ACTA PALAEONTOLOGICA POLONICA

Soft-tissue attachment structures and taphonomy of Middle Triassic nautiloid *Germanonautilus*

Christian Klug and Achim Lehmkuhl
Acta Palaeontologica Polonica 49 (2), 2004: 243-258

New examinations of numerous steinkerns of the Middle Triassic nautiloid *Germanonautilus* from southern Germany revealed new anatomic, ecologic, and taphonomic details, which are compared with Recent *Nautilus*. The attachment structures of the cephalic retractor muscle (large scar) and of the dorsal (black layer) and the posterior mantle (posterior narrow scar, anterior band scar of the mantle and septal myoadhesive bands), some with tracking bands (recording the anteriorward movement of the soft body during ontogeny), were seen in several specimens. The shape and proportions of these soft-tissue attachment structures resemble those of Recent *Nautilus macromphalus* and indicate a similar soft part anatomy. Based on their conch geometry, the mode of locomotion of *Germanonautilus* is reconstructed. Owing to the wide whorl cross section and the high whorl expansion rate, drag of the conchs was high, the aperture was oriented at an oblique angle which made *Germanonautilus* a rather slow horizontal swimmer. Because of their large sizes and widths, conchs of Germanonautilus were often deposited on their broad venters, forming elevated 'benthic islands' (secondary hardgrounds). A broad range of animals (fish, decapods, ophiurans, crinoids, brachiopods, bryozoans, bivalves, *Spirorbis*, foraminiferans) lived in and on these comparatively large secondary hardgrounds.

Key words: Nautiloidea, Germanonautilus, soft–tissue attachment, taphonomy, palaeoecology, epifauna, Triassic, Germany.

Christian Klug [chklug@pim.unizh.ch] Paläontologisches Institut und Museum der Universität Zürich, Karl Schmid–Str. 4, 8006 Zürich, Switzerland; Achim Lehmkuhl [lehmkuhl.smns@naturkundemuseum–bw.de] Staatliches Museum für Naturkunde, Rosenstein 1, 70191 Stuttgart; Germany.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use,

distribution, and reproduction in any medium, provided the original author and source are credited.

Full text (970.0 kB)