Neocometes SCHAUß and ZAPFE, 1953 (Rodentia, Mammalia) from the Miocene of Bełchatów (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 SCHAUß 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 Belchatów 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 (Platatanthomyidae) are limited to tropical parts of East Asia.

The present study of the fossil fauna of Belchatów was supported by the grant Nº 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 Belchatów 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 Belchatów.

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 (Nº MF/2134 and MF/2135).

II. SYSTEMATIC PART

Family Platatanthomyidae

Genus Neocometes SCHaub and ZAPFE, 1953

Neocometes similis FAHLBUSCH, 1966

Belchatów - C

Material. Isolated molars: 2 M1, 2 M2, 2 M3, 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*, Belchatów. 1-4: Belchatów – C; 1 – RM₁, No 2134/4; 2 – LM₂, No 2134/5, 3 – LM₂, No 2134/1, 4 – LM², No 2134/2. 5-9: Belchatów – 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.

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**Table I**

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

<table>
<thead>
<tr>
<th>Tooth</th>
<th>L</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Belchatów - C</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M₁, No 2134/4</td>
<td>1.72</td>
<td>1.02</td>
</tr>
<tr>
<td>M₁, No 2134/6</td>
<td>1.80</td>
<td>1.01</td>
</tr>
<tr>
<td>M₂, No 2134/1</td>
<td>1.63</td>
<td>1.23</td>
</tr>
<tr>
<td>M₂, No 2134/5</td>
<td>1.56</td>
<td>0.96</td>
</tr>
<tr>
<td>M₂², No 2134/2</td>
<td>1.48</td>
<td>1.35</td>
</tr>
<tr>
<td><strong>Belchatów - B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M₂, No 2135/1</td>
<td>–</td>
<td>1.27</td>
</tr>
<tr>
<td>M₃, No 2135/2</td>
<td>1.41</td>
<td>0.97</td>
</tr>
<tr>
<td>M₃, No 2135/3</td>
<td>–</td>
<td>1.17</td>
</tr>
<tr>
<td>M₂², No 2135/5</td>
<td>1.57</td>
<td>1.18</td>
</tr>
<tr>
<td>M₂², No 2135/6</td>
<td>1.37</td>
<td>0.95</td>
</tr>
</tbody>
</table>
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 (FAILBUSCH 1966) and that of *N. brunonis* from Devinská Nová Ves (FEIJFAR 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 Belchatów – C and Belchatów – 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 Belchatów – B (1.27 mm) is above the respective dimensions of two specimens from Belchatów – C (0.96 and 1.17 mm). The specimen of M2 from Belchatów – B is longer, but narrower than the specimen of the same molar from Belchatów – C.

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

According to FEIJFAR (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 Belchatów – 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 Belchatów – C have uninterrupted anterolophids.

The material from both localities of Belchatów 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 Belchatów – B make impression of being larger than those from Belchatów – 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 Belchatów (Belchatów – C) are situated below tuffite dated at 18.1-1.7 MA (STWORZEWICZ, SZYNSKI EWICZ 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 Belchatów – 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, Ratufla, Anomalomys, Leptodontomys, Keramidomys, Megacricetodon, Lartetomy, 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 Belchatów – C and MN5 for Belchatów – B.
Since the discovery of the genus *Neocometes* in the European Miocene it has been taken for granted (SCHAUB, ZAPF 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 platyacanthomyids have been discovered also in East Asia. Besides *Neocometes orientalis* from the Miocene of Thailand (MEIN, GINSBURG, RATANASTHIEI 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 Longguo 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 Belchatów extends the range of this species to the north-east. The Miocene presence of platyacanthomyids 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 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.

REFERENCES


