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Paper review

Otoliths of the Polish Miocene

Radwańska, U. 1992. Fish otoliths in the Middle Miocene (badenian) deposits of southern Poland. *Acta Geologica Polonica* 42, 3–4, 1–328, 167 text-figs, 38 plates.

The abundant fauna of the Middle Miocene Polish Fore-Carpathian branch of Paratethys has been subject to a great number of studies since Friedberg's first monographic treatment in 1907. Most of this literature deals with various invertebrate groups, just a small percentage concerning vertebrate remains. Interestingly enough, the bone remains of both fishes and other marine vertebrates (cetaceans and sirenians) are extremely rare in these deposits. Only small compact elements (teeth and otoliths) are better preserved and accumulated, and consequently serve as a basis for the reconstruction of the vertebrate fauna of this basin. Beginning with Chaine and Duvergier's work of 1928, the otolith fauna from the marine Middle Miocene (Badenian) deposits of southern Poland has been subject to a sequence of studies by Smigielska.

The reviewed monograph is a continuation of these studies. It is the outcome of ten years of field and research work by the author. Most of the volume of this paper amounting to 321 pages (plus six pages of references) concerns taxonomy, about 14 pages comprises the geological setting and stratigraphy of the otolith-bearing deposits and about 16 of them deal with the environmental interpretation of the otolith assemblages.

The total of 22,600 specimens has been assigned to 145 Teleostei species thoroughly illustrated and described in terms of morphological nomenclature currently accepted in otolith studies.

Aside from making the number of the otolith species known from the Miocene of Poland about twice as large as it was before, the author has made an important and expert revisional work which affected about 50 previous assignments. The revision has been based on studies of the otolith collections of the Belgian Institute of Natural History in Brussel, one including European Tertiary otoliths, and the second including recent otoliths, both very rich.

The reference of the Polish material to the comparative materials of the living taxa is equivalent to putting it into a biological context insted of treating it as merely a collection of certain mineral bodies occurring in the marine deposits of a certain age. However, the general approach presented in this paper is an ecological one which is reduced here to regarding fish taxa as environmental indicators. Consequently, almost only this aspect of fish biology is mentioned in the descriptive part of the paper. Based on Nolf's Otolithi Piscium, the ecological requirements of the extant fishes have been transmitted, in a fully actualistic manner, directly onto the Miocene taxa.

Almost no considerations on fish relationships and on phylogeny is possible on the basis of this kind of material, and none have been attempted in this paper, the conclusions regarding the paleoenvironment rather than the structure of paleocommunity. This is probably why the otolith papers are usually submitted to geological rather than paleontological journals.

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