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Karabi Tamchin: Faunal Remains

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This research represents a preliminary analysis of the faunal assemblages from four occupation levels at Karabi Tamchin. The total number of faunal remains recovered from Levels II/2, III, IV, and V, which were excavated during three successive field seasons from 1999 to 2001, is 52,820 pieces (Table 16-1). Faunal identifications were made in the field in 2000 and 2001, a small selection of diagnostic faunal material was identified using reference collections at the Museum National d'Histoire Naturelle, Paris. Unidentifiable bone fragments were sorted to standard size categories and counted with the help of graduate students from the University of Manitoba.

Taxonomic Representation

The faunal assemblages excavated from the four main occupation levels at Karabi Tamchin (Levels II/2, III, IV, and V) indicate the presence of taxa typical of Late Pleistocene, Eurasian steppe biocoenoses including: *Equus hydruntinus, Rangifer tarandus, Cervus elaphus, Saiga tatarica, Bos/Bison* sp., *Hyena crocuta, Vulpes vulpes, Ursus spelaeus*, and *Rupicapra rupicapra* (Table 16-2). These taxa tend to co-occur in upland regions of Eastern Europe, particularly in the Crimean Peninsula and neighboring Caucasus region, during the Late Pleistocene (Markova et al. 1995; Markova, Simakova, Puzachenko, and Kitaev 2002).

The "wild ass" (*Equus hydruntinus*) dominates all levels in terms of the total number of identifiable bone fragments (NISP) (Table 16-2) and in terms of the minimum number of individuals (MNI) (Table 16-3). Reindeer (*Rangifer tarandus*) and red deer (*Cervus elaphus*) are present in smaller quantities but are ubiquitous (Tables 16-2, 16-3). Large artiodactyls include fragments of bone attributable to either red deer or reindeer. Other herbivores present include saiga antelope (*Saiga tatarica*), which is ubiquitous and probably under-represented due to the fragmentary nature of the assemblage (Table 16-4). The small artiodactyl class likely incorporates numerous saiga remains rendered non-diagnostic (to taxon) due to fragmentation. The same might be said of chamois (*Rupicapra rupicapra*), although diagnostic material for this taxon is only encountered in Level IV (Table 16-2). A large bovid (*Bos/Bison*) occurs in Levels II/2 and V. Among the carnivores, the common fox (*Vulpes vulpes*) and hyæna (*Hyena crocuta*) are present in most levels; cave bear (*Ursus spelaeus*) occurs once in Level III. The distribution of bone fragments into size classes appears to confirm the dominance of equids (LM class) while highlighting the continued presence of smaller, saiga-sized prey (S/MM class).

The small MNI values for herbivores in all levels at Karabi Tamchin (Table 16-3) are indicative of short stays and/or small hominid group sizes. The assemblage from Level III is relatively larger than the other assemblages in terms of the total number of individuals present (five *Equus hydruntinus* and two reindeer have been identified). The carnivores are also repre-

TABLE 16-1
Karabi Tamchin: assemblage size and percentage of unidentified bone

	Total	*Unidentifiable*	*% Unidentifiable*
Level II/2	6,998	6,494	92.8
Level III	11,832	10,629	89.8
Level IV	9,392	8,938	95.2
Level V	24,598	24,046	97.8
Total	52,820	50,107	94.9

TABLE 16-2
Karabi Tamchin: taxonomic representation (NISP)

	Level II/2	*Level III*	*Level IV*	*Level V*
E. hydruntinus	51	40	37	18
Cervus	7	3	1	6
Rangifer	5	35	6	1
Saiga	2	5	6	3
Rupicapra	–	–	2	–
Bos/bison	2	0	1	2
Hyena	1	6	–	–
Ursus	–	1	–	–
Vulpes	10	5	3	3
Panthera sp.	–	2	–	–
Lepus sp.	–	1	–	–
Equid	57	126	89	116
Carnivore	4	19	4	1
Large artiodactyl	43	74	23	44
Small artiodactyl	113	263	77	73
MF	–	22	2	–
LM	166	516	132	144
S/MM	21	66	54	14
SM	8	13	6	6

TABLE 16-3
Karabi Tamchin: taxonomic representation (MNI)

	Level II/2	*Level III*	*Level IV*	*Level V*
E. hydruntinus	3	5	3	3
Cervus	1	1	1	1
Rangifer	1	2	1	1
Saiga	1	1	1	1
Rupicapra	–	–	1	–
Bos/bison	1	–	1	1
Hyena	1	1	(1?)	(1?)
Ursus	–	1	–	–
Vulpes	1	1	1	1
Panthera sp.	–	1	–	–

Numbers in parentheses indicate Carnivore cf. *Hyena* only identified in these levels.

TABLE 16-4
Karabi Tamchin: allocation of unidentified bone to size classes (percent of sample)

	<2 cm	*2–5 cm*	*5–10 cm*	*N*
Level II/2	59.0	40.3	0.7	6,494
Level III	62.4	36.9	0.7	10,629
Level IV	57.9	41.2	1.0	8,938
Level V	82.7	16.9	0.4	24,046

Age Classes

sented by very few bones and it is unlikely that the site functioned as a den for either hyæna or bear during the time of deposition of the levels studied here.

Teeth provide a basis for analyzing the mortality patterns for equids in all four of the occupation levels. Remains consist mostly of single (isolated) teeth. Unfortunately, wear stages on isolated teeth can only provide broad age estimates that sometimes overlap two age categories. In this study, equid teeth were assigned a dental wear stage (following Levine 1983) and sorted (where possible) to the following age categories: foal, juvenile, prime adult, and old adult. Age categories were established following significant developmental stages. Foals (birth to 2 years of age) are dependent on their mothers and rarely encountered on their own. Juveniles (between 2 and 5 years of age) are entering their reproductive years and may still be present in mixed mare and stallion herds (especially if female) or may be solitary or living in small bachelor groups (if male). Prime adults are in their peak reproductive years (5–17 years of age for the sexes combined, based on peak reproduction ages in males: 7–11 years; and females: 5–17 years). Old adults (aged over 17 years) are past their reproductive prime and males are unlikely to maintain territories.

In Level II/2 a minimum of three equids are present, including one juvenile, one prime, and one old adult. Level III includes one foal, one juvenile, and three prime aged adults. The presence of three fœtal individuals in this level indicates that the prime adults were female. The probable age of the fœtuses (15–23 weeks of age, see discussion below) indicates that the females, though pregnant, would not have been hindered in their movements. Level IV contains three individuals including one foal and two prime adults. Level V contains a minimum of three individuals, including

one juvenile and two prime adults. The age profiles indicate that the exploitation of *E. hydruntinus* was focused on the acquisition of prime adults, specifically mares accompanied by juveniles or traveling in mixed social groups. A prime adult focus, combined with the presence of skeletal elements from all portions of the carcass (see discussion below) indicates hunting rather than scavenging as the mode of acquisition.

Seasonality

Seasonal information for Level III is available on the basis of fœtal equid remains. Three fœtal equids are present in this level. On the basis of data published by Prummel (1987) for fœtal horse, the ages of the three fœtuses in Level III are estimated between 15 and 23 weeks. Given normal reproduction and gestation patterns for wild ass, this means that the mares were probably killed in the fall or early winter. Fœtal bone is also present in Levels II/2 and V but cannot be identified to taxon with any confidence.

Taphonomic Patterning

The faunal assemblages analyzed here are heavily fragmented (Table 16-4). Most of the bone fragments measure less than 2 cm in length and have not been identified to either taxon or size class. The Level V assemblage is the most heavily fragmented, at least partially as a result of brecciation. The effects of brecciaing (and archeological recovery from brecciated levels) are not the only factors affecting bone fragmentation, however. Most bone fragments show a pattern of green-bone fracture and dynamic loading (spiral fractures, impact scars) attributable to human and/or carnivore processing of fresh bone.

Taphonomic patterning indicates that Levels II/2 and III are more likely to have been affected by carnivores than Levels IV and V, and that these latter reflect more direct signs of hominid use of bone (Table 16-5). Gnawing is present to some extent in all levels but is relatively more common in Levels II/2 and III, indicating that carnivores potentially played a greater role in creating the taphonomic signatures for these levels. Gnawed bone, digested bone, end-flaked bone, bone flakes (detached flakes, sometimes digested), and flake scars tend to co-occur. Levels II/2 and III also contain a larger number of carnivore remains by NISP (Table 16-2) and greater diversity of carnivore species. The presence of fœtal bone in these levels indicates that the assemblages were not heavily damaged by carnivore activity, however.

Burned bone is present in Levels III, IV, and V (Table 16-5). Most of the burned bone scored is completely burned, indicating direct exposure to flames; burned bone fragments are generally under 2 cm in length. Fragmentation (Table 16-4) and taphonomic patterns indicate that bone was probably heavily processed in Level V, likely for marrow judging by the number of long bone shaft fragments. The pattern of burning also indicates that bone may also have been burned as a source of fuel (Thery-Parisot 2002). Bone may also have served as a fuel source in Level IV. Burned bone will have been much less attractive to scavengers visiting the site after its human occupants had left (Outram 2001), which could explain the relative lack of carnivore damage in these levels.

TABLE 16-5
Karabi Tamchin: taphonomic patterns

	Level II/2	*Level III*	*Level IV*	*Level V*
Burned	–	20	252	752
Butchered	9	14	9	10
End flaked	11	10	4	6
Gnawed/digested	54	58	23	5
Bone flake	51	77	42	30
Flake scars	3	13	9	5

Human Modifications to Bone

Cut marks or other butchering marks are relatively infrequent (Table 16-5). The lack of butchering data is partly attributable to the poor surface condition of the bone and to post-depositional damage, especially in the lower (brecciated) Levels IV and V. Two bone shaft fragments from Level V showed a pattern of damage consistent with their use as retouchers, but surficial damage to the fragments prevents definitive identification. Similarly, one shaft fragment from Level II/2 showed a small number of repeated, localized impact

scars but without additional preparation (striations) and the bone was weathered. Lack of evidence for the use of bone retouchers may be a result of lithic reduction patterns at the site, discussed elsewhere in this volume, which indicate little primary tool production or extensive tool reworking on site.

Element Representation: Equids

Element representation patterns are analyzed for the best-represented taxon—the equids (Figure 16-1). The ratio of lower to upper teeth (per level) indicates that whole skulls (including mandibles) were transported to the site in Levels II/2, III, and IV (the ratio approaches 1 in each case), whereas in Level V, a ratio of 1.55 indicates that mandibles were either transported or have preserved preferentially. Figure 16-1 also indicates that entire carcasses were likely processed at the site in Levels II/2, III, and IV. The kill sites, therefore, must have been a relatively short distance from the shelter and hominids had preferential access to the kills. The same figure (Figure 16-1) indicates that podial and axial elements are under-represented in Level V, which may indicate that fragmentation and burning has removed these smaller (podial) and more fragile (axial) elements. It could also indicate that elements of greater utility were being preferentially transported to the site, which would explain the ratio of lower to upper teeth. In the latter case, the distance to kill-sites may have been greater but preferential access is still indicated. The highly fragmented nature of bone in Level V (Table 16-4) makes any further conclusions tenuous.

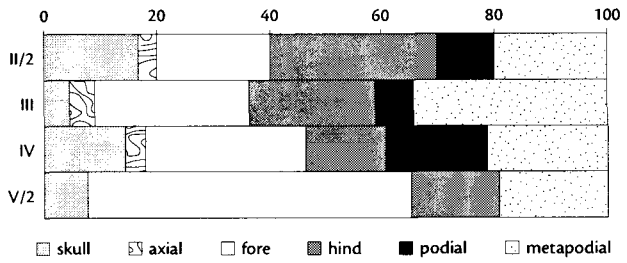

Figure 16-1—Karabi Tamchin: element representation for Equids (cumulative percentages).

Epiphyseal portions of equid limb bones are distinctly under-represented; the processing of limb bones for marrow and the use of bone for fuel likely resulted in an over-representation of shaft fragments and the destruction of spongy bone. Equid long bones are a relatively important source of bone grease (Lam 1999) and this is probably reflected in the degree of shaft fragmentation seen in the assemblages.

Spatial Distribution of Bone

The spatial distribution of bone material in Levels II/2 and IV is not very focused (Figure 16-2). The lack of spatial focus may indicate a lack of spatial organization or the presence of palimpsests, but this remains to be tested. In Levels III and V, faunal remains are more spatially focused, despite the fact that these are numerically larger assemblages. Bone tends to concentrate in the central part of the shelter in Level III, and towards the front of the shelter and centrally in Level V (Figure 16-2). The presence of burned bone concentrations in Level IV, in squares 9I and 10G, and in squares 10H and 11H in Level V, may indicate the presence of hearths inside the shelter or hearth-cleaning episodes.

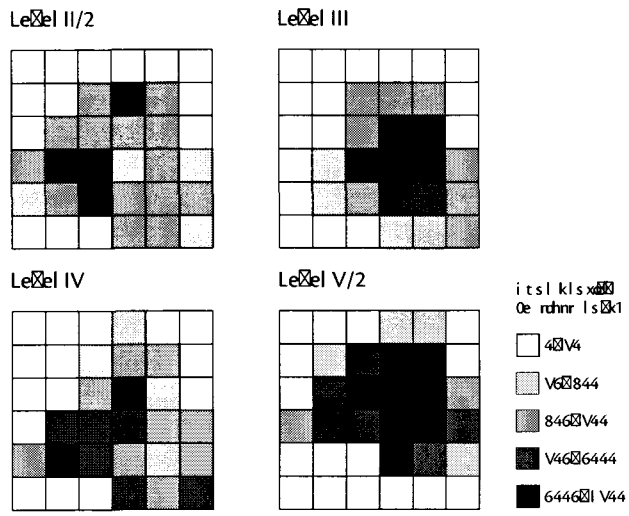

Figure 16-2—Karabi Tamchin: spatial distribution of bone.

Environmental Reconstruction

The presence of *E. hydruntinus* and *S. tatarica* at the site is consistent with broad plateaux and open grassland or steppe communities, while also reflecting a regional (Crimean) focus on the acquisition of these species, for example at sites like Starosele, Kabazi II, and Kabazi V (Burke 1999a, 1999b; Patou-Mathis 1999). The presence of reindeer at Karabi Tamchin is indicative of tundra-like landscapes or wooded (coniferous) tundra (Kahlke 1999). Reindeer were widespread in Crimea throughout the Late Pleistocene and clearly adapted to mosaic environments (Markova et al. 1995).

Red deer (*Cervus elaphus*) tolerate a wide range of habitats including open, mountainous country (Skovlin 1982), but prefer forested belts in elevated regions (Markova et al. 1995). Although red deer are distributed in open, mountainous terrain today (e.g., in the British Isles), these are managed herds in highly anthropogenic landscapes and it seems more likely that the occupants of Karabi Tamchin were exploiting smaller groups of red deer on wooded or partially wooded slopes below the site.

Chamois (*Rupicapra rupicapra*) is often used as an indicator of mountain environments, but this species is also known to frequent karst features in mid to low altitudes (Miracle and Sturdy 1991) where its surefootedness comes into play. The presence of chamois in Level IV at Karabi Tamchin is a reflection of the karstic nature of Karabi plateau, which lies above the site, rather than the proximity of the first Crimean Mountain range.

The environment that can be reconstructed around Karabi Tamchin on the basis of malacological and microfaunal analyses reflects the local setting of the shelter at the foot of a rocky escarpment, above a river valley. The microfauna indicate generally open conditions around the site (Markova, Chapter 17). Rocky and forest-steppe species dominate the snail assemblages in Levels II/2 and IV, while Level III contains relatively more steppic elements (Mikhailesku, Chapter 19). Conditions in Level IV were relatively humid, while Level III appears to have accumulated under temperate conditions, but relatively colder than today (Mikhailesku, Chapter 19). The malacological data reflect probable interstadial conditions, while both the malacological and microfaunal data indicate that Level II/2 was deposited during a warm phase.

Regardless of the apparent shifts in climate indicated by the microfauna and malacofauna, the large mammal fauna indicate a continuing focus on animal resources from the more open landscapes on the plateau above the site. The steep sloped ravine below the site probably excluded wild ass and saiga, since these species tend to prefer even, hard and unbroken terrain. The dominance of wild ass in all assemblages, and the ubiquity of saiga and reindeer, indicates that the plateau above the site was probably accessible during each of the occupation phases and remained a focus of animal procurement.

Discussion

The minimum number of individual prey present in each level (Table 16-3) indicates that Karabi Tamchin was probably only used for short periods of time by small numbers of people. This is consistent with evidence that carnivores also used the site, particularly in Levels II/2 and III. The relatively large assemblages from Levels III and V (Table 16-1) may indicate either longer periods of occupation, more than one period of occupation per level, or the presence of larger groups. In Level V, assemblage size is probably inflated by the degree of fragmentation, however.

Taphonomic patterns indicate that whole equid carcasses were intensively processed on site. Element representation patterns for Level V, where upper teeth, axial, and podial elements are under-represented (Figure 16-1), could be due either to selective transportation of bone for marrow processing, or to destructive processes such as burning of bone, combined with depositional and post-depositional breakage. In general, mortality and element representation patterns indicate that equids were hunted, with a focus on the acquisition of prime-aged adults. The killing of both adult mares and juveniles (e.g., in Level III) indicates that hominids were probably stalking mixed herds of mares and young—though whether the assemblages reflect single hunting episodes or successive hunting events is unclear.

The environmental information that has been obtained for the site based on large mammal remains is consistent with what is known for the Late Pleistocene of Crimea, while microfaunal and malacological data indicate interstadial conditions. Evidence for fall/winter occupations at a relatively high altitude (the site is situated slightly less than 800 meters above mean sea level) near the first Crimean Mountain chain is more understandable given this evidence.

Taphonomic signatures for levels containing Crimean Micoquian lithic assemblages (Levels V and IV) and levels containing Western Crimean Mousterian lithic assemblages (II/2 and III) are somewhat

different, particularly with respect to the possible use of bone as fuel. However, the site appears to have had essentially the same function during successive occupations. The plateau above the site seems to have provided the occupants of Karabi Tamchin with most of their faunal resources, while the presence of red deer, combined with the use of flint cobbles from the riverbed below the site (Yevtushenko, Chapter 20) indicates that hominids were also exploiting resources from the valley below the site. Hominids likely occupied Karabi Tamchin for brief periods of time; the small lithic assemblages (Yevtushenko, Chapter 20) and the faunal evidence presented above indicate that hunting and the processing carcasses were the main activities carried out at the site.