

Observations on the occurrence of *Dibolia* (Talpidae: Desmaninae) in the Lower Pliocene of Poland

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SUMMARY

This note describes a maxillary molar, lower premolar and lower incisors of a small watermole (Desmaninae) from Podlesice, Poland, (Ruscinian MN 14) which are tentatively referred to *Dibolia* aff. *dekkersi*, RÜMKE, 1985. They are the first known specimens of *Dibolia* from Poland and the most northern record of the genus yet found. The teeth are compared with the other known Talpidae from Podlesice including an M2 of the rare and little known *Scaptonyx dolichochoir*.

SAMENVATTING

Tijdens een verzamelcampagne uitgevoerd door het Institute of Systematics and Evolution of Animals, Kraków en het Harrison Zoological Museum, Sevenoaks werd een bezoek gebracht aan de beroemde rijke vindplaats Podlesice. De vindplaats heeft een enorm rijke zoogdierfauna uit het Vroeg Pliocéen opgeleverd met o.a. meer dan 25 soorten Insectivoren. Het was daarom des te verwonderlijker dat in de nieuwe monsters een tot nu toe onbekende soort werd ontdekt. In dit artikel wordt een linker bovenkaaks M2 beschreven. De kies wordt op basis van de grootte en de morfologie aan de fossiele kleine watermol *Dibolia* aff. *dekkersi*, RÜMKE, 1985 toegeschreven. Deze soort is o.a. in Pliocene faunas (MN 13 - 15) uit Griekenland en Spanje aangetroffen. Het is de eerste aanwijzing voor het voorkomen van het genus *Dibolia* in Polen en tot nu toe de meest noordelijke vondst van dit genus.

Introduction

During a visit of the Harrison Zoological Museum to Poland in July 1991, palaeontological field work was carried out jointly with the Institute of Systematics and Evolution of Animals, Krakow. This included a second visit to the famous site at Podlesice, 5034'N 1931'E, to collect further samples of breccia for extraction of fossil material. The site has an astonishingly rich fauna of small mammals, already including more than 25 Insectivores. It is generally considered to be of Lower Pliocene age (Ruscinian, MN 14, ca. 5 m.y.b.p.).

In view of the large and diverse fauna of fossil Insectivores, listed by RZEBIK KOWALSKA in KOWALSKI (1989) it was surprising to find in our new samples a maxillary molar of a small Desman hitherto unrecorded from Poland.

Description

The specimen (HZM. 1.23924) described below, is an M2 sin. which has the unmistakable morphological characteristics of a member of the Desmaninae, described and illustrated by RÜMKE (1985).

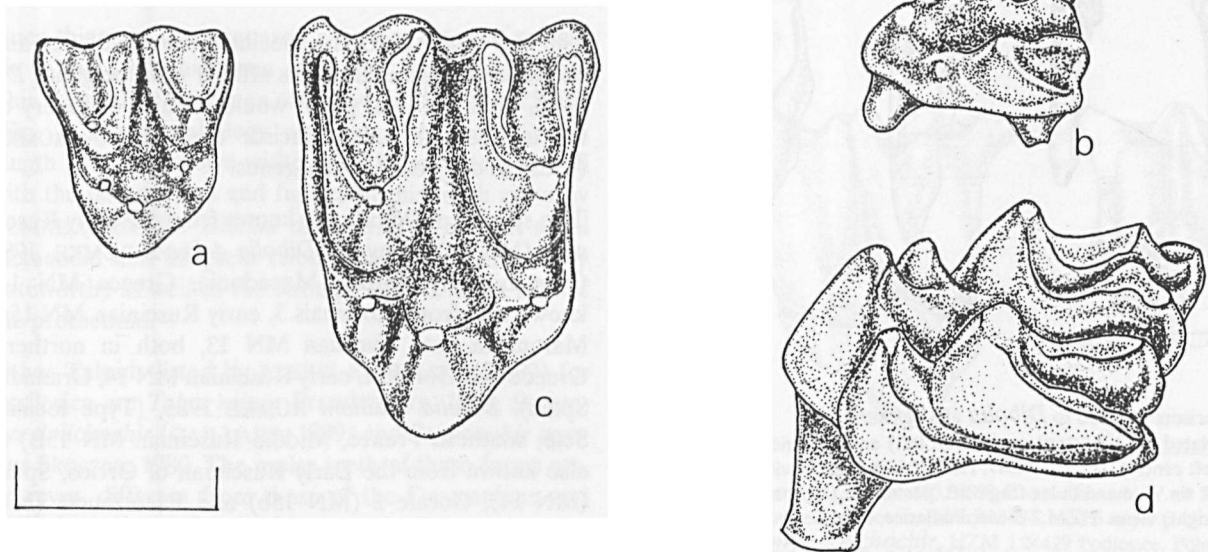


Fig. 1: Occlusal (left) and oblique caudal (right) views of M2 sin. a-b: *Dibolia* aff. *dekkersi*. HZM.1.23924 Podlesice, Poland. Pliocene MN 14. ca. 5 m.y.b.p. c-d: *Desmana* sp. HZM.47.17645 West Runton, Norfolk. Middle Pleistocene, Cromerian. Scale = 2 mm.

Fig. 1: Kauwvlak (links) en achter-zijaanzicht (rechts) van de M2 sin. a-b: *Dibolia* aff. *dekkersi*. HZM.1.23924 Podlesice, Polen. Pliocéen MN 14. ca. 5 m.y.b.p. c-d: *Desmana* sp. HZM.47.17645 West Runton, Norfolk. Midden Pleistoceen, Cromer. Maatstreep = 2 mm.

It is illustrated here (Fig. 1) in comparison with an M2 sin. of *Desmana* sp. (HZM.47.17645) from the Cromerian Freshwater Bed, West Runton, Norfolk (Middle Pleistocene, ca. 700,000 y.b.p.). Notably comparable features of the two are the symmetrical appearance of the labial part of the crowns, with the mesostyle in each case deeply divided, the labial margins having therefore three distinct emarginations. It is also evident that in each case the anterior cusplet of the divided mesostyle is larger than its posterior part.

On the lingual side of the crown the metaconule is distinctly larger than the protoconule, in each case causing a bulge in the outline of the crown caudally. The protoconule is quite feebly developed and in each case the postprotocrista is better developed than the preprotocrista. The cusps and ridges on the crown of the Podlesice specimen show little evidence of natural wear, but they are all rather smoothed off, suggesting that the tooth may have been digested by a predator, which is presumably how the remains of an aquatic animal could have been transported into the cave.

The root structure is quite well preserved. It is similar to the West Runton specimen. Three well developed roots are present, on the lingual side a single strong root supports the protocone, slanted internally; on the labial side there are antero-labial and postero-labial roots. A small accessory rootlet is situated in the centre of the crown, attached by distinct ridges to each of the three main roots. In the Podlesice specimen a further tiny rootlet was located on the low ridge connecting the antero- and postero-labial roots.

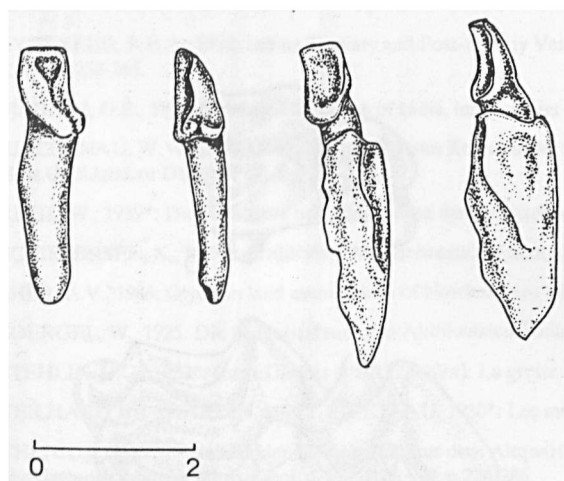


Fig. 2: Incisors referred to *Dibolia* aff. *dekkersi*.
Left: Isolated i 1-2, postero-medial (on left) and posterior views of crown (left centre), HZM.3.24647, Podlesice, Poland.
Right: i 1 sin. in mandibular fragment, posterior (right centre) and medial (right) views. HZM.2.24646, Podlesice, Poland.

Fig. 2: Incisiven gedetermineerd als *Dibolia* aff. *dekkersi*.
Links: geïsoleerde i 1-2 posterieur-mediaal aanzicht (links) en posterieur aanzicht van de kroon (links midden), HZM.3.24647, Podlesice, Poland.
Rechts: i 1 sin. in mandibula fragment, posterieur (rechts midden) en mediaal (rechts) aanzicht. HZM.2.24646, Podlesice, Poland.

Two further specimens are tentatively referred to this taxon. They are an isolated lower incisor (HZM.3.24647 i 1-2) and an i 1 sin. *in situ* in a mandibular fragment with the symphyseal articulation (HZM.2.24646). The morphology of these incisors with their low and rather rectangular, spatulate crowns are highly suggestive of *Dibolia* as described and figured by RÜMKE (1985). The proclivous position of the first incisor in the mandibular fragment is also consistent with such an identification and in each case the anterior face of the crown is slightly convex, the posterior surface concave, (Fig. 2).

The measurements of the two specimens are: HZM.3.24647 (i 1-2), crown length 1.15 mm; crown width 0.77 mm and HZM.2.24646 (i 1 sin.), crown length 1.02 mm; crown width 0.64 mm. They are comparable with those of the lower canine of *Dibolia dekkersi* given by RÜMKE (1985) and seem consistent with this taxon.

Discussion

KOWALSKI (1956) described remains of *Desmana nehringi* Kormos, 1913 from Podlesice. This is a large form, the dimensions of the teeth far exceeding those of the small molar here described. The measurements of HZM. 1.23924, taken by the method of RÜMKE (1985) are Crown length 1.89 mm, Crown width 2.24 mm, the Width/Length Ratio (W/L) 1.19.

These measurements are far too small to pertain to any of the known fossil Desmaninae from Poland, including *Galemys sulimskii* Rümke 1985 from the Middle Pliocene of Weze 1 (Late Ruscian MN 15b) and its Lower Pleistocene successor *Galemys kormosi* Schreuder, 1940, which has been found in Poland at Rebielice Królewski 1 (Villanyian MN 16b). Comparative measurements of these taxa, compiled from RZEBIK-KOWALSKA (1971) are given in Table 1.

The very small size of the specimen from Podlesice and its Ruscian age indicate its affinity with the genus *Dibolia*, although final proof would require discovery of the unique bifid upper incisor described by RÜMKE (1985) as diagnostic of this genus.

Two species of *Dibolia* are known from the early Ruscian (MN 14). They are *Dibolia dekkersi* RÜMKE, 1985 (type Locality Kardja, Macedonia, Greece MN 14; known also from Ptolomais 3, early Ruscian MN 15a; Maramena, late Turolian MN 13, both in northern Greece and Gorafe 1, early Ruscian MN 14, Granada, Spain). *Dibolia brailloni* RÜMKE 1985, (Type locality Sete, southern France, Middle Ruscian MN 15B) is also known from the Early Ruscian of Orrios, Spain (MN 14), Gorafe 2 (MN 15b) and Escorihuela (MN 16a), both in Spain.

The measurements of the M2 of *D. brailloni* are distinctly larger than those of *D. dekkersi*, as listed below (after RÜMKE, 1985). They are compared with the Podlesice specimen (Table 2).

	Crown length M2	Crown width M2	W/L Ratio M2
<i>Dibolia brailloni</i>	2.05 - 2.41 mm	2.53 - 2.86 mm	1.10 - 1.29
<i>Dibolia dekkersi</i>	1.80 - 2.16 mm	2.40 - 2.79 mm	1.16 - 1.40
HZM. 1.23924 Podlesice	1.89 mm	2.24 mm	1.19

Table 1: The measurements of the Podlesice specimen compared with those of *Dibolia brailloni* and *Dibolia dekkersi*.

Tabel 1: De afmetingen van de M2 uit Podlesice vergeleken met die van *Dibolia brailloni* en *Dibolia dekkersi*.

	Rebielice Królewskie 1A	Weze 1	Podlesice
	<i>Desmana nehringi</i>	<i>Galemys kormosi</i>	<i>Dibolia</i>
M2 L ext.	-	2.41	1.89
W max.	-	2.70	2.24

Table 2: The measurements of the M2 of *Dibolia* from Podlesice compared with those of *Galemys kormosi* from Rebielice (Królewski 1A), and *Desmana nehringi* and *Galemys sulimski* from Weze 1.

Tabel 2: De afmetingen van de M2 van *Dibolia* uit Podlesice vergeleken met die van *Galemys kormosi* uit Rebielice (Królewskie 1A), en *Desmana nehringi* en *Galemys sulimski* uit Weze 1.

Clearly more material is desirable to confirm the specific identity of this tooth, but it seems reasonable to refer it to *Dibolia* aff. *dekkersi* provisionally. Its discovery in Poland, far to the north of its previously known Mediterranean range is a matter of some interest. It may be noted that the extraordinarily diverse fauna of Podlesice includes other essentially Mediterranean elements such as the Long-fingered Bat *Miniopterus approximatus* WOLOSZYŃ, 1987. *Dibolia* appears to be a rare element in the breccia, of which further material should be obtained if possible, to confirm its identity and determine its taxonomic status more accurately.

Since this note was prepared a further element referable to this taxon has been recovered from the breccia. This is a perfect specimen of the p4 sin. (HZM 4.25057) (Fig. 3). Its morphology and measurements (Crown length 1.60 mm crown width W2 0.83 mm) accord well with the descriptions and figures of this tooth given by RUMKE (1985) for *Dibolia dekkersi*. The distinct small metaconid and incipient talonid basin are particularly noteworthy as well as the strongly convex labial face of the protoconid.

Other Talpids listed by RZEBIK KOWALSKA (1989) for Podlesice are *Talpa minor* Freudenberg, 1914; *Scaptonyx dolichochir* (GAILLARD, 1899) and *Scapanulus agrarius* Skoczen, 1980. The molar teeth of these forms are, however, different from those of the Desmaninae and unlikely to be confused with them. In *Talpa minor* the mesostyle is usually bifurcated while in *S. dolichochir* the M2 mesostyle is undivided, (Fig. 4). *T. minor* has the M2 metaconule greatly reduced. Both have high sharp cusps and commissures. The M2 of *S. dolichochir* was described and illustrated by Skoczen (1980).

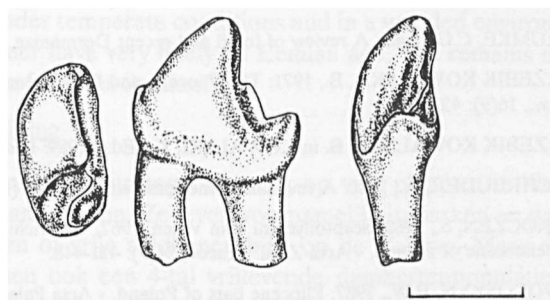


Fig. 3: Occlusal (left), buccal (centre), and posterior (right) views of p4 sin. HZM 4.25057 Podlesice, Poland. Scale 0.1 mm.

Fig. 3: Kauwvlak (links), buccale (midden), en posterieure (rechts) zijde van de p4 sin. HZM 4.25057 Podlesice, Poland. Schaal 0.1 mm.

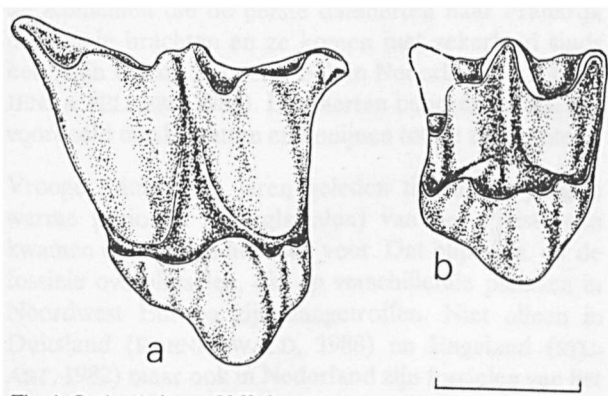


Fig. 4: Occlusal views of M2 dex.

a: *Talpa minor*, HZM 193.24239 Zabia Cave, N-W of Podlesice, Poland. Lower Pleistocene, Biharian, Q1. ca. 1.5 m.y.b.p.
b: *Scaptonyx dolichochir*, HZM 1.24429 Podlesice, Poland. Pliocene MN 14. (Metastyle broken). Scale = 1 mm.

Fig. 4: Kauwvlak van de M2 dex.

a: *Talpa minor*, HZM 193.24239 Zabia Cave, Noordwest van Podlesice, Polen. Vroeg Pleistoceen, Biharian, Q1. ca. 1,5 m.y.b.p.
b: *Scaptonyx dolichochir*, HZM 1.24429 Podlesice, Polen. Pliocceen MN 14. (Metastyle gebroken). Maatstreek = 1 mm.

It is much smaller than the *Dibolia* tooth described here. The metaconule of *S. dolichochoir* is similarly larger than the protoconule, but situated close to the high metacone, the tip of which is curved caudally in the example from Podlesice (HZM. 1.24429), (Fig. 3). The maxillary teeth of *Scapanulus agrarius* are undescribed, but are unlikely to differ greatly from those of other recent *Scalopini*.

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