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Systematics and Paleobiogeographic Patterns

Late Mesozoic Antarctic Fishes: a review and future perspectives

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Abstract:

The Larsen Basin includes all the upper Mesozoic–lower Cenozoic sedimentary rocks on the continental shelf east of the Antarctic Peninsula. One of the fossil-bearing levels widely prospected are those of the late Cretaceous–Maastrichtian–marine López de Bertodano Formation, which are widely exposed at Seymour (= Marambio) Island. This highly fossiliferous level is among the most productive sites for fossil remains

in the Southern Hemisphere. Many vertebrate material recovered are fishes, which mainly encompass isolated chondrichthyans and teleosteantooths, tooth plates, and vertebrae; many of which was recently described and/or reviewed. Despite the actinopterygian teeth and vertebrae record is extremely abundant, it was mostly identified at generic or higher taxonomic levels. In addition to those material, a partial actinopterygian head was formally described and assigned to Beryciformes. Noteworthy, the upper levels of the López de Bertodano Formation house the extremely interesting fish bone layer associated to the K/Pg boundary and the iridium anomaly. This fish bone layer crops out in a large extension in the Seymour (=Marambio) Island. The fish material (skull bones and vertebrae) are preserved partially disarticulated in concretions and associated to a massive sediment containing charcoal and plant debris (fern, conifers, and angiosperms). Despite the concretions of the "fish mass mortality layer" are extremely abundant in fish bones, which could be of taxonomic relevance, these remains never were further studied. Other interesting marine Antarctic fish-bearing locality is the Jurassic-late Kimmeridgian-early Tithonian-Ameghino (=Nordenskjöld) Formation. The marine late Jurassic fishes from Antarctica are known by few described actinopterygians. During the 2016 the Argentinian Antarctic field expedition to Ameghino Formation recovered a taxonomically diverse actinopterygian fauna which includes teleostomorphs (pachycormiforms and aspidorhynchids), teleosts, and indeterminate actinopterygians. Thus, the last two Argentinian Antarctic field trips (2016-2017) provide new material on both, Jurassic and Cretaceous fishes that improve the evolutionary history of Antarctic ichthyofaunas. The main goal of this presentation is to summarize what we know today about late Mesozoic (Cretaceous-Jurassic) fishes from the Larsen Basin giving an overview of the new findings and future research objectives in Antarctica.