

THEROPOD TEETH FROM THE UPPER JURASSIC OF LOWER SAXONY*

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Theropod teeth from the Upper Jurassic of Lower Saxony were mentioned for the first time in 1848 (Graf zu Münster). Later they were cited under the names *Megalosaurus monasterii*, *M. insignis*, and *M. bucklandii*, however were no longer listed by Weishampel et al. (1990) in their compendium of dinosaur finds. An investigation in museums, university institutes, and private collections furnished a total of 69 theropod teeth from the Upper Jurassic of Lower Saxony. They are distributed among 9 different localities, of which 3 are from the city zone of Hanover (H.-Lindenerberg, H.-Tönniesberg, H.-Ahlem), the remaining lie in Liene-Weser-Bergland (Holzen/lth, Duingen, Larienhagen, and Thüste/alle Hils) and in Harz-Vorland (Langeberg/Oker and Uppen bei Hildesheim). An exact stratigraphic allocation becomes difficult, because more exact locality data are not verified in old finds, and/or stratigraphic data were not collected. However most teeth can be assigned to the ?Upper Oxfordian through Upper Kimmeridgian (?Lower Tithonian).

In the investigation of the teeth, four different types are distinguished, which can also be assigned to four different theropods or theropod groups:

1. Teeth of a primitive theropod (Tetanurae-grade, e.g. *Megalosaurus*). The largest number of collected specimens belong to this group. The teeth average 2.56 cm high, 0.93 cm wide mesial-distally, and 1.-1. 0.55 cm long. The maximum height is 8 cm. There are 15-17 serrations per 5 mm, and the posterior carinae are longer than the anterior. The number of serrations is the same on the anterior and posterior carinae. No grooves (or caudae, sensu Abler, 1992) branch off a single denticle. The one tooth that did not show any serrations is moreover the only one with a portion of the root, another shows 2 punctures (bite marks? growth anomaly?).

2. Three teeth are assigned to a more advanced theropod (grade: Neotetanurae, e.g. Sinraptoridae or Allosauridae). These teeth are very large, among them the largest theropod tooth previously found in the Upper Jurassic of Europe (length =

* Original citation: Windolf, R. 1997. Theropoden-Zähne aus dem Oberen Jura Niedersachsens. Pp. 33-34 in S. Sachs, O. W. M. Rauhut, & A. Weigert (eds), *Terra Nostra. 1. Treffen der deutschsprachigen Paläoherpetologen. Extended Abstracts*. Düsseldorf, Germany. Translated by Matthew Carrano, Smithsonian Institution, December 2006.

11.8 cm). These teeth show 13-16 serrations/5 mm. Grooves branch off obliquely from the denticle base at an angle of 35 to 40 degrees along the posterior carina, by which it agrees in this feature with other teeth of this type from the Upper Jurassic of Europe (e.g. Portugal, Rauhut & Kriwet, 1994).

3. Two teeth clearly deviate from types 1 and 2 and are attributed to other, systematically not more closely definable, theropods. They are drawn through a weaker curvature of the apex, more or less triangular shape, and a very coarse denticulation of only 6-7 serrations/5 mm. The pulp cavity is very narrow compared with tooth types 1 and 2, and the tooth cement is thicker, showing concentric growth rings.

4. The smallest tooth from the Uppen bei Hildesheim locality shows an extremely fine serrations, and therefore could belong to a smaller theropod form ("Coelurosaur" of earlier definitions).

Altogether appear in the composition of the theropod tooth fauna from the Upper Jurassic of Lower Saxony agreements with comparable theropod (tooth) faunas of Spain, Portugal, France, Switzerland, East Africa (Tendaguru), and the North American Morrison Formation, that suggest the simultaneous presence of at least three, and probably more, theropod forms.

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