

A new *Triodus* species (Xenacanthidae, Xenacanthiformes) from the basal Permian of France (Autun basin, Saône-et-Loire) and its palaeobiogeographical implications

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Xenacanthiformes forms an Order of elasmobranchs or stem-chondrichthyans known from the early Carboniferous to the upper Triassic. Their maximum diversity occurs around the Carboniferous-Permian boundary, notably in Europe.

In France, they are known since the 19th century in the Autun basin (Saône-et-Loire), particularly in the Muse oil-shale bed. Their systematics remains poorly understood: most of the specimens, consisting of isolated dorsal spines, are still identified as belonging to the genus “*Expleuracanthus*” Heyler, 1969 but it is potentially synonymous with *Triodus* and/or *Xenacanthus*. Their specific attribution remains therefore doubtful. Furthermore, French specimens attributed in the past to the genus *Triodus* Jordan, 1849 have no definite specific attribution, while this genus is known by at least ten species in the European Carboniferous-Permian basins.

We describe three new specimens of *Triodus* from the basal Permian of Autun, recently found during systematic excavation campaigns at Muse. These specimens allow the erection of a new species, *Triodus aeduum* sp. nov., and to discuss the validity of other species from Muse: “*Expleuracanthus*” *frossardi* (Gaudry, 1883) should be considered as a *nomen dubium* and other specimens attributed to *Triodus* are for the time being left in open nomenclature as *Triodus* sp. These results highlight the endemism of the *Triodus* species in each European Carboniferous-Permian basins where they are present, and raise the question of how they migrated from one to another.

Two hundred years after the first palaeontological excavation campaigns, the scientific interest of Muse is still relevant. This work illustrates the need to revise historical specimens, to carry out new excavation campaigns and to preserve this locality.

Mots-Clés : *Triodus*, Xenacanthiformes, Muse, Autun basin, systematics, palaeobiogeography