



Bayerische
Staatssammlung
für Paläontologie und Geologie

- Zitteliana A 55, 127 – 129
- München, 15.12.2015
- Manuscript received
10.12.2014; revision
accepted 13.02.2015
- ISSN 1612 - 412X

Short communication

Note on the eomyid rodents from Eitensheim (Early Miocene, Germany)

Jérôme Prieto*

SNSB-Bayerische Staatssammlung für Paläontologie und Geologie, and Department of Earth- and Environmental Science, Palaeontology and Geobiology, Ludwig-Maximilians-University Munich, Richard-Wagner-Straße 10, 80333 Munich, Germany.

*E-mail: j.prieto@lrz.uni-muenchen.de

Keywords: North Alpine Foreland Basin, biostratigraphy, Eomyidae, *Keramidomys*, *Ligerimys*

Schüsselwörter: Nordalpines Vorland Becken, Biostratigraphie, Eomyidae, *Keramidomys*, *Ligerimys*

In a study of the Eomyidae from the Upper Freshwater Molasse of Bavaria, Fahlbusch (1975: 85) concluded that a small collection of molars from Eitensheim is monospecific, and suggested that it belongs to a new, unnamed species of *Keramidomys*. However, Prieto (2010: tab. 1) regards Fahlbusch's evaluation of the fossil as questionable and in need of a revision; problems with the assignment of the fossil have previously also been expressed by Bolliger (1992: 108). Especially interesting in this context is figure 9 in Fahlbusch (1975) that suggests the presence of two different genera of Eomyidae in the Eitensheim fossil assemblage. One of the molars definitely belongs to *Keramidomys* (Fahlbusch 1975: fig. 9d; Fig. 1 in this paper), whereas the systematic affinities of the other three teeth remain unresolved. If this is accurate, then the conception of the lower part of the Upper Freshwater Molasse biostratigraphy needs to be reconsidered because the first occurrence of *Keramidomys* defines the base of the OSM B in the South German local biostratigraphy (e.g., Heissig 1997).

Details on the locality Eitensheim can be found in Fahlbusch (1964: 96). The fossil site is a brickyard carrier located at the southern end of the village of Eitensheim, on road 13 to Ingolstadt (Gradadt.-Bl. 7133; R 4450700, H5408500; Elevation: around 395m). Below ~1.5 m of gastropod-enriched loess occur ~3 m of grey-greenish, fine sand and marls of the OSM. The small mammal-bearing fossiliferous layer, located approximately 0.5 m below the boundary to the loess, is composed of ~20 cm of soft, coaly sediments. In addition to eomyid rodents, Fahlbusch (1964) describes the cricetid rodents *Megacricetodon bavaricus* and *M. aff. minor* (one que-

stionable m3), as well as a single tooth of *Eumyarion aff. medius* from this site. Gliroids from Eitensheim (i.e. *Bransatoglis astarensis*, *Microdyromys praemurinus*, *Eomuscardinus sansaniensis*, *Miodyromys hamadryas hamadryas*, and *Paragilirulus diremptus-conjunctus*) are detailed in Mayr (1979), and Klembara et al. (2010: tab. 1) list several reptilian remains, including *Latonia ragei*, *Pelophylax* sp., *Eopelobates* sp., *Pelobates* sp., *Trionyx* sp., and *Testudo* sp. Moreover, Böhme et al. (2007) report on the occurrence of silicified wood (*Liquidambaroxylon* sp.) at Eitensheim.

The dating of the locality is based on the evolutionary level (i.e. size range) of the cricetid rodent *Megacricetodon*; the most frequently used biostratigraphic indicator is the first lower molar (m1). One *Megacricetodon* m1 has been discovered from Eitensheim that is relatively small (i.e. 1.55 mm long). This might justify placing the fossiliferous bed at Eitensheim in the OSM A. Other *Megacricetodon* molars however correspond in size to several specimens of the *M. bavaricus* type sample from Langenmoosen, which is OSM B.

Fahlbusch (1975) regards the peculiar *Keramidomys* molar from Eitensheim as coming from a new species based primarily on the morphological differences of one p4 and two m1,2, while the last m1,2 is more characteristic of *Keramidomys*. I agree with the original generic identification of Fahlbusch, with the exception that not all specimens can be ascribed to the same genus. The molar SNSB-BSPG 1958 XVIII 15 (Fahlbusch 1975: fig. 9d; Fig. 1A this paper) certainly represents a *Keramidomys* left m1,2. However, assignment of this specimen at species level is difficult due to the differences between *K. thaleri* and *K. carpathicus* which are well-recognizable

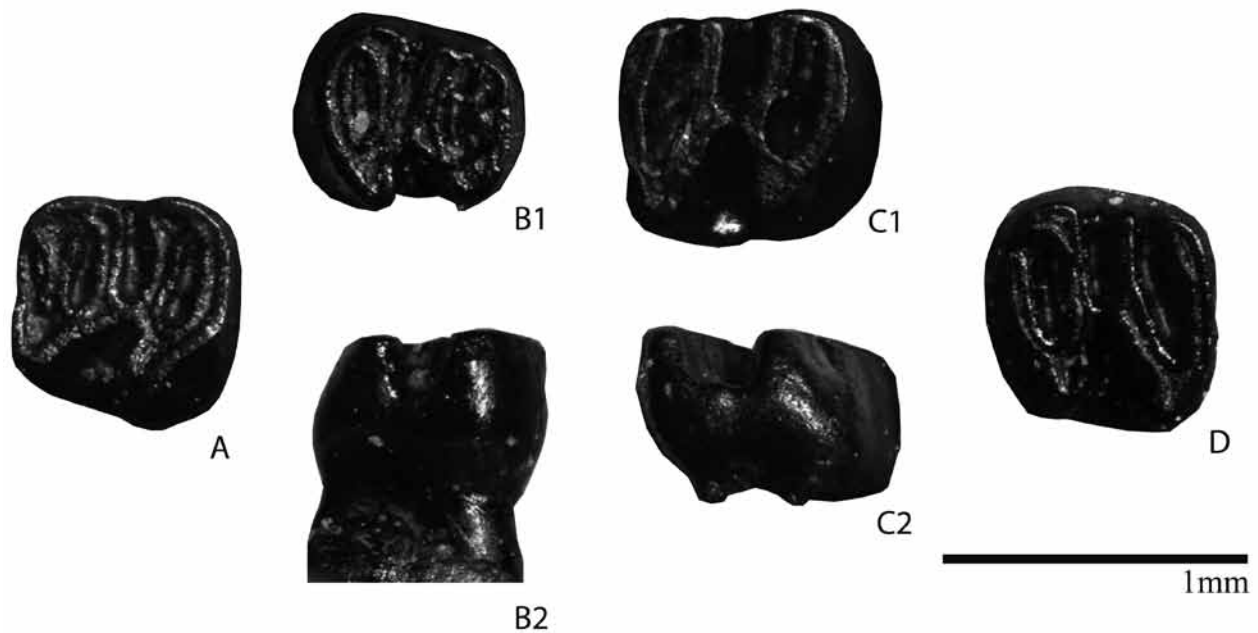


Figure 1: Eomyidae from Eitensheim. **(A)** *Keramidomys* sp., left m1,2; **(B)** *Ligerimys* sp. (tentative assignment), right p4 (B1: occlusal view; B2 labial view); **(C)** *Ligerimys* sp., left m1,2 (C1: occlusal view; C2 labial view); **(D)** *Ligerimys* sp., right m1,2.

only in M3/m3 (Mein 2009; Prieto 2010). However, the mesolophid is long, and thus suggest a relationship of the specimen to *K. thaleri*. On the other hand, the two m1,2 resemble *Ligerimys* and *Pseudotheridomys*, rather than *Keramidomys*. Separation of *Ligerimys* from *Pseudotheridomys* remains a matter of debate. I follow Engesser (1990: 102–104, and the references therein). Assignment of the p4 from Eitensheim remains problematic. Fahlbusch (1975) noted several distinctive differences to *Keramidomys*. Especially puzzling is the premolar that lacks the morphological features characteristic of *Ligerimys*, but yet resembles the p4 of *L. oberlii* figured by Engesser (1990: fig. 89c). The tooth is therefore only tentatively assigned to *Ligerimys* sp. Interesting in this context are also the fossils of *Keramidomys thaleri*, *Ligerimys florancei*, and *Ligerimys* sp. from the French fissure filling La Blanquatère 1 (Lazzari & Aguilar 2007; Aguilar et al. 2010). The unnamed *Ligerimys* from this fissure filling is small-sized and morphologically similar to *L. antiquus* from southern France. This form is quite similar to the enigmatic p4 from Eitensheim.

The preceding considerations have implications on the biostratigraphy of the German part of the North Alpine Foreland basin in which Eomyidae fossils play a significant role, especially regarding the definition of OSM A-OSM B. It is widely accepted today that *Ligerimys florancei* disappeared in the NAFB (OSM A) well before the first appearance of *Keramidomys* (OSM B). However, Sach & Heizmann (2001) report a co-occurrence of *Ligerimys* and *Keramidomys* at Langenau 1. Unfortunately, this fauna has not been analyzed in detail to date and there appear to be pro-

blems with the identification of the fossils (JP pers. observation). The presence at Eitensheim of *Keramidomys* together with a small-sized *Ligerimys* species is therefore new for the North Alpine Foreland basin. The *Megacricetodon* fossils from Eitensheim are inconclusive with regard to the exact age of the fossiliferous layer. According to the definition of the local biozones, Eitensheim likely correlates to the earliest OSM B based on the occurrence of *Keramidomys*. Nevertheless, the Eomyid association from this locality cannot at present be classified as representative, due chiefly to uncertainties with regard to the homogeneity of the sample. As long as there is no other locality yielding a comparable faunal assemblage, I cannot rule out that elements from different faunas are mixed together at Eitensheim.

Acknowledgments

Gertrud Rößner (Munich) is thanked for making the specimens available for study. Olivier Maridet (Porrentruy) provided a valuable review, and important metric comments.

References

- Aguilar JP, Michaux J, Aunay B, Calvet M, Lazzari V. 2010. Compléments à l'étude des rongeurs (Mammalia, Rodentia, Cricetidae, Eomyidae, Sciuridae) du gisement karstique de Blanquatère 1 (Miocene moyen, sud de la France). *Geodiversitas* 32, 515–533.
- Böhme M, Bruch AA, Selmeier A. 2007. The reconstruction of Early and Middle Miocene climate and vegetation in Southern Germany as determined from the fossil wood flora. *Palaeo-*

- geography, Palaeoclimatology, Palaeoecology 253, 91–114.
- Bolliger T. 1992. Kleinsäuger aus der Miozänmolasse der Ostschweiz. Documenta naturae 75, 1–296.
- Engesser B. 1990. Die Eomyidae (Rodentia, Mammalia) der Molasse der Schweiz und Savoyens. Systematik und Biostratigraphie. Schweizerische Paläontologische Abhandlungen 112, 1–144.
- Fahlbusch V. 1964. Die Cricetiden der Oberen Süßwassermolasse Bayerns. Bayerische Akademie der Wissenschaften; mathematisch-naturwissenschaftliche Klasse, Abhandlungen, Neue Folge 118, 1–136.
- Fahlbusch V. 1975. Die Eomyiden (Rodentia, Mammalia) der Oberen Süßwasser-Molasse Bayerns. Mitteilungen der bayerischen Staatsammlung für Paläontologie und historische Geologie 15, 63–90.
- Heissig K. 1997. Mammal faunas intermediate between the reference faunas of MN4 and MN6 from the Upper freshwater Molasse of Bavaria. Actes du Congrès Biochrom'97, Mémoires et Travaux de l'Ecole pratique des Hautes Etudes, Institut de Montpellier 21, 537–546.
- Klembara J, Böhme M, Rummel M. 2010. Revision of the anguine lizard *Pseudopus laurillardii* (Squamata, Aanguidae) from the Miocene of Europe, with comments on paleoecology. Journal of Palaeontology 84, 159–196.
- Lazzari V, Aguilar JP. 2007. Les *Megacricetodon* du gisement karstique miocène moyen de Blanquatère 1 (Pyrénées-Orientales, Sud de la France): nouvelles espèces, implications biochronologique et phylogénique. Geobios 40, 91–111.
- Mayr H. 1979. Gebissmorphologische Untersuchungen an miozänen Gliriden (Mammalia, Rodentia) Süddeutschlands. PhD-Thesis, Ludwig-Maximilians-University, Munich, Germany, 380 pp.
- Mein P. 2009. The Miocene *Keramidomys* (Rodentia, Eomyidae) from the Sandelzhausen locality (Germany). Paläontologische Zeitschrift 83, 141–150.
- Prieto J. 2010. Note on the morphological variability of *Keramidomys thaleri* (Eomyidae, Mammalia) from Puttenhausen (North Alpine Foreland Basin, Germany). Zitteliana A 50, 103–109.
- Sach VJ, Heizmann EPJ. 2001. Stratigraphy and mammal faunas of the Brackwassermolasse in the surroundings of Ulm (Southwest Germany). Stuttgarter Beiträge zur Naturkunde, Serie B 310, 1–95.
-

