

**5th International Symposium
on Lithographic Limestone
and Plattenkalk**

Abstracts and Field Guides

Edited by

Jean-Paul Billon-Bruyat, Daniel Marty, Loïc Costeur,
Christian A. Meyer & Basil Thüring

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Exceptional preservation of embryos in the Middle Triassic actinopterygian *Saurichthys* from Monte San Giorgio, Switzerland

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New excavations in the famous Monte San Giorgio area, close to the historical sites where the Cassina beds crop out (Lower Meride Limestone, Ladinian), have been started in 2006 by the Museo Cantonale di Storia Naturale, Lugano (Stockar this volume).

The new outcrop consists of an almost 3 m thick interval of mainly interbedded finely laminated, organic-rich shales and limestones with intercalated thicker bituminous micritic and marly limestones deposited in oxygen-depleted bottom water. Along with sauropterygian fragmentary remains, the new excavations yielded many complete and well-preserved specimens of the large (up to 0.5 m standard length) predatory actinopterygian fish *Saurichthys* (mainly *S. curionii*, but *S. macrocephalus* is also present), along with other smaller fishes like *Archaeosemionotus*, *Eosemionotus* (not previously reported from these beds), and *Peltopleurus*. Among the prepared specimens, four specimens of *Saurichthys* contain embryos, and in one specimen (MCSN 8016, Fig. 1A) sixteen very small embryos (skull mean length 6 mm) are present. These latter show a peculiarity not reported so far for other *Saurichthys* embryos: each skull is associated with a tiny, narrow and elongate structure which, at higher magnifications (Fig. 1B), appears as a short and narrow cylinder, either curled or comma shaped. The nearly one-to-one association between the embryonic skulls and the narrow cylinders suggests that they represent some postcranial structure of the embryos. Chemical investigation (Renesto & Stockar in press) revealed the phosphatic nature of these structures. Phosphatization may occur for soft parts if the microenvironmental conditions around the carcass are modified by bacterial activity. The size and length of these structures with respect to the associated skulls are compatible with the axial musculature and recall the morphology of embryos of extant fishes, so that the curled narrow cylinders may

represent the fossilized musculature of the embryos, and each segment may correspond to a somite. A SEM (Scanning Electron Microscope) observation confirmed the metameric structure of the cylinder. This discovery is of particular relevance because fossil embryos with preserved soft parts are extremely rare. In addition, although viviparity had previously been described for *Saurichthys*, the new specimens are rather better evidence and add further support to this reproductive mode.

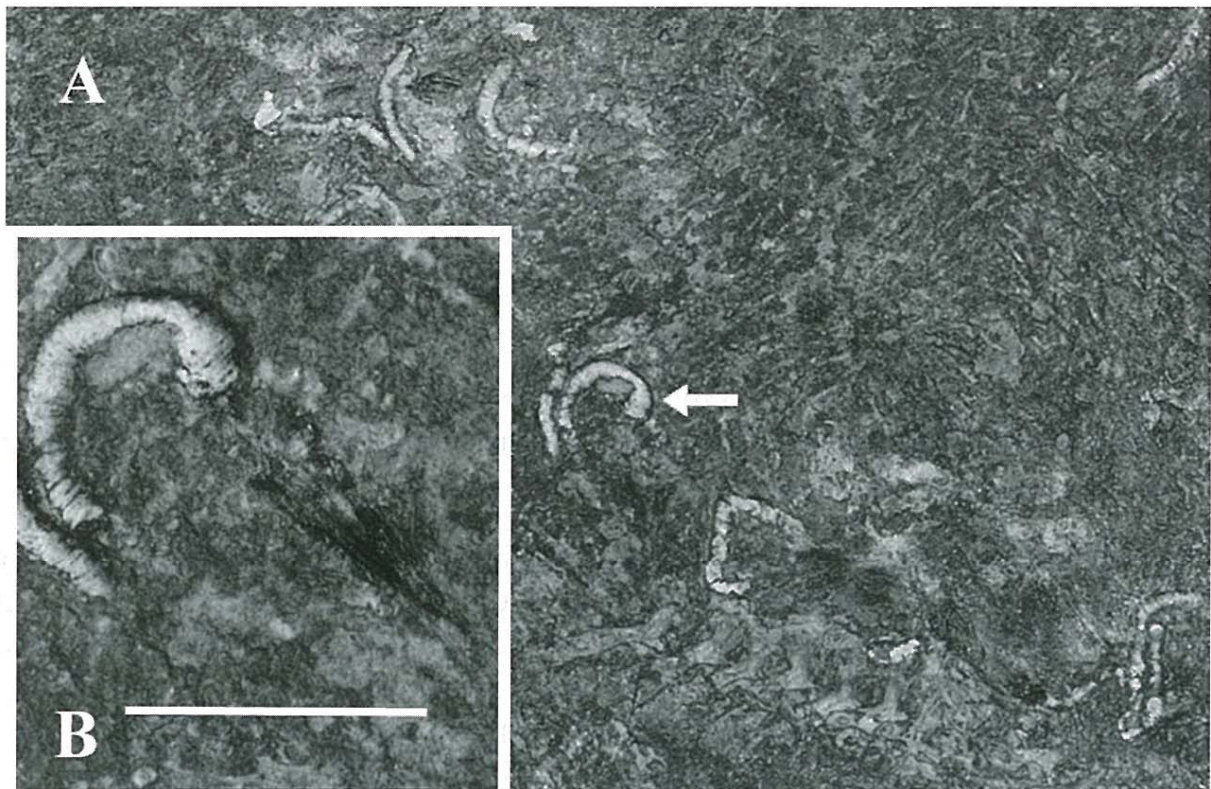


Figure 1: *Saurichthys curionii*. **A:** Body cavity of MCSN 8016 with preserved embryos. **B:** High magnification detail of the embryo indicated by arrow. Scale bar = 0.5 cm.

References

Renesto S. & Stockar R. in press: Exceptional preservation of embryos in the actinopterygian *Saurichthys*, from the Middle Triassic of Monte San Giorgio, Switzerland. *Swiss Journal of Geosciences*.

Stockar, R. this volume: The Middle Triassic Cassina beds. First results from a new excavation in the Monte San Giorgio UNESCO WHL site (Switzerland).