

***Neocometes* SCHAUB and ZAPFE, 1953 (*Rodentia*, *Mammalia*) from the Miocene of Bełchatów (Poland)**

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Abstract. Isolated molars of *Neocometes similis* have been found in lacustrine carbonate sediments in the middle and lower part of the profile in the brown-coal mine of Bełchatów (Bełchatów – B and Bełchatów – C). So far this species has been known from several Middle Miocene localities of central and western Europe. Its discovery in Poland extends its range to the north-east. The genus *Neocometes* is present also in the Miocene of Thailand and is important to understanding the paleobiogeography and paleoecology of the Miocene of Europe.

Key-words: fossil mammals, *Rodentia*, *Neocometes*, Miocene, Poland.

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I. INTRODUCTION

Layers of limnic sediments intercalated between the coal seams in the brown coal mine of Bełchatów in Central Poland contained shells of molluscs and remains of small mammals. Three main horizons with animal remains have been discovered, an upper, a middle and a lower, referred to in the paleontological papers as Bełchatów – A, Bełchatów – B and Bełchatów – C, respectively (STWORZEWICZ, SZYNKIEWICZ 1989, STUCHLIK et al. 1990). Among the remains of small mammals so far only those of *Microtocricetus molassicus* FAHLBUSCH and MAYR, 1975 from Bełchatów – A have been described in detail (KOWALSKI 1993). This paper is therefore the second from the series of publications concerning small mammal fauna of Bełchatów.

The genus *Neocometes* and its typical species *N. brunonis* were first described from the Miocene of Devinská Nová Ves (Neudorf Spalte) in Slovakia by SCHAUB and ZAPFE (1953). The same species was later discovered at Anwil in Switzerland (ENGESSER 1972). Another, more primitive species, *N. similis*, was diagnosed on the basis of remains from Erkertshofen in Germany (FAHLBUSCH 1966). It was later listed from several fossil localities in Europe: Rubielos de Mora 2 in Spain (BRUIJN, MOLTZER 1974), Dolnice 1-3

in the Czech Republic (FEJFAR 1974), Massendorf, Schönenberg and Undorf in Germany (SCHÖTZ 1981), Martinsbrünneli in Switzerland (HÜNERMANN 1984) and Vieux-Collonges in France (MEIN, FREUDENTHAL 1981). Specimens from other localities were usually identified as *Neocometes* sp., either because they represent, according to the authors of particular papers, populations intermediate between the above mentioned two species, as in the case of Franzensbad (FEJFAR 1974) or because the material was too scanty or unsufficiently studied, as at Isle d'Abeau in France (MEIN 1984), at Echzell (TOBIEN 1955) and Puttenhausen (WU 1982) in Germany and Oberdorf in Austria (DAXNER-HÖCK 1990).

A new species of *Neocometes*, so far the most primitive, *N. orientalis*, was discovered in the Miocene fauna of rodents at Li in Thailand (MEIN, GINSBURG, RATANASTHIEN 1990).

In all its known fossil localities *Neocometes* is represented by a rather small number of isolated teeth. Nevertheless, it is important from the stratigraphic point of view, its presence in Europe being limited to Middle Miocene (MN4 - MN8). Hitherto it has not been known from Poland and its discovery in Bełchatów extends its range in Europe to the north-east. It is also important from the point of view of paleobiogeography, because living members of its family (*Platacanthomyidae*) are limited to tropical parts of East Asia.

The present study of the fossil fauna of Bełchatów was supported by the grant N° 6 6219 92 03 of the Polish Scientific Committee. The author is indebted to Miss Beata SŁOWIK who selected most of the small mammals remains from the samples collected at Bełchatów and to Mr Marek KAPTURKIEWICZ who prepared the drawings. Dr. Adam SZYNKIEWICZ provided data on the geological background and discovered most of the layers with remains of small mammals at Bełchatów.

Specimens described in the present paper are housed in the collections of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Cracow (N° MF/2134 and MF/2135).

II. SYSTEMATIC PART

Family *Platacanthomyidae*

Genus *Neocometes* SCHAUB and ZAPFE, 1953

Neocometes similis FAHLBUSCH, 1966

Bełchatów – C

Material. Isolated molars: 2 M₁, 2 M₂, 2 M², 1 M³ (MF/2134). At least 3 individuals are represented in the material.

Description. Two M₁ are present. One, right (MF/2134/4, Fig. 1) is in a medium stage of wear and does not differ from the holotype of *N. similis* from Erkertshofen and from the specimens of this species from Dolnice. The other specimen (MF/2134/6) has its crown more heavily worn but of similar pattern.

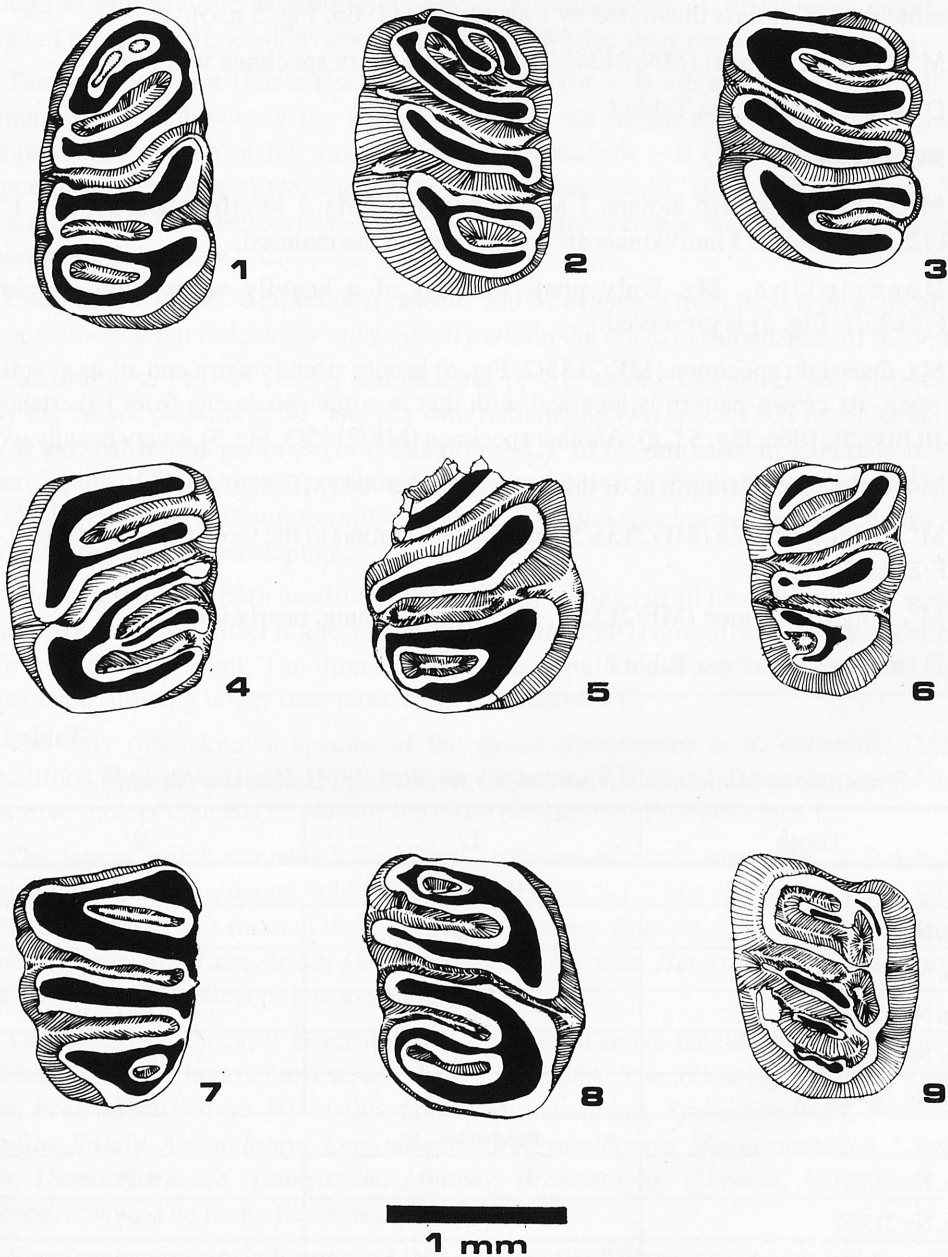


Fig. 1-9. *Neocometes similis*, Bełchatów. 1-4: Bełchatów - C; 1 - RM₁, No 2134/4; 2 - LM₂, No 2134/5, 3 - LM₂, No 2134/1, 4 - LM₂, No 2134/2. 5-9: Bełchatów - B; 5 - fragment of RM₂, No 2135/1, 6 - RM₃, No 2135/2, 7 - LM₃, No 2135/3, 8 - RM₂, No 2135/5, 9 - RM₃, No 2135/6.

M₂. Of two specimens, both left, one (MF/2134/5, Fig. 2) is only slightly, the other (MF/2134/1, Fig. 3) heavily worn. The anterior border of the crown is straight, there are no longitudinal connections between the antero-, meso- and posterolophids.

M². There were two specimens, both left, but one (MF/2134/3) was damaged during preparation. In specimen MF/2134/2 (Fig. 4) the protocone extends backwards as in specimens of *N. similis* illustrated by FAHLBUSCH (1966, Fig. 5 n, o).

M³. Only a fragment (MN/2134/7) of a heavily worn specimen was found.

Dimensions: see Table I.

Bełchatów – B

Material. Isolated molars: 1 M₂ (fragment), 2 M₃, 1 M¹ (fragment), 1 M², 1 M³ (MF/2135). At least 3 individuals are represented in the material.

Description. M₂. Only posterior part of a heavily worn right specimen (MF/2135/1, Fig. 5) is preserved.

M₃. One right specimen (MF/2135/2, Fig. 6) is only slightly worn and all its synclines are open. Its crown-pattern is identical with that in some specimens from Erkertshofen (FAHLBUSCH, 1966, Fig. 5 f, g). Another specimen (MF/2135/3, Fig. 7) is very heavily worn.

M¹. Only a small fragment of this tooth is preserved (MF/2135/4).

M². Right specimen (MF/2135/5, Fig. 8), very similar to the tooth from Bełchatów – C (MF/2134/2, Fig. 4).

M³. Single specimen (MF/2135/6, Fig. 9), very young, nearly unworn.

Dimensions: see Table I.

Table I

Dimensions of molars in *Neocometes similis* from Bełchatów (in mm)

Tooth	L	W
Bełchatów - C		
M ₁ , No 2134/4	1.72	1.02
M ₁ , No 2134/6	1.80	1.01
M ₂ , No 2134/1	1.63	1.23
M ₂ , No 2134/5	1.56	0.96
M ² , No 2134/2	1.48	1.35
Bełchatów - B		
M ₂ , No 2135/1	–	1.27
M ₃ , No 2135/2	1.41	0.97
M ₃ , No 2135/3	–	1.17
M ² , No 2135/5	1.57	1.18
M ² , No 2135/6	1.37	0.95

III. DISCUSSION

Two species of *Neocometes* known so far from Europe, differ in size, but their morphology is very similar. Only the sample of *N. similis* from Erkertshofen (FAHLBUSCH 1966) and that of *N. brunonis* from Devinská Nová Ves (FEJFAR 1974) are numerous enough to illustrate the variability of respective populations. *N. brunonis* is larger, the range of particular dimensions does not as a rule overlap their range in *N. similis*.

The samples from Bełchatów – C and Bełchatów – B are small, and from all the dimensions of molars only the width of M₂ and the length and width of M² can be compared. The width of the unique M₂ from Bełchatów – B (1.27 mm) is above the respective dimensions of two specimens from Bełchatów – C (0.96 and 1.17 mm). The specimen of M² from Bełchatów – B is longer, but narrower than the specimen of the same molar from Bełchatów – C.

Compared with the samples of *N. similis* and *N. brunonis* from their typical localities the specimens from Bełchatów are generally within the range of dimensions of *N. similis*.

According to FEJFAR (1974) and SCHÖTZ (1981) among morphological differences only the crown patterns of M¹ and M₁ differentiate the two species. Of these teeth only M₁ is present in our material (in Bełchatów – C). In *N. similis* from Erkertshofen the anterolophid of M₁ is always continuous, in *N. brunonis* it is divided into several cusps in 60 % of specimens and uninterrupted in 40 %. The two specimens from Bełchatów – C have uninterrupted anterolophids.

The material from both localities of Bełchatów belongs in all probability to *N. similis*. The two populations differ in age, but the existing material is not sufficient for determining their evolutionary level. The dimensions of the population from Bełchatów – B make impression of being larger than those from Bełchatów – C.

The only other known species of the genus *Neocometes* is *N. orientalis* (MEIN, GINSBURG, RATANASTHIEN, 1990) from the Miocene of Thailand. It has shorter and more primitive molars than has *N. similis*, the more primitive of European species.

The layers which contained the oldest remains of small mammals at Bełchatów (Bełchatów – C) are situated below tuffite dated at 18.1-1.7 MA (STWORZEWICZ, SZYNKIEWICZ 1989). Their rodent fauna contains the genera *Blackia*, *Spermophilinus*, *Anomalomys*, *Ligerimys*, *Eumyarion*, *Democricetodon*, *Myoxus*, *Heteromyoxus*, *Bransatoglis* and *Myoglis*. This fauna points to zone MN 4.

The layers of the locality Bełchatów – B are situated above the tuffite mentioned above and below another layer of tuffite, dated at 16.5-1.3 MA. The following genera of rodents have been identified so far in this fauna: *Miopetaurista*, *Spermophilinus*, *Forsythia*, *Blackia*, *Ratufa*, *Anomalomys*, *Leptodontomys*, *Keramidomys*, *Megacricetodon*, *Lartetomys*, *Democricetodon*, *Eumyarion*, *Myoxus*, *Bransatoglis*, *Glirulus*, *Glirudinus* and *Microdyromys*. The fauna fits zones MN5-MN6.

Neocometes appears in Europe in MN 4 as *N. similis*. This species is present in localities representing zones MN4-MN5. The more derived species, *N. brunonis* is present at Devinská Nová Ves (Neudorf Spalte), representing MN6 and at Anwil (MN7/8, HÜNERMANN 1984). This would suggest MN 4 age for Bełchatów – C and MN5 for Bełchatów – B.

Since the discovery of the genus *Neocometes* in the European Miocene it has been taken for granted (SCHAUB, ZAPFE 1953) that it belongs to the same group as two extant rodent genera from south-eastern Asia, *Platacanthomys* BLYTH, 1859 and *Typhlomys* MILNE-EDWARDS, 1877. All these genera were included in a distinct tribe, subfamily or family of rodents. In the opinion prevailing among recent mammalogists it seems to be justifiable to isolate them as a separate family, *Platacanthomyidae*, belonging to the *Myomorpha*.

In the last years some fossil remains of platacanthomyids have been discovered also in East Asia. Besides *Neocometes orientalis* from the Miocene of Thailand (MEIN, GINSBURG, RATANASTHIEN 1990), three new species belonging to the extant genera were described from the Upper Miocene of Lufeng in Yunnan in South China: *Platacanthomys dianensis* QIU, 1989, *Typhlomys primitivus* QIU, 1989 and *T. hipparionum* QIU, 1989. According to QIU (1989), the first two may represent ancestors of the living forms, the third one is similar to recent *T. cinereus*, but it is larger. Further taxa have been described from the middle layer (of Early Pleistocene age) of Cave Longgupo near Wushan in China (HUANG, FANG et al., 1991). These are: *Typhlomys intermedius* ZHANG, 1991 and *T. macrurus* ZHENG, 1991. In the same cave but in upper layers some remains of the extant species *T. cinereus* have been noted.

The discovery of *Neocometes similis* at Bełchatów extends the range of this species to the north-east. The Miocene presence of platacanthomyids in Europe is interesting from the paleobiogeographic point of view because it suggests the uninterrupted expanse of tropical forest between south-east Asia and Europe at that time.

Of the two still living species of *Platacanthomyidae* one, *Platacanthomys lasiurus*, is distributed in southern India, where it inhabits rocky hills and forested valleys. It has opposable, clawless hallux. This character and the fact that its nests are in holes situated high in large trees indicate its arboreal way of life (ELLERMAN 1961). The second, *Typhlomys cinereus*, inhabits southern China and northern Vietnam. It "lives in elevations of 1200 to 2000 m a.s.l. in mountains covered with dwarfed, moss-laden deciduous trees and an undergrowth of small bamboos" (NOWAK 1991). According to the same author, nothing of its natural history has been recorded.

At European fossil localities *Neocometes* is relatively numerous only at Devinská Nová Ves and Erkertshofen, both being karstic fissures. In other sites, representing limnic sediments, its remains are very rare. Most authors are of the opinion that *Neocometes* was connected with tropical forest, but direct evidence is lacking.

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