.5	30.1	36	32	35	32	33	32	35	33		
67.4	65.6	65.9	66	73	69	67	66.5	71.5	66	71	70	68	67.5	73	72		
59.9	56.2	59.8	61	64	60	59.5	62	66.5	60	66	61	63	60	63	64		
32.7	29.8	31.6	31	34.5	33	32	31	34.5	33	34	34	33	31	33.5	34		
61.9	56.4	59.5	60	66.5	62	62	62	67	59	65	63	63	59	68.6	67		
51.8	48.8	50.9	50.5	53	51	50	48.5	54.5	50.5	55	53	52	49	54	52		
30.2	29.1	30.8	32	31	30	30.5	31	33.5	32	35	32	30	31	31	31		
20.9	19.8	20.6	22	23.5		20.5	22	24	22.5	25	23	24	22	24	22		
11.6	11.8	11.8	12.5	15	13	12.5	14	15.5	14	14	14	15	12	14	15		

Table 9- Humerus and Radius

HUMERUS

Code	HP 30	HP 31	HP 32	HP 33	HP 34	HP 35	HP 36	HP 37	HP 40	HP 41	HP 48	HP 49	HP 51
Collection	HA	HA	HA	HA	HA	BO	BO	BO	WA	WA	MU	MU	AC
No Cat	7851	7850	8281	8304	7446	7927	7927	92311	541427	521103	1965.207	1980.67	1983.72
Origin/Std	Std 69	Std 23	Std 120	Std 264?		Std 100	Std 145	Std 145	Zoo	Zoo	Ortiz	Std 56	Std 190
Sex	F	F	M	M	M	F	F	M	F	F	M	F	F
Age	Old	Old	Old			Old	Old	23	4			Old	
1	247	245	252	250	240	240	248	241	245.3	245	241	233	244
2						217	223	222	245.3	245	217	216	228
3						30	28	29	33	29.1	30	28	30.7
4						79	78	82		81	81	77	87.1
5						81	82	82		82	82	77	78
6						62	60	61	64.9	61	64	63	66.1
7						69	68.5	68	69.7	68.3	70	69	71.8
8						42	42	43	44.2	39.8		37	41.9
9						31	31	31		30	30	28	31.7
10						38	38	38				37	39.1
11						32.5	33.2	32				31	34.6

RADIUS

Code	HT 2	HT 4	HT 8	HT 12	HT 18	HT 23	HT 25	HT 26	HT 27
Collection	KI	MU	LG	MS	MS	LG	LG	LG	LG
No Cat	3480	1962.203	19046	49098	74802	32047	32277	32279	49
Origin/Std	Zoo	Aral	Zoo	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz
Sex	M	F	F	F	M	M	F	M	M
Age		Old		Old	Old			Old	Old
1	305	306	307	289	285	298	297	283	283
2	291	284	295	277	274	285	280	270	273
3	32	31.5	33	32	35	35	31	33	35
4	71.5	71	72	71	70	70.5	69	67	70.5
5	65	63	66	64	66	62.5	63	61.5	62.5
6	34	36	35	34	32	35.2	32	33	33.5
7	67	65	62.5	64	64	63	64	64	64
8	53	53.5	51	52	55	52	50.7	53	51
9	31	34	33	30	31	32	31	31	32
10	24	24	21	23.5	21	21.1	23	22	22
11	13.5	15	15	14	13	14	13	14	13

Table 10- Humerus and Radius

HUMERUS

Code	HT 30	HT 32	HT 33	HI 1	HM 1	HM 5	HM 13	HM 14	HM 15	HM 16	HM 17	HM 29	HM 30	HM 33
Collection	LG	HA	AC	AC	BA	LG	NY	NY	NY	NY	NY	MS	MS	LG
No Cat	31810	7682	549	549	3529	14741	57208	57201	57209	57212	57214	102029	94400	32275
Origin/Std	Kuchka	Std 29	Kutch	Kutch	47°N94°E	45°N102°E	Loh	Loh	Loh	Loh	Loh		Zoo	Zoo
Sex	M	F	M	M	M	M	M	M	M	M	M	F	F	M
Age	Old	21		3			Old	Old	Old	Old	Old			Old
1	261	245	235	235	235	259	258	262	256	250	255	239	255	253
2	238		223	223	218,5	235	236	237	236	227	235	218	237	232
3	31		26	26	26	31	31	31	32	34	30	39	29	31
4	88		70	70	75	87	82	79	88	81	82	75,5	75	86
5	87		78	78	80,8	88	79	85	89	81	88	86	87	82
6	70		60,3	60,3	60,7	65	67	64	65	65	66	63	66,1	65
7	78		66,9	66,9	69,6	74	76	73	76	74	75	67,5	70	72
8	44					45						40	47	44
9	33,5		29,7	29,7	32,1	31	32	30	32,5	31	33	30,5	34,7	32
10	41					40						37,5	41	38
11	38,5					34						32,5	33,1	30

RADIUS

1	298	295	294	294	297,5	307	309	316	305	297	311	289	310	292
2	287		279	279	281	292	293	303	287	283	298	272	297	281
3	35		30,7	30,7	30,3	34	35	30,5	35	35	36	32	33	33
4	76		65,1	65,1	69	70	74	70	72	70	69	68	73	72
5	69		58,8	58,8	60,9	63	67	65	66	64	66,5	62	65	65
6	37,7		31,4	31,4	32,5	34,5	35	36	35	35,5	34,5	33	36	34
7	70		61,6	61,6	61,4	64	67	62,5	67	65	65	61,5	64	64
8	57		49,4	49,4	54	54	56	54	55	55	55	50,2	52	53
9	35		31,5	31,5	31,2	34	34,5	33,5	36	34	34	32	31	32,5
10	25		21,1	21,1	21,2	24	25	24	26	27	25	23	22	23
11	15		12,6	12,6	13	12,2	14,5	13	15	12	14	14	14	16

Table 11- Third Metacarpal and Metatarsal

THIRD METACARPAL

Code	HS 2	HS 3	HS 5	HP 1	HP 2	HP 3	HP 7	HP 8	HP 9	HP 12	HP 13	HP 15	HP 16	HP 17	HP 19	HP 20	HP 21
Collection	AC	YA	MCZ	AC	AC	AC	LD	AM	AM	LY	KI	HA	HA	HA	NY	KI	YA
No Cat	1863,20	1637	6345	1901,9	1902,487	12507	17667	11827	11827	383	1576	5881	7045	7158	35670	1662	5098
Origin/Std	Synia	Synia	Synia	Iran	Iran	Iran	Std 25	Std 102	36°N55°E	Std 16	Std 10	Std 40-41	Std 10	Std 93	Zoo	Std 35	Iran
Sex	F	F?	F	F	F	F	M	M	M	F	M	M	M	M	M		F
Age				Old	Old	Old	2	18	2			3	Old		Old	2	4
1	195	193,4	205	227	208	219	198	219,5	211	218	196	217	199	218	216	211	205
3	21,7	21	23,5	25	23	26	23,5	25,3	25	26	26,5	27,5	25,5	27,5	26	26,5	27
4	18	17	19,5	20	19,5	21	20	21	19,5	20,5	20,5	24	22	24	22	21,5	21
5	35,9	38	38,5	45	41	41,5	43	46	44	43	43	45,5	41	45	44	44,5	40,5
6	23,9	24,1	26	27	25	28	27,5	27	26,5	29	25,5	29	27	28,5	28	27	25,5
7	29,8	31,2	33	36,5	32	33	35	35,5	34,5	35	32,5	35	32	35,5	36	33	32,5
8	12,7	12,5	12	14	13	11	12	12	11	11	12	13	12,5	14	13	13	12,5
10	35,5	34,7	35	39,5	37,5	38	36,5	40,2	38,5	38	38,5	41,3	36	41	37,5	39	37,5
11	35,3	35,6	36,5	38,5	37	38	38	40	37	37,5	38	40	37	40	39	38	37,5
12	26,5	27,7	28	29,5	26,5	28,5	30	30,5	29	29,5	30	30	30,5	30,5	30,1	29	29
13	21,3	20,5	23,5	25	23	24,5	24	25	23	24	25	25	25	20	25	24,5	22,2
14	23,6	23,1	25	26,5	25	26	25	26,5	25,5	25,5	26,5	26,5	26	26	26,5	26,5	24,3

THIRD METATARSAL

Code	HS 2	HS 3	HS 5	HP 1	HP 2	HP 3	HP 7	HP 8	HP 9	HP 12	HP 13	HP 15	HP 16	HP 17	HP 19	HP 20	HP 21
Collection	AC	YA	MCZ	AC	AC	AC	LD	AM	AM	LY	KI	HA	HA	HA	NY	KI	YA
No Cat	1863,20	1637	6345	1901,9	1902,487	12507	17667	11827	11827	383	1576	5881	7045	7158	35670	1662	5098
Origin/Std	Synia	Synia	Synia	Iran	Iran	Iran	Std 25	Std 102	36°N55°E	Std 16	Std 10	Std 40-41	Std 10	Std 93	Zoo	Std 35	Iran
Sex	F	F?	F	F	F	F	M	M	M	F	M	M	M	M	M		F
Age				Old	Old	Old	2	18	2			3	Old		Old	2	4
1	224	225	236	268	230	255	230,5	250	238	254	230	253	239	252,5	251	245	243
3	22	21	23	25	23	25,5	22,2	25	24	25,5	24,5	26	26	26	26	26	26,1
4	20	20	22,8	25	24	24,5	23,6	27	23	26	24	28	25	26	25,5	25	25,2
5	33,5	35,5	36	43	39	41	39	40,5	41	42	39,5	41,5	40,5	43	41	38	38
6	31	30	30	36	35	34	35	40	38	34,5	34	39	34	37	37	34	32,5
7	30,5	35	33	38	35	35	35,5			37	34	37,5	35	37	37	35	35
8	8,1	8	9	10	10	9	8		7,5	9,5	5	8	9,5	9	9		8
10	33,5	34	35	37	37	38	36	41	36	37	37,5	41,3	35,5	41	39	38	38,3
11	32,5	35,2	35	36	35	37	36	39	36	37,5	37	40	35,5	40	39	37	37,6
12	27,5	28	29	30	27	30	30	31,5	29	29,5	30	31,2	30,5	32	32	30	30
13	20,7	20,4	22,5	24	22	25	24	24	22	23	24	25	23,5	25	25	24	22,6
14	23,1	23	24	26,5	25	27	25	27	24	25,5	27	27	23,5	27	28	26	25,3

Table 12- Third Metacarpal and Metatarsal

THIRD METACARPAL

Code	HP 22	HP 23	HP 28	HP 29	HP 30	HP 31	HP 32	HP 33	HP 34	HP 35	HP 36	HP 37	HP 40	HP 41	HP 43	HP 44	HP 48	HP 49
Collection	CH	AC	HA	HA	HA	HA	HA	HA	HA	BO	BO	BO	WA	WA	FSUT	FSUT	MU	AC
No Cat	97880	1978.50	7591	7621	7851	7850	8281	8304	7446	89482	77927	92311	541427	521103			1965.207	1980.67
Origin/Std	36°N55°E	Std 24	Std 7	Zoo	Std 69	Std 23	Std 120	Std 264?		St 223	Std 100	Std 145	Zoo	Zoo	Iran	Iran	Ortiz	Std 56
Sex	M	M	F	F	F	F	M	M	M	F	F	M	F	F			M	F
Age		Old	Old	Old	Old	Old	Old			Old	12	23	4					Old
1	220	209,5	208	200	211	203	210	207	210	212	206	204	218	213,3	204	212	217	202
3	28	26,5	26	27	27	28	28,3	28,3	26,6	27,3	27	27	29,3	26,3	25,3	27,1	28	26
4	21	20,5	21	2	21,5	21,5	22,5	21,2	22	22	21,5	21	22,4	25	21	21	22	20
5	42	42,5	42	41,5	41	41	43	42	41	41,1	42	41	43,4	42,4	40,6	42,2	45	43
6	26	28	26	25,5	26	26	26	25,5	27	27	27	25	27,3	30,1	27,7	27,3	26,5	26
7	35	35,5	36	32,5	31,7	33	34	33	33	34	35	33	34,5	34,7	32,8	33,5	35,5	35
8	12	11,5	11	13	12	12,5	13	12,7	11	11,7	11	12	13,6	11,6	13,6	14,2	13	12
10	40	40,5	38	38,9	38	40	40	40	39,5	38,3	36,3	38	41,8	36,3	37	38,5	39,5	37
11	39	41,5	38	39	37	40	39	39	39	37,1	37,2	38	42,1	37,7	37,3	38,4	40	37
12	29	29	30	29,9	29,8	30	29	30	30	29,5	30	29,5	29,8	28,6	29,5	30,3	30	30
13	23	23	24,1	25	24,1	24	24	24	24,1	24	24	24	24,2	23,4	23,5	24,2	25	24
14	26	27	25,5	26,5	26	26	25,1	25	26	25,2	26	26	25,4	25,7	24,8	26	27	25

THIRD METATARSAL

1	258	244,5	245	234	251	246	248	245	257	252	252	243	253		251	237	246,5	236
3	25,9	25	24,5	26	26,3	27	27	27	25,6	26	26	26,5	28,2	25,4	25,7	24,8	27	24,5
4	25,8	27,5	25	27	26	27	25	25,5	25	26	26	25,5	25,8	25,1	24,1	23,1	26	25
5	39	43	38	39	38	38	37,2	38	39	38	39	38	42,6	40,7	41,3	39	40	39
6	33	33	34	32	33	33,5	32,7	32,5	33	31	34	33	35,7	39,6	34,9	32,4	36	
7	37	36	35	36,5	35,5	35	36	36,5	37	35	36	34	36,1	36,8	56,9	35,4	36,2	
8	9,5	11	7	8	10	7,5	8,8	6,3	7	7,5	8	8	8,1	8,8	9,1	8,5	7	
10	38,5	40	39	39	38,5	40	40	39	38	39	38	38	39,8	35,4	36,4	35,7	39	36,2
11	38	38,5	38	37,5	36,5	41	37,2	38,5	38	37	36,5	37,7	40,1	37,1	37,1	36,7	39	36
12	30	29	30,5	31	30,5	31	29,8	30,8	30	30	30	30,7	29,4	29,1	30,5	30,1	30	30
13	23	23	24	24,2	24,2	24	23,6	24	23,1	23,2	24	24	23,1	23,7	23,9	23,6	24	23
14	27	27	26	27	26,1	27	25,5	26	25,5	25	26	26	25,6	25,7	26	25,9	26,5	25

Table 13- Third Metacarpal and Metatarsal

THIRD METACARPAL

Code	HP 51	HT 2	HT 4	HT 8	HT 12	HT 18	HT 23	HT 25	HT 26	HT 27	HT 30	HI 1	HI 10	HM 1	HM 5	
Collection	AC	KI	MU	LG	MS	MS	LG	LG	LG	LG	LG	AC	BM 1957	BA	LG	
No Cat	1983.72	13480	1962.203	19046	49098	74802	32047	32277	32279	49	31810	549	7.18.1	3529	14741	
Origin/Std	Std 190	Zoo	Aral	Zoo	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Kushka	Kutch	Kutch	47°N94°E	45°N102°E	
Sex	F	M	F	F	F	M	M	F	M	M	M	M	M	M	M	M
Age			Old		Old	Old			Old	Old				3		
1	206	214	226,5	228	217	218	218	223	213	215	223	215	198,5	222	240	
3	28,3	26	26	26,5	25,1	27	26	26	26,5	28	28,5	25,9	26	24,2	28	
4	22,3	21	23	22	22	23	24,5	22,7	22	24	28,5	21,9	21		23	
5	44,3	44	45	44,1	43	46	42,6	42,8	42	43,5	24	44,1	43	44,8	44	
6	31,1	28,1	29	28,5	28,2	30	28,5	28,5	28	29	46,5	27,7	27,5	28,6	29	
7	34,2	34,5	38	36	36	36,5	34,1	36	36	36	38	34,1	33,5	36,4	37	
8	11,1	12	13	13	12	14	12	13	13	13	12,7	14	13,1	11,6	12,7	
10	40,5	37,5	41	38,5	39	38	38	39	37	40	42	38,9	37,5	39,5	40	
11	38,6	38	39	38,5	39	38	37,5	37,5	38	38	43	39,4	40	40,1	42,5	
12	29,3	29,5	33	30	31	31	30	30	31,2	31	32	28,3	28	31	31	
13	24	24,5	27	25,1	25,2	25,7	24,5	24	25	25,1	26,5	23,8	23	25,3	25,6	
14	26,2	27	28	27	27,7	28	27	25,8	26	26,5	29	26,7	25,6	27,5	29	

THIRD METATARSAL

1	244	249	262	268	255	260	256	267	252	250	260	247,5	235	259	276
3	27,9	24,5	25	25	24	25	26	24,7	25	26,5	26,5	25	25	22,9	26
4	26	25	26	28	25	28	26	25,6	25	26,5	29	24,8	24		25
5	43,5	42	42	40	39	42	39	41,1	38	38,5	44	41,2	41,5	41	42
6	38,7	36	36,5	37	36	35,5	37	37,5	32,7	36	39	33,1	35	36,3	36
7	39,5	36	36	35	29	38	35	37,5	35	35,5	40	38	37	39	38
8	7,5	8	8,5	10	8	8,5	10,3	10	10	10	13	8,9	10	8,8	10,1
10	41,6	38	38	38	36	36,7	37	37,7	35	38	40	38	37	38	39
11	37,3	36,5	37	37,1	37,5	37,2	36	37	35,2	37	40	36,7	37,7	36	41,1
12	30,2	30	33	30	30,2	30,9	30,9	32	31	31	32,1	30,1	29	31	31
13	23,8	25	26	25	24	25	24	25	24	24,2	26,3	23,8	23	25	24,5
14	26,8	28	29	27	27	27,5	26,2	26,7	25,7	26	28,1	26,2	26	27,1	28

Table 14- Third Metacarpal and Metatarsal

THIRD METACARPAL

Code	HM 13	HM 14	HM 15	HM 16	HM 17	HM 29	HM 30	HM 33
Collection	NY	NY	NY	NY	NY	MS	MS	LG
No Cat	57208	57201	57209	57212	57214	102029	94400	32275
Origin/Std	Loh	Loh	Loh	Loh	Loh		Zoo	Zoo
Sex	M	M	M	M	M	F	F	M
Age	Old	Old			Old			Old
1	240	236	231	231,5	234	220	225	220
3	27	28	29	28	28	25	26	27,9
4	24,5	24	22,5	25	23	23	22	22
5	46	44	44	46	45	42,5	43,5	44
6	30	30	31	30	30	29	29	30
7	38,2	37	37,5	39	36	36	37,5	37
8	13,5	14	11,5	11	14	12,5	12,5	14
10	42	40	41,3	41	41	37,7	40,7	40
11	41	40	42,1	40	44	38	39	40,5
12	33,5	30	32,3	32	32	31,5	31	30
13	28	24	27	26	26,2	26	25,5	25
14	30,5	27	29,5	28,5	28,2	27,5	27	27,5

K 1	K 5	K 17	K 32	K 39	K 42	K 43	K 44	K 47
AC	BM	AM	BL	MU	LG	MS	WA	PR
1963.363	976e	985	32172	572	32276	151314	84088	6291
	Ladak ?	Zoo			Zoo	Zoo	Ladak	Zoo
M?	M	M	F		M	F	F	M
Old	Old	21						
240	205	242	237,5	242	241	231	227	240
27	26	28	28	28	29	27,1	27,4	29,5
23	21	23	23,5	24	24	22	21,4	24
47	42,5	45	47	46	46	42	43,2	45
30	29,5	30	30	30,5	30	28	30,4	30
37,5	36,5	36	37,5	38	37	34	34	36
14,5	12	14	14	13	14,1	12	13,3	12
42,5	38,5	43	44,5	43	45	42	42,3	44
40,5	38	41	42	41,5	41,5	39	41	42
30	30	31	31	31,5	31,5	29,5	31,3	30
26	25	26,5	25	25,5	26,8	25	25,2	25,2
29	26	29	27,5	28,5	29,3	27,5	27	28,5

THIRD METARSAL

Code	HM 13	HM 14	HM 15	HM 16	HM 17	HM 29	HM 30	HM 33
1	277	276	268	266	267	253	267	255
3	27	26,5	28	27,3	26	24	26	26
4	26,5	26	28	26	26	26	26	26
5	45	40	42,5	42	42,2	39	42,2	43
6	37	36,5	37	37	39	37	39	37
7	40	36,5	38	38	40	35	40	37
8	11	9	10	11	9	7,5	9	10,5
10	40	37	39	39	40	35	40	37
11	40	39	40,2	39	39	35,1	39	39,2
12	34	30	32,1	33	32	31,6	32	31
13	27	24	25,5	26	26	25	26	24,1
14	30	26,5	28,7	28,5	28	26,7	28	26,6

272	238	285	277	282,5	283	262	265	280
26,5	23,5	26,5	27	26,5	28,5	26	26,2	27
28	23	27	27	27	26,5	24	26,7	27
43,5	42,8	44	43	46	42	40	39,7	40
41	37,5	41,5	39	40	39	33	39,1	36
39	38	40	39	40,5	38	36	38,5	37
10	10,5	10	11	11	12	10	10	11
42	38,5	42	44	42	43	42,7	42,7	45
40	38,3	40	41	41	41,7	39	41	40
32	31	32,5	32	33	33	30	33	31
26,5	24,5	26,5	25,5	26	26	24	25,4	25
28,5	27,1	29,5	28,5	29	29,2	27	28,7	29

Table 15- First Anterior and Posterior Phalanges

FIRST ANTERIOR PHALANX

Code	HS2	HS3	HS5
Collection	AC	YA	MCZ
No Cat	1863.20	1637	6345
Origin/Std	Syria	Syria	Syria
Sex	F	F?	F
Age			
1	70,8	70	73
2	65,5	64	66
3	21,3	20,8	21,5
4	34,4	35	36
5	26,5	27	28
6	31,5	33	32,5
7	44,5	44,5	49
10	54		56
12	9		9
14	30	31,6	32

HP1	HP2	HP3	HP7	HP8	HP12	HP13	HP15	HP16	HP17	HP19	HP20	HP21	HP23
AC	AC	AC	LD	AM	LY	KI	HA	HA	HA	NY	KI	YA	AC
1893.509	1901.9	1902.487	12507	17667	383	1576	5881	7045	7158	35670	1662	5098	1978.50
Iran	Zoo	Iran	Iran	Std 25	36°N55°E	Std 16	Std 40-41	Std 10	Std 93	Zoo	Std 35	Iran	Std 24
M	F	F	M	M	F	M	M	M	M	M		F	M
Old	7	Old	2	18			3	Old		Old	2	4	Old
77	74	77	75	82	78	75	79	73,5	77	75	78,5	75	77
70	62	69	70	76	70,5	66	72	67	70	68	72	68	70,5
23,9	23,7	24,9	23	23	25,5	24,5	26	24	26	24	24	25	26
42,1	39,6	41,3	38,5	43	41	41	43	39	43	41	39	41,6	44
30,9	30	30	28,5	32	29,5	30	32,5	31	33	29	31	29,9	34
37	34,1	37,2	34	37	37	35	39	36	38	35	36	36	41,8
47,5	45	47	50	53	52,5	47	47	46	51	48	47	48	45
58,5	56	58	58	62	60	56	61	56	56	58	61		59
9,8	8,8	10	10,5	12	10	11	10	10,5	12	11	10		10
35,2	33,3	35	35	34,5	37	34,5	37	34	38,5	34,5	35,5	34	37,5

FIRST POSTERIOR PHALANX

1	66,5	65,2	68,5
2	62,4	60	64
3	21,1	20,3	21,5
4	35,1	36,3	36,5
5	26,5	26,9	27
6	29,1	30,2	30
7	40,5	42	44
10	49		51
12	11		12
14	27	29	28,5

71	66	70	70	78	71,5	71	72	69	71	72	72	70	74
65	61	63	65,5	69	65,5	63	65	63	64	66	66	63	67
23,7	23,9	24,1	23	23,5	25	23,2	26	23,5	26,5	24	24	25	24,7
41,3	41,2	42,3	39	45	42,5	42	45	40	44,5	44	41	42,5	44,3
31,2	29	30,1	29	32,5	29,5	31	32,5	30	32	31	32	31	32
34	32,6	33,8	33	36	35	35	38	34	37	33	34	34	40
41,5	40	41	41	47	42	42	39	41	43	45	37	41	45
51,8	50	51	52	56	51	50	54	50	51	52	53		55
11,6	9	11	12,5	13	14,5	13	11,5	13	14	12,5	12,5		11
33	31,3	33	32	33,5	34,5	32,5	34,5	31	36	32,5	33	32	34,7

Table 16- First Anterior and Posterior Phalanges

FIRST ANTERIOR PHALANX

Code	HP 28	HP 29	HP 30	HP 31	HP 32	HP 33	HP 34	HP 35	HP 36	HP 37	HP 40	HP 41	HP 43	HP 44	HP 48	HP 49	HP 51
Collection	HA	HA	HA	HA	HA	HA	HA	BO	BO	BO	WA	WA	FSUT	FSUT	MUJ	AC	AC
No Cat	7591	7621	7851	7850	8281	8304	7446	89482	77927	92311	541427	521103			1965-207	1980,67	1983,72
Origin/Std	Std 7	Zoo	Std 69	Std 23	Std 120	Std 264?	-	St 223	Std 100	Std 145	Zoo	Zoo	Iran	Iran	Ortiz	Std 56	Std 190
Sex	F	F	F	F	M	M	M	F	F	M					M	F	F
Age	Old	Old	Old	Old	Old			Old	12	23						Old	
1	73,5	78	76	78	79	77	76,5	77	76,1	74,5	80	69	72	77	78	75	76
2	65	71	70,2	70	72	70	70	71	70	68	73,4	63,5	64,7	68,7	72	67	68,3
3	25	25	25	26	25,6	25,5	24,5	24	24,3	25,5	26	24,5	24	25,5	27	25	26,4
4	40,5	40,5	40	43	42	41	41	40	38,5	40,5	45,5	39,5	39,4	42,5	44	40,1	41,6
5	30	32	31	32	32	31,7	31,5	31	30	30,5	31,5	29,4	28,9	30,1	32	29,3	33
6	36	37	37	40	36,6	38	36,2	36,6	36,3	36	40	35,1	33,8	36,9	37,5	36,3	39,5
7	49	54	52	52	53	47	48	50	53	48	46,1	44,6	44,3	44,8	51	49	42,5
10	54	59	57,7	58	60	58	58	59	56	56	61,5	50,4	55,2	57	57	54	57,5
12	12	10,5	10,7	11,5	12	12	12	11,3	11,2	10	11,4	11,6	10,7	11	14	13	9,3
14	36	36,3	35	38	35,1	36,1	35,2	33,9	34,2	36	73,4	32,3	34,6	37,1	37	34,3	35,3

FIRST POSTERIOR PHALANX

1	69	71,5	71,5	73	70,3	71,5	71	71	71	68,5	70,3	64,4	69	66	72	69	72
2	62,5	65	66	-	64	65	64	65	65	62	67,8	57,4	63	59,7	66	64	64,3
3	24,5	24,1	24,1	25,5	25	25	23,5	24	24	25	25	23,8	24,3	24,1	26	25	25,6
4	42	41	42	44	43	42,5	42,5	42	40,5	42	44,2	41,8	41,6	40,1	44	41,5	43,7
5	31	33,1	33	34	31	31,8	30,5	31,2	32	31	32,2	31,1	31	29,4	31	32	33,7
6	35	34,5	35,2	47	45,5	43	34	35	35,5	41	36,6	30,5	35,8	33,6	36	35,5	38,7
7	42	47	47	38,5	34,5	35,6	47	44	45	35	44	38,1	35,9	37,5	42	43	36,2
10	49	52	53	52,5	51,5	53	52	53	52	50	52,7	44,7	51,5	47,5	52	48,5	52,8
12	12	12,5	11,3	14	13	12,5	12	11,2	13	11	13,5	11,2	11	13	15	13,5	12,1
14	34	34	33	36,5	32	34	32,5	31,8	32	34	34,5	34,3	35	33,4	34,5	32	33,9

Table 17- First Anterior and Posterior Phalanges

FIRST ANTERIOR PHALANX

Code	HT 2	HT 4	HT 8	HT 12	HT 18	HT 23	HT 25	HT 26	HT 27	HT 30
Collection	KI	MU	LG	MS	MS	LG	LG	LG	LG	LG
No Cat	3480	62203	19046	49098	74802	32047	32277	32279	49	31810
Origin/Std	Zoo	Kitty	Paratype	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Kuchka
Sex	M	F	F	F		M	F	M	M	M
Age										
1	78,5	81	80	78	79	76,2	76,5	75	78,5	83,2
2	70,5	74	73	69	72	69,3	70	69	72	76
3	25	25	25	25	25,2	26	25	25,5	27	27
4	42	43	40	41,5	40,4	41	39,5	40,1	41,7	44,1
5	31	33	31	32	32	30,3	29	31,1	30,1	32
6	38,5	38,5	36	37,5	36,7	37	36,7	36,9	36,8	38,7
7	53	51	54,5	48	50	52	50	46,5	52	55
10	61	62	61	59	60	59,5	58	55,5	59,5	63
12	9	12,5	10	10	11	10,1	10,5	11,5	12,2	12
14	35	35,5	35	35	35,1	34	34	34	33,8	37

HM 1	HM 5	HM 13	HM 14
BA	LG	NY	NY
3529	14741	57208	57201
47°N94°E	45°N 102°E	Loh	Loh
M	M	M	M
j			
82	89	90	85
76,5	82	82	78
24	26	26,5	27
41	45	43	43
31,2	33	33	32,5
34,8	38,5	38,5	37,5
58	56	60	57
68	68	71	65
13	11	10	10,5
35	36,1	36,5	37,5

HI 1	HI 10
AC	BM 1975
549	7.18.1
Kutch	Kutch
M	M
78,8	75
71,5	67
23,7	25
42	43,5
29,6	30,1
36,2	39
50	46
59,5	55
9,5	12,5
34	36

FIRST POSTERIOR PHALANX

1	2	3	4	5	6	7	10	12	14
73	66	24	43	32	36	46	54	13	32,5
72,5	65,5	23,5	42,2	32	36,2	45	54	12	33
74	67	24	41	31	34	45	56	11	34
71,1	65	24	42,5	31	35,7	45	53	12	32,8
73	67	24	40,5	31	36	43	54	11,5	32,5
70	66	25	41,7	31,1	33	44	52,5	11,5	31,1
72	65	23	41	31,3	34	43	51	14	32
67	61	26	40	30,8	34	39	45,5	14	30,2
70	64	26	42	30	34	44	44	12,5	30,1
70	64	25,8	45	32	37,5	46,5	51	12	35
72,4	66	23,5	42,5	30,2	34,6	45	54,5	10	33
70,5	64	43,5	31	37,5	41,5	49	15	33,5	
80	73	25	31	33	48	59	13,7	34	
82	75	26,2	33	37	57	62	12,5	33	
77	70	26	41	32	36,5	51	15	34	
74,8	69	24,5	42,1	31	44	59,5	14	33	
80	73	25	31,3	33	48	62	13,7	34	
82	75	26,2	33	37	57	62	12,5	33	
77	70	26	41	32	36,5	51	15	34	
74,8	69	24,5	42,1	31	44	59,5	14	33	
80	73	25	31,3	33	48	62	13,7	34	
82	75	26,2	33	37	57	62	12,5	33	
77	70	26	41	32	36,5	51	15	34	

Table 18- First Anterior and Posterior Phalanges

FIRST ANTERIOR PHALANX

Code	HM 16	HM 17	HM 29	HM 30	HM 33
Collection	NY	NY	MS	MS	LG
No Cat	57212	57214	102029	94400	32275
Origin/Std	Loh	Loh		Zoo	Zoo
Sex	M	M	F	F	M
Age					
1	85	86	76,8	79,5	80
2	77	79	71	72	73
3	26	26	24	25	29
4	41	41	40	43	43,8
5	33,5	33	31	30,7	33
6	38	39	36	37	39
7	57	62	50,5	53	48
10	67	67	60,5	61	62
12	10	10,5	10,5	12	9,5
14	36,5	35,2	33,7	36,5	36

K 1	K 5	K 17	K 32	K 39	K 42	K 43	K 44	K 47	K 48
AC	BM	AM	BL	MU	LG	MS	WA	PR	BM 1855
1963.363	976e	985	32172	572	32276	151314	84088	6291	1.20.1
Zoo	Ladak?	Zoo			Zoo	Zoo	Ladak	Zoo	Nepal
F	M	M	F		M	F	F	M	
86	86	85	85,5	87,5	90	85	82,1	88	83
79,1	79	78	78	81	83	77	75	81,8	78
25,5	26,5	26,2	27	26	25	24	25,5	26,1	27
46,1	42	45	45	44	44,8	43	42,7	44,2	43
34	33,5	33,2	33	33	33,6	30	30,5	32,2	32,2
39	37,5	40	41	40	39	36	38	41	40,2
55	52	54	55	58	58	58	51,7	58	55
66	67	65	64	70	70	65	63,7	67	65
10,2	10,5	12	11,5	12	12	12	10	11	10
36,1	36	38	38	36,5	37	34	37	36,1	37

FIRST POSTERIOR PHALANX

1	77	78	69	73	74
2	68	72	64	67	69
3	25,5	23	22,5	25	27
4	41	42	40	45	44
5	34	31	30	32	33,1
6	36,5	34	32,7	36	38
7	53	55	43	45	40,5
10	57	60	51	52	57
12	12	11	11,5	14	11,1
14	33,2	32	31	34,3	33,5

77,3	80	77	78	82	78	74,7	81,2	77
71,5	76,5	71	71	76	75	68,6	75,2	71
26	25,5	26,2	26	25,5	25	25,2	25	26,5
47,4	41,5	47	46	45,3	46,5	44	44,2	46,5
34,7	33,5	34	34,5	33,5	33,6	31,2	31,5	33,2
38,8	35,5	37	38	37	36	33,1	35,5	39,5
49	48	47	49	51	54	52	45,9	50
59	61	56	54	60	61	57,5	53,1	59
10,3	11,5	14	15	16	14	14	11,7	13
35	33,5	35,2	35	34,2	34,5	32	35	33,5

Table 19. Second and Third Anterior and Posterior Phalanges

SECOND AND THIRD PHALANGES

Code	HS 2	HS 3	HS 5	HP 1	HP 2	HP 3	HP 7	HP 8	HP 12	HP 13	HP 15	HP 16	HP 17	HP 19	HP 20	HP 21	HP 23	HP 28	HP 29	HP 30	HP 31
Collection	AC 65	YA	MCZ	AC	AC	AC	LD	AM	LY	KI	HA	HA	HA	NY	KI	YA	AC	HA	HA	HA	HA
No Cat	1863.20	1637	6345	1901.9	1902.487	12507	17557	383	383	1576	5881	7045	7158	35670	1662	5098	1978.50	7591	7621	7851	7850
Origin/Std	Syria	Syria	Syria	Zoo	Iran	Iran	Std 25	36°N55'E	Std 16	Std 16	Std 40-41	Std 10	Std 93	Zoo	Std 3.5	Iran	Std 24	Std 7	Zoo	Std 69	Std 23
Sex	F	F	F	F	F	M	M	M	F	M	M	M	M	M	M	F	M	F	F	F	F
Age				Old	Old	Old	2	18	8	8	3	Old	5	Old	2	4	Old	Old	Old	Old	Old
PH II ANT																					
1	36	37	37	37,5	36	39	39	40	38,5	42,5	40	42	42	40,5	40	40	40	40	40,5	41	41,5
2	27,3	27	27	27,5	26	30	30	30	28,5	30,5	31,5	31	33	29	30	29	29,5	30	30,5	31	31,5
3	32	32,5	31	36	34,5	36	32	36	37	33,5	36	34	36,5	34,5	34,5	34,2	38,5	36	36	35,7	38,5
4	34,1	35,5	36	40	39	39,5	37	42,5	41	40,5	43	39	42,5	39	40	40	44,1	40,2	41	40,7	43
5	24,2	25,5	25	27	25	26	26	27	25,5	27	27	27	27,5	27	27	27,5	26,5	27		27,5	28,5
6	32,9	35	35	38	37	39,5	37,2	40	39	38,5	38	35	40	36,2	38	35,8	40	39,1	39	38	40,2
7				21,5	21	23											23	24	25	23	24,2
PH II POST																					
1	36,4	36,5	37,1	37	36	40	39	39	39	42	39,5	40,5	42	41	40	38,3	41	38,5	40	40,5	41,5
2	27,7	27	28,5	28	26	29	30	30	28	30	30	30,0	32,0	30,5	30	28,3	29	28,5	30	30,5	31,5
3	27,8	28,2	30	33,5	33	33	31,5	35	34,5	31,2	34	32,0	34,0	33	32,5	33	35,5	34	33,5	33	35
4	32	33	34	38	38,5	37,5	36,5	42	40	39	41	39,0	42,0	37,5	38,5	38,1	41	40	39	39	42
5	24	24	25	27	26	26	25,5	27	26	27	26	26,0	27,0	27	27	26,5	26	26	27	27	27,5
6	28,9	30,4	32	34	33	35	34	36,5	35	35	34,5	32,0	35,5	34	33,5	32	36	36	35	34	37
7				21,5	21	23,1											24	22,8	24	22,4	23,5
PH III ANT																					
1	33,5	34	37	39	36	40	42,5	46	45,5	41	-	40	42	-	45	-	-	41	46	39	44
2	37			50	40,5	49	43	56	53	49	-	48,5	45,5	-	49	-	-	52	53	47,5	54
3	27			32	31	31,5	32,5	33	35,5	33,5	-	31,5	32	-	35	-	-	32	35	33,2	35
4	44,5	48	45	50	52	53	51	57	56	56	-	52	56	-	54	-	-	55	56,2	51,5	58
5	18	18		20	18	20	20,5	20	21	20	-	21	22	-	20,5	-	-	20	23	21	22
6	32	33		35	39	37,5	37,5	41	38,5	37	-	37	39	-	39	-	-	40	36	36	39
7	95	100		120	110	125	110	135	130	126	-	118	115	-	122	-	-	130	132	125	135
PH III POST																					
1	34,5	35,1	36	39	38	44	43,5	50,5	47,5	42	-	43	42	44	44	42	-	42,5	46,5	40	44,5
2	38			44	38	48	44	57	48,5	47	-	47	43	48,5	44	42,5	-	47	48	42,5	49
3	28			31	31	33	32,5	33	36	33,5	-	32,5	33	32	34,5	31,5	-	32	35	32	34
4	41,7	43	42	46,5	49	51	50	55,5	53,5	53	-	49	53	50	52	49,1	-	51	53	49,5	57,5
5	19	20		20	19,5	21	21	20	22	20	-	21	22	21	21	20	-	20	23,5	21	22
6	28,7	31		34	33	34	35	37	38	34	-	31	36	35	35	31,5	-	36	34	33	36
7	90	95		105	100	118	105	132	120	120	-	115	110	120	110	108	-	115	116	110	120

Table 20- Second and Third Anterior and Posterior Phalanges

SECOND AND THIRD PHALANGES

Code	HP 32	HP 33	HP 34	HP 35	HP 36	HP 37	HP 43	HP 44	HP 48	HP 49	HP 51
Collection	HA	HA	HA	BO	BO	BO	FSUT	FSUT	MU	AC	AC
No Cat	8281	8304	7446	89482	77927	92311		1965.207	1980.67	1983.72	
Origin/Std	Std 120	Std 264?		Std 223	Std 100	Std 145	Iran	Iran	Ortiz	Std 56	Std 190
Sex	M	M	M	F	F	M		M	M	F	F
Age	Old			Old	12	23				Old	
PH II ANT											
1	43	41.5	40	38.7	41.5	41	37	37	39	-	40
2	33	33	31	28.5	32	32	27.6	27.4	28	-	28.8
3	34.2	35.5	35.5	34	33.6	36	23	32.2	38	-	35.7
4	41	41.5	41	40	38.3	40.5	39.7	38.4	43	-	40
5	27	27.2	27	26.7	28	27.8	25.1	25.7	27	-	27.4
6	36.7	38	36.7	35.5	36	39.3	36.8	34.4	39.5	-	33.5
7	23	23	22.5	22.2	24	-	-	-	-	-	22.5
PH II POST											
1	40.2	42	39	39	42	42	39	39	38	40	39
2	31.6	32	29.5	29	31	32	28.4	28.2	28	30	30.8
3	32.3	33	33	32.1	33	34	35.8	37	34	35	36.6
4	39	40	39	39	38	41	41.5	42.6	41	40	40.3
5	26	26.3	26.5	27	27	28	25.9	26.1	27	28	27.8
6	33	34.5	33	32.9	33	35.5	38.1	40.7	35	36.7	36.6
7	23	22	22.5	22	23	24	-	-	-	23.1	22.5
PH III ANT											
1	-	-	40	39	45	44	-	-	41	-	45
2	-	-	51	46.5	54	52.5	-	-	50.5	-	54.2
3	-	-	32.5	31	34	36.5	-	-	35	-	31.8
4	-	-	53	53	51.7	54.5	-	-	61	-	56.1
5	-	-	20	20	20	22.5	-	-	21	-	22.5
6	-	-	37	34	34	35.5	-	-	40	-	36.9
7	-	-	125	122	130	135	-	-	130	-	135
PH III POST											
1	-	-	40	38.5	43	45	-	-	43	-	45.8
2	-	-	46.5	41.1	45	47.2	-	-	48	-	48
3	-	-	32	31.1	34	34	-	-	35	-	35.4
4	-	-	50	51	48	54	-	-	55	-	54.9
5	-	-	20.5	20.5	21.5	23	-	-	21	-	22.5
6	-	-	33.5	34	32	33	-	-	34	-	33
7	-	-	118	107	112	120	-	-	122	-	123

HT 2	HT 4	HT 8	HT 12	HT 18	HT 23	HT 25	HT 26	HT 27	HT 30
KI	MU	LG	MS	MS	LG	LG	LG	LG	LG
3480	203	19046	49098	74802	32047	32277	32279	49	31810
Zoo	Aral	Zoo	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Kuchka
M	F	F	F	M	M	F	M	M	M
8	Old		Old	Old	5	6	Old	Old	30

	39	43	38	41.5	39	38	38.5	40.7	39	42
1	26	31	27	29	30	27.3	28	30	30.5	32
2	36	37.7	36	37	35.5	34	35	34.5	35	38.1
3	41	42	40	41	40	38	40	40	39.5	44
4	25.5	28	25	28	27	25.6	25.5	27	27	27.6
5	37	39	38	39	39	37	38	38	37	40
6			22.5	23.3	22	22.5	23	21	23	24

	37	42	39	41	39	38	39	39	39.1	43
1	26	30	28.5	29	29	27	29	30	30	32
2	33	34.5	33	33	33	32	33	31	31.7	35
3	39.5	40	37.5	38	37.8	37	38	37	37.8	41.5
4	26	27	25	29	26	26	26.1	26	26.5	28
5	34	34.5	35	34.5	35	34	35	33.3	33	35
6			23	23	22	22	22.1	20	21	24

	36	43	43	43	45	43	46	42	42	40
1	48	55	45	50	55	50	52	46	51	50
2	31.5	32.5	32	34	31.8	33	33	30	31	33
3	53	60	58.3	61	59	56	60	58	58	59
4	22	21	23	21.5	20.3	23	24	21	22	26
5	37	40	38.5	39	38.7	36	38	36	35	38.5
6	120	141	120	127	139	129	137	123	131	136

	35	45.5	46	45	48 <th>41.5</th> <th>47.2</th> <th>43</th> <th>44.1</th> <th>46</th>	41.5	47.2	43	44.1	46
1	42	54	50	49	53.2	50	51	46.5	49	53
2	30	32.5	32.1	35	33	32.1	32	30	31	33.5
3	52	55	53	58	55	52	57.5	52	54	56
4	22	22	23	22.7	21	22	21.5	21.5	21	25.5
5	34	33	36	35.5	34.7	33	35	35	32	37.5
6	105	133	123	120	133	121	132	114	120	130

Table 21- Second and Third Anterior and Posterior Phalanges

SECOND AND THIRD PHALANGES

Code	HI 1	HI 7	HI 10	HM 1	HM 5	HM 13	HM 14	HM 16	HM 17	HM 29	HM 30	HM 33
Collection	AC	BM	BM	BA	LG	NY	NY	NY	NY	MS	MS	LG
No Cat	549	1646	57.718.1	3529	14741	57208	57201	57212	57214	102029	94700	32275
Origin/Std	Kutch	Kutch	Kutch	47°N94°E	45°N102°E	Loh	Loh	Loh	Loh	Loh	Zoo	Zoo
Sex	M	M	M	M	M	M	M	M	M	F	F	M
Age			22			Old	Old					Old
PH II ANT												
1	37,7		40	40,5	39,2	45	41	39	42	40	40	40
2	27,3		29	31	29,2	34	30	30	31	30	29	29
3	37		39	35,1	36	36,5	39	37,5	36	34	36	37,2
4	41		41,5	41,4	42,5	41,2	41	42	40	38	42	43
5	26		27	27,5	27	28	28	26,5	27	27	26,5	27,1
6	37,2		39	37,3	40	39	41,5	40	40	36,5	39	39
7					23					22	23	22,5
PH II POST												
1	39		40	40,8	40	45	41,5	38,5	41	39	40	41
2	26,8		28,5	31	28	33,5	31	29	31	29	30	32
3	34,4		36,5	31,8	34,2	35	35,5	33,5	33,5	31,3	35	34
4	40,1		40,5	39,6	40,1	40	37,5	40	37	36,1	41	40
5	26,8		28	26,5	26	28	28	26,3	26,5	25,5	28	28
6	34,1		36	33,5	37	35	36	35,3	36	32	35	34,1
7					23,1					21,5	22,5	23
PH III ANT												
1		34	43,5	42,3	-	-	-	-	-	42	36	37
2		45	49,5	50,7	-	-	-	-	-	49	46	51
3	29,5	29,7	32	33	-	-	-	-	-	30,5	32	32
4	51	54,5	60	55,5	-	-	-	-	-	53	53	58
5	19,2	21	21,5	20,5	-	-	-	-	-	20	22	21
6	39	41	38,5	39	-	-	-	-	-	37	37,7	38,5
7		117	130	128	-	-	-	-	-	124	115	130
PH III POST												
1	40	43	43,5	44,1	-	-	-	-	-	43	38,5	43
2	44	46,5	49	48,7	-	-	-	-	-	49,5	44	47
3	32,2	32	33	32,5	-	-	-	-	-	30	32	32,2
4	48,5	53,5	55,5	50	-	-	-	-	-	49	50	53
5	19	21,5	22	21,5	-	-	-	-	-	20	22,5	22
6	36	38	35	34	-	-	-	-	-	32	35,5	36
7	105	118	120	118	-	-	-	-	-	120	108	123

Table 22- Femur and Tibia

FEMUR

Code	HS 1	HS 2	HS 3	HS 5
Collection	BM 1867	AC 65	YA	MCZ
No Cat	12.3.1	1863.20	1637	6345
Origin/ Std	Syria	Syria	Syria	Syria
Sex	F	F	F	
Age				
1	285	286	280	299
2	260	263	255	271
3	29	28	26	30
4	84	82	81	86
5	64	65	62	63
6	40,2	40,2	41	41
7	68	67,7	67	71
8	47	47,9	48	47
9	88	91,9	89	88

HP 1	HP 2	HP 3	HP 7	HP 8	HP 9	HP 12	HP 13	HP 15	HP 16	HP 17	HP 19	HP 20	HP 21	HP 22
AC	AC	AC	LD	AM	AM	LY	KI	HA	HA	HA	NY	KI	YA	CH
1893.509	1901.9	1902.487	12507	17557	11827	383	1576	5881	7045	7158	35670	1662	5098	97880
Iran	Iran	Iran	Iran	Zoo	Zoo	Iran	Iran	Zoo	Zoo	Zoo	Zoo	Zoo	Iran	Iran
M	F	F	M	M	M	F	M	M	M	M	M		F	M
			2		2		8	3			Old	2	4	
321	317	329	299	342,5	325	335	318	335	320	327	340	327	315	347
293,5	288,5	299,5	273	305	290	305	286	298	291	295	307	291	283	308
28	28,5	31	30	31	29	30,5	31	35	28,5	33	30	30,5	31,5	32,7
98	90	99,5	89	97	99	94,5	94,5	97	95	98	99	97	96	99
74	70	68	70	74	72	79	72	76	69	71	78	76	70	78
46	44	47,5	44	46,5	42,5	46,5	43	48	48	51	48	45	47	47
76	74	77	72	78	74	75	74,5	77,5	75	82	77	78	70	76
49	51,5	55	50	53	53,5	49	50	55	49	51	51	50	51	53
100	95,5	98	85,5	101	95,5	94,5	92	104	99	108	103	98,5	97	99

TIBIA

1	270	267	263,5	291
2	260	245	254,5	275
3	31	29	28,1	33
4	22	22,5	22	23
5	73,5	70,1	70	72
6	65	65	65	64
7	53,5	52	58	53,5
8	36,5	38	37,1	37
9	38,5	35,5	33	37
10	12,5	12	14	13

307	298	306,5	292	329	313	320	307	314	306	306	320	313	301	330
282	272	280	281	314	298	309	294	301	293	293	308	300	290	317
32	32	33	30	35	32,5	34,5	35	36	33	38	34	36,5	36	36
25	24,1	25	23	24	24	27	24,5	26,5	(28)	26	27,5	25	26	26
79	76	80	76	81	78	81	78	83	83	85	79	80	81	84
74	70	74	68,5	76	73	70	69,5	76,5	75	81	74	73	71,5	78
60	57	58	58	62,2	62	57,5	58	64	59,5	63	63	60	58,1	63,5
40	37	40	37	44	41	38	39	41,5	42	45	44	40	40,5	44
39	41	39	44	45	42	42	42	42	39	48	42	40	41	44
12	12	15	12,5	14	14	16	15	15	14	13	15	13,5	12	13,5

Table 23- Femur and Tibia

FEMUR

Code	HP 23	HP 28	HP 29	HP 30	HP 31	HP 32	HP 33	HP 34	HP 35	HP 36	HP 37	HP 40	HP 41	HP 48	HP 49	HP 51
Collection	AC	HA	HA	HA	HA	HA	HA	HA	BO	BO	BO	WA	WA	MU	AC	AC
No Cat	1978.50	7591	7621	7851	7850	8281	8304	7446	89482	77927	92311	541427	521103	1965.207	1980.67	1983.72
Origin/ Std	Iran	Iran	Zoo	Zoo	Zoo	Zoo	Zoo	Zoo	Zoo	Zoo	Zoo	Zoo	Zoo		Std 56	Std 190
Sex	M	F	F	F	F	M	M	M	F	F	M	F	F	M	F	F
Age	Old	Old	Old	Old	Old	Old			Old	12	23	4			Old	
1	340	333	335	332	335	340	337	317	328	328	331	-	-	326	326	333
2	300								300	302	304	-	-	294	285	298
3	33,7								31	31,5	31	-	-	32	30	35,2
4	104								95	94	102	-	-	99	97	104
5	79								67	74	72	-	-	75	72	75,5
6	46,5								48	47	46	-	-	47,5	46,2	47
7	81								75	79	76	-	-	77	75	79
8	50								51	50	52	-	-	49	51	54,3
9	102								100	98	99	-	-	97	95	108
HT 2	KI	HT 4	HT 2	HT 4	HT 2	HT 4	HT 2	HT 4	KI	HT 2	HT 4	HT 2	HT 4	KI	HT 2	HT 4
3480	MU	3480	MU	3480	MU	3480	MU	3480	203	3480	MU	203	3480	MU	203	3480
Zoo	Aral	Zoo	Aral	Zoo	Aral	Zoo	Aral	Zoo	Aral	Zoo	Aral	Zoo	Aral	Zoo	Aral	Zoo
M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
8	Old	8	Old	8	Old	8	Old	8	Old	8	Old	8	Old	8	Old	8
334	341	334	341	334	341	334	341	334	341	334	341	334	341	334	341	334
308	310	308	310	308	310	308	310	308	310	308	310	308	310	308	310	308
29,5	30	29,5	30	29,5	30	29,5	30	29,5	30	29,5	30	29,5	30	29,5	30	29,5
95	103	95	103	95	103	95	103	95	103	95	103	95	103	95	103	95
76	84	76	84	76	84	76	84	76	84	76	84	76	84	76	84	76
47	48,5	47	48,5	47	48,5	47	48,5	47	48,5	47	48,5	47	48,5	47	48,5	47
77	79	77	79	77	79	77	79	77	79	77	79	77	79	77	79	77
53	57	53	57	53	57	53	57	53	57	53	57	53	57	53	57	53
99	100,5	99	100,5	99	100,5	99	100,5	99	100,5	99	100,5	99	100,5	99	100,5	99

TIBIA

1	310	307	326	316	322	326	327	310	317	315	310		314	313	293	309
2	285								297	301	288			301,5	268	
3	37,5								34	35,5	37	39,4	33,2	36	35,2	38,9
4	26								25	25	25			25,5	24,5	28,1
5	86								81	82	82	84,2	80,4	81	78	85,6
6	78								75	77	77			75,5	68	76,9
7	64								60	61	62	62,5	57,1	61	59	65,7
8	42								40	43	41	43,3	40,2	43	39	44,6
9	44								42	42	39,2			44	45,5	46,9
10	14								13,5	12,5	16			12,5	12	15,3
323	323,5	323	323,5	323	323,5	323	323,5	323	323,5	323	323,5	323	323,5	323	323,5	323
310	308,5	310	308,5	310	308,5	310	308,5	310	308,5	310	308,5	310	308,5	310	308,5	310
34,5	33,5	34,5	33,5	34,5	33,5	34,5	33,5	34,5	33,5	34,5	33,5	34,5	33,5	34,5	33,5	34,5
25,5	28	25,5	28	25,5	28	25,5	28	25,5	28	25,5	28	25,5	28	25,5	28	25,5
82	85	82	85	82	85	82	85	82	85	82	85	82	85	82	85	82
70	76,5	70	76,5	70	76,5	70	76,5	70	76,5	70	76,5	70	76,5	70	76,5	70
65	60	65	60	65	60	65	60	65	60	65	60	65	60	65	60	65
42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14

Table 24- Femur and Tibia

FEMUR

Code	HT 12	HT 18	HT 23	HT 25	HT 26	HT 27	HT 30	HT 32
Collection	MS	MS	LG	LG	LG	LG	LG	HA
No Cat	49098	74802	32047	32277	32279	49	31810	7682
Origin/ Std	Badkhyz		Badkhyz	Badkhyz	Badkhyz	Badkhyz	Kuchka	Zoo
Sex	F	?	M	F	M	M	M	F
Age	Old	Old	5	6	Old	Old	Old	21
	336	335	338	333	333	325	356	325
1	298	304	310	298	294	296	310	
2	30	31	32	30	27,5	31	34	
3	97	94	98	98	97,5	95	103	
4	76	77	78	74	74	76	83	
5	46	46	48	47,5	43	45	50	
6	77	80	75	71	77	74	82	
7	56	54	54	53	53	54	62	
8	97	99	104	100	100	99	108	
9								

HI 1	AC
549	
Kutch	
M	
322	
297	
29,3	
90	
70,1	
41,7	
74,2	
48,6	
95,8	

HM 1	HM 5	HM 13	HM 14	HM 15	HM 16	HM 17	HM 29
BA	LG	NY	NY	NY	NY	NY	MS
3529	14741	57208	57201	57209	57212	57214	102029
47°N94°E	45°N102°E	Loh	Loh	Loh	Loh	Loh	
M	M	M	M	M	M	M	F
		Old	Old			Old	
319	333	344	346	336	334	341	332
293	305	313	317	307	305	312	300
30,1	33,5	33	31,5	34	34	32	29
95	100	101	96	104	98	100	99
70	79	81	74	79	80	81	71
46,2	49,5	49	44,5	48	49	49	48
73,5	82	81	77	81	76	78	75
52	54	55	58	57	53	55	54
102	100	105	100	99	101	105	98,5

TIBIA

1	314	324	318	320	314	306	334	320
2	300	307	300	294	288	286	307	
3	34	34	36	31,5	33	36	38	
4	26,5	26	28	27	26,5	28	28	
5	83	82	81	77	80	79	87	
6	76	74	77	72	72	75	82	
7	59	60	61	60	58	61,5	70,5	
8	41	42	41	40	41	40,5	46	
9	36,5	38	44	40	41	40	40	
10	13,5	12,5	16,5	15,8	16	15	16	

302
277
31,7
24,2
75,6
70
60
41,5
36
15

318	325	334	335	322	315	329	310
304	305	319	323	310	305	318	293
31	38,5	36	36	37	36,5	37	31,5
23,3	25,5	27	37,5	28	28	27	27
78,1	87	85	83	85	84	84	80
71	75	75	72	72	77	72	71
58,5	62	64	59	65	64	61	57,5
41	43	45	43	43	43	39	38
38	44	43	43	43	40	43	40
14	14	15	15	18	15,5	15	14,5

Table 25- Femur, Tibia, Talus and Calcaneum

FEMUR

Code	HM 30	HM 33
Collection	MS	LG
No Cat	94400	32275
Origin/ Std	Zoo	Zoo
Sex	F	M
Age		Old
1	356	332
2	321	304
3	32	33
4	101	102
5	77	75
6	49	47
7	79	76
8	53	54
9	107	104

K1	K17	K32	K42	K43	K47
AC	AM	BL	LG	MS	PR
1963.363	985	32172	32276	151314	6291
	Zoo	Tibet	Zoo	Zoo	Zoo
M?	M	F	M	F	M
Old	21				
365	366	355	366	350	379
324	321	318	327	317	338
31,5	31	32	33	29	33
103	100	102,5	117	97	103
79	77	75	78	74	80
48,5	48	48	48	48	46
81,5	81	79	81	75	77
58	53	56	54	51	53
101	105	104	108	100	100

TALUS

Code	HS 2	HS 3	HS 5
Collection	AC	YA	MCZ
No Cat	1863.20	1637	6345
Origin/Std	Synia		
Sex	F	F	F
Age			
1	49		47
1 bis		47	
2	46,5	47	47,5
3	44,7	45	45
4	21,5	24,5	22
5	35,2	38	38
6	25	26,5	26,5
7	39,2	39,5	38,8

HP 1	HP 2	HP 3	HP 7	HP 8
AC	AC	AC	12.507	AM
1893.509	1901.9	1902.487	LD	17667
Iran	Iran	Iran		Zoo
M	F	F	M	M
Old	8	Old	2	18
52,8	49	51	55	55
50,7	48	49		
49,4	46,9	50,5	50,5	54
48,8	42	45,6	49	52
24,6	23	26	24	27
41,4	37,3	38,2	40,5	43
30,9	28,3	29,1	30	30
41,4	39,3	41	42	45,5

TIBIA

1	335	325
2	315	303
3	37	38
4	27	26
5	85	85
6	80	81
7	62	64
8	44	43,5
9	45	39
10	16,5	16

344	338	336	346	317	353
318,5	325	319	324	300	335
37	35	37	38	34	36,5
26	26	27	26	24	27
87	85,5	87	88	76	86
81	79	76	85	72,5	75
43	43	43	64	60	64
65,5	67	66	45	40,7	45
48	50	46,5	40	44	44
14,5	17	15	15	14	17

CALCANEUM

1	87	85	90
2	54,6	57	60
3	14,8	15	16
4	23,8	24	23
5	37	38,5	36
6	37,1	35	39
7	36,7	38	36
8		29	27

98	93	91	94	104
61	61,5	61	59	71,5
18,5	16,5	18	15,2	19
29	28,5	27	27	30
45,5	43	43	42	44
41,5	40	43,5	41	44
40,5	40,5	41,5	42	43
30	30	28		

Table 26- Talus and Calcaneum

TALUS

Code	HP 9	HP 12	HP 13	HP 15	HP 16	HP 17	HP 19	HP 20	HP 21	HP 23	HP 28	HP 29	HP 30	HP 31	HP 32	HP 33	HP 34	HP 35	HP 36	HP 37
Collection	AM	LY	KI	HA	HA	HA	NY	KI	YA	AC	HA	HA	HA	HA	HA	HA	HA	BO	BO	BO
No Cat	11827	383	1576	5881	7045	7158	35670	1662	5098	1978,50	7591	7621	7851	7850	8281	8304	7446	89482	77927	92311
Origin/ Std	Zoo	Iran	Iran	Zoo	Zoo	Zoo	Zoo	Zoo	Iran	Iran	Iran	Zoo	Zoo	Zoo	Zoo	Zoo		Zoo	Zoo	Zoo
Sex	M	F	M	M	M	M	M	M	F	M	F	F	F	F	M	M	M	F	F	M
Age	2			3	Old		Old	2	4	Old	Old	Old	Old	Old	Old			Old		
1	54	53	49,5	55	51	57	56	53		54	53	52	52,5	50	51	51,5	52	51,5	55	54
1 bis									48,5	52	50	50	51	48	50	50	50	50,2	52,5	52
2	52	52,5	50	55	49	56,5	57,5	52	50	52	52	52	52	53,5	53,5	53	51,5	50,4	53,5	52
3	49	48	47	52	47,5	52	50	50	46	52	48,5	51	49	51	51	49	51,5	49,5	50	50
4	23	24	24	27	24,5	30	25	27,5	23	25	26	24	26	25	24,5	24	25	25	24	26
5	40,5	40,5	38	44	39	44	43	42	41	40	40	41	40	40	40,5	41	40	40,5	40	40
6	31	28	29	31	28	33	30	28,5	29	31	30,2	30	31	29	28,5	31	28,5	31	31	30
7	44	41	42	46	40,5	46	41,5	43	42	43	43,3	43	43,5	44	43	43	43	42	44	43

CALCANEUM

1	103		95	98	93	99	93	96	93,5	98	96,5	96	96	97	95	96,5	93	95,5	95	96
2	68		64	66	62	64	62	67	61	64	62	62	62	64	62	65	60	67	64	62
3	15,5		1,5	18	15,5	18	16,5	16	15,5	19	16,8	17	16	16,2	17,5	17	17	17	17,5	16,7
4	30		28	30,5	27	30,5	27	30,5	28,5	28,5	29	30	29	28	30	29,5	28,5	28	27	30,3
5	39		39	44	43	44	45	41	42	47,5	41	44	42	41,5	42	44	43	44	44	42
6	42		43	43,3	39	45	43	41,5	39	42	41	42,5	41	41,5	41	41	41,5	41	41	42
7	43,5		42	43	40	44	44	42	41	46	41,5	42	44	43	44	43	41,5	42	43	42
8							30		30,7	30	29	32	30,1	32	32	30	30	30,5	32	30

TALUS

35°63°

Code	HP 40	HP 41	HP 48	HP 49	HP 51
Collection	WA	WA	MU	AC	AC
No Cat	541427	521103	1965.207	1980.67	1983.72
Origin/ Std	Zoo	Zoo	Zoo	Std 56	Std 190
Sex	F	F	M	F	F
Age			6	Old	
1			53	51	52
1 bis	50,5	46,8		49	50,5
2	52,2	47,8	53	50,5	51
3	53,5	46,8	52	52	55
4			26	22,5	23,8
5	41,8	39,7	43	40	40,5
6			30	28	29,2
7			43	41	

HT 2	HT 4	HT 8	HT 12	HT 18	HT 23	HT 25	HT 26	HT 27	HT 30
KI	MU	LG	MS	MS	LG	LG	LG	LG	LG
13480	1962.203	19046	49098	74802	32047	32277	32279	49	31810
Zoo	Aral	Zoo	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Badkhyz	Kuchka
M	F	F	F	M	M	F	M	M	M
	Old		Old	Old			Old	Old	30
52	52	54	47	52	52	49	50	52	56
		51,5	45	50	50	48	48	50,5	54
51	54	52	48,2	51	52	51	50	51	55
51,5	50,5	48	49	51,5	48	48	46	48	53,3
26,5	25	24	23	23	23,5	22,5	23	24	25
42	42,3	42	43	42	40	41,5	42,2	41,3	45
30,5	30	29,5	29	31	30	30,5	29	29	34
44	43	40,7	41,2	43	42	42,1	41,7	42	46

HI 1	HI 10
AC	BM
549	1957.7.18.1
Kutch	Kutch
M	M
	22
53	52
53,1	52,5
49	47
23,5	25
41	38
29,5	30
43,9	44

CALCANEUM

1	101,1	92,4	96	92,5	98,5
2			65	59	69,5
3			17,5	17	19,7
4	30,1	30,6	27	29,7	30,6
5	40,4	37	45	39,7	41,3
6			43	40,1	43,4
7	43,4	41,6	40	39	43,2
8				28	28,8

94	98	99	92	92	94	94	94	104
65	67	67	62	64	63	61	65	72
16	16,5	16	16,1	17	18	15,6	16	18,3
30,5	30	31	30	30	27,7	30	29,5	34
44	44	45	45	44	45	43	43	44
42,5	43	42	40	43,5	40	42	40	45
43	43	44	45	42	41	39	43	45
		30	29	30	29,2	30	28,5	30

93	91,8
58,9	61
15,1	16,5
27	32
43,9	49,5
40,3	42
42,1	46

