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SOME OF THE SMALL MAMMALS FROM HAARSTRANG SITE (GERMANY)

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Zusammenfassung: Zähne von Kleinsäugern wurden in der Fundstelle am Haarstrang entdeckt. Beschreibungen, Vermessungen und Abbildungen von Zähnen der Mäuse M. pusillus (Mehely, 1914), Microtus sp., der Waldmaus und ein Beleg der Spitzmaus liegen vor. Das Alter der Funde ist Oberes Pliozän – Unteres Pleistozän.

Summary: Teeth of small mammals were found in the Haarstrang site. Descriptions, measurements, and figures of teeth of voles M. pusillus (Mehely, 1914), Microtus sp., wood mouse and specimen of Soricidae are provided. The age of finds is Upper Pliocene – Lower Pleistocene.

Small mammals is a group of animals with small and middle body size from orders: Insectivora, Chiroptera, Lagomorpha, Rodentia, Carnivora (small Mustelidae). The group is heterogeneous in systematic plan, but all of them may be possible food for some of predators. This fact is important for understanding the process of taphocoenosis (Andrews, 1990).

Bone remains from Haarstrang site are rather fragmented, light brown in color, which is characteristic of karst materials.

Unfortunately, it is impossible to carry out suitable morphometric study, because we have only several whole teeth. The first low molar and third upper molar are appropriate for morphological analysis. We have not found M_1, M^3 is in triplicate (but only one is whole). Also, there are several fragments of incisors. We have study 9 teeth of voles, 1 tooth of wood mouse, and 1 tooth of specimen of Soricidae.

The morphometric study of M_1 of the genera Mimomys followed the method proposed by Tesakov (2004) – fig. 1. The figures of teeth and graphs were performed using a Canon Power Shot A640 camera and the program Corel Draw-11.

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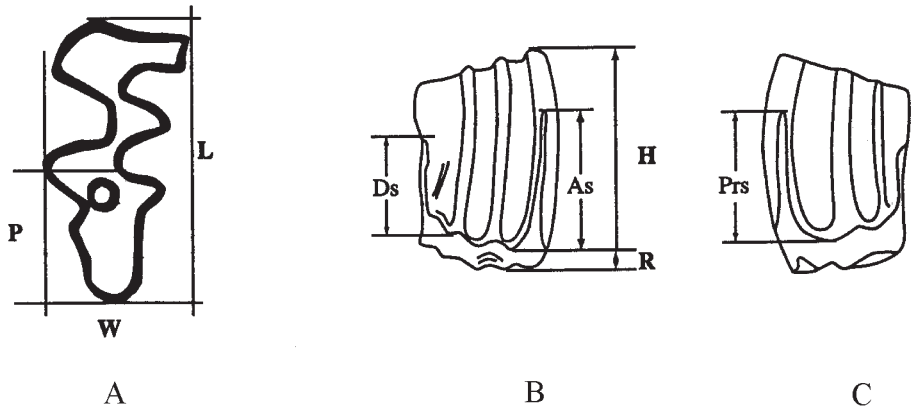

Fig. 1: The plan of measurements of teeth of *Mimomys* (Tesakov, 2004): A - occlusal view; B - buccal view, C - lingual view.

SYSTEMATIC PALEONTOLOGY

Order Rodentia
Family Cricetidae Fischer von Waldheim, 1817
Subfamily Arvicolinae Gray, 1821
Tribe Microtini G. Miller, 1896
Genus *Mimomys* F. Major, 1902
Mimomys pusillus (Mehely, 1914)

Microtomys pusillus: Mehely, 1914, p. 214.
Mimomys intermedius parvus@ subsp. nov.: Sukhov, 1970, p. 62.
Mimomys blanci: Van der Meulen, 1973, p. 39.
Mimomys pusillus: Topachevsky et al., 1987, p. 147.

Holotype: Hungarian Geological Institute (MAFI), left ramus of the lower jaw with M_1 - M_2, collection number is not specified; Püspökfürdo (Betfia 2, 9); Lower Pleistocene.

Description (Figs. 2, 3): The enamel shows reverse differentiation (*Mimomys* type).

Cement deposits are abundant, roots are present. M^3 lack enamel lakes. M^3 has two external reentrants, the internal side has one; T4 is in the shape of a weak projection.

Measurements in mm. M^3:

L	W	P	H	R	As	Ds	Prs
1.6	0.85	0.75	1.45	>0.25	-	-	-

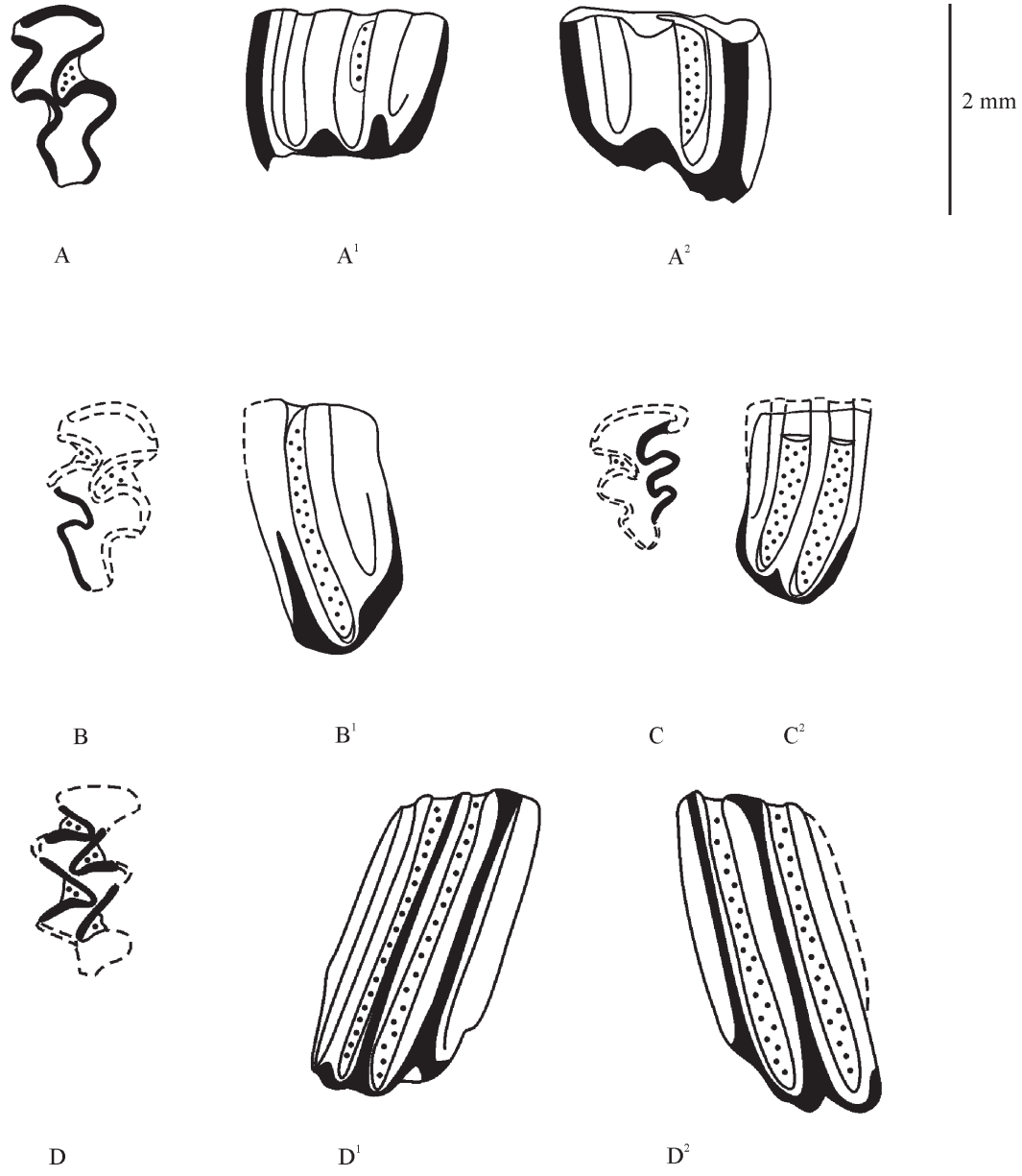

Fig. 2: *Mimomys pusillus* (Mehely, 1914): A, A^1, A^2, № HaKs 1, right M^3; B, B^1, № HaKs 2, right M^3, C, C^2, № HaKs 3, left M^3; D, D^1, D^2 № HaKs 4, left M^1; A-D occlusal view, A^1-D^1 buccal view, A^2-D^2 lingual view; Haarstrang (Germany). Upper Pliocene-Lower Pleistocene.

Comparison: *M. pusillus* differs from the majority of congeners in the absence of *Mimomys* fold and enamel styles; from *M. pliocaenicus*, *M. polonicus*, *M. intermedius*, *M. irtyshensis*, and *M. praepliocaenicus*, in the small size; and *from M. newtoni*, in the insignificant deposits of external cement in the reentrants of teeth.

Remarks: Some researchers indicated that the enamel lake disappeared early in ontogeny of *M. pusillus* (Zazhigin, 1980; Tesakov, 2004). Since we deal with teeth of adults, with interruption of dentine tracts, the absence of enamel lake is easy to explain.

Occurrence: *M. pusillus* appears in geological history of northern Eurasia since Lower Pliocene.

Material : M^3 – 3 teeth. (Nr. HaKs 1 – 3); M^1 – 1 tooth. (Nr. HaKs 4); M_2 – 1 tooth. (Nr. HaKs 5); M_3 – 2 teeth. (Nr. HaKs 6 - 7).

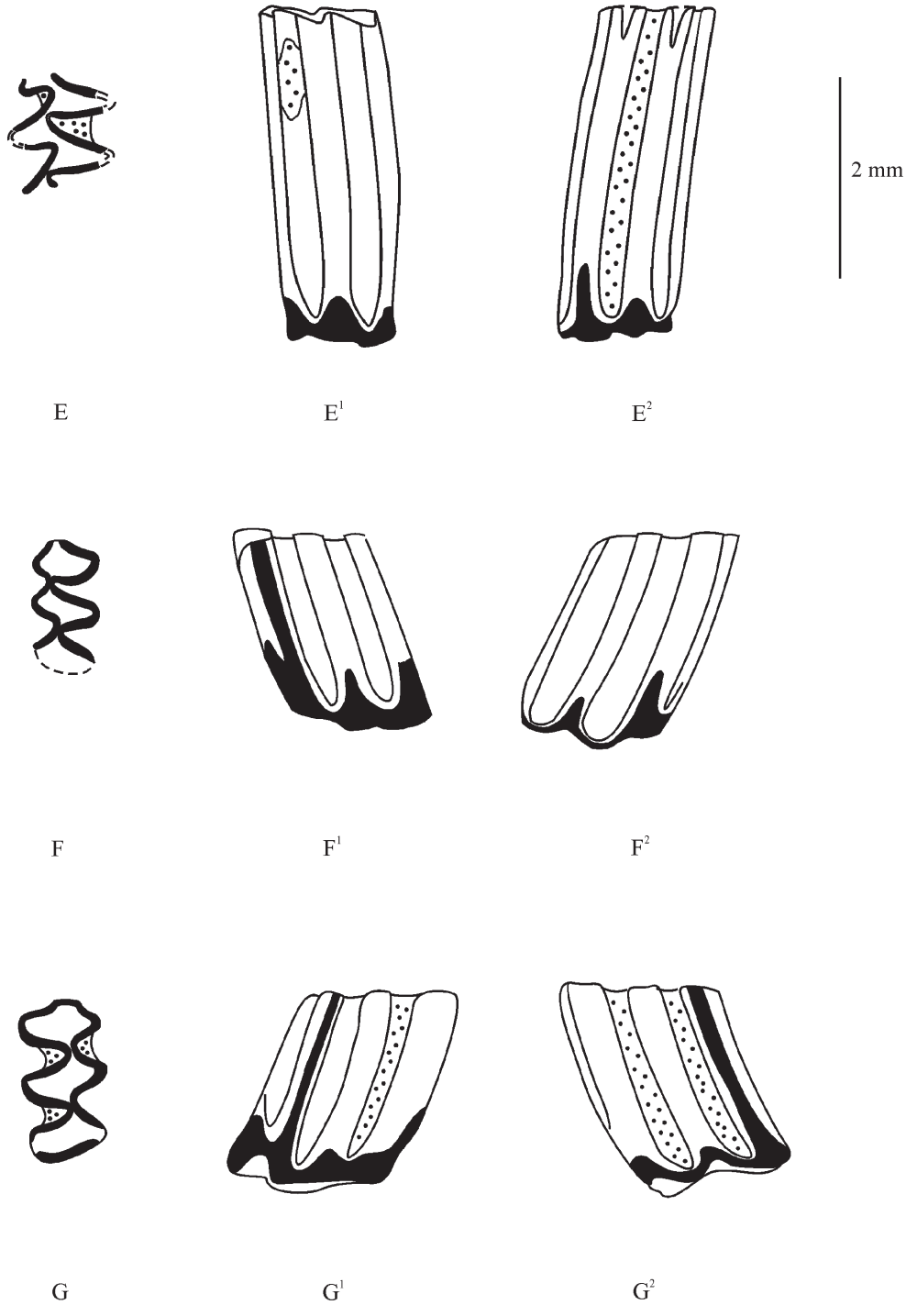

Fig. 3: *Mimomys pusillus* (Mehely, 1914): E, E^1, E^2, № HaKs 5, left M_2; F, F^1, F^2 № HaKS 6, left M_3, G, G^1, G^2, № HaKs 7, right M_3; F-G occlusal view, F^1-G^1 buccal view, F^2-G^2 lingual view; Haarstrang (Germany). Upper Pliocene-Lower Pleistocene.

Genus *Microtus* Shrank, 1798
Microtus sp.

Description (Fig. 4): The teeth lack roots and have abundant deposits of external cement. The enamel on the anterior walls of loops is thicker than on the posterior walls (Microtus type).

Occurrence: Microtus genus is known since Upper Pliocene from Eurasia.

Material: fragment of M_1 – 1 tooth. (№ HaKs 8).

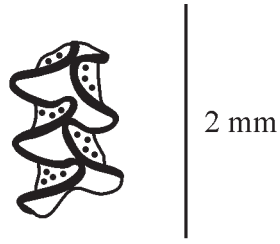

Fig. 4: *Microtus* sp. № HaKs 8, left M_1 occlusal view. Haarstrang (Germany). Upper Pliocene-Lower Pleistocene

Family Muridae Illiger, 1811
Genus *Apodemus* Kaup, 1829
Apodemus sp.

Description (Fig. 5): The tooth has fused anterior and posterior pairs of knolls. Anterior external knoll developed. There is no enamel collar at the external side. The tooth belonged to young animal.

Remarks: Specialization of family is the adaptation to semi-wood way of life. Representatives of family Muridae, as a rule, are indicators of shrubs and forests.

Occurrence: Genus Apodemus appears in Upper Miocene of Western Europe.

Material: M_2 – 1 tooth. (№ HaKs 9).

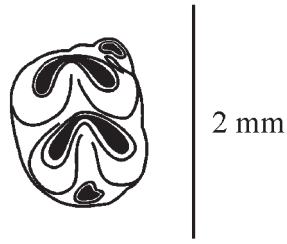

Fig. 5: *Apodemus* sp. № HaKs 9, left M_2 occlusal view. Haarstrang (Germany). Upper Pliocene-Lower Pleistocene

Order Insectivora Bowdich, 1821
Family Soricidae Gray, 1821

Description (Fig. 6): Meta-, meso-, protoconus are lofty and connected by sharp crests. Hypoconus develop reasonably.

Remarks: Definition of Soricidae is difficult on the upper separate teeth to genus and or to species.

Occurrence: Ancient Soricidae from Europe are known since Lower Oligocene.

Material: M^2 – 1 tooth. (№ HaKs 10)).

2 mm

Fig. 6: *Soricidae.* № HaKs 10, left M^2 occlusal view. Haarstrang (Germany). Upper Pliocene-Lower Pleistocene

DISCUSSION

In nature small mammals, especial rodents and lagomorphs, are closely connected with their fodder base, plants and their derivatives. In this case any changing in structure of vegetative community will be cause for changing in structure of the small mammals population. This peculiarity of small mammals is used in paleoreconstruction for restoration of ancient vegetative associations, climatic conditions. But it is possible for faunae with plentiful finds and with full spectrum of species. It is truth, first of all, for Holocene and for Late Pleistocene.

In our case the small mammal are only reference points of the geological deposit Upper Pliocene – Lower Pleistocene.

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