

## New "Middle Pliocene" Microvertebrate fauna from Northern Hungary (Osztramos Loc. 9)

Dénes JÁNOSSY

Hungarian Natural History Museum  
Paleontological Department, Budapest

**ABSTRACT:** The author describes a new locality from the Osztramos Hill, Northern Hungary, namely Loc. 9. A detailed analysis of its microvertebrate fauna proves a Middle Pliocene age, older than the Uppermost Pliocene animal assemblages known to the present in Western and Eastern Europe as well (Perpignan, Csarnóta, Ivanovce etc.), but considerably younger than the classical Lower Pliocene (Pannonian, Pikermian etc.) faunas. It represents therefore a new microstratigraphical unit in Eastern Europe. There are described three new species: *Muscardinus giganteus* n. sp., *Promimomys microdon* n. sp. and *Mimomys silasensis* n. sp. seemingly characteristic for the age represented by the microfauna of the new locality.

In recent years there were discovered in the quarry system of the Hill Osztramos (in the neighbourhood of the villages Bódvaszilás, Bódvarákó and Tornaszentandrás, cca. 50 km North of the town Miskolc) fifteen different localities, represented by fissures and caves with rich faunas originating from the Middle Pliocene up to the Middle Pleistocene, as mentioned in my previous papers (JÁNOSSY, 1970, 1972a, 1972b, etc.).

This time I want to make known shortly the fauna of a new locality, which - as we will see below, - represent a new microstratigraphical unit. This is the locality, labeled with number 9. From the point of view of karstmorphology is the locality 9. very peculiar. There is a series of cavities (opened up recently about two hundred meters long) filled up partially by a 2-3 meters thick calcite and containing an intercalated, cemented, yellow coloured bone-bearing clay. This is up to the present day known oldest - not ruined - cave-system of Hungary and perhaps of whole Europe.

A part of the series of cavities consists the geologically contemporaneous Locality 13., which yielded, - among a lot of bones of bats, - only the recently described new species of a small shrew (*Episoriculus tornensis* JÁNOSSY, 1973).

The other part of the locality-system, labeled as Loc. 9. contains chiefly a bat-fauna too, but the accompanying animal assemblage represents a small (very fragmentary) but very characteristic microvertebrate assemblage as follows (preliminary determinations):

Piscis indet.

Amphibia-Reptilia

Aves (Galliformis indet).  
 Talpa sp. (small)  
 Desmanina sp. I. (small)  
 Desmanina sp. II. (larger)  
 Petényi cf. hungarica KORMOS  
 ?Petényia cf. dehneli (KOWALSKI)  
 Episoriculus tornensis JÁNOSSY  
 Soricid indet. (middle sized white toothed)  
 Sciurid indet. (large)  
 Pteromys sp. indet.  
 Glirulus (aff. pusillus HELLER)  
 Glis cf. minor KOWALSKI  
 Muscardinus cf. pliocaenicus KOWALSKI  
 Muscardinus giganteus n. sp.  
 Leptodontomys cf. bodvanus JÁNOSSY  
 Prospalax cf. priscus NEHRING  
 Apodemus sp.  
 Promimomys microdon n. sp.  
 Mimomys silasensis n. sp.  
 Meriones sp.

A systematico-stratigraphical analysis of this animal assemblage shows clearly the intermediate position of it, between the typical Upper and Lower Pliocene ("Pannonian") microfaunas of the corresponding territory.

The primitive form of *Episoriculus* was analyzed on another occasion (JÁNOSSY, 1973). As the taxonomical designation of a very large *Petényia*-like form announces (cf. "dehneli"), it is related to the Podlesice-form (see KOWALSKI, 1956).

The *Petauristine* (perhaps the first fossil representant of *Pteromys* s. str.) is different from those of younger Pliocene forms as well as from the older ones.

Only one Eomyid, a *Leptodontomys* is present, apparently a constant element of Pliocene faunas.

A giant *Muscardinid* may be especially characteristic for this stratigraphical level of the corresponding geographical territory (description of new species see below).

A parallel case is the appearance of the two special forms of *Arvicolids* representing new species as well (descriptions below). The presence of such evolved voles proves more and more the formerly not estimated very ancient origine of the members of this group.

The lacking of *Cricetids* may be due to ecological - environmental peculiarities.

*Meriones* is represented by characteristic although very fragmentary material but it is clearly to be proved that a smaller form as *Epimeriones austriacus* DAXNER 1972 is present.

The other forms as a small *Talpa*, two *Desmans*, *Prospalax* "priscus". *Apodemus* (predominating), *Muscardinus*, *Glirulus pusillus*, - are banal forms or strongly related to the Upper Pliocene faunas known at present.

From the point of view of stratigraphical estimation the shrews play a special important role. According to the personal communication of K. KOWALSKI, - in the sense of the newest revision, - the *Episoriculus* as well as the white toothed form, and "Sorex" = *Petényia dehnelli* of Podlesice are very near to the form of *Osztramos* 9. Moreover in Podlesice some other shrews are strongly related with some of the Konfidisch and Polgárdi-forms (see BACHMAYER et WILSON, 1970; KRETZOI, 1952). These facts prove the older age of Podlesice as formerly estimated and at the same time the lower stratigraphical position ("Middle Pliocene age") of the above sketched new Localities of *Osztramos* too.

On the basis of these new data we can refine the "Middle Pliocene" stratigraphical series of Middle-Eastern Europe demonstrating in the following table:

MIDDLE - UPPER PLIOCENE	"perpignan"	<i>Allosorex</i>	
	"ruscinian"	<i>Baranomys</i> <i>Trilophomys</i>	Ivanovce
	estramontian	<i>Episoriculus borsodensis</i> <i>Amblycoptus topali</i> <i>Baranomys</i> ( <i>Warthamys</i> ) <i>Prospalax kretzoi</i>	<i>Osztramos</i> 1.
		<i>Episoriculus tornensis</i> <i>Petényia</i> cf. <i>dehnelli</i> <i>Promimomys microdon</i> n. sp. <i>Mimomys silasensis</i> n. sp. <i>Muscardinus giganteus</i> n. sp.	<i>Osztramos</i> 9., 13.,
	"hautimagne"	<i>Episoriculus</i> cf. <i>tornensis</i> <i>Petényia dehnelli</i> <i>Polonomys insuliferus</i>	Podlesice
	?	?	
	baltavarian pontian	<i>Amblycoptus oligodon</i>	Polgárdi
	pikermian	" <i>Anourosorex</i> " <i>kormosi</i> "very primitiv" <i>Arvicolid</i> +	Kohfidisch = ( <i>Gyepüfüzes</i> )

The Localities 9. and 13. seem to fall in Western European stratigraphy between the "Zone de Teruel" (THALER, 1966) and the "Zone de Perpignan" (newly revised by HUGUENEY and MEIN, 1966) perhaps near the age of the Localities of the "Zone de Hautimagne" (MEIN and MICHAUX, 1970).

+ WILSON, personal communication

In the Central-Eastern European succession the position in time of Osztramos 9. and 13. does not seem quite convincing but there are some other biological and geological arguments speaking for an older age as Osztramos Loc. 1. and a younger one as Podlesice. The geological argument may be as mentioned in my previous paper (JÁNOSSY, 1973) "the dark red clay of Loc. 1. Osztramos... penetrates the matrix of Loc. 13." filling up a tectonically preformed fissure and arguing a geologically younger age of the former one. Some very primitive rodents in Podlesice (personal comm. of KOWALSKI), strengthen the older age of this Locality besides the shrews too.

The only disturbing fact is the return of common forms in Podlesice and Osztramos 1. (Wartamys, Polonomys, Kowalskia) entirely lacking from Osztramos 9. with the appearance of the mentioned, below described peculiar Arvicolids.

Unfortunately we have not the possibility to connect the Osztramos local microfaunas with the classical European Hipparion assemblages.

The zoogeographical differences between the Eastern and Western European micro-mammalian faunas constitute a special problem, which make more difficult the correlation in the whole territory of our continent (e.g. Stephanomys, Ruscinomys and an otherwise rich Murine fauna only in Western, Amblycoptus, Prospalax in Eastern Europe etc.).

However the gaps in the Pliocene successions are in both territories so remarkable, that we are far from a continuous succession. Otherwise, we have to hope from the rapid advance in the investigation of small mammal successions from year to year the narrowing and precisizing of these hiatuses.

#### DESCRIPTION OF NEW SPECIES

Glires LINNÉ 1758  
Myoxidae WATERHOUSE 1839  
Muscardinus KAUP 1829

#### Muscardinus giganteus n. sp.

Derivatio nominis: "giganteus" from the Latin: extremely large, referring to the size of the holotype.

Stratum locusque typicus: Horizontal cave system in the SE part of the western-lying quarry (No IX.) of Hill Osztramos, at about 350 m height a. s. l., on the confines of the villages Tornaszentandrás, Bódvaszilás and Bódvarákó (NE Hungary, 50 km north of the town Miskolc).

Age: Middle Pliocene ("postpannonian Pliocene")

Holotype: right first upper molar. Inventory Number: V. 74. 2. Collection of the Paleontological Department of the Natural History Museum, Budapest.

Diagnosis: The up to the present known largest member of the genus.

Description and remarks: Only the anterior part of the first upper molar preserved, the crown of the posterior part somewhat detached (ridges lacking). There are on the oral part three well developed ridges present. Chief features the same as in *Muscardinus avellanarius*: occlusal surface subquadrate, the ridges slightly arched posteriorly, but the anterior part more rectangular and the ridges more prominent (stronger built) than at the recent species. Anteroloph well developed and not connected to either protocone or paracone. Proto- and metaloph form a rectangular, U-shaped pattern. Extra ridges not present. There are five roots present, in the same arrangement as at the recent form. Length of the occlusal surface cca. 2.70 mm, largest width 1.70 mm.

So far the following fossil species of the genus are described (including the subgenera *Eomuscardinus* HARTENBERGER 1966 and *Muscardinulus* THALER 1966):

- Muscardinus* (*Eomuscardinus*) *sansaniensis* (LARTET, 1851)
- M. dacicus* KORMOS, 1930
- M. pliocaenicus* KOWALSKI, 1963
- M. davidi* HUGUENEY and MEIN, 1965
- M. vireti* HUGUENEY and MEIN, 1965
- M. thaleri* DE BRUIJN, 1966
- M. (Eomuscardinus) vallesiensis* HARTENBERGER, 1966
- M. crusafonti* HARTENBERGER, 1966
- M. (Muscardinulus) bouzigensis* THALER, 1966

This species as well as *M. gracilis* DEHM 1950 and *M. modestus* DEHM, 1950 (incl. in the subgenus *Glirudinus* DE BRUIJN, 1966) represent different morphotypes and different evolutionary lines, but the length of the  $M^1$  of none of these species exceed 1,8 mm, the width 1,5 mm.

Such (viz. larger) dimensions as our fossil specimen shows among recent and fossil dormice only *Leithia melitensis* (ADAMS, 1863) although with a quite different molar-structure. The pattern of the occlusal surface of the molar agrees morphologically mostly with that of the same tooth of *Muscardinus* especially *M. avellanarius* or *crusafonti*, other genera we cannot take into consideration. However, there are observable some differences which perhaps exceed the boundary of generic limits. The discovery of further material may decide in this question.

Arvicolidae GRAY 1821  
*Promimomys* KRETZOI 1955

*Promimomys microdon* n. sp.

Derivatio nominis: "microdon", referring to the small size of the tooth of the type specimen.

Stratum locusque typicus and age: see at the description of *Muscardinus giganteus*.

Holotype: right fragmentary first upper molar. Inv. No. V. 74. 3. Collection of the Paleontological Department of the Museum of Natural History, Budapest.

Diagnosis: The up to the present known smallest member of the genus with typical *Promimomys*-pattern of the first lower molar.

Description and remarks: The anterior loop (paraconid, "cap") very simple, without a ridge or islet, somewhat *Baranomys*-like. Triangles alternating and acuminate, proving to represent the evolutionary line of voles (*sensu stricto*) and not that one of *Baranomys*-ines. First outer and second inner triangle (protoconid and entoconid) confluent, seemingly characteristic for all members of the genus up to the present known. Enamel not differentiated. Brachyodonty not only from lingual and labial view apparent, but by the more or less deep grooves in the lowest part of reentrant angles of enamel as well. Cementum entirely lacking. Anterior part of the first molar unfortunately broken and therefore the running down of the boundary between the crown-enamel and the root-dentin not to see. The most important feature of the new species of this otherwise morphologically very homogenous genus is the small size: the length of the occlusal surface measure 1.82 mm, the largest length of the whole tooth maximally 2.02 mm. The length of  $M_1$  of the members of the genus *Promimomys* (*s. str.*) to the present known: *Pr. moldavicus* (KORMOS, 1932) and *Pr. cor KRETZOI* 1955 measures 2.7 - 2.9 mm (originating from Malusteni, Kuchurgan (TOPACHEWSKIJ, 1965) and Csarnóta), that one of *Pr. insuliferus* KOWALSKI, 1958 from Podlesice and Vendargues (see MICHAUX, 1971) - isolated by KRETZOI as *Polonomys*, - measures between 2.36 and 2.82 mm.

I have to emphasize on this place that, against superficial resemblances seem the North-American form *Prosomys mimus* SHOTWELL 1956 (with smaller dimensions: 2.14 - 2.97 mm, perhaps 1.9 mm as well) to represent according to the very precise figures of REPENNING (1968), - a quite separate evolutionary line. The differences are expressed in the whole structure of all molars but chiefly in the  $M^3$  as well.

*Mimomys* Forsyth Major 1902

*Mimomys silasensis* n. sp.

Derivatio nominis: "silasensis", referring to the old name of the village near the locality: Bódvaszilás = Szilas, in latinized form "Silas".

Stratum locusque typicus and age: see at the description of *Muscardinus giganteus*.

Holotype: Right first lower molar in the fragment of mandible Inventory Number V. 74. A, Collection of the Palaeontological Department of the Museum of Natural History, Budapest.

Diagnosis: Species of the size and with the morphological features of the *Mimomys stehlini* group, but much more brachyodont than the members of the genus up to the present known.

Description and remarks: The morphological features and size are the same as at *Mimomys stehlini* KORMOS, *hassiacus* HELLER, *occitanus* THALER, *ivanovcensis* FEJFAR, *septimanus* MICHAUX, etc. The enamel differentiated, on the anterior surface of the anterior loop (paraconid) thinner than otherwise. There is a *Mimomys*-ridge and *Mimomys* islet on the paraconid. First outer and second inner triangle (protoconid and

entoconid) confluent, as at the members of *Promimomys*. Length of the occlusal surface 2.65 mm.

A detailed comparison with an original material of a part of the members of this group originating from SETE and SEYNES (received for investigation by courtesy of J. MICHAUX) as well as from *Osztramos* Loc. 7 and with figures of different publications (chiefly FEJFAR, 1961 and MICHAUX, 1971) resulted in the following: none of one of these materials shows from lingual and labial view the same brachyodonty as the *Osztramos* 9 - material. This brachyodonty is very sharply expressed not only by the more thick basal and narrower upper part of the crown, but by the deep grooves in the lowest part of the reentrant angles of enamel. Crown-cementum present. The fold, consisting the boundary between the enamel of the crown and the dentin of the root on the anterior part of the tooth very deep.

The mosaic-like combination of advanced and archaic evolutionary features of the described *Mimomys* oblige me to interpret it as a new species, - despite of the disquieting taxonomical confusion of the genus.

### JÁNOSSY Dénes: "Középső pliocén" aprógerinces fauna az osztramosi 9. lelőhelyről

A szerző ismerteti az új, 9. sz. osztramosi lelőhelyet. Az innen előkerült aprógerinces fauna a vizsgálatok nyomán "középső pliocén" korúnak bizonyult. Mindenesetre idősebb jellegű annál a faunatípusnál, amelyet ezideig mind Kelet- mind Nyugat-Európából ismerünk (Perpignan, Csarnóta, Ivanovce, stb.), fiatalabb azonban a klasszikus alsó pliocén faunáknál (pannoniai, pikermii, stb.).

Az ősmaradvány-együttes így új keleteurópai mikrosztratigráfiai egységet képvisel. A dolgozatban három új alak leírására is sor kerül, ezek egyúttal a lelőhely korjelző alakjai: *Muscardinus giganteus* n. sp., *Promimomys microdon* n. sp., és *Mimomys silansensis* n. sp.

#### REFERENCES

- BACHMAYER, F. et WILSON, R. W. (1970): Small Mammals (Insectivora, Chiroptera, Lagomorpha, Rodentia) from the Kohfidisch Fissures of Burgenland, Austria. *Ann. Naturhist. Mus. Wien.* 74. pp. 533-587.
- FEJFAR, O. (1961): Die plio-pleistozänen Wirbeltierfaunen von Hajnacka und Ivanovce (Slowakei), CSR. - *Neues Jahrb. Geol. Paläont., Abh.* 112. 1. pp. 48-82.
- HUGUENEY, M. et MEIN, P. (1966): Les Rongeurs Pliocenes du Roussillon dans les collections lyonnaises. - *Trav. Lab. Géol. Fac. Sci. Lyon. N. S., n° 13*, pp. 243.266.

- JÁNOSSY, D. (1970): Ein neuer Eomyide (Rodentia, Mammalia) aus dem Ältestpleistozän (Oberes Villafrankium, Villányium) des Osztramos (Nordostungarn). - Ann. Hist. Nat. Mus. Nat. Hung. Pars Miner. et Palaeont. 62. pp. 99-113.
- JÁNOSSY, D. (1972/a): Middle Pliocene Microvertebrate Fauna from the Osztramos Loc. 1. (Northern Hungary). - Ann. Hist. Nat. Mus. Nat. Hung. 64. pp. 27-52.
- JÁNOSSY, D. (1972/b): Ein kleiner Hystrix aus dem Altpleistozän der Fundstelle Osztramos 8. (Nordungarn). - Vertebrata Hungarica, 13. pp. 163-185.
- JÁNOSSY, D. (1973): New species of Episoriculus from the Middle Pliocene of Osztramos (North Hungary). - Ann. Hist. Nat. Mus. Nat. Hung. 65. pp. 49-55.
- KOWALSKI, K. (1956): Insectivores, Bats and Rodents from the Early Pleistocene Bone Breccia of Podlesice near Kroczyse (Poland). - Acta Palaent. Polonica. 1. 4. pp. 331-394.
- KRETZOI, M. (1952): Die Raubtiere der Hipparionfauna von Polgárdi. - Jahrb. Ung. Geol. Anstalt. 40. 3. pp. 1-12.
- MEIN, P. et MICHAUX, J. (1970): Un nouveau stade dans l'évolution des Rongeurs Plidcenes de l'Europe sud-occidentale. - C. R. Acad. Sci. Paris. t. 270. pp. 2780-2783.
- MICHAUX, J. (1971): Arvicolinae (Rodentia) du Pliocene terminal et du Quaternaire ancien de France et d'Espagne. - Palaeovertebrata. Vol. 4. Fasc. 5. pp. 137-214.
- REPENNING, CH. (1968): Mandibular Musculature and the origin of the Subfamily Arvicolinae (Rodentia). - Acta Zool. Cracoviensia. 13. 3. pp. 29-72.
- THALER, L. (1966): Les Rongeurs fossiles du Bas-Languedoc dans leur rapports avec l'histoire des faunes et la stratigraphie du Tertiaire d'Europe. - Mémoires Mus. Nat. Hist. Nat. N. S. Sér. C. 17. pp. 1-295.
- TOPACZEWSKY, W. A. (1965): Remains of Voles of the Genus Promimomys Kretzoi (Rodentia, Microtidae) from the Pliocene Deposits of the Southern Part of the Ukrainian SSR. (ucrainian). - Dopowidi Akademii Nauk Ucrainskoi RSR. 6. pp. 777-781.

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Dr. Dénes JÁNOSSY  
Hungarian Natural History Museum  
Paleontological Department.  
H-1088. Budapest,  
Muzeum krt. 14-16.



REMAINS FROM OSZTRAMOS LOCALITY 9  
AZ OSZTRAMOS 9. LELŐHELY ŐSMARADVÁNYAI

FIGURES - ÁBRÁK

EXPLANATION - ÁBRAMAGYARÁZAT

Promimomys microdon n. sp.

- a) Right first lower molar, occlusal view (length: 1.82 mm) - Jobboldali első, alsó moláris, rágófelület (1,82 mm hosszú).
- b) The same, labial view. - Ugyanaz; a labiális oldal.

Mimomys silasensis n. sp.

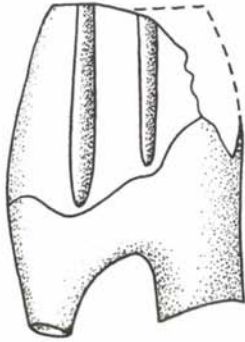
- c) Right first lower molar, occlusal view (length: 2,65 mm) - Jobboldali első, alsó moláris, rágófelület (2,65 mm).
- d) The same, labial view. - Ugyanaz, labiális oldal.
- e) Left  $M^3$  of the (??) same species, occlusal view. + Bal felső  $M^3$ , ugyanazon (??) fajból, rágófelület.

Muscardinus giganteus n. sp.

- f) Damaged right first upper molar, occlusal view (length: 2.70 mm). - Töredékes jobb felső moláris, rágófelület (2,70 mm hosszú).



a



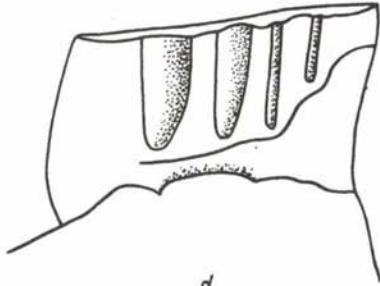
b



c



e



d



f

