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Late Astaracian (Late Sarmatian) Lagomorphs and Rodents from Felsőtárkány-Felnémet (Northern Hungary)

by

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Summary

In the Felsőtárkány Basin (close to the town Eger) a field campaign has been going on since 2000 for collecting microvertebrate fossils from Sarmatian continental deposits by washing. Two sections were studied. In the "Güdör-kert" the most important fauna is Felsőtárkány 3/2. The fauna of this locality was already published. In the present paper the description of two new MN7/8 rodent assemblages is given. The studied faunas differ from Felsőtárkány 3/2 in the dominancy of the taxa *Prolagus oeningensis*, *Megacricetodon minor* and *Cricetodon* n.sp. The differences are explained by a slightly older chronological position and the probably warmer and dryer palaeoenvironment for the new localities.

Keywords: Continental Middle Miocene, Central Paratethys, Mammalia, Felsőtárkány Basin, Hungary

Zusammenfassung

Im Felsőtárkány Basin (nahe der Stadt Eger) finden seit dem Jahr 2000 Grabungen statt, mit dem Ziel Mikrovertebraten aus kontinentalen Ablagerungen zu gewinnen. Zwei Abschnitte wurden untersucht. Im „Güdör-kert" ist die wichtigste Fauna Felsőtárkány 3/2. Die Fauna dieser Lokalität wurde bereits publiziert. In der vorliegenden Arbeit werden zwei neue MN7/8 Rodentia-Faunen beschrieben. Diese untersuchten Faunen unterscheiden sich von Felsőtárkány 3/2 in der Dominanz der Taxa *Prolagus oeningensis*, *Megacricetodon minor* und *Cricetodon* n.sp.. Diese Unterschiede ergeben sich durch eine chronologisch etwas ältere Stellung der Fauna und durch ein etwas wärmeres und trockeneres Paläoenvironment dieser neuen Fundstellen.

1. Introduction

The re-excavation of the Miocene palaeovertebrate locality Felsőtárkány 3/2 ("Güdör-kert") has been going on since 2000 by a Hungarian-Canadian team under the guidance of Prof. David Begun (University of Toronto) and the author. This classic locality has been known since the beginning of the 20th century. Schréter (1913) gave the first report on the continental sediments. Sümeghy (1923, 1924) studied the terrestrial snail material. The first publication of the vertebrate finds from Felsőtárkány was by Éhik (1926) on some lagomorphs. Andreánszky & Kovács (1955) elaborated the fossil macroflora of the section. Kretzoi (1982) published the list of the vertebrate fossils collected before 1950 without washing. The results of the renewed field activity up to the present were published by Hír (2004a) and Hír et al. (2001).

In the spring of 2003 a new locality was found by the side of the road between Felsőtárkány and Felnémet (Fig. 1). The profile of the locality was exposed during the construction of a bicycle path between the two villages. The locality is situated within the district of the village Felsőtárkány. The goal of this paper is to present a description of the fossils from this new locality. The *Cricetodon* finds, which represent a new species, will be described elsewhere. For an overview of the vertebrate fauna localities in the Felsőtárkány Basin see Fig 1.

Felsőtárkány "Güdör-kert"

This locality was excavated in the first half of the last century. The best description of the position is given by Andreánszky & Kovács (1955). It was situated in an erosional trench in the field "Güdör-kert", in the Southern foothill of the Őr-hegy. The fossiliferous
layer was found under a lignitic seam. The published fauna includes *Galerix ehiki*, *Pliopithecus* sp., *Chloromys minutus*, *Leptodontomys* sp., *Amphilagus fontannesi*, Proboscidea indet. and *Cervavitus* sp. (Kretzoi, 1982).

Felsőtárkány 3/2 (FT 3/2)

This is the most productive locality of the Felsőtárkány Basin. GPS: N: 47° 58,5' 19" E: 20° 24,7' 14" Based on topographical and stratigraphical indications it is prob-

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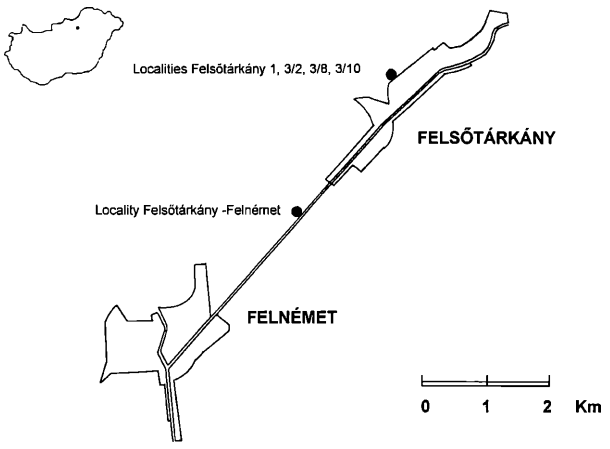

Figure 1: The geographical position of the paleovertebrate localities in the surroundings of Felsőtárkány.

ably identical to the classic locality "Güdör-kert" From 2000-2004 nine metric tons of sediment was sampled and washed from here and about 800 rodent teeth were found. The fauna includes *Eurolagus fontannesi*, *Trogontherium minutum*, *Spermophilinus bredai*, *Miopetaurista* sp., *Albanensia grimmi*, *Hylopetes* sp., *Blackia miocaenica*, *Muscardinus* aff. *sansaniensis*, *Muscardinus* sp., *Glirulus* sp., *Paraglirulus* aff. *werenfelsi*, *Myoglis meini*, *Eomyops oppligeri*, *Keramidomys mohleri*, *Megacricetodon minutus*, *Eumyarion medius*, *Collimys dobosi* and *Anomalomys gaudryi* (Hír, 2004a). The other recovered fossils, including insectivores, the herpetofauna and some rare large mammals are under study by specialists.

Felsőtárkány 3/8 (FT 3/8)

In 2003 the sediments above the locality Felsőtárkány 3/2 were excavated. A green clay layer (the "upper green clay") which is rich in continental molluscs was unearthed 140 cm above the lignitic seam. One ton of sediment was washed and a poor but interesting rodent fauna was collected, including *Eurolagus fontannesi*, *Glirulus lissiensis*, *Eumyarion medius* and *Microtocricetus molassicus*.

Felsőtárkány 3/10 (FT 3/10)

In 2004 the section of the "Güdör-kert" containing the fossiliferous layers FT 3/2 and FT 3/8 was expanded by an eighty metres long artificial trench dug by an excavator machine. A brown clay lens was exposed by the artificial trench 29 m from the section of "Güdör-kert". GPS: N: 47° 58,5' 40" E: 26° 24,7' 01" In 2005 two tons of sediment were collected from the lens and the study of the fossil material is still going on. Up to now the rodents *Myoglis meini*, *Collimys dobosi*, *Anomalomys gaudryi*, and *Microtocricetus molassicus* were found.

Felsőtárkány 1 (FT 1)

The locality was excavated in 2000. It is found in the head of a small erosional trench which is perpendicular to the trench of the classic locality "Güdör-kert". GPS: N: 47° 58,5' 23" E: 26° 24,7' 04". A twenty centimetres thick green clay layer was sampled. The washing of one ton of sediment

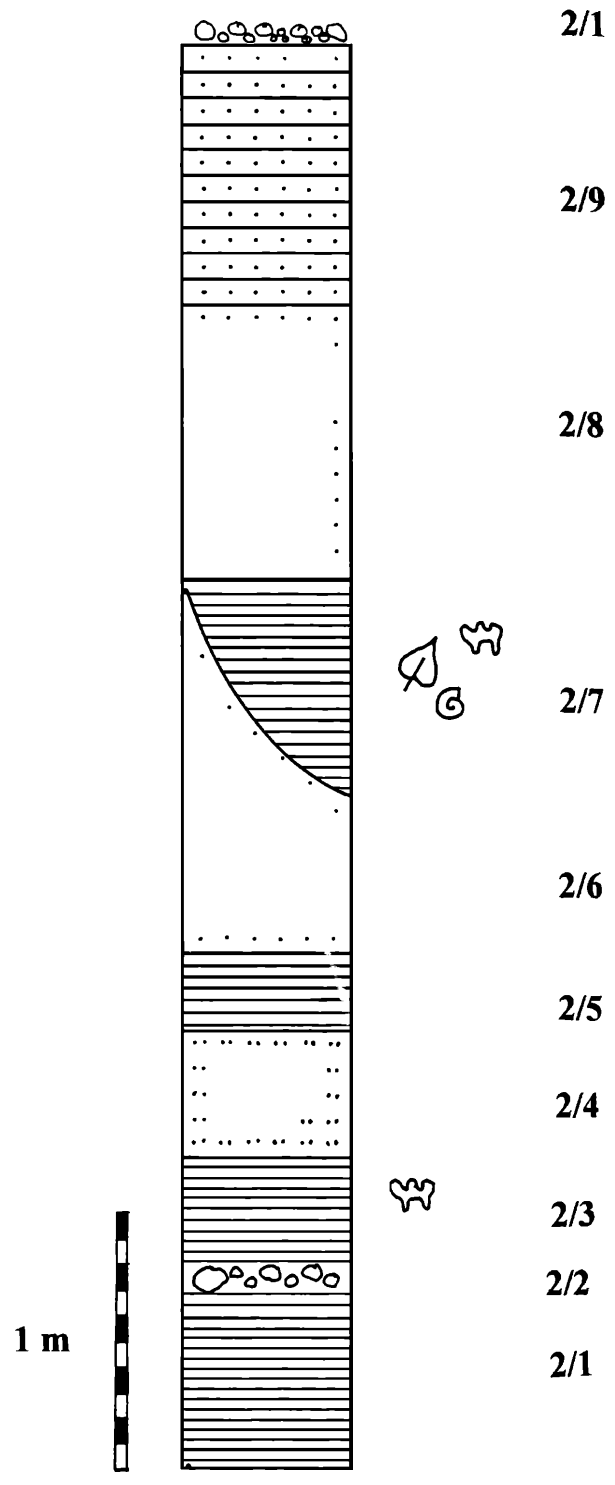

Figure 2: The section of the locality Felsőtárkány-Felnémet.

2/1: 70 cm dark gray clay, 2/2: 5 -10 cm limonitic concretions, 2/3: 40 cm gray clay containing vertebrate finds and scutums of houseless snails, 2/4: 50 cm laminated grey sand, 2/5: 30 cm laminated grey clay, 2/6: 60 cm gray sand, 2/7: chanell -filling gray silt and clay containing plant imprints, mollusc shells and bones, 2/8: 90 cm gray sand, 2/9: 100 cm gray sand with calcareous lamina, 2/10: 10 cm terrace -gravel

produced a small rodent fauna, including *Paraglirulus* sp., *Myoglis meini*, *Eomyops oppligeri*, *Keramidomys* cf. *mohleri*, and *Megacricetodon* sp. (Hír, 2001).

2. Materials and Methods

The section of the locality Felsőtárkány-Felnémet is shown in Fig. 2. The first small test-samples were taken by Dr. Árpád Dávid, teacher of the Geographical Department at the College of Eger. He found an M1 of *Megacricetodon germanicus* from the level FF 2/7. This molar is stored in the Vertebrate Palaeontological Collection of the Geological Museum of Hungary, in the building of the Hungarian Geological Institute, MÁFI.

Fossil bones were recovered by intensive sampling in two levels: Felsőtárkány-Felnémet 2/3 and 2/7 (FF 2/3 and FF 2/7 below). During 2003 and 2004 five tons of sediment were taken from the FF 2/3 and 1.5 tons from FF 2/7. The samples were washed using a sieve-system with 0.5 mm mesh.

The sediment of FF 2/3 consists of a fine dark gray clay. In the field only the scutums of the slugs are visible in the sediment. Other snail shells were probably dissolved. The layer is bedded continuously in the profile.

FF 2/7 is a channell-filling. It is located only in the northern part of the profile. The sediment consists of a grey silt with a great deal of badly preserved reddish coloured plant fossils, and containing a few landsnails (planorbids, helicids) and bone-fragments.

The locality's section and other surrounding outcrops were mapped earlier as Sarmatian continental complex (Balogh & Rónai, 1965). Pelikán (2002) classified the sediment as Kozárd Formation.

With the exception of the M1 of *Megacricetodon germanicus* from FF 2/7, the material is stored at the Natural History Collection of the Nógrád County Museums in the Municipal Museum of Pásztó (MMP).

Abbreviations in the text: D: maxillary milk-tooth, d: mandibular milk-tooth, P: maxillary premolar, p: mandibular premolar, M: maxillary molar, m: mandibular molar, L: length of the molar, W: maximal width of the molar. The measurements are given in mm.

3. Systematic Palaeontology

Classis Mammalia

Ordo Lagomorpha Brandt, 1855

Familia Ochotonidae Thomas, 1897

Genus *Prolagus* Pomel, 1853

***Prolagus oeningensis* (König, 1825)**

Nomenclature: Lopéz Martínez (1989); measurements: on the basis of Lopéz Martínez (1986) with modification that the width was measured both in the anterior and in the posterior lobes of the D4, P4, M1-2, p4 -m1, and m2.

Description. The milk teeth are rooted, the permanent teeth are hypsodont and rootless. All the seven p3 molars have isolated anteroconids and well-developed crochets (Pl. 1, Figs. 8, 11).

Comments: In the European Miocene the species extends

Position	Locality	Measurement	No.	Min.	Max.	$\bar{x}$
D2	FF 2/3	L	2	1.01	1.01	1.01
		W post.	2	1.69	1.78	1.73
D2	FF 2/7	L	1	—	—	0.99
		W post.	1	—	—	1.62
D3	FF 2/3	L	2	1.06	1.09	1.07
		W post.	2	1.39	1.47	1.43
D4	FF 2/3	L	5	0.98	1.07	1.02
		W ant.	5	1.43	1.90	1.57
		W post.	5	1.32	1.88	1.52
d3	FF 2/3	L	5	1.46	1.68	1.57
		W post.	5	1.06	1.48	1.20
d3	FF 2/7	L	1	—	—	1.79
		W post.	1	—	—	1.54
p3	FF 2/3	L	1	—	—	0.87
		W post.	1	—	—	1.60
P2	FF 2/3	L	2	0.73	0.88	0.81
		W post.	2	1.54	1.82	1.68
P2	FF 2/7	L	1	—	—	0.76
		W post.	1	—	—	1.51
P3	FF 2/3	L	4	0.95	1.61	1.34
		W post.	4	2.34	2.62	2.37
P3	FF 2/7	L	6	1.40	1.82	1.68
		W post.	6	2.23	3.0	2.61
P4	FF 2/3	L	18	0.90	1.37	1.15
		W ant.	18	1.70	2.75	2.22
		W post.	18	1.57	2.65	2.15
P4	FF 2/7	L	1	—	—	1.37
		W ant.	1	—	—	2.55
		W post.	1	—	—	2.55
M 1-2	FF 2/3	L	11	0.85	1.29	1.12
		W ant.	11	1.47	2.42	2.17
		W post.	11	1.65	2.32	2.00
M 1-2	FF 2/7	L	1	—	—	1.09
		W ant.	1	—	—	1.82
		W post.	1	—	—	1.96
p3	FF 2/3	L	6	1.55	1.68	1.60
		W post.	6	1.47	1.85	1.67
p3	FF 2/7	L	1	—	—	1.82
		W post.	1	—	—	1.96
p4-m1	FF 2/3	L	4	1.27	1.46	1.38
		W ant.	4	1.19	1.61	1.43
		W post.	4	1.12	1.54	1.36
p4-m1	FF 2/7	L	5	1.41	1.60	1.51
		W ant.	5	1.35	1.89	1.59
		W post.	5	1.40	1.75	1.56
m2	FF 2/3	L	3	2.03	2.17	2.08
		W ant.	3	1.47	1.57	1.53
		W post.	3	1.50	1.60	1.54
m2	FF 2/7	L	1	—	—	1.75
		W ant.	1	—	—	1.37
		W post.	1	—	—	1.35

Table 1: Measurements of *Prolagus oeningensis* molars from Felsőtárkány-Felnémet, +16 unmeasurable damaged molars.

from MN 4 to MN 9 (Boon-Kristkoiz, 2003). In Hungary the only other occurrence of *Prolagus oeningensis* is from Sümeg (MN 11) (Kretzoi, 1985). In Felsőtárkány 3/2 *Prolagus* is substituted by *Eurolagus*.

Ordo Rodentia Bowdich, 1821
Familia Castoridae Hemprich, 1820

Genus *Trogontherium* Fischer von Waldheim, 1809

***Trogontherium minutum* (von Meyer, 1838)**

Description: The molars are hypsodont, the occlusal surface is flat, the root formation is expressed in the adult and senile specimens. The cement is missing in the re-entrants.
Comments: In the Carpathian Basin the species was found in Felsőtárkány 3/2 and Rudabánya, Kordos, 2003. The early finds from Felsőtárkány, Güdör-kert were published as *Chloromys minutus* (Kretzoi, 1982).

		L	Wa	Wp	Figures
m3	FF 2/3	2.8	2.85	2.37	Plate III - 11-12
m2	FF 2/7	3.40	3.17	—	
m1-2	FF 2/7	non measurable juvenil molar			

Table 2: Individual data of *Trogontherium minutum* molars from Felsőtárkány-Felnémet.

Familia Sciuridae Fischer von Waldheim, 1817
Subfamilia Sciurinae Fischer von Waldheim, 1817

Genus *Spermophilinus* De Bruijn & Mein, 1968

***Spermophilinus bredai* (von Meyer, 1848)**

Description: The dental morphology of the material corresponds generally to the description of De Bruijn & Mein (1968), Cuenca-Bescos (1988), Aldana-Carrasco (1992). Only special morphological markers are described here. The nomenclature is after Cuenca-Bescos (1988).
P4. The anterolophid is very reduced. This was the reason that this molar was erroneously identified as *Heteroxerus* sp. in the preliminary report (Hír & Venczel, 2004).
m2. The mesoconid forms a short, labially directed ridge, which does not reach the labial margin.

		L	W	Figure
D4	FF 2/3	1.47	1.50	
P4	FF 2/7	1.34	1.82	Plate I - 10
M1-2	FF 2/3	1.79	2.16	
m1	FF 2/3	1.68	1.81	
m2	FF 2/3	2.10	2.06	
m3	FF 2/3	2.24	2.10	
m3	FF 2/7	2.09	2.17	

Table 3: Individual data of *Spermophilinus bredai* molars from Felsőtárkány-Felnémet.

Comments: The species is very frequent in the Middle Miocene faunas of the Carpathian Basin (Hír, 2004b).

Subfamilia Pteromyinae Brandt, 1855

Genus *Albanensia* Daxner-Höck & Mein, 1975

***Albanensia* sp.**

Description: The material consists of only three molar fragments from FF 2/3. One of them is a posterior portion of a P4 and another one is a posterior portion of a D4. In the P4 fragment the protocone and the metaloph are visible (Pl. 1, Fig. 12). The metaloph is not zigzag-shaped like in the excellently preserved *A. grimmi* material of Felsőtárkány 3/2. This marker is important because the distinction of *A. albanensis* and *A. grimmi* (Daxner-Höck, 2004). In spite of this fact the fragmentary material is not sufficient for a definitive species determination.

Genus *Blackia* Mein, 1970

***Blackia miocaenica* Mein, 1970**

Description: The morphology of the teeth is as in the original description of Mein (1970). The M1-2 molar is subadult with finely sculptured occlusal surface. The other molars are senile with worn occlusal surfaces without sculpture.
Comments: This small-sized flying squirrel genus has an extremely long stratigraphical range from the Early Miocene to the Late Pliocene. In the Carpathian Basin *Blackia miocaenica* is known from Neudorf-Spalte (Sabol & Holec, 2002), Felsőtárkány 3/2 (Hír, 2004a), Rudabánya

		L	W	Figure
M1-2	FF 2/7	1.33	1.55	Plate I - 12
M3	FF 2/3	1.65	1.48	
M3	FF 2/3	1.61	1.51	
m2	FF 2/3	1.27	1.58	

Table 4: Individual data of *Blackia miocaenica* molars from Felsőtárkány-Felnémet.

(Daxner-Höck & Fejfar, 2003; Kretzoi & Fejfar, 2005) and Csarnóta 2 (Van de Weerd, 1979).

Familia Gliridae Thomas, 1897

Genus *Muscardinus* Muirhead, 1819

***Muscardinus* sp.**

Description: The crown of the D4 is oval and it has four transverse ridges. The first and third ridges are lingually connected. The second ridge is shorter. Both m1 molars have six main ridges without accessory ridges.
Comments: Without the M1 molar the determination is uncertain. In Felsőtárkány 3/2 *M.* aff. *sansaniensis* and

Muscardinus sp. were found (Hír, 2004). From Rudabánya *M. hispanicus* was described (Daxner-Höck & Fejfar, 2003; Daxner-Höck, 2005).

		L	W	Figure
D4	FF 2/3	0.62	0.7	
m1	FF 2/3	1.12	0.99	
m1	FF 2/7	1.13	0.97	Plate I - 16

Table 5: Individual data of *Muscardinus* sp. molars from Felsőtárkány-Felnémet.

Genus *Myoglis* Baudelot, 1966

Myoglis meini Baudelot, 1966

Description:

D4. The anteroloph is independent. The protoloph-metaloph-posteroloph system is unified in the protocone. A very weak extra ridge is found between the protoloph and the metaloph.

P4. The anteroloph is independent and wide. The protoloph-metaloph-posteroloph system is fused in the protocone. There is a thin and interrupted anterior centroloph between the protoloph and the metaloph. A weak extra ridge is connected to the lingual end of the posteroloph.

M1. The anteroloph is independent and wide. The protoloph-metaloph-posteroloph system is fused in the protocone. Between the protoloph and the metaloph there is an anterior centroloph and two short accessory ridges. The ridges are separated on the buccal side.

M3. Our specimen is worn. The anteroloph is continued in the endoloph. The other six transversal ridges are connected to this endoloph as well. The ridges are separated on the buccal side.

p4. The crown is triangular and has four separate ridges: anterolophid, metalophid, mesolophid and posterolophid. The anterolophid is reduced and similar to a cusp. The metalophid is interrupted.

m1. The rectangular crown has four completely developed independent ridges: anterolophid, metalophid, mesolophid, posterolophid. The lingual side of the anterolophid is wider than the buccal one. The curved anterior extra ridge does not connect to the anterolophid. The surface of the extra ridges (centrolophid, posterior extra ridge) is convex.

m2. The general pattern of the main ridges is identical to that of the m1. The metalophid has a slight S-like curvature. There is a cusp-like extra ridge between the anterolophid and the anterior extra ridge. A short extra ridge is connected to the lingual side of the metalophid.

Comments: The morphology of this large-sized glirid corresponds to the descriptions of Baudelot (1966), Engesser (1972) and Nemetschek & Mörs (2003). Identification as *M. ucrainicus* (Nesin & Kowalski, 1997) can be excluded, because of the morphology of the upper molars. *Myoglis meini* is known in the Carpathian Basin from Comăneşti (Feru et al. 1980), Felsőtárkány 3/2, Felsőtárkány 1 (Hír, 2004a). The material from Rudabánya was classified as *M.* cf. *ucrainicus* (Daxner-Höck, 2005).

		L	W	Figures
d4	FF 2/7	1.43	1.58	Plate I - 20
P4	FF 2/7	1.53	1.68	Plate I - 21
M1	FF 2/7	1.75	1.74	Plate II - 1
M3	FF 2/3	1.57	1.67	
p4	FF 2/7	1.27	1.29	Plate II - 2
P4	FF 2/7	1.22	1.26	
m1	FF 2/7	1.78	1.57	Plate II - 3
m2	FF 2/7	1.89	1.89	Plate II - 4

Table 6: Individual data of *Myoglis meini* molars from Felsőtárkány-Felnémet.

Genus *Microdyromys* De Bruijn, 1966

Microdyromys complicatus De Bruijn, 1966

Description:

D4. The triangular occlusal surface is concave. The endoloph is interrupted between the anteroloph and the protoloph. Three main ridges are connected to the endoloph: protoloph, metaloph and posteroloph. The anteroloph is connected to the protoloph on the buccal side. The anterior centroloph is without any connection. Two extra ridges are developed: one between the anteroloph and the protoloph, the other between the metaloph and the posteroloph.

M1. The rectangular occlusal surface is concave. Four main ridges are connected to the endoloph (anteroloph, protoloph, metaloph, posteroloph). The two centrolophs are nearly equally developed and are not connected to the endoloph. The anterior extra ridge is long. Other accessory ridges are found between the anteroloph and the protoloph and between the metaloph and the posteroloph.

m3. There are five main ridges of the occlusal surface (anterolophid, metalophid, centrolophid, mesolophid and posterolophid). Two well-developed extra ridges are found: one of them is between the anterolophid and the metalophid, the other one is between the mesolophid and the posterolophid. The endolophid is not complete due to the interruption between the centrolophid and the mesolophid.

Comments: The morphology is as in the descriptions of De Bruijn (1966), Daams (1981), Schötz (2002) and the material described under the junior synonym *Microdyromys miocaenicus* by Baudelot (1966), Engesser (1972) and Wu (1990). The species is rare in the Miocene of the Carpathian Basin. It was reported from Neudorf (Sabol & Holec, 2002), Sámsonháza and Felsőtárkány 1 (Hír, 2004b). The stratigraphic range of the species is MN 5 - MN 7/8 (Daams, 1999).

		L	W	Figures
D4	FF 2/7	0.70	0.76	Plate I - 18
M1	FF 2/7	1.05	1.16	Plate I - 17
m3	FF 2/7	0.98	0.98	

Table 7: Individual data of *Microdyromys complicatus* molars from Felsőtárkány-Felnémet

Genus *Miodyromys* Kretzoi, 1943

Miodyromys hamadryas (Forsyth-Major, 1899)

Description: The roots are not preserved. The rectangular occlusal surface is concave. The anteroloph is connected to the paracone. The protoloph-metaloph-posteroloph system is fused in the protocone. Two centrolophs are developed. The anterior centroloph is longer, but is interrupted. A long anterior extra ridge is found. The posterior extra ridge is missing.

Comments: Two small-sized *Miodyromys* species are known from the Eastern European faunas of the MN 7/8 and MN 9 zones: *M. hamadryas* and *M. grycivensis*. According to Nesin & Kowalski (1997) *Miodyromys grycivensis* differs from *M. hamadryas* in lacking the posterior accessory ridge on M1-2. On the other hand Bolliger (1992: fig. 53) figured *M. hamadryas* specimens from the Swiss molasse without a posterior accessory ridge. The molar from FF 2/3 is wider than the range of *M. grycivensis* molars.

M. hamadryas is a rare glirid in the Miocene of the Carpathian Basin. It was reported from Neudorf-Spalte (Zapfe, 1949) and Comanesti 1 (Feru et al., 1980). The stratigraphical range of the species is MN 4 - MN 7/8 (Daams, 1999).

		L	W	Figure
M1-2	FF 2/3	1.09	1.26	Plate I - 19

Table 8: Individual data of the *Miodyromys hamadryas* molar from Felsőtárkány-Felnémet.

Familia Eomyidae Winge, 1807

Genus *Keramidomys* Hartenberger, 1966

Keramidomys sp.

Description: **P4**. There are four main ridges of the tooth crown. In the anterior part there is an incipient anteroloph with the first syncline. The interruption of the longitudinal crest is only superficial. The long mesoloph is connected to the paracone.

p4. The occlusal surface has four main ridges. The additional crest is interrupted, the longitudinal crest is continuous. The hypoconid is ridge-like.

m3. There are four main ridges of the crown surface. The mesolophid is reduced. The longitudinal crest is not interrupted.

Comments: The morphology of the P4 differs from *Keramidomys carpathicus* (Engesser, 1972:fig. 67) and *K. thaleri* (Engesser, 1990: figs. 106-107). The pattern of the m3 differs from *K. mohleri* (Engesser, 1972:fig. 66). In the Carpathian Basin *K. carpathicus* is known from Neudorf-Spalte (Sabol & Holec, 2002). *K. mohleri* was reported from Mátraszőlős and from Felsőtárkány 3/2 and Felsőtárkány 1 (Hír, 2004b).

		L	W	Figures:
P4	FF 2/3	0.67	0.69	Plate I - 13
M2	FF 2/3	0.77	0.83	
p4	FF 2/3	0.78	0.66	
p4	FF 2/3	0.78	0.66	Plate I - 14
m3	FF 2/3	0.66	0.63	Plate I - 15
m3	FF 2/7	0,62	0,64	

Table 9: Individual data of *Keramidomys* sp. molars from Felsőtárkány-Felnémet.

Genus *Eomyops* Engesser, 1979

Eomyops oppligeri Engesser, 1990

Description: **p4**. The protoconid and the metaconid are worn. The mesolophid is long. A mesoconid is visible. The posterolophid is very reduced.

Comments: The measurements are smaller than *E. catalaunicus*. *Eomyops oppligeri* was described in the Carpathian Basin from Mátraszőlős, Felsőtárkány 3/2 and Felsőtárkány 1 (Hír, 2004b).

		L	W
1M3	FF 2/3	0.60	0.73
1p4	FF 2/3	0.71	0.57

Table 10: Individual data of *Eomyops oppligeri* molars from Felsőtárkány-Felnémet.

Familia Muridae Illiger, 1811

Subfamilia Cricetodontinae Schaub, 1925

Tribus Cricetodontini Schaub, 1925

Genus *Cricetodon* Lartet, 1851

Cricetodon n.sp.

The accurate description of the high-crowned *Cricetodon* finds from Felsőtárkány-Felnémet 2/3 and 2/7 will be provided in a separate publication.

Tribus Megacricetodontini, Mein & Freudenthal, 1971

Genus *Megacricetodon* Fahlbusch, 1964

Megacricetodon minor (Lartet, 1851)

The nomenclature is after Mein & Freudenthal (1971). The special nomenclature of M3 is after Freudenthal & Daams (1988).

Description: **M1**. The anterocone is divided and consists of two equally developed conelets. The groove between these cusps is short and not continued on the anterior surface of the anterocone. The anterolophule starts from the protocone. The anterior end of the anterolophule is ramified as a "Y" and the two branches are connected to the two conelets of the anterocone. The protolophule

Position	Locality	Measure-ment	No.	Min.	Max.	X
M1	FF 2/3	L	19	1.33	1.54	1.44
		W	19	0.87	0.98	0.90
M1	FF 2/7	L	1	—	—	1.43
		W	1	—	—	0.94
M2	FF 2/3	L	7	1.11	1.20	1.14
		W	7	0.88	0.95	0.93
M2	FF 2/7	L	2	1.05	1.05	1.05
		W	2	0.84	0.84	0.84
M3	FF 2/3	L	5	0.70	0.78	0.73
		W	5	0.71	0.77	0.75
m1	FF 2/3	L	17	1.26	1.47	1.35
		W	17	0.77	0.89	0.82
m1	FF 2/7	L	1	—	—	1.41
		W	1	—	—	0.87
m2	FF 2/3	L	13	0.99	1.16	1.09
		W	13	0.77	0.94	0.86
m2	FF 2/7	L	1	—	—	1.11
		W	1	—	—	0.94
m3	FF 2/3	L	9	0.88	0.99	0.92
		W	9	0.67	0.77	0.73

Table 11: Measurements of *Megacricetodon minor* molars from Felsőtárkány-Felnémet.

I is missing in 12 specimens. It is well developed (5) or is incipient and does not reach the anterior basis of the paracone (2). The posterior ectoloph of the paracone is missing (4), short (8) or long (7). In the latter case it reaches the labial end of the mesoloph. The combination of the posterior ectoloph of the paracone and the protolophule I is as follows:

ECL is missing, PRL I is missing: 2 specimens.
ECL is missing, PRL I is found: 2
ECL is found, PRL is mising: 10
ECL is found, PRL is found: 4.

The mesoloph is short (1), moderately developed (5), long without reaching the labial margin (12), or long up to the labial margin (1).

The lingual end of the metalophule is connected to the posterior corner of the hypocone (16) or connected to the centre of that cusp (3).

M2. The lingual anterolophule is short, the labial one is longer. The protolophule I is present (8 specimens) or missing (6). The mesoloph reaches the labial margin (4), is moderately developed (4), or is short (1). The posterior ectoloph is missing (3) or it is well developed and reaches the labial end of the mesoloph (6).

The lingual end of the metalophule is connected to the anterior corner of the hypocone (5), or connected to the centre of the hypocone (2), or connected to the posterior corner of the hypocone (2).

M3. Lingual anterolophule is missing. There is a neo -entoloph between the protocone and the hypocone. An axioloph is found between the protolophule and the incipient centrocone. The metacone is reduced. The mesoloph reaches the labial margin.

m1. The anteroconid is usually unicuspid (15 specimens). In some young unworn individuals a bicuspid anteroconid is present (2). The anteroconid and the protoconid are connected by a simple anterolophulid (12). The buccal additional branch of the anterolophulid is present in four specimens. The mesolophid is short (5) or moderately developed (12). In two individuals the lingual end of the mesolophid is connected to the posterior basis of the metaconid.

m2. The lingual anterocingulum is well developed (4 specimens), incipient (7), or missing (3). The mesolophid is moderately developed. It reaches the posterior basis of the metaconid in seven specimens.

m3. The lingual anterocingulum is well developed (4 specimens), or incipient (4). The protoconid and the incipient entoconid are connected by a protoconid posterior arm. A mesolophid is not developed.

Comments: The species is one of the most frequent elements of the Hungarian Middle Miocene faunas (Hír, 2004b). Felsőtárkány-Felnémet is probably the last occurrence of *Megacricetodon minor* in the Carpathian Basin, because in the fauna of Felsőtárkány 3/2 it is replaced by the smaller sized *Megacricetodon minutus*. In the Swiss Molasse *M. minor* persists up to the early MN 9 zone as it was found at Nebelbergweg (Kälin & Engesser, 2001).

Megacricetodon germanicus Aguilar, 1980

Description: The M1 of this species was the first find from the locality as was mentioned in the description of the section. The anterocone has two parts, but is only superficially subdivided. The lingual part of the anterocone and the protocone is connected by a short anterolophule. The protolophule I is incipient and far from the anterior basis of the paracone. The anterosinus is labially closed by a parastyle. There is no posterior spur of the paracone. The mesoloph is moderately developed. The direction of the protolophule is lingual, that of the metalophule is postero-lingual. A small posterosinus is surrounded by the metacone, metalophule and posterolophule.

Comments: In the Swiss-Bavarian Molasse this species is known from MN 5 MN 7/8 (Bolliger, 1994). Up to the present we have very little information about the distribution of this species in the Middle Miocene of the Carpathian Basin. Apart from Felsőtárkány-Felnémet it is known only from Tâşad (Hír et al., 2002).

		L	W	Figure
M1	FF 2/7	1.92	1.29	Plate II. - 5.

Table 12: Individual data of the *Megacricetodon germanicus* molar from Felsőtárkány-Felnémet.

Genus *Democricetodon* Fahlbusch, 1964

Democricetodon brevis (Schaub, 1925)

Description: **M1**. The anterocone is undivided and kidney -shaped. A labial cingulum of the anterocone reaches the

base of the protocone. A well-developed parastyle is found in the labial margin of the anterosinus. The lingual side of the anterocone and the protocone are connected by the anterolophule. This anterolophule bears a moderately developed labial spur (= anteromesoloph).
Protolophule I is absent. The protolophule II is directed postero-lingually. The mesoloph reaches the mesostyle. The metalophule is directed posteriorly.
m1. The anteroconid is a simple subtriangular cusp. The anteroconid and the anterior basis of the protoconid is connected by an anterolabial cingulum. The anterolophulid is very short and connected to the metaconid. A metalophulid is not developed. There is a narrow trench between the metaconid and the protoconid. The mesolophid is long and reaches the lingal margin of the tooth crown. The metalophulid is widely confluent with the metaconid.
m3. The antero -lingual cingulum is well developed. The antero –buccal cingulum is developed in a lower level. A mesolophid is connected to the mesostylid.
Comments: In the Swiss-Bavarian Molasse the species is found in MN 7/8 and MN 9, e.g., at Anwil, Ergeten 990 m, Grat 930 m, Giggenhausen Reisenburg, and Marktl (Bolliger, 1992, 1994; Kälin & Engesser, 2001). Up to the present it is very rare in the Carpathian Basin and it was known only from Tâşad (Hír et al., 2002). The genus *Democricetodon* is missing in Felsőtárkány 3/2 but it is re-appears in Rudabánya (Kretzoi & Fejfar, 2005). In Anatolia *Democricetodon brevis* is known from Paşalar (MN 6) (Peláez-Campomanes & Daams, 2002).

		L	W	Figures
M1	FF 2/3	1.74	1.22	
M1	FF 2/7	1.97	1.30	Plate II. - 6.
m1	FF 2/7	1.68	1.15	Plate II. - 10.
m3	FF 2/7	1.29	1.05	Plate II. - 21.

Table 13: Individual data of *Democricetodon brevis* molars from Felsőtárkány-Felnémet.

Genus *Collimys* Daxner-Höck, 1972

Collimys dobosi Hír, 2005

Description: **M1**. The anterocone is broad and undivided one specimen. In the other M1 the anterocone is well divided, which is a rare morphotype (Plate II.-8). The protocone and the posterocentral part of the anterocone are connected by a short and wide anterolophule. This anterolophule has a long and high labial spur (= anteromesoloph). The ridge reaches the small parastyle on the labial margin. Protolophule I is not developed. There is an incipient posterior ectoloph of the paracone, which is not connected to the mesoloph. The sinuses are deep and narrow. The mesoloph is long and reaches the labial margin. Protolophule and metalophule are postero-lingually directed. The small posterosinus is surrounded by the metalophule, posteroloph and the metacone.
M2. The lingual anterolophule is weakly developed in four specimens, well developed in the other three. The protolophule I is missing and the protolophule II is well developed. The posterior ectoloph of the paracone is developed in one specimen only. The mesoloph is long and reaches the labial margin in four specimens, moderately developed in three. An extra ridge of the metalophule is not found.
M3. The lingual anterolophule is incipient. The protolophule I is missing, the protolophule II is well developed. The posterior spur of the paracone reaches the mesoloph. The mesoloph is long. The metacone is reduced.
m1. The structure of the anteroconid-anterolophulid region is highly variable. The anteroconid is two or three parted. The anterolophulid can be a simple connection between the protoconid and the labial part of the anteroconid. In one specimen the anterolophulid is two branched. The lingual branch is connected to the lingual cusp of the anteroconid and the labial branch is connected to the anterolabial cingulum. The mesolophid is long and reaches the lingual cingulum. A long ectomesolophid is found only in the specimen with the two-branched anterolophid. This loph is missing in the other m1.
m2. The antero-lingual cingulum is weakly or better developed, but always present. The mesolophid always reaches the lingual margin. The ectomesolophid is found in two molars only.
m3. The molar has an elongated shape. The antero-lingual cingulum is incipient, the mesolophid is long.
Comments: *Collimys dobosi* is the dominant element of the fauna Felsőtárkány 3/2 (Hír, 2005). *Collimys* is not reported from the Miocene of Hungary beyond the Felsőtárkány Basin. The genus is a rare element of the Middle and Late Miocene faunas of Switzerland, Germany and Austria (Kälin & Engesser, 2001).

Position	Locality	Measure-ment	No.	Min.	Max.	$\bar{x}$
M1	FF 2/7	L	2	1.96	1.96	1.96
		W	2	1.2	1.34	1.27
M2	FF 2/3	L	4	1.33	1.53	1.43
		W	4	1.19	1.26	1.23
M2	FF 2/7	L	3	1.47	1.58	1.53
		W	3	1.26	1.40	1.33
M3	FF 2/3	L	1	—	—	1.33
		W	1	—	—	1.22
M3	FF 2/7	L	2	1.33	1.34	1.34
		W	2	1.18	1.20	1.19
m1	FF 2/3	L	2	1.83	1.85	1.84
		W	2	1.11	1.12	1.12
m1	FF 2/7	L	2	1.85	1.89	1.87
		W	2	1.15	1.19	1.17
m2	FF 2/3	L	4	1.40	1.58	1.48
		W	4	1.11	1.16	1.14
m2	FF 2/7	L	2	1.48	1.58	1.53
		W	2	1.20	1.26	1.23
m3	FF 2/3	L	1	—	—	1.57
		W	1	—	—	1.08

Table 14: Measurements of *Collimys dobosi* molars from Felsőtárkány-Felnémet.

Genus *Eumyarion* Thaler, 1966

Eumyarion medius (Lartet, 1851)

Description: **M1**. The anterocone is narrow, blade-shaped. The lingual part of the anterocone is connected to the protocone by a short anteroloph. The labial spur of the anteroloph (= anteromesoloph) does not reach the labial margin in one specimen. In three specimens the labial spur is connected to the labial part of the anterocone. The mesoloph is long, but does not reach the labial margin. The protolophule and metalophule are lingually directed. The anterosinus is closed by the parastyle. The mesosinus is labially open. The posterosinus is closed because the posteroloph is connected to the posterior base of the metacone.

M2. Only the labial part of the anterolophule is developed. This ridge runs from the protocone to the antero -lingual basis of the paracone. The anterosinus is narrow and transversally directed. The mesoloph is moderately developed. The protolophule and the metalophule are transversally directed. The metaloph bears a conelet, the metaconulus. The posterosinus is wider than in the M1.

M3. The lingual part of the anterolophule is incipient, the labial part reaches the anterior basis of the paracone. The anterior sinus and the protolophule are transversally directed. The hypocone and the metacone are very reduced and incorporated into the posteroloph. Well-developed ridges of the occlusal surface are the axioloph, mesoloph, and the posteriorly directed metalophule.

m1. The anteroconid is unicuspid. In the molars from the FF 2/7 level the anterolophulid is connected to the protoconid or directed to the metaconid. In the latter case the anterolophulid and the metaconid are divided by a narrow trench (Pl. 2, fig. 14). In the three specimens from FF 2/3 the anterolophulid is more complicated: it has a connection to the protoconid and the metaconid and incipient lingual and buccal spurs are found as well (Pl. 2, fig. 13) The posterior arm of the protoconid and the mesolophid are equally developed. The length of the ectomesolophid is variable.

m2. The anterocingulum has a short lingual and a longer labial arm. The latter one reaches the antero-labial base of the protoconid. The posterior arm of the protoconid is long; the mesolophid is incipient. The ectomesolophid is incipient or missing. The metalophulid and the hypolophulid are transversally directed. The posterolophulid has two arms.

m3. The anterocingulum is similar to the m2. The posterior arm of the protoconid is long. A mesolophid is not developed. The entoconid is reduced. The metalophulid and the hypolophulid are transversally directed.

Comments: In the recently known Hungarian Miocene vertebrate faunas unquestionable evolutionary trend of the *Eumyarion* finds was not recognised. The *Eumyarion* molars of the Felsőtárkány localities differ from *Eumyarion* cf. *latior* of Rudabánya (Kretzoi & Fejfar, 2005) in the less emphasised lophs and the lower developed crown of teeth.

Position	Locality	Measurement	No.	Min.	Max.	$\bar{x}$
M1	FF 2/3	L	2	2.07	2.11	2.09
		W	2	1.50	1.50	1.50
M1	FF 2/7	L	3	2.10	2.18	2.14
		W	3	1.53	1.60	1.57
M2	FF 2/3	L	1			1.65
		W	1			1.48
M2	FF 2/7	L	1			1.64
		W	1			1.62
M3	FF 2/3	L	1			1.19
		W	1			1.30
M3	FF 2/7	L	4	1.26	1.48	1.37
		W	4	1.23	1.55	1.43
m1	FF 2/3	L	4	1.99	2.09	2.03
		W	4	1.25	1.33	1.28
m1	FF 2/7	L	2	2.00	2.10	2.05
		W	2	1.30	1.39	1.35
m2	FF 2/3	L	3	1.62	1.78	1.72
		W	3	1.25	1.44	1.36
m2	FF 2/7	L	3	1.68	1.75	1.71
		W	3	1.47	1.54	1.51
m3	FF 2/3	L	3	1.55	1.68	1.62
		W	3	1.33	1.41	1.36
m3	FF 2/7	L	2	1.26	1.57	1.42
		W	2	1.23	1.25	1.24

Table 15: Measurements of *Eumyarion medius* molars from Felsőtárkány-Felnémet.

Familia Anomalomyidae Schaub, 1925

Genus *Anomalomys* Gaillard 1900

Anomalomys gaudryi Gaillard 1900

Description: **M1-M2**. The occlusal surface consists of three enamel-folds: anteroloph, medioloph, posteroloph. The folds are divided by one lingual sinus and two labial sinuses. In the M2 the first lingual sinus becomes an enamel-ring during the wear process. A distinct mesoloph is not developed.

m1-m2. The occlusal surface consists of three enamel folds: anteroconid, mediolophid, posterolophid. The folds are divided by one labial sinus and two lingual sinuses. The anteroconid contains an enamel ring in the juvenile stage of wear. There is a large enamel ring in the lingual part of the mediolophid, but it never forms a sinus.

m3. The main structure of the occlusal surface is very similar to that of the m2. The interior enamel rings disappear during the very early stage of the wear.

Comments: The absence of the distinct mesoloph in the upper molars means that our material is more evolved than the *Anomalomys gaudryi* populations of La Grive and Anwil (Engesser, 1972). The structure of the enamel ring in the mediolophid of the lower molars differs from *A. rudabanyensis* (Kordos, 1989, 2005). The morphol-

Position	Locality	Measure-ment	No.	Min.	Max.	X
M1	FF 2/3	L	4	1.78	1.89	1.82
		W	4	1.29	1.26	1.15
M1	FF 2/7	L	3	1.75	2.07	1.90
		W	3	1.09	1.58	1.38
M2	FF 2/3	L	2	1.62	1.68	1.65
		W	2	1.18	1.19	1.19
M2	FF 2/7	L	3	1.54	1.67	1.61
		W	3	1.29	1.41	1.35
M3	FF 2/7	L	2	1.22	1.22	1.22
		W	2	1.01	1.13	1.07
m1	FF 2/3	L	1	—	—	1.97
		W	1	—	—	1.50
m1	FF 2/7	L	5	1.81	1.90	1.85
		W	5	1.02	1.30	1.17
m2	FF 2/3	L	2	1.81	1.83	1.82
		W	2	1.53	1.62	1.58
m2	FF 2/7	L	5	1.61	1.92	1.77
		W	5	1.01	1.33	1.16
m3	FF 2/3	L	2	1.36	1.71	1.54
		W	2	0.97	1.05	1.01
m3	FF 2/7	L	5	1.29	1.54	1.45
		W	5	0.80	1.32	1.12

Table 16: Measurements of *Anomalomys gaudryi* molars from Felsőtárkány-Felnémet.

ogy is very similar to that of the *A. gaudryi* population of Felsőtárkány 3/2 (Hír, 2002).

4. Conclusions

The faunas of Felsőtárkány-Felnémet section are the second important vertebrate assemblage after the re-excavation of the classic locality Felsőtárkány 3/2 ("Güdör-kert") in the Felsőtárkány Basin. The morphology of the common species of the two localities (*Myoglis meini*, *Collimys dobosi*, *Eumyarion medius*, *Anomalomys gaudryi*) are not substantially different. Therefore we can conclude that there is no considerable choronological difference between Felsőtárkány-Felnémet 2/3, 2/7 and Felsőtárkány 3/2. The faunas are probably referable to MN 7/8. The presence of *Miodyromys hamadryas*, *Megacricetodon minor*, *Cricetodon* n.sp. and *Democricetodon brevis* in Felsőtárkány-Felnémet are last occurrences of these taxa in the Carpathian Basin.

In the fauna of FT 3/2 the *Megacricetodon minor* is replaced by the smaller *M. minutus*, indicating that this fauna is somewhat younger than those of FF 2/3 and FF 2/7. Extremely small *Megacricetodon* species are known from the Late Astaracian - Early Vallesian faunas all over Europe. *Megacricetodon minutus* is frequent in the early MN 9 faunas of the Vienna Basin (Daxner-Höck, 1967; Sabol et al., 2004). In Spain *M. minor* - *M. debruijni* evolve during MN 9 zone with a direct evolutionary connection of the two species (Daams & Freudenthal, 1988). Re-

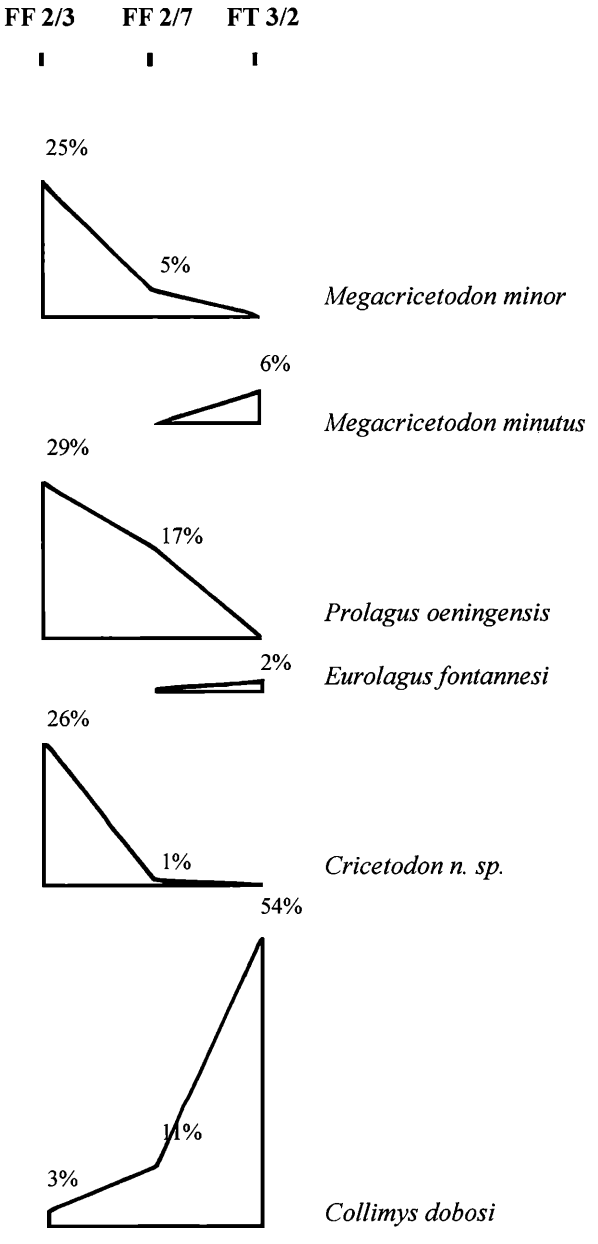

Figure 3: The relative frequency of some rodent species in three faunas of the Felsőtárkány Basin.

cently Joniak (2005) verified that *M. debruijni* is a junior synonym of *M. minutus*. In the Swiss-Bavarian molasse *M. minor* and the smaller *M.* aff. *minor* are found together from MN 7/8 to MN 9 (Bolliger, 1994).

The faunistic differences of the three discussed faunas of the Felsőtárkány Basin are noteworthy. The species *Prolagus oeningensis*, *Megacricetodon minor*, *Cricetodon* n.sp. together compose 80% of the fauna FF 2/3 but in FT 3/2 they are completely missing (Fig. 3). The ecological interpretation of this phenomenon can be deduced from the following considerations:

1. Cricetodontini possibly preferred dryer biotopes (De Bruijn et al., 1993, De Bruijn & Ünay, 1996).
2. In Spain the dominance of *Megacricetodon* is independent of ecological and climatic fluctuations (Daams & Freudenthal, 1988). In the Middle Miocene faunas

of Mühlbach and Grund of Austria Daxner-Höck (2003) found, that "a more dry climate and environment could have enabled the immigration of *Cricetodon meini* and *M. minor*."

3. Middle Miocene *Prolagus* is generally regarded as a thermophile and wetland dweller (Lopéz-Martínez, 2001). The parallel change of dominance of this species with probable xerophile elements in the Felsőtárkány faunas is difficult to explain.

4. In the pollen material of FF 2/3 freshwater and swamp elements were not found, but those are very frequent in FF 2/7. On the basis of the vegetation the climate was warmer than Felsőtárkány 3/2 (Szuromi-Korecz & Nagy-Bodor, 2004).

5. The fauna of Felsőtárkány 3/2 ("Güdör-kert") is consistent with a wet forest environment given the palaeoflora of Felsőtárkány (Erdei, 1999) and the presence of four flying squirrel genera (*Blackia*, *Hylopetes*, *Albanensia*, *Miopetaurista*).

The differences in the composition of the studied faunas can be interpreted as the results of increasing humidity and decreasing temperature from FF 2/3 to FT 3/2. This climatic trend is play correspond to the beginning of the humid climatic phase reflected in the Central European vertebrate faunas of the MN 9 such as Rudabánya in Hungary (Bernor et al., 2003).

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PLATE 1

Fig. 1 *Prolagus oeningensis* D2, FF 2/3, 2005. 5. occlusal view

Fig. 2 *Prolagus oeningensis* D2, FF 2/3, 2005. 5. anterior view

Fig. 3 *Prolagus oeningensis* D4, FF 2/3, 2005. 4. occlusal view

Fig. 4 *Prolagus oeningensis* D4, FF 2/3, 2005. 4. anterior view

Fig. 5 *Prolagus oeningensis* d3, FF 2/3, 2005. 1. occlusal view

Fig. 6 *Prolagus oeningensis* d3, FF 2/3, 2005. 1. lingual view

Fig. 7 *Prolagus oeningensis* P3, FF 2/3, 2005. 13. occlusal view

Fig. 8 *Prolagus oeningensis* p3, FF 2/3, 2005. 9. occlusal view

Fig. 9 *Albanensia* sp., P4 fragm., FF 2/3, 2005. 192. occlusal view

Fig. 10 *Spermophilinus bredai* P4, FF 2/7, 2005. 286. oclusal view

Fig. 11 *Prolagus oeningensis* p3, FF 2/3, 2005. 20. occlusal view

Fig. 12 *Blackia miocaenica*, M 1-2, FF 2/7, 2005. 287. occlusal view

Fig. 13 *Keramidomys* sp. P4, FF 2/3, 2005. 209. occlusal view

Fig. 14 *Keramidomys* sp. p4, FF 2/3, 2005. 169. occlusal view

Fig. 15 *Keramidomys* sp. m3, FF 2/3, 2005. 211. occlusal view

Fig. 16 *Muscardinus* sp. m1, FF 2/7, 2005. 251. occlusal view

Fig. 17 *Microdyromys complicatus* M1, FF 2/7, 2005. 294. occlusal view

Fig. 18 *Microdyromys complicatus*, D4, FF 2/7, 2005. 296. occlusal view

Fig. 19 *Miodyromys hamadryas*, M 1-2, FF 2/3, 2005. 200. occlusal view, reversed

Fig. 20 *Myoglis meini* D4, FF 2/7, 2005. 291. occlusal view, reversed

Fig. 21 *Myoglis meini* P4, FF 2/7, 2005. 289. occlusal view, reversed

A: scale 1 mm for the figures 2, 4, 6.

B: scale 1 mm for the figures 1, 3, 5, 8, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21.

PLATE 1

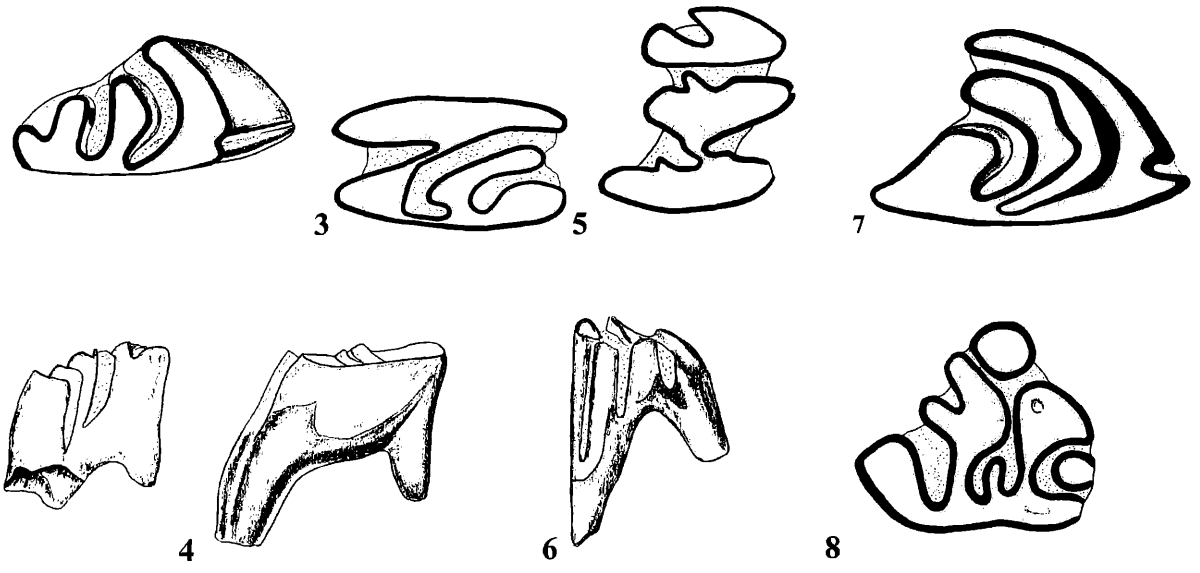

PLATE 2

Fig. 1 *Myoglis meini*, M1, FF 2/7, 2005. 90. occlusal view

Fig. 2 *Myoglis meini*, P4, FF 2/7, 2005. 288. occlusal view

Fig. 3 *Myoglis meini*, m1, FF 2/7, 2005. 252. occlusal view

Fig. 4 *Myoglis meini*, m2, FF 2/7, 2005. 253. occlusal view

Fig. 5 *Megacricetodon germanicus*, M1, FF 2/7 MÁFI occlusal view

Fig. 6 *Democricetodon brevis*, M1, FF 2/7 2005. 266. occlusal view

Fig. 7 *Collimys dobosi*, M1, FF 2/7 2005. 247. occlusal view

Fig. 8 *Collimys dobosi*, M1, FF 2/7 2005. 230. occlusal view, reversed

Fig. 9 *Eumyarion medius*, M1, FF 2/7 2005. 265. occlusal view

Fig. 10 *Democricetodon brevis*, m1, FF 2/7 2005. 278. occlusal view, reversed

Fig. 11 *Collimys dobosi*, m1, FF 2/7 2005. 277. occlusal view

Fig. 12 *Collimys dobosi*, m1, FF 2/7 2005. 234. occlusal view, reversed

Fig. 13 *Eumyarion medius*, m1, FF 2/7 2005. 261. occlusal view

Fig. 14 *Eumyarion medius*, m1, FF 2/7 2005. 262. occlusal view, reversed

Fig. 15 *Collimys dobosi*, M2, FF 2/3 2005. 139. occlusal view

Fig. 16 *Eumyarion medius*, M2, FF 2/7 2005. 231. occlusal view, reversed

Fig. 17 *Collimys dobosi*, M3, FF 2/7 2005. 271. occlusal view

Fig. 18 *Eumyarion medius*, M3, FF 2/7 2005. 272. occlusal view

Fig. 19 *Eumyarion medius*, m2, FF 2/7 2005. 274. occlusal view, reversed

Fig. 20 *Eumyarion medius*, m3, FF 2/3 2005. 115. occlusal view, reversed

Fig. 21 *Democricetodon brevis*, m3, FF 2/7 2005. 284. occlusal view

Fig. 22 *Megacricetodon minor*, M1, FF 2/7 2005. 268. occlusal view

Fig. 23 *Megacricetodon minor*, m1, FF 2/3 2005. 128. occlusal view, reversed

Fig. 24 *Megacricetodon minor*, m1, FF 2/7 2005. 279. occlusal view

PLATE 2

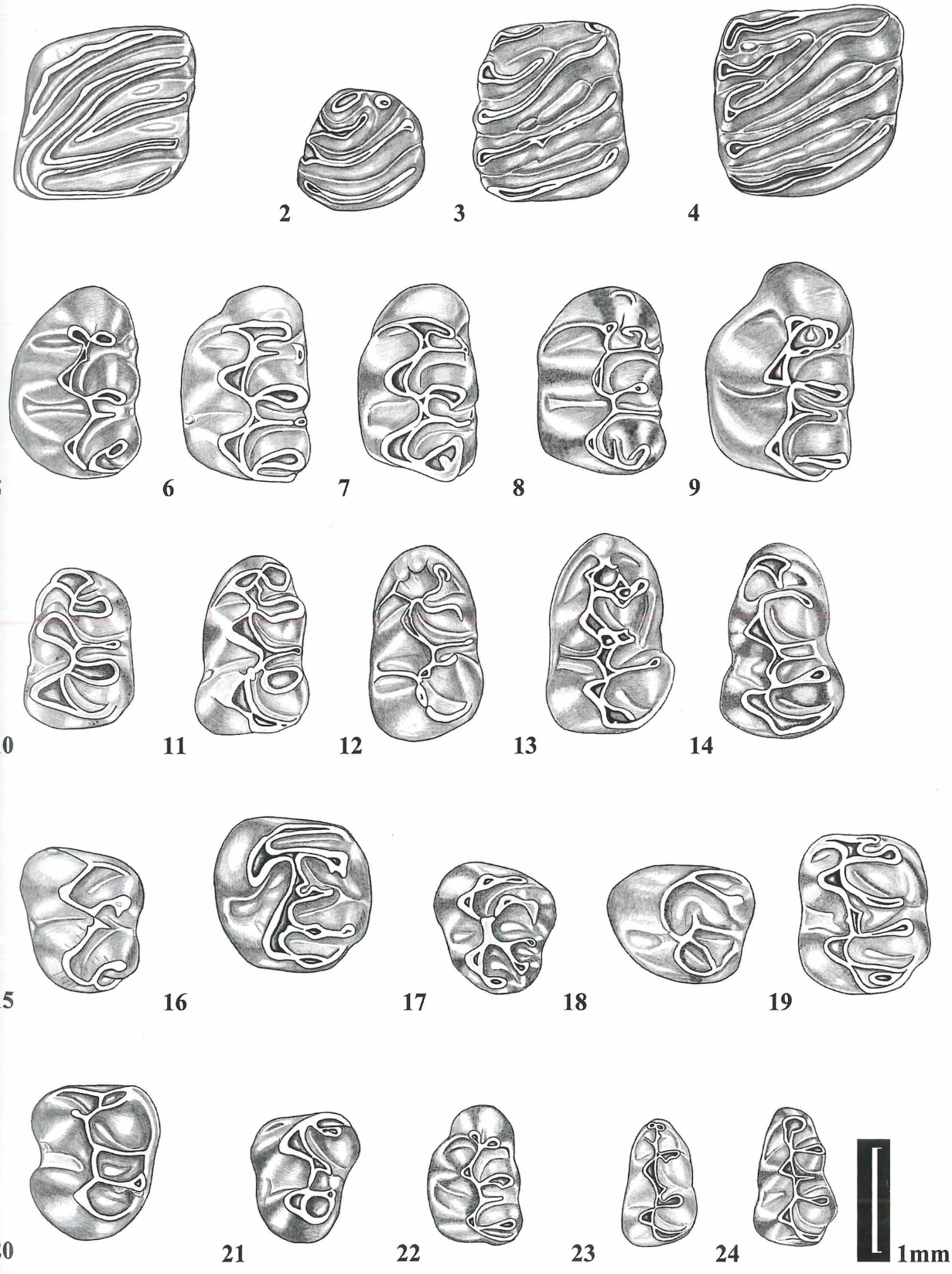

PLATE 3

Fig. 1	*Anomalomys gaudryi*, M1, FF 2/7	2005. 299., occlusal view
Fig. 2	*Anomalomys gaudryi*, M1, FF 2/7	2005. 299., lingual view
Fig. 3	*Anomalomys gaudryi*, M2, FF 2/7	2005. 300., occlusal view
Fig. 4	*Anomalomys gaudryi*, M2, FF 2/7	2005. 300., lingual view
Fig. 5	*Anomalomys gaudryi*, M3, FF 2/7	2005. 302., occlusal view, reversed
Fig. 6	*Anomalomys gaudryi*, M3, FF 2/7	2005. 302., lingual view, reversed
Fig. 7	*Anomalomys gaudryi*, m1, FF 2/7	2005. 216., occlusal view, reversed
Fig. 8	*Anomalomys gaudryi*, m1, FF 2/7	2005. 216., labial view, reversed
Fig. 9	*Anomalomys gaudryi*, m1, FF 2/7	2005. 217., occlusal view
Fig. 10	*Anomalomys gaudryi*, m1, FF 2/7	2005. 217., labial view
Fig. 11	*Trogontherium minutum*, m3, FF 2/3	2005. 49., occlusal view
Fig. 12	*Trogontherium minutum*, m3, FF 2/3	2005. 49., labial view
Fig. 13	*Anomalomys gaudryi*, m2, FF 2/7	2005. 219., occlusal view, reversed
Fig. 14	*Anomalomys gaudryi*, m2, FF 2/7	2005. 219., labial view, reversed
Fig. 15	*Anomalomys gaudryi*, m2, FF 2/7	2005. 249., occlusal view
Fig. 16	*Anomalomys gaudryi*, m2, FF 2/7	2005. 249., labial view
Fig. 17	*Anomalomys gaudryi*, m3, FF 2/7	2005. 221., occlusal view, reversed
Fig. 18	*Anomalomys gaudryi*, m3, FF 2/7	2005. 221., labial view, reversed

A: scale 1 mm for the figures 2, 4, 6, 8, 10, 11, 12, 14, 16, 18

B: scale 1 mm for the figures 1, 3, 5, 7, 9, 13, 15, 17.

PLATE 3