



# Revision of the boselaphin bovid *Miotragocerus monacensis* STROMER, 1928 (Mammalia, Bovidae) at the Middle to Late Miocene transition in Central Europe

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With 19 figures and 8 tables

**Abstract:** During excavations in 2011–2014, new fossil material of the boselaphin *Miotragocerus monacensis* STROMER, 1928 (Mammalia, Bovidae) was found at the locality Hammerschmiede (Bavaria, Germany), which is dated to ~11.6 Ma (Middle to Late Miocene transition). For the first time, both dentition and postcranial material can be studied on this species. These new findings complete a collection of casts stored in the Bavarian State Collection for Palaeontology and Geology. In addition, the holotype of *M. monacensis* from Oberföhring (Bavaria, Germany) and further unpublished material from Southern Germany and Lower Austria are newly described in this study. Important new taxonomic characters are emphasized improving our knowledge on the species which was originally described based on one single horn core. *M. monacensis* can be assigned to the basal Boselaphini based on the plesiomorphic features in the dentition and characters of the postcranial material. Intraspecific variabilities, ontogenetic changes and allometries are identified improving the differentiation to other basal boselaphins like *Miotragocerus pannoniae*, *Austroportax latifrons* and *Protagocerus chantrei*. An improved statement regarding the biostratigraphic range of basal Boselaphines from Central Europe is provided.

**Key words:** Taxonomy, Biostratigraphy, Boselaphini, *Miotragocerus monacensis*, Middle to Late Miocene transition, Central Paratethys, Southern Germany, Lower Austria.

## 1. Introduction

The locality Hammerschmiede (Bavaria, Germany) provides a rare insight into the European palaeoecosystem at the Middle to Late Miocene transition because of the wide taxonomic range of fossils excavated since decades (see Chapter 2 and references therein). Among them, the vertebrates play an important part, especially ectothermic forms and small mammals while larger mammals were until now poorly documented. The discovery of a new fossil-rich layer allows to fill this gap. Particularly, the excavated assemblage provides new insight into the bovid *Miotragocerus*.

The genus *Miotragocerus* STROMER, 1928 was one of the dominant taxa among the Boselaphini during the Late Miocene in terms of diversity and geographic distribution. It is known from Europe (e.g., STROMER 1928; KRETZOI 1941; MORALES et al. 1999; SPASSOV & GERAADS 2004; KOSTOPOULOS 2006; GENTRY & KAISER 2009), Asia Minor (KÖHLER 1987; KOSTOPOULOS 2005) and the Indo-Pakistani Siwaliks (KHAN et al. 2009), as well as China (ZHANG 2005) and sub-Saharan Africa (e.g., BIBI 2011). Currently, *Miotragocerus* includes the subgenera *M. (Pikermicerus)* KRETZOI, 1941 and *M. (Miotragocerus)* STROMER, 1928. Its relationship to *Tragoportax* is unclear and they have been used synonymously