Suidae (Artiodactyla, Mammalia) from the Miocene of Bełchatów in Poland

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Abstract: Scarce remains of suids have been found in the Miocene layers of the brown coal mine of Bełchatów in Poland. Bełchatów C, representing MN 4, yielded a tooth of Hyotherium soemmeringi. The uppermost layer with Miocene faunal remains, Bełchatów A, containing a fauna indicating MN 9, yielded one tooth of Suidae unsufficient for identification to species and genus.

Key words: fossil mammals, Artiodactyla, Suidae, Miocene, Poland.

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I. INTRODUCTION

The earliest data on remains of Miocene suids in the present Poland originate from the end of the 19th and beginning of the 20th century and concern the region of Opole (Oppeln) in Silesia. In 1870 RÖMER mentioned in his Geologie von Oberschlesien "Hyotherium sp." as represented by one premolar and fragments of a molar from Domaradz (Damratsch), a few kilometers from Opole in Silesia. STEHLIN (1899/1890) noted H. simorrense from "Tauenzinow" near Opole and illustrated two teeth from that locality. The same specimens were studied by WEGNER (1908), who was of the opinion that they represent Hyotherium soemmeringi. The morphology and dimensions of these specimens as illustrated by STEHLIN (1899/1900, Pl. VI, Fig. 26) point rather to Parachleuastocboerus cf. steinheimensis.

ANDREA (1904) listed from Opole 1 (Oppeln) "cf. Choerotherium sansaniense LART. sp. (oder pygmaeum DEP.)", identified by SCHLOSSER on the basis of one astragalus. WEGNER (1913) studied new material from the same locality and recognized "Hyotherium simorrense LARTET 1851," represented by a lower canine tooth. An upper canine was also illustrated by WEGNER and listed as probably belonging to the same species. The material as illustrated by WEGNER is insufficient to be identified as belonging to a suid.

GŁAZEK et al. (1971) described two fragmentary mandibles and several bones of the postcranial skeleton of Hyotherium simorrense from another Miocene locality in Silesia, called Przeworno. They were collected in one of the two localities existing in Przeworno, namely Przeworno 2. From locality Przeworno 1 in the same quarry they described one incisor as belonging to Hyotherium.
aff. *soemmeringi* (MEYER, 1829). KUBIAK (1981) studied new materials from Przeworno and described the mandible and a few isolated teeth as belonging to *Conohyus simorrensis* (LARTET, 1851). According to him, Przeworno 1 and 2 are of the same age and the tooth identified as *Hyotherium soemmeringi* by GŁAZEK et al. (1971) belongs to *Hyotherium simorrense*. KUBIAK (1981) also identified numerous remains of the taunassuid *Taucanamo sansaniense* (LARTET, 1851) in Przeworno 1.

According to new investigations (CHEN 1984, VAN DER MADE 1900, 1994b, FORTELIUS et al. in press) three species of Suoidea are present in Przeworno: *Albanothyus* **cf. pygmaeus** (DEPERET, 1892), *Taucanamo grandaeum* (FRAAS, 1870) and *Parachleuastichoerous steinheimensis* (FRAAS, 1870).

The brown coal mine of Belchatów in central Poland contained shells of molluscs and remains of small mammals in layers of limnic sediments intercalated between the coal seams (KOWALSKI 1994). The remains of large mammals are very rare (KOWALSKI & KUBIAK 1993). Three main horizons with animal remains have been recognized: the upper, Belchatów A, belongs, according to its rodent fauna, to MN 9, the middle one, Belchatów B, belongs to MN 5/6 and the lowermost, Belchatów C, represents MN 4.

The remains of suids described in the present paper originate from Belchatów C and Belchatów A. The specimens are housed in the collection of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, in Cracow.

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II. SYSTEMATIC PALAEONTOLOGY

Family Suidae

Subfamily Hyotheriinae

Genus *Hyotherium* MEYER, 1834

*Hyotherium soemmeringi* (MEYER, 1829)

**Locality.** Belchatów C.

**Material.** Right P₃ (No. MF/2166) (Fig. 1).

**Description and dimensions.** The paracone is large and conical. There is no clear and individual metacone. The protocone is small and low. It is a simple structure and there is no lingual cingulum on the protocone. A pattern like this is found in D², P² and P³ of the Suoidea. The dimensions of the tooth are: Antero-posterior diameter = 15.5; anterior transverse diameter = 9.6; posterior transverse diameter = 12.1.

**Comparison.** The known European Suoidea are listed by VAN DER MADE (1990). The dimensions of our specimen were compared with P³ and P² of a number of European Miocene species of the suids (Fig. 2). The very small suids can be disregarded, as well as some of the very large ones. It is apparent that the P² is usually a much narrower tooth than the P³: the index I = 100 antero-posterior diameter/transverse diameter is greater than 150 in most P², whereas it is smaller in the P³. The only exception are the listriodonts, where the premolars are "molarized". The D² is narrow, even in listriodonts. Listriodont P² and P³ have lingual cingula that are always more or less separate from the protocone: the tooth from Belchatów is a P³ and does not belong to a listriodont.

*Propotamocheroerus palaeochoerous* (KAUP, 1833) has a metacone that is close to, but well separated from the paracone. Other European species of *Propotamocheroerus* PILGRIM, 1925 or *Microstonyx* PILGRIM, 1926 are larger than *P. palaeochoerous* and thus much too large for the tooth.
in question. The P₃ of *Conohyus* PILGRIM, 1925 and *Parachleuastocherus steinheimensis* (FRAAS, 1870) are larger while that of *Parachleuastocherus huenermanni* (HEISSIG, 1989) is smaller. *Parachleuastocherus crusafonti* GOLPE, 1972 is still smaller. In size and morphology the tooth from Belchatów is close to that of *Hyotherium soemmeringi*, the largest species of this genus.

Subfamily Tetraconodontinae or Suinae

Genus and species indet.

**Locality.** Belchatów A.

**Material.** Left M¹ or M² (N° MF/2167) (Fig. 3).

**Description and dimensions.** The tooth is bunodont with four main cusps, as is common in Suoidea, and it is slightly longer than wide (antero-posterior diameter = 21.6; anterior transverse diameter = 20.3; posterior transverse diameter = 19.3). The protocone is fused to the cingulum. The posterior cingulum has a cusp in the middle and is not connected to the metaconule.

**Comparison.** The tooth does not belong to a listriodont, since the European species are lophodont or sublophodont, nor to the Old World "Tayassuidae", which have the protoconule connected to the protocone (VAN DER MADE 1994a). The size of the tooth is greater than that of the M² of *Hyotherium soemmeringi* (AZANZA et al. 1993, fig. 3), the largest species of this genus, and all *Aureliachoerus* GINSBURG, 1974 (VAN DER MADE 1994a). It is comparable in size to the M² of *Xenohyus venitor* GINSBURG, 1980, but *Xenohyus* GINSBURG, 1980 has M² that are wider.
Fig. 2. Antero-posterior diameter (DAP) and posterior transverse diameter (DTp) of the P³ of *Hyotherium soemmeringi* from Belchatów compared to D³, P² and P³ of other species. 1 – *Hyotherium soemmeringi* from Sandelzhausen (Bayerische Staatssammlung für Paläontologie und historische Geologie in München); 2 – *H. soemmeringi* from type locality Georgensgmünd (Naturhistorisches Museum, Basel); 3 – P³ of *H. soemmeringi* from Belchatów (Institute of Systematics and Evolution of Animals, Cracow); 4 – *Bunolistriodon lockharti* (POMEL, 1848) from various localities; 5 – *Bunolistriodon aff. latidens* (BIEDERMANN, 1873) from various localities; 6 – D³ in the diagram for P³ of *Bunolistriodon lockharti*; 7 – *Listriodon splendidens* MEYER, 1846 from La Grive (Muséum Guimet, Lyon – MGL, Université Claude Bernard, Lyon – UCBL; Instituto di Geologia, Firenze – IGF); 8 – *Conothyas simorrensis* from Göritsch (Landesmuseum Joanneum, Graz); 9 – *Parachleuastachoerus steinheimensis* from La Grive (MGL, UCLB and IGF). 10 – *Parachleuastachoerus huenermanni* from various localities; 11 – *Propotamochoerus palaeochoerus* from various European localities. The line represents the relation: antero-posterior diameter = 1.5 transverse diameter.
Fig. 3. Left $M^1$ or $M^2$ of Tetracodontinae or Suinae sp. indet. from Belchatów A.

than long and tend to have the posterior cingulum connected to the metaconule (GINSBURG et al. 1988, Table 2, Plate 1, figs. 13, 14, 16). *Albanohyus* GINSBURG, 1974 is a very small suid the affinities of which are not yet well known (VAN DER MADE 1994b). This leaves the Tetracodontinae and Suinae as possibilities.

There are two European genera of Tetracodontinae: *Parachleuostoechoeus* GOLPE, 1972 and *Conohyus*. Of the former, *P. steinheimensis* of MN 8 and 9 has a size comparable to this tooth (FORTELIUS et al. in press), though earlier representatives of the species tend to be smaller. Of the latter genus, *C. ebroensis* AZANZA, 1986 may have a $M^2$ of this size, though at present no upper molars are known of this species (VAN DER MADE 1989). European mainland Suinae include *Propotamochoerus*, *Microstonyx* and *Sus* LINNAEUS, 1758 (VAN DER MADE & MOYA-SOLÁ 1989). The tooth might be a $M^1$ or $M^2$ of species of any of those genera (data on size given by: HÜNERMANN 1968; VAN DER MADE et al. 1992; VAN DER MADE & HAN 1994).

Bearing in mind the probable age of this tooth and the species that were abundant at that time, it is possible that the tooth belonged to *Propotamochoerus palaeochoerus*, but it might have belonged to at least 6 other species [*Propotamochoerus steinheimensis*, *Conohyus ebroensis*, *Propotamochoerus provincialis* (GERVAIS, 1859), *Microstonyx antiquus* (KAUP, 1833), *M. major* (GERVAIS, 1848/1852), *M. erymanthius* (ROTH & WAGNER, 1854)]. The first *Sus*, *S. arvernensis* CROIZET & JOBERT, 1828, is much younger (first known occurrence in MN 14).

III. DISCUSSION

*Hyotherium soemmeringi* was a common species in Europe, with a possible first occurrence in MN 3, but certainly in MN 4 to 6 (VAN DER MADE 1990). This fits the age of Belchatów C (MN 4) well. The material extends the geographical range of the species to the northeast.
The molar from Belchatów A cannot be determined to species, nor even to genus, but it belongs to a taxon of an evolutionary stage indicative of MN 8 or later. This is in accordance with the age of Belchatów A (MN 9).

*Hyotherium soemmeringi* is well known from lignite deposits and is usually considered to be indicative of more humid conditions (*Thenius* 1956). Belchatów is another case where *Hyotherium* is found associated with lignite and strengthens the correlation between the species and its supposed preferred environment.

**REFERENCES**


