

Upper Devonian placoderms from Morocco: taxonomy, phylogeny and taphonomy

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The eastern Anti-Atlas of Morocco is famous for its fantastic outcrops of Devonian sediments and fossils. Since 2003 three field-trips were performed in the project „Kellwasser arthrodires“. More than 200 placoderm remains from the upper Frasnian (Late Devonian) were excavated. The research area is about 12.000 km² from platform to basin sediments.

The largest amount among the placoderms are arthrodires, especially Selenosteids. This group is represented with *Enseosteus*, *Walterosteus*, *Rhinosteus*, *Pachyosteus* and a new genus. The Brachydeirids are present with *Brachydeirus* and *Oxyosteus* and the Trematosteids with *Brachyosteus*. Other finds are of a Dinichthyid, Mylostomatid and *Aspidichthys*. The Ptyctodontida are present with *Ptyctodus*.

A phylogenetic analysis including the new species confirms the monophyly of the Selenosteids, excluding *Braunosteus*. This is in accordance with Lelièvre et al. (1987) and Carr (1994, 1996), whereas Denison (1978) included *Braunosteus* into the Selenosteids.

Five decay categories of the placoderm finds are established, reaching from complete skulls with thoracic armour (1) up to isolated bone fragments

(5). The categories 1-3 are mostly present in the basins and the categories 3-5 on the platforms. This is in accordance with currents on the platforms and calm conditions in the basins with less destruction of the carcasses.

References

- Carr, R.K. (1994): A redescription of *Gymnotrachelus* (Placodermi: Arthrodira) from the Cleveland Shale (Famennian) of Northern Ohio, U.S.A. *Kirtlandia*, 48: 3-21, Cleveland.
- Carr, R.K. (1996): *Stenosteus angustopectus* sp. nov. from the Cleveland Shale (Famennian) of Northern Ohio with a review of selenosteid (Placodermi) systematics. *Kirtlandia*, 49: 19-43, Cleveland.
- Denison, R.H. (1978): Placodermi. In: Schultze H.-P. (ed.), *Handbook of Paleichthyology*. Vol. 2. Gustav Fischer Verlag, Stuttgart: 128 pp.
- Lelièvre, H., Feist, R., Goujet, D. & Blicq, A. (1987): Les vertébrés de la Montagne Noire (Sud de la France) et leur apport à la phylogénie des Pachyostéomorphes (Placodermes, Arthrodires). *Palaeo-vertebrata*, 17(1): 1-26.