

A REVIEW OF THE LATE JURASSIC CHONDRICHTHYAN EGG CAPSULES FROM THE PLATTENKALK AREA OF SOUTHERN GERMANY

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Egg capsules are an essential part of the life cycle of many chondrichthyans, which, following a complex behavioural network, are deposited in special spawning areas (nurseries). Fossil egg capsules of chondrichthyans are known from the Lower Carboniferous (Viséan) onwards. They provide unique information about the reproductive behaviour of extinct chondrichthyans and are occasionally the sole indicators, by proxy, for the occurrence of chondrichthyan taxa in certain deposits. Modern morphotypes, as known from extant marine chondrichthyans, are sometimes characteristic down to the species level, but they are surprisingly rare in the fossil record. In particular, the fossilized egg capsules of neoselachian sharks are virtually unknown. The egg capsule fossils from the laminated limestones of the famous Upper Jurassic (Tithonian) Konservat-Lagerstätte of Solnhofen and Eichstätt in southern Germany have received little attention to date. However, they provide valuable information about marine egg capsule types of chondrichthyans in general and of neoselachians in particular. Four different fossil capsule types can be distinguished. Type 1 is clearly a holocephalian egg capsule because of its characteristically spindle-shaped capsule body fringed by a broad lateral web. It resembles the capsules of present-day rhinochimaerids and has been described as *Chimaerotheca schernfeldensis*. With a total length of almost 40 cm, this is significantly larger than any other known fossil or modern holocephalian capsule. *Ischyodus egertoni* is considered the possible producer. Type 2 is a holocephalian capsule, as yet un-named, which is half the size of *C. schernfeldensis*. The shape of body and web shows considerable similarities to present-day egg capsules of the genus *Harriotta* (Rhinochimaeridae). *Chimaeropsis paradoxa* may be the possible producer. Type 3 is a small vase-shaped capsule with a constriction posteriorly. In size and shape it is remarkably similar to the egg capsules of modern catsharks (Scyliorhinidae) like *Galeus* or *Apristurus*; a possible producer may be the carcharhiniform *Parascyllium*. Type 4 is an almost rectangular capsule, nearly 13 cm tall with distinct horns posteriorly and two prominent constrictions along the longitudinal axis of the body. Although at first glance reminiscent of the capsules characteristic of rays, some features evoke the egg capsules of modern catsharks such as *Scyliorhinus*. At present, assignment to a particular elasmobranch order is not possible, even if all potential producer groups were represented in the Plattenkalk. The Plattenkalk remains form the first fossil multi-taxon chondrichthyan egg capsule association from the marine realm. Besides the largest known holocephalian capsule type, it also contains the oldest evidence of neoselachian eggs. Their rarity in the fossil inventory suggests that the capsules were not from organisms living in the immediate Plattenkalk environment, but are allochthonous, being washed into the depositional area from adjacent waters. The question also arises as to the possible egg capsules of other, at least partially oviparous Plattenkalk chondrichthyan orders represented by holomorphic specimens, such as bodontiformes, Heterodontiformes and Orectolobiformes.