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KABAZI II: LAST INTERGLACIAL OCCUPATION, ENVIRONMENT & SUBSISTENCE

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НАЦИОНАЛЬНАЯ АКАДЕМИЯ НАУК УКРАИНЫ
ИНСТИТУТ АРХЕОЛОГИИ
КРЫМСКИЙ ФИЛИАЛ

КЁЛЬНСКИЙ УНИВЕРСИТЕТ
ИНСТИТУТ ДО- И ПРОТОИСТОРИИ

Палеолитические стоянки Крыма,
Том 1

КАБАЗИ II:
ПРИРОДА И ЧЕЛОВЕК ВРЕМЕНИ ПОСЛЕДНЕГО ИНТЕРГЛЯЦИАЛА

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Small Mammals from the Palaeolithic Site of Kabazi II, Western Crimea

Anastasia K. Markova

The unique multi-layered open Middle Palaeolithic site Kabazi II is situated on the Second (Internal) Ridge of the Crimean Mountains (44° 50′ N; 34° 02′ E), on the right bank of the Alma River, in a belt of low mountain forest-steppe. Dr. Victor Chabai investigated the archaeology of the site, and has organised the complex study of the deposits, which include six archaeological units with numerous levels (Chabai 2003b; 2004c; Chabai et al., 2002; 2004.). Furthermore, the investigations at Kabazi II have incorporated several palaeontological methods, including palaeobotanical, malacological and theriological studies (Gerasimenko 1999; Patou-Mathis 1999; Mikhailesku 1999). The results from environmental studies, and the results obtained from a number of dating methods (AMS, U-series and ESR) have shown that humans occupied the site over an extremely long period of time, which stretches from the Mikulino / Eemian Interglacial until the second part of the Valdai Glaciation. Thus, the duration of human occupation encompasses about 90,000 years (5 – 3 MIS stages), and covers periods with varying climatic conditions (Mikulino interglacial, Valdai glaciation, and different Stadials and Interstadials of the Last Glaciation).

Material

In the upper part of the stratigraphical sequence at Kabazi II, small mammal bones were very rare. Only a few remains were recovered from the sterile strata between Units III and IV, and included only one species, northern mole-vole *Ellobius (Ellobius) talpinus* (Markova 1999).

However, during the campaigns undertaken in 2000/2001, new rich materials were collected, and small mammal remains were recovered from the archaeological Units VI, V, IV and III. These archaeological units comprise a number of separate levels. This stratigraphical subdivision forms the basis for this study of the micro-mammalian material (see Tables 3-1, 3-2, 3-3, 3-4).

Generally speaking, the bone material from the site is well preserved. Teeth were often complete and undamaged, and several mandibles with teeth were recovered. Whereas some of the mammal bones were deposited directly (possibly in borrows), others show traces of digestion, which

TAXA	VI/1	VI/2	VI/3	VI/4	VI/5	VI/6	VI/7	VI/8
Insectivora – insectivores								
Crocidura leucodon Herm. – white-tooth shrew	–	–	1	–	1	–	1	–
Rodentia – rodents								
Spermophilus pygmaeus Pallas – little suslik	–	3	–	–	–	–	1	1
Spalax microphtalmus Güldenstaedt – Russian mole rat	–	–	2	2	–	2	–	2
Ellobius talpinus Pallas – northern mole-vole	–	9	–	–	–	6	–	–
Dryomys nitedula Pallas – tree dormice	–	–	–	–	–	–	–	2
Apodemus (Sylvimus) flavicollis Melch. – yellow-necked mouse	–	–	–	–	–	–	–	–
Cricetulus (Cricetulus) - migratorius Pallas	–	–	–	–	–	–	–	3
Eolagurus luteus Eversmann – yellow steppe lemming	–	8	–	–	–	–	–	2
Lagurus lagurus – steppe lemming	–	–	–	–	–	–	–	–
Arvicola terrestris L. – water vole	2	5	9	2	4	6	–	5
Microtus (Stenocranius) gregalis Pallas – narrow-skull vole	–	–	–	–	–	–	–	1
Microtus (Microtus) obscurus Eversmann – "obscurus" vole	20	62	56	15	20	51	42	50
Total species:	**2**	**5**	**4**	**3**	**3**	**4**	**3**	**8**

Table 3-1 Kabazi II, Unit VI: species composition of small mammals, by level.

indicates that the material was deposited by predators (birds and animals). The majority of bones are of a light yellow or orange colour.

The saturation of bones in the deposits is rather high. About two thousand bones were recovered, of which 911 were identified on the species level (Tables 3-1, 3-2, 3-3, 3-4, 3-5).

The richest material was found in the levels of Unit VI. From this unit, more than five hundred (518) bones were identified on the species taxonomical level. This was also achieved for a further 159 bones from Unit V, for 195 bones from Unit IV, and for 39 bones from Unit III (Level III/8E). Naturally, these results also reflect the quantity and quality of material collected from the different layers.

According to the results from the complex archaeological, palynological and geochronological studies, the small mammal assemblages from Units VI to IV must correspond to the different stages of the Mikulino Interglacial. On the other hand, the material from Unit III would appear to correspond to one of early interstadials of the Valdai Glaciation (Chabai et al. 1999; 2004).

Small Mammals from Kabazi II, Unit VI

Small mammals were collected from 16 levels of Unit VI (Table 3-1). The 518 identified bones from this unit comprise twelve different species of small mammals, these include one insectivore (*Insectivora*) and eleven rodents (*Rodentia*). The "obscurus" vole *Microtus obscurus* is dominant in all levels (Fig. 3-1; 3-4, *1, 2, 3, 4, 5, 6, 7, 8*; 3-5, *2, 3, 5, 6*; 3-6, *2, 3, 4*; *7, 1, 2*; 3-8, *3*). This species is common to steppe and meadow landscapes, and is also the dominant species at Kabazi V (Markova 1999), and is numerous in Buran-Kaya III, Karabi – Tamchin and Chokurcha I (Markova 2004a; 2004b; 2004c). The water vole *Arvicola terrestris* is also a mammal which is common to Unit VI (Fig. 3-5, *4, 7*; 3-6, *1*; 3-7, *4*). This species inhabits the banks of water basins, and the Alma River running near the site would have been a favourable environment for this mammal. The absence of water vole remains from levels VI/12-VI/15 is surprising, and is probably attributable to the very small amount of material which was recovered from these levels. The presence of the tree-doormouse *Dryomys nitedula*, which lives in broadleaved and mixed forests, as well as in bushes on plains and in mountainous regions, in levels VI/8 and VI/9a (Fig. 3-2, *6*) indicates that forested areas must have existed nearby at the time in which these levels were deposited. Its favourite foods include the seeds and fruits of broadleaved and fruit trees, berries, young sprouts and leaf-buds. The tree-doormouse is no longer indigenous to the Crimea (Ognev 1947).

The tooth of yellow-necked mouse *Apodemus flavicollis* was found in level VI/9a (Fig. 3-2; 3-4). The

VI/9	VI/9a	VI/10	VI/11	VI/12	VI/13	VI/14	VI/15
–	–	–	–	–	–	–	–
4	1	3	–	–	–	–	1
–	1	–	–	–	–	–	–
–	4	–	–	–	–	–	–
–	1	–	–	–	–	–	–
1	–	–	–	–	2	–	–
–	1	–	–	–	–	–	–
1	–	–	–	–	–	–	–
1	–	–	–	–	–	–	–
–	2	4	2	–	–	–	–
–	–	–	–	–	–	–	–
2	20	49	24	11	4	11	9
3	**7**	**3**	**2**	**1**	**2**	**1**	**2**

Table 3-1 continued.

remains of this species also indicate that a nemoral forest and/or bushed areas were located near the site. The seeds of broadleaved trees (*Fagus, Quercus, Corylus, Tilia, Acer*) and bushes (Celastraceae, Rosaceae etc.) are the preferred food of this animal. The cold and snow-free winters are the most dangerous for the yellow-necked mouse.

The majority of mammals identified in the levels of Unit VI still inhabit open steppe and semi-desert landscapes (Fig. 3-8, 3-9). They include the little suslik *Spermophilus pygmaeus* (Fig. 3-6, *7*), the Russian mole rat *Spalax microphtalmus* (Fig. 3-2, *5a, 5b*; 3-3, *1*; 3-4, *9*; 3-5, *1*); the grey hamster *Cricetulus migratorius* (Fig. 3-6, *6*), the northern mole-vole *Ellobius talpinus* (Fig. 3-2, 1-3; 3-4, *10, 11*), the yellow steppe lemming *Eolagurus luteus* (Fig. 3-7, *3*; 3-8, *2*), the steppe lemming *Lagurus lagurus* (Fig. 3-8, *1*) and the white-tooth shrew *Crocidura leucodon* (Fig. 3-2, *7*; 3-3, *3*).

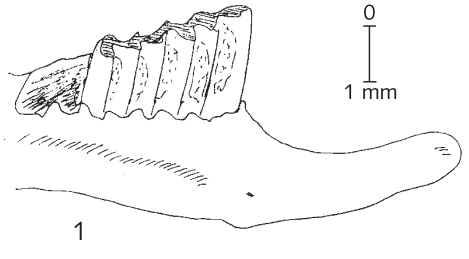

Fig. 3-1 Kabazi II, level VI/14: 1 – low mandible with m1 of *Microtus obscurus.*

The little suslik is found in a variety of habitats. These include the very different biotopes which not only prevail in deserts, but also in semi-deserts (sand, clay-sand and loess semi-deserts), and in dry arid steppes with wormwood. The little suslik is also known to inhabit low mountain steppes, but only in regions not exceeding 400 to 500 m above sea level.

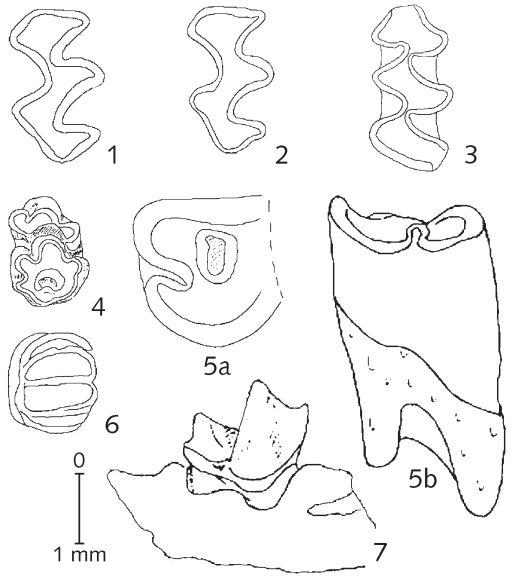

Fig. 3-2 Kabazi II, level VI/9a: 1 and 2 – M2 *Ellobius talpinus*, 3 – m2 *Ellobius talpinus*, 4 – M1 *Apodemus (Sylvaemus) flavicollis*, 5a and 5b – m3 *Spalax microphtalmus*, 6 – m2 *Dryomys nitedula*; 7 – m2 *Crocidura leucodon.*

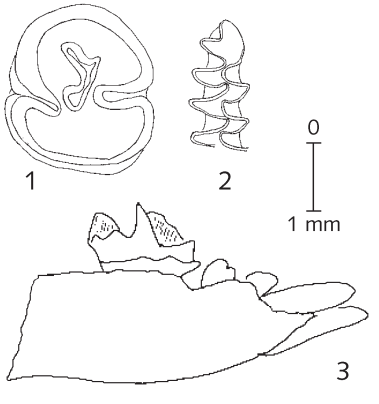

Fig. 3-3 Kabazi II, levels VI/8 (1, 2) and VI/7 (3):1 – m1 *Spalax microphtalmus*, 2 – m1 *Microtus (Stenocranius) gregalis*, 3 – fragment of lower mandible of *Crocidura leucodon*.

TAXA	V/1	V/2	V/3	V/4	V/5
Insectivora – insectivores					
Crocidura leucodon Herm. – white-tooth shrew	–	–	–	–	1
Lagomorpha – lagomorphes					
Lepus europaeu s L. – European hare	–	2	–	–	–
Rodentia – rodents					
Marmota bobac Müller – bobac marmot	–	–	–	1	–
Spermophilus pygmaeus Pallas little suslik	–	–	6	4	–
Spalax microphtalmus Güld. – Russian mole rat	–	–	4	–	2
Apodemus (Sylvimus) flavicollis Melch. – yellow-necked mouse	–	–	–	1	–
Ellobius talpinus Pallas – northern mole-vole	1	2	6	3	2
Cricetulus (Cricetulus) migratorius Pallas – grey hamster	–	2	–	–	–
Eolagurus luteus Eversmann – yellow steppe lemming	–	4	19	7	4
Arvicola terrestris L. – water vole	–	–	–	–	4
Microtus (Microtus) obscurus Eversmann –"obscurus" vole	–	15	7	–	57
Total species:	**1**	**5**	**5**	**5**	**6**

Table 3-2 Kabazi II, Unit V: species composition of small mammals, by level.

The mammals of genus *Spalax*, which includes several species, inhabit plain-, mountain- and forest-steppes. Their preferred habitat is to be found on the slopes of valleys and other depressions with chernosem, brown soils and rich grass cover. Russian mole rat *Spalax microphtalmus* was identified in Kabazi II. Nowadays, this mammal is absent in the Crimea, and it is the first time that its remains have been identified at a Middle Palaeolithic site. Its presence in Unit VI is therefore indicative for the presence of rich soils near the site.

The grey hamster *Cricetulus migratorius* is found in a variety of landscapes: in open plains, in mountainous regions, in forest-steppe, steppe, semi-desert and even in desert. Its favourite habitats are, however, plain and mountain steppes.

Northern mole vole *Ellobius talpinus* prefers the open landscapes, mostly steppes and forest-steppes with rich soils. This species constructs deep borrows. Some of the remains of this mammal display archaic features, such as the so-called "prismatic" fold on the anterior loop (Fig. 3-4, *11*). This characteristic was also identified on the first lower molar of an *Ellobius talpinus* from the fifth layer at Karabi Tamchin (Markova, 2004b). Thus, this archaic characteristic also supports the early age of Unit VI.

Nowadays, the distribution of the yellow steppe lemming *Eolagurus luteus* is limited to regions of Central Asia, Mongolia and China. It prefers open landscapes, and is found in semi-deserts, dry steppes and even in deserts. During the Valdai

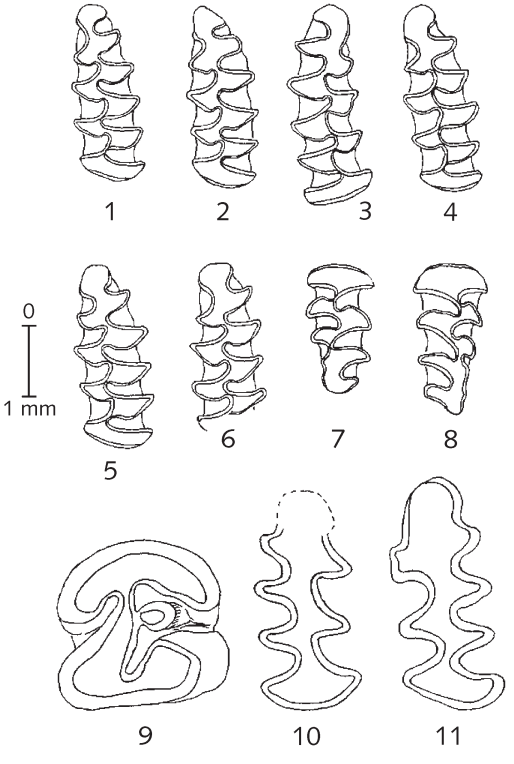

Fig. 3-4 Kabazi II, level VI/6: 1, 2, 3, 4, 5, 6 - m1 *Microtus obscurus*, 7 and 8 – M3 *Microtus obscurus*, 9 – M2 *Spalax microphtalmus*, 10 and 11 – m1 *Ellobius talpinus.*

TAXA	IV/2	IV/3	IV/4
Lagomorpha – lagomorphes			
Lepus europaeus – European hare	1	–	–
Rodentia – rodents			
Spermophilus pygmaeus – little suslik	–	–	2
Allactaga major Kerr – great jerboa	–	1	–
Ellobius talpinus Pallas – northern mole-vole	3	10	35
Eolagurus luteus Eversmann – yellow steppe lemming	29	4	38
Lagurus lagurus Pallas – steppe lemming	–	–	10
Arvicola terrestris L. – water vole	1	–	4
Microtus (Microtus) obscurus Eversmann – "obscurus" vole	20	23	15
Total species:	**5**	**4**	**6**

Table 3-3 Kabazi II, Unit IV: species composition of small mammals, by level.

Glaciation, *Eolagurus luteus* was indigenous to many areas, which included the Central and Southern Russian Plain and the Crimea. This species was not only typical for the so called "mixed" or "non-analogue" periglacial faunas of the Valdai Glaciation, but also of earlier glaciations of Eastern Europe, such as the Dnieper, Oka and Don Glaciations (Markova 2004). Yellow lemmings - at different evolutionary levels (species) - are also known from the interglacial periods, and from the Holocene period. Even as late as the 19th century, the yellow steppe lemming was still to be found in the Lower Volga River drainage basin and in the deserts of Kazakhstan. Thus, the remains of this animal are definitely indicative of open landscapes near the site.

The remains of steppe lemming *Lagurus lagurus* were found in Layer VI/9 (Fig. 3-8, *1*). This species is a typical inhabitant of an open landscape, and was indigenous to the Eastern European steppes and forest-steppes both during the Pleistocene interglacials and glacial periods (Markova 2004). During the last glaciation it was also common to the West European periglacial steppes and forest-steppes.

The narrow-skull vole *Microtus (Stenocranius) gregalis* has been identified only in level VI/8 (Fig. 3-3, *2*). Its preferred habitat comprises open landscapes of different types, and it is now found in regions with tundra and steppe. This animal is practically indifferent to low temperatures, and, at the time of the Valdai Glaciation, was very common. Indeed, *M. gregalis* is one of the characteristic elements of the "Mammoth assemblage" (Smirnov 1992; Agadjanian 2001; Markova 1982; Baryshnikov and Markova 1992; 2002). After the retreat of the Valdai ice-sheet, the population split into two branches: one which became specialised in a tundra environment, and a second which adapted to the steppe. The narrow-skull voles from Kabazi II and Buran-Kaya 3 display a simple teeth morphology, which is now characteristic of the steppe population of the modern *M. gregalis*. Such a morphology is also similar to that

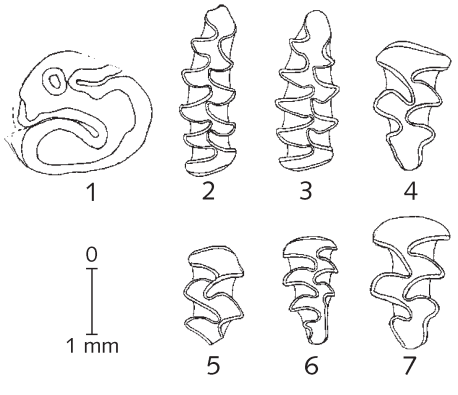

Fig. 3-5 Kabazi II, levels VI/3 (1, 2, 3, 4, 5, 6) and VI/5 (7): 1 – M2 *Spalax sp.* (fragment), 2, 3 – m1, 4 – M3 *Arvicola terrestris*, 5 – M2, 6 – M3 of *Microtus obscurus*, 7 – M3 *Arvicola terrestris*.

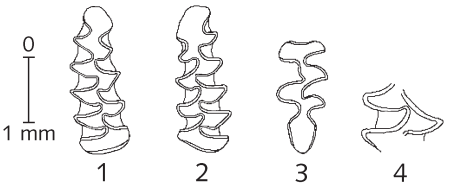

Fig. 3-7 Kabazi II, level VI/1: 1, 2 – m1 *Microtus obscurus*, 3 – M3 *Eolagurus luteus*, 4 – m1 (fragment) of *Arvicola terrestris.*

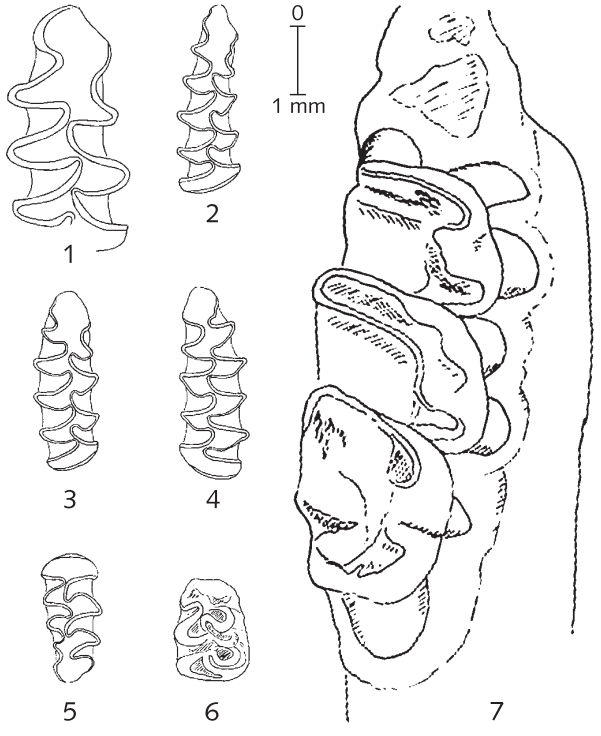

Fig. 3-6 Kabazi II, level VI/2: 1 – m1 *Arvicola terrestris*, 2, 3, 4 – m1 *Microtus obscurus*, 5 – M3 *Microtus obscurus*, 6 - m2 *Cricetulus migratorius*, 7 – lower mandible of *Spermophilus pygmaeus* with m1-m3.

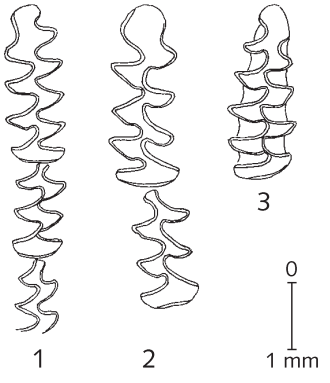

Fig. 3-8 Kabazi II, level VI/9: 1 – m1-m3 *Lagurus lagurus*, 2 – m1-m2 *Eolagurus luteus*, 3 – m1 *Microtus obscurus.*

TAXA	**III/8E**
Rodentia – rodents	
Ellobius talpinus Pallas – northern mole-vole	1
Eolagurus luteus Eversmann – yellow steppe lemming	17
Arvicola terrestris L. – water vole	10
Microtus (Microtus) obscurus Eversmann – "obscurus" vole	11
Total species:	**4**

Table 3-4 Kabazi II, Unit III, level III/8: species composition of small mammals.

of yellow steppe lemmings from the late Middle Pleistocene. Thus, the narrow-skull voles from the Crimean Palaeolithic sites were possibly more accustomed to steppe environments.

The only insectivore identified at Kabazi II, Unit VI is a white-tooth shrew *Crocidura leucodon*. This animal now inhabits open landscapes such as forest-steppe, steppe and semi-desert. Its modern distribution includes the Crimean Peninsula.

The species composition of small mammals from all levels of Unit VI is shown in Fig. 3-9 and in Table 3-1.

The diagram (Fig. 3-10) shows the distribution of ecological groups of small mammals in different levels of Unit VI. Steppe, semi-desert, and meadow-steppe species prevailed in all levels of the Unit VI. Water vole, which is connected with subaquatic landscapes, is also present in the majority of levels. Indeed, they are only absent in levels VI/13-VI/15. However, this might be explained by the fact that only a small amount of material was recovered from these levels. The remains of forest species have been found in levels VI/8, VI/9a and VI/13. Their presence is indicative of a forested and bushed areas in the vicinity of the site during the deposition of these levels.

TAXA	VI	V	IV	III	Small mammal fauna, currently found in the Crimea
Insectivora					
Erinaceus europeaus L. – European hedgehog	–	–	–	–	+
Crocidura leucodon Herm. – white-toothed shrew	+	+	–	–	+
Crocidura suaveolens Pall – lesser white-toothed shrew	–	–	–	–	+
Sorex minutus L. – pigmy shrew	–	–	–	–	+
Sorex araneus L. – Eurasian common shrew	–	–	–	–	+
Neomys fodiens Pennant – Eurasian water shrew	–	–	–	–	+
Lagomorpha					
Lepus europeus Pallas – European hare	–	+	+	–	+
Rodentia					
Sciurus vulgaris L. – red squirrel	–	–	–	–	+
Marmota bobac – bobac marmot	–	+	–	–	–
Spermophilus pygmaeus Pallas – little suslik	+	+	+	–	–
Allactaga major Kerr – Great gerbil	–	–	+	–	–
Spalax microphtalmus Güldenstaedt – Russian mole rat	+	+	–	–	–
Ellobius talpinus Pallas – northern mole-vole	+	+	+	+	+
Dryomys nitedula Pallas – tree dormice	+	–	–	–	–
Sicista subtilis	–	–	–	–	+
Apodemus (Sylvimus) flavicollis Melch. – yellow-necked mouse	+	+	–	–	+
Rattus norvegicus Berc. – common rat	–	–	–	–	+
Rattus rattus L. – roof rat	–	–	–	–	+
Mus musculus L. – house mouse	–	–	–	–	+
Cricetus cricetus L. – common hamster	–	–	–	–	+
Cricetulus (Cricetulus) - migratorius Pallas – grey hamster	+	+	–	–	+
Eolagurus luteus Eversmann – yellow steppe lemming	+	+	+	+	–
Lagurus lagurus Pallas – steppe lemming	+	–	+	–	+
Arvicola terrestris L. – Water vole	+	+	+	+	+
Microtus (Stenocranius) gregalis Pallas – narrow-skull vole	+	–	–	–	–
Microtus (Sumerionys) socialis Pallas – social vole	–	–	–	–	+
Microtus (Microtus) obscurus Eversmann (=*M. arvalis obscurus*) – "obscurus" vole	+	+	+	+	+

Table 3-5 Kabazi II and composition of modern Crimean small mammal species.

Small Mammals from Kabazi II, Unit V

A total of eight species of rodent, one species of insectivore and one lagomorph species have been identified in the material from Unit V (Table 3-2). The ecological preference of the most of these small mammals has been described above. Only one additional species was found in Unit V – bobac marmot *Marmora bobac*. This species inhabits steppes and forest-steppes of plains and low mountains. Its favorable biotopes are the forbs and feather-grass steppes, and it avoids wet areas with a high level of subsoil waters.

The distribution of small mammal remains of different ecological groups in the levels of Unit V (Fig. 3-11) implies that the landscape near the site was dominated by steppe and semi-desert conditions. Such species as yellow steppe lemming *Eolagurus luteus* (Fig. 3-13, *3, 4*; 3-14, *1*; 3-15, *4, 5*; 3-16, *3*), Russian mole rat *Spalax microphthalmus* (Fig. 3-13, *2a, 2b*; 3-15, *2*), northern mole vole *Ellobius talpinus* (Fig. 3-13, *5*; 3-15, *3*; 3-16, *1, 2*), small suslik *Spermophilus pygmaeus* (Fig. 3-15, *1*), grey hamster *Cricetulus migratorius* (Fig. 3-16, *4*), and white-teeth shrew *Crocidura leucodon* (Fig. 3-13, *1*) all belonged to this group. It is interesting that the m1 of an *Ellobius talpinus* from Unit V/1 (Fig. 3-16, *1*) also displays the archaic feature (the "prismatic" angle on the anterior loop) mentioned above. This feature is no longer found in modern northern mole-vole teeth, nor in other Crimean Late Pleistocene *Ellobius* remains, and therefore confirms the antiquity of the fauna from Units V and VI.

Meadow steppes also existed in the vicinity. This is indicated by the strong presence of *Microtus obscurus* (Fig. 3-12, *1, 2, 3, 4*; 3-16, *5, 6*). The bones belonging to water vole *Arvicola terrestris*, found in Level V/5, are also a clear sign that water was also to be found nearby. The remains of yellow-necked mouse in Level V/4 (Fig. 3-14, *2*) would suggest bushed or forested areas.

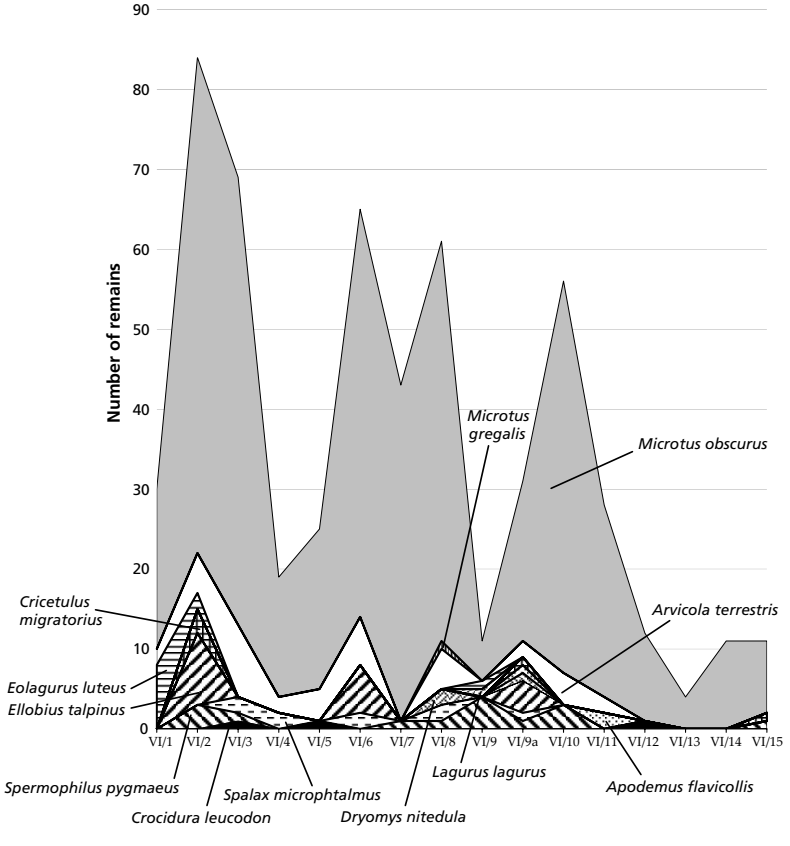

Fig. 3-9 Kabazi II, Unit VI: species composition of small mammals.

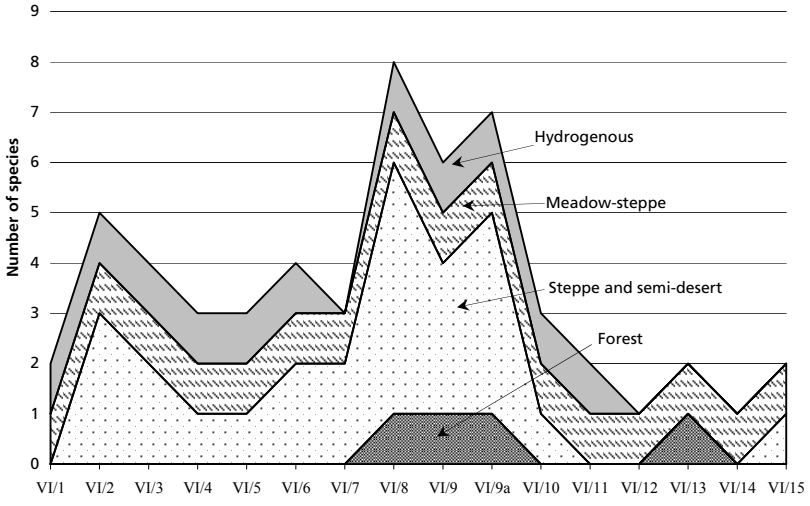

Fig. 3-10 Kabazi II, Unit VI: ecological groups of small mammals.

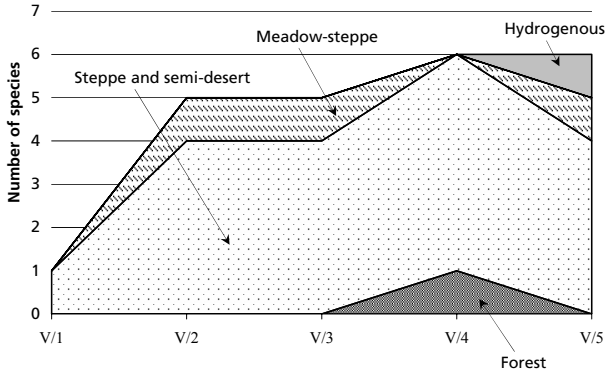

Fig. 3-11 Kabazi II, Unit V: ecological groups of small mammals.

Small Mammals from Kabazi II, Unit IV

More than 400 bones were collected from the three levels of Unit IV, of which a total of 195 were identified on the species taxonomical level. These were assigned to seven small mammal species (Table 3-3).

Most of these species were also found in Units VI and V. Their ecology and modern distribution have been described above, and include *Microtus obscurus* (Fig. 3-17, *2, 3*; 3-19, *4, 5, 6*; 3-20, *4, 5, 6, 7*) *Eolagurus luteus* (Fig. 3-17, *4, 5, 6*; 3-19, *3*; 3-20, *1, 2, 3*); *Ellobius talpinus* (Fig. 3-18, *1, 2, 3*; 3-19, *2*; 3-20, *9, 10*), *Arvicola terrestris* (Fig. 3-20, *8*). Two further species were recovered from Unit IV. The bones of a great jerboa *Allactaga major* were found in Level IV/3 (Fig. 3-19, *1*). This animal is typical for steppe, forest-steppe and semi-deserts; it occurs in the south of the Russian Plain, in the Crimea, and in West Siberia. Steppe lemming *Lagurus lagurus* remains were recovered from Level IV/4 (Fig. 3-17, *1*). The modern habitat of steppe lemming includes steppe, southern forest-steppe and semi-desert. Thus, these two species also indicate open arid landscapes, possibly a steppe. The close ecology has yellow steppe lemming, northern mole-vole, little suslik, and European hare, the remains of which were found in the Unit IV.

Microtus obscurus is indicative of meadow-steppe conditions. Water vole *Arvicola terrestris* shows that water was also to be found near the site. The absence of forest species permits a reconstruction of an arid steppe-like landscape near the site during the formation of Unit IV (Fig. 3-21).

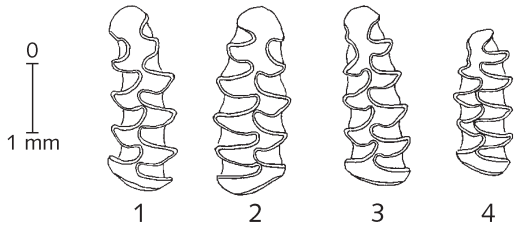

Fig. 3-12 Kabazi II, level V/5: 1, 2, 3, 4 – m1 *Microtus obscurus*; 4 – carries on the juvenile features.

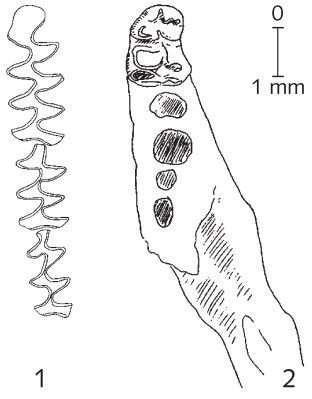

Fig. 3-14 Kabazi II, level V/4: 1 – m1-m3 *Eolagurus luteus*, 2 – lower mandible of *Apodemus flavicollis* with m1.

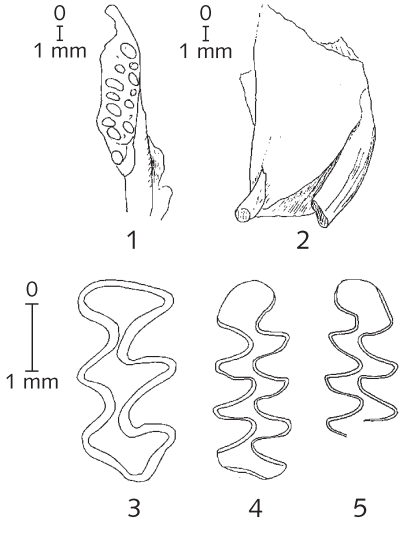

Fig. 3-15 Kabazi II, level V/3: 1 – fragment of maxilla of *Spermophilus pygmaeus*, 2 – fragment of mandible of *Spalax microphtalmus* with incisors, 3 – M1 *Ellobius talpinus*, 4 and 5 – m1 *Eolagurus luteus.*

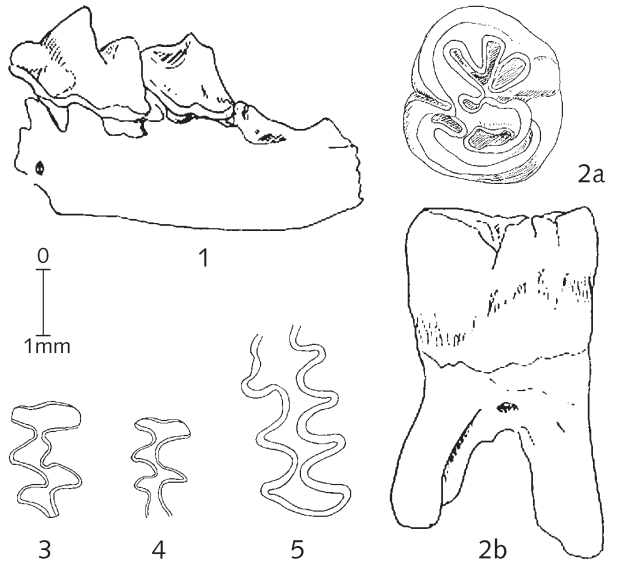

Fig. 3-13 Kabazi II, level V/5: 1 – low mandible with m2-m3 of *Crocidura leucodon*; 2a and 2b – *Spalax microphtalmus*, 3 – M2, 4 – M3 *Eolagurus luteus*, 5 – m1 – *Ellobius talpinus.*

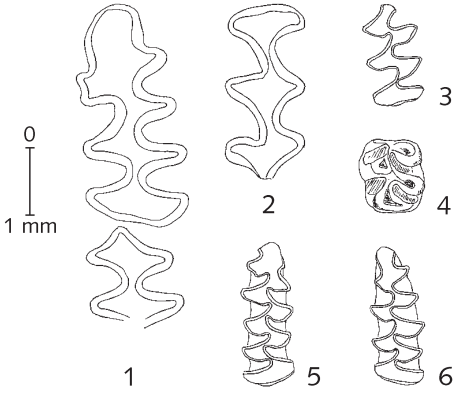

Fig. 3-16 Kabazi II, level V/1: 1 – m1 and m2 (fragment) of *Ellobius ex gr. Talpinus*, 2 – M1 *Ellobius talpinus*, 3 – m2 *Eolagurus luteus*, 4 – *Cricetulus migratorius*, 5 and 6 – m1 *Microtus obscurus.*

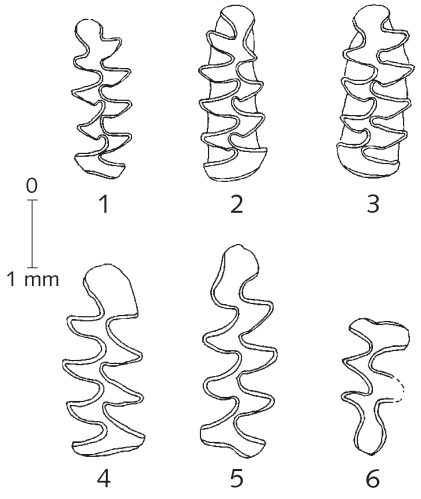

Fig. 3-17 Kabazi II, level IV/4: 1 – m1 *Lagurus lagurus*, 2 and 3 – m1 *Microtus obscurus*, 4 and 5 – m1, 6 – M3 *Eolagurus luteus.*

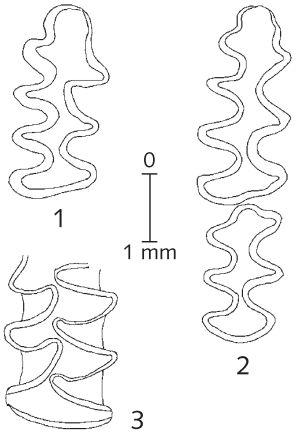

Fig. 3-18 Kabazi II, level IV/4: 1 – m1 *Ellobius talpinus*, 2 – m1 and m2 *Ellobius talpinus*, 3 – m1 *Arvicola terrestris.*

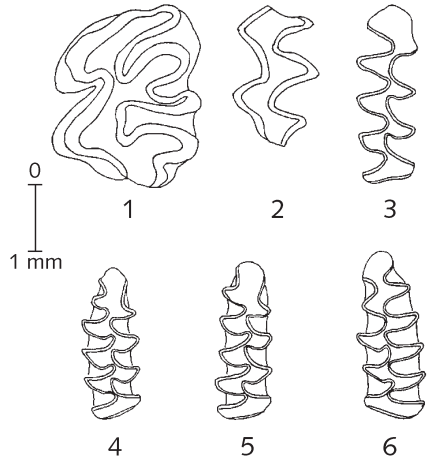

Fig. 3-19 Kabazi II, level IV/3: 1 – M1 *Allactaga major*, 2 – M2 *Ellobius talpinus*, 3 – m1 *Eolagurus luteus*, 4, 5, 6 – m1 *Microtus obscurus.*

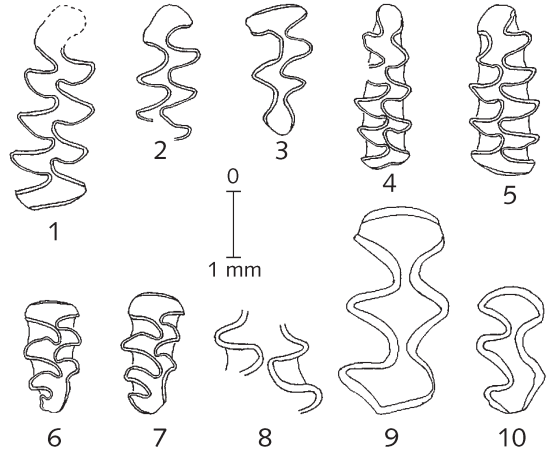

Fig. 3-20 Kabazi II, level IV/2: 1 and 2 – m1 *Eolagurus luteus*, 3 – M3 *Eolagurus luteus*, 4 and 5 – m1 *Microtus obscurus*, 6 and 7 – M3 *Microtus obscurus*, 8 – m1 (fragment) *Arvicola terrestris*, 9 – M1 *Ellobius talpinus*, 10 – M2 *Ellobius talpinus.*

Small Mammals from Unit III

Small mammal remains from Unit III were found only in Level III/8E. The 39 identified bones belong to four different species (Table 3-4).

The northern mole-vole is typical of open arid landscapes (steppes and semi-desert). *Microtus obscurus* occurs in meadow-steppe. Water vole inhabits the banks of rivers and other water reservoir (Fig. 3-22, *1, 2*). Yellow lemmings prefer dry arid landscapes (Fig. 3-22, 3-6).

The ecology of these species would imply that the site was surrounded by an open landscape (Fig. 3-23).

Conclusion

The analysis of the rich bone materials recovered from Units VI, V, IV, and III at Kabazi II has shown that the following environments were prevailing in the vicinity of the site during their deposition. As the majority of small mammals identified from the site are usually found in open environments, open steppe-like landscapes must have been dominant during the formation of all four archaeological units. The concentrations of small mammal remains discovered in the cultural layers are probably associated with the hunting activities of owls, which were nesting in the rocks and rock-shelters. The indirect evidence of the presence of these birds, which hunt small mammals found mostly in open areas, serves to confirm the small mammal composition of the Kabazi II fauna. As owls can have a hunting radius of several kilometres (Gromov 1961), the fauna identified at Kabazi II is most likely indicative of the natural conditions found in a rather wide area around the site, and includes the fauna from the Kabazi questa. This may explain the contradictions in the results of the palynological, malacological and small mammal studies. Whereas the first two methods reflect the natural environment in the immediate vicinity of the site, the analysis of the small mammals allows us to reconstruct the environments prevailing in a radius of several kilometres around the site.

However, the remains of small mammal from Kabazi II also reflect changes in climatic conditions. For example, the mammal remains found in Units VI and V shows that the climate was more moderate and humid than during the deposition of the later layers (Fig. 3-24). During these temporal intervals, forested or bushed areas were located near the site, a fact which is reflected in the finds of forest species. Later, during the deposition of Units IV-III, only steppe, semi-desert, and meadow steppe were to be found. At such times only a few hydrogenous mammals inhabited the local environments.

Today, 15 species of rodent, 6 insectivores and one lagomorphe species are indigenous to the Crimea (Flint et al. 1970; Gromov and Erbaeva 1995). Some of the rodents (*Rattus rattus, R. norvegicus, Ondatra*) only appeared in the Crimea during the Holocene. The red squirrel *Sciurus vulgaris* became acclimatised to the Crimea in the 1940s (Gromov et al. 1963) (Table 3-5).

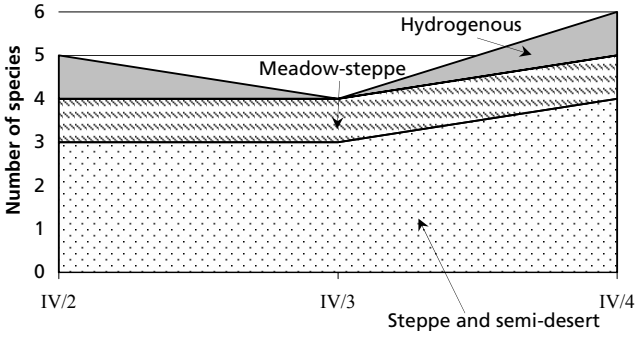

Fig. 3-21 Kabazi II, Unit IV: ecological groups of small mammals.

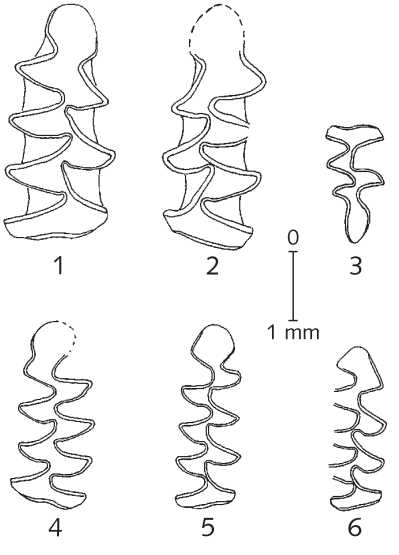

Fig. 3-22 Kabazi II, level III/8E: 1 and 2 – m1 *Arvicola terrestris*, 3 – M3 *Eolagurus luteus*, 4, 5, 6 – m1 *Eolagurus luteus.*

The small mammals, whose remains were found in the layers of Kabazi II, include 13 rodents, 1 lagomorphe and one insectivore. The large list of rodents found in Kabazi II probably includes most of the rodentia which inhabited this region during the Mikulino Interglacial. The diversity of small mammals from Kabazi II is comparable to the modern situation, though the composition has changed greatly (Table 3-5).

Some of the species identified have now disappeared from this region: Yellow steppe lemming is now found only in parts of Mongolia, China, and the Zaisan Depression. Narrow-skulled vole, which was very common during the Pleistocene on the Russian Plain and in the Crimea, now inhabits the Kazakhstan steppes and the tundra zone. Bobac marmot also disappeared from the Crimea and is now found in the easternmost steppe territories only. Due to the fact that the drop in temperature during the Valdai Glaciation did not inhibit them in any way, these animals were able to survive in the Crimea and on the Russian Plain. The different types of open landscapes, with grass cover, represented the only prerequisite to ensure their survival. The restriction and changes in their distribution only occurred after human impact during the Holocene. The habitat favoured by the modern Russian vole rat does not include the Crimea, and the remains of this animal were not found at the Crimean Middle Palaeolithic sites Kabazi V, Starosele, Chokurcha I, Karabi Tamchin, and Buran Kaya III. All mentioned sites correlate with later periods of the Late Pleistocene, and only Units VI-IV at Kabazi II correspond to the Mikulino Interglacial. Therefore, we can conclude that Russian mole rat (which prefers regions with rich soils and grass cover) was only common during the Mikulino Interglacial and then disappeared from the Crimea during the first part of Valdai glaciation, which was characterised by more arid conditions.

According to the dates from the U-series, ESR, and LU methods, the Units VI, V and IV at Kabazi II were formed before the first large-scale Late Pleistocene glaciation of the Eurasian Arctic (Chabai et al. 2004). This first stage of the Valdai / Weichselian glaciation has been dated to 90,000 years ago (OIS-5b) and occurred in Scandinavia and Svalbard (Siegert et al. 2001). Figure 25 shows a curve depicting climate change from the Eemian / Mikulino Interglacial (OIS-5e) until the end of the Valdai / Weichselian Glaciation, as recorded by δ18O records (Mangerud 1989).

If the date for Unit III of between 117 – 81 ka is reliable (see Chapters 1 and 2 for a more detailed discussion), this means that Unit III possibly corresponds to OIS stages -5a – 5d (to the early phase of the last glaciation). This long interval is characterised by noticeable climatic change with several interstadials (Herning correlated with 5d; Amersfoort and Brørupt with 5c) with cool stadial periods. The most pronounced cold period falls in OIS 5b (Siegert et al. 2001; Van Andel and Tzedakis 1996) (Fig. 3-25; 3-26). In this period the World Ocean level was ~50 m lower) (Van Andel and Tzedakis 1996). Therefore, at this time the connection between the Crimean Peninsular and the Russian Plain was significantly more intense than in modern times.

Units VI-V are assigned to the Mikulino / Eem Interglacial (Chabai 2003b; Gerasimenko 1999; Gerasimenko, this volume). In this interval, the Crimean Peninsula was further separated from Eastern Europe, the sea-level in the Karangat Basin of the Black Sea being 5-7 m higher than in modern

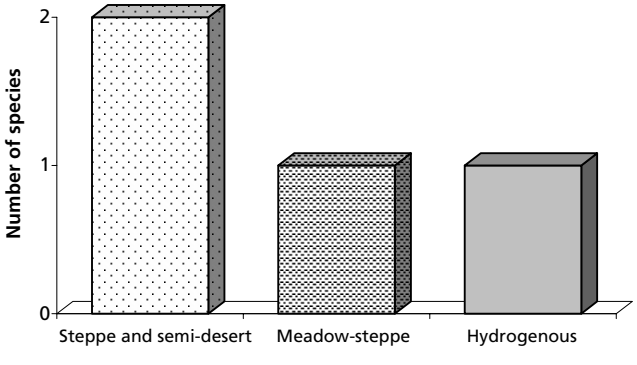

Fig. 3-23 Kabazi II, level III/8E: ecological groups of small mammals.

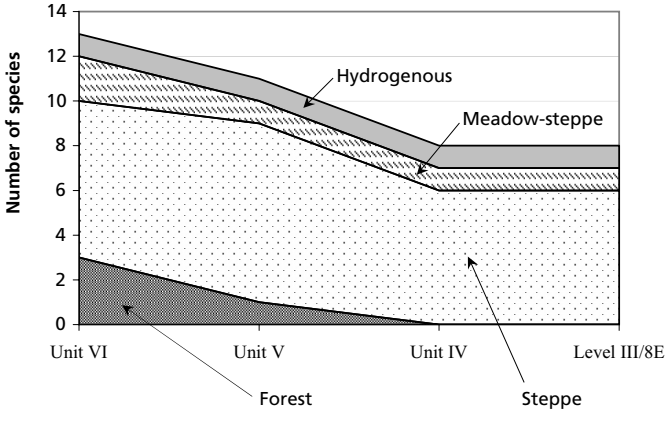

Fig. 3-24 Kabazi II, Units VI, V, IV and level III/8E: ecological groups of small mammals.

times (Chepalyga 2002). However, the species composition of small mammals from Units VI – IV does not differ significantly from those at other Crimean Middle Palaeolithic sites dated to later intervals. The core of small mammal faunas from all of these sites (Kabazi V, Starosele, Buran-Kaya III, Chokurcha I, Karabi-Tamchin) also include open landscape mammals (ground squirrel, northern mole-vole, steppe and yellow lemmings, narrow-skulled vole, "obscurus" vole and others). Boreal and cold-adapted animals were not found as well as in Mikulino layers of Kabazi II (what is understandable), so in later layers of mentioned-above sites, corresponding to the different stages of Valdai glaciation. This fact could be explained by the southern position of the Crimea. The remains of a number of forest mammals recovered from Units VI and V show that numerous local environments found in these low mountains provided habitats for mammals from different ecological groups.

The climatic changes, influenced by the Scandinavian ice-sheet, were smoothed in this region and provided ancient humans with comfortable and rather stable conditions. Forested and bushed areas were distributed in the Crimea, but they alternated with open landscapes which were also very common here during different phases of Mikulino Interglacial, as well during Valdai time.

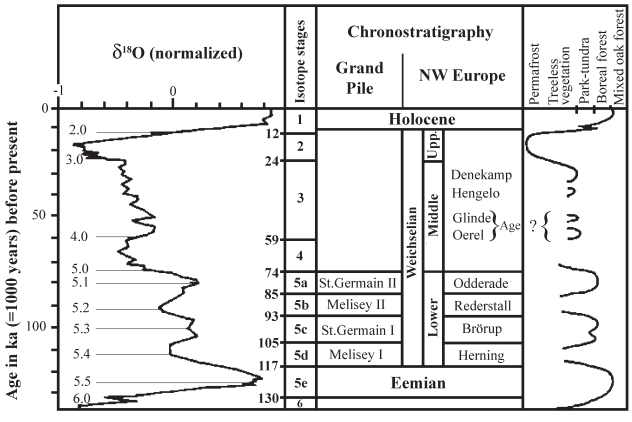

Fig. 3-25 A correlation chart for the deep sea oxygen stratigraphy and the continental stratigraphy in Europe, to the right a curve of environmental changes in Germany/Netherlands (after Mangerud, 1989).

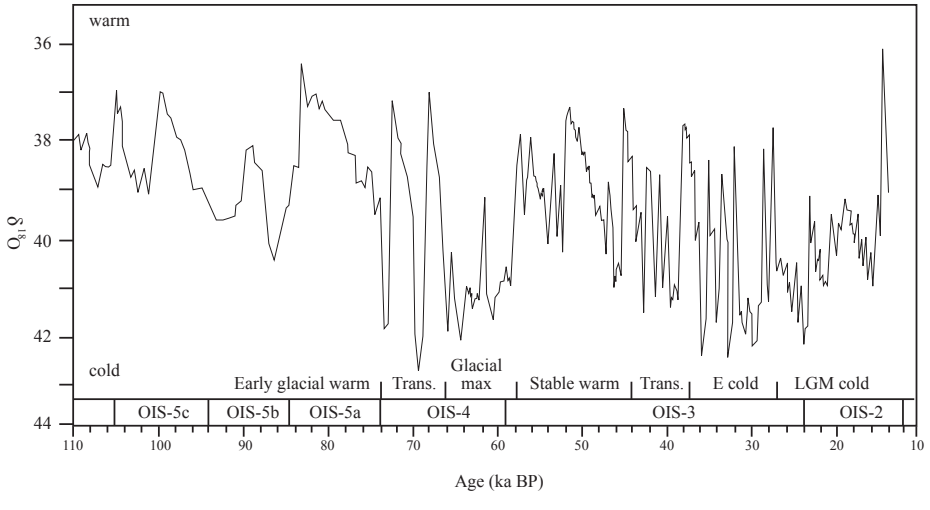

Fig. 3-26 The climatic changes of the Weichselian Glaciation recorded by the δ18O record of the GISP2 Greenland ice-core (Meese et al., 1997; Johnsen et al., 2001; Stuiver & Grootes 2000).

Abstract

ФАУНА МЕЛКИХ МЛЕКОПИТАЮЩИХ КАБАЗИ II, ЗАПАДНЫЙ КРЫМ

А. К. МАРКОВА

Во время раскопок Кабази II в 2000-2001 гг. получен богатый остеологический материал ископаемых мелких млекопитающих (Rodentia, Lagomorpha, Insectivora), включающий около тысячи остатков, определимых до видового уровня. Концентрация остатков мелких млекопитающих в отложениях стоянки связана с охотничьей деятельностью хищных птиц, прежде всего сов, которые охотятся в радиусе нескольких километров. Таким образом, видовой состав мелких млекопитающих позволяет реконструировать окружающие ландшафты достаточно обширной территории вокруг стоянки.

Видовое богатство мелких млекопитающих, обнаруженных в Кабази II, сравнимо с современным видовым богатством микротериофауны Крыма. Однако их видовой состав существенно изменился. Ряд видов, обнаруженных в Кабази II –желтая пеструшка, узкочерепная полевка, байбак, обыкновенный слепыш – полностью исчезли с крымского полуострова. С другой стороны в современной фауне Крыма присутствуют голоценовые вселенцы.

На протяжении формирования слоев Кабази II, судя по микротериологическим данным, вблизи стоянки преобладали открытые ландшафты. Во всех слоях превалируют остатки степных, луговых и даже полупустынных млекопитающих, остатки холодолюбивых видов отсутствуют. Однако некоторые изменения природной среды во время существования древнего человека удается зафиксировать. Фауна мелких млекопитающих наиболее древних культурно-хронологических слоев VI и V дает представление о некоторой облесенности территории вблизи стоянки и включает остатки ряда лесных животных. Фауна из культурно-хронологических слоев IV и III содержит остатки лишь степных, полупустынных и луговых видов. Такие изменения видового состава отражают, вероятно, климатические изменения – переход от условий микулинского межледниковья – к более аридным условиям начала валдайской ледниковой эпохи.

В целом фауна мелких млекопитающих, обнаруженная в культурных слоях Кабази II, позволяет говорить о слабом влиянии Скандинавского ледникового щита, о существовании достаточно стабильных климатических и ландшафтных условий на Крымском полуострове, что определяется его южным географическим положением. Эта стабильность являлась благоприятным фактором для существования древнего человека, как в период микулинского межледниковья, так и в более позднее время, относящееся к началу валдайского оледенения.