

Middle Triassic marine fish faunas from Switzerland

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Abstract

At Monte San Giorgio (Southern Switzerland) over the last 85 years large quantities of chondrichthyans and especially of actinopterygian fishes have been found in marine Middle Triassic sediments. Most of these fossils are from the Anisian-Ladinian boundary zone and were deposited in the anoxic bottom layers of a shallow lagoon. Other contemporaneous fossil sites in Eastern Switzerland have been systematically studied only over the last years. Their increasing amounts of fossil actinopterygians show close similarities with some of the Monte San Giorgio fossiliferous beds. The present status of these studies is reported. A comparison with other Middle Triassic fish faunas from Europe shows either close relationships (Alpine realm) or certain dissimilarities (Muschelkalk) which can be explained by different paleoecological and paleogeographical conditions.

Introduction

From the Middle Triassic outcrops of Monte San Giorgio, situated in the southern part of Switzerland, large quantities of often beautifully preserved specimens of fossil marine fishes and reptiles have been found since 1919 (e.g., KUHN-SCHNYDER 1974, BÜRGIN et al. 1989, RIEPPEL 1993, BRINKMANN 1997). The sediments containing these fossils have been deposited in a small, shallow lagoon with an anoxic bottom layer. This lagoon was part of a larger reef complex at the northern border of the Tethyan sea. The five vertebrate bearing strata document the evolution from an intraplatform basin with temporal connection to the open sea (early Anisian to early Ladinian) to a shallow lagoon with strong seasonal variation of salinity in the late Ladinian (FURRER 1995a). Most of the presently known species, with the exception of the chondrichthyans and some epipelagic actinopterygians, seem to be more or less autochthonous, inhabitants of the reef areas.

Although the systematic study of the fossil fishes from Monte San Giorgio was initiated in 1970, a detailed review of the most important groups started only in 1980. Up to now five species of chondrichthyans, two coelacanths and over 20 different actinopterygian species have been formally described. Since 1987 some other contemporaneous vertebrate bearing localities have been investigated in the eastern parts of Switzerland (BÜRGIN et al. 1991). These new localities yielded many actinopterygian specimens, some of them representing new taxa; their description is under way. The present paper summarizes our knowledge of these two important Middle Triassic fish faunas from Switzerland.

Institutional abbreviations: BMNH, The Natural History Museum, London, England; and PIMUZ, Paläontologisches Institut und Museum, University of Zürich, Switzerland.

Monte San Giorgio

Monte San Giorgio is an important element of the southern calcareous Alps (Fig. 1). Its Middle Triassic outcrops are built of marine sediments. They have been studied in detail at various localities (e.g., SANDER 1989). Excavations started in 1919, but the most important, large-scale excavation took place from 1950 to 1968 at a locality called Point 902 or Mirigioli (KUHN-SCHNYDER 1974). Recently, the youngest Middle

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