

Unappreciated Cenozoic ecomorphological diversification of stem gars revealed by a new large species

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Acta Palaeontologica Polonica 67 (3), 2022: 559-568 doi:<https://doi.org/10.4202/app.00957.2021>

The evolutionary history of gars, an ancient group of ray-finned fishes, is excellently documented in the fossil record. These fishes are notable for how little the anatomy of extant species differs from that of their earliest known relatives from over 150 million years ago. As such, the low species richness of the gar crown group is thought to reflect the diversity of this clade over most of their history. Here, I describe the skeleton of a new gar species from the Eocene Willwood Formation of Wyoming, USA. Numerous features, including a shortened skull, ornamented external cranial bones, and microteeth ally the new species with Cuneatini, an obscure clade of gars restricted to the Eocene of southwestern North America. Yet, *Cuneatus maximus* sp. nov. is more than twice as large as its closest relatives. The holotype of the new species preserves a partial palate, providing new information about the anatomy of this poorly known cranial region in cuneatins. Phylogenetic analysis of gars with the new species *C. maximus* included implies a diversification of cuneatins in North America following the Cretaceous/Paleogene extinction. The presence of large-bodied stem-gars in the Eocene Willwood Formation also suggests that the fish fauna of this region was reminiscent of present-day ones from the American southeast. The discovery of *C. maximus* emphasizes the propensity of the fossil record to significantly increase the diversity and biogeographic range of even the most depauperate lineages.

Key words: Actinopterygii, Osteichthyes, *Cuneatus*, lepisosteid, Eocene, USA.

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