

RAPTORIAL APPENDAGES IN MANTIS SHRIMPS – EVOLUTION OF A SPECIALIZED PREDATORY APPARATUS

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Mantis shrimps (Stomatopoda) are marine predatory crustaceans of the group Hoplocarida with an interesting, though incompletely known, evolutionary history. First appearing in the fossil record in the Carboniferous (about 300 million years ago), mantis shrimps were not the highly specialized predators that they are today. The group is mostly known for their major raptorial appendages, which separate extant adults into “speakers”, impaling their prey with spines on the distal elements of their major raptorial appendages, and “smashers” punching their prey with a massive club on the distal element of their major raptorial appendages (maxilliped 2). The following three appendage pairs (maxillipeds 3–5) are significantly smaller raptorial appendages, closely resembling each other. However, the raptorial apparatus did not always have this morphology. In early representatives of the group, the maxillipeds were not yet specialized or differentiated in size. Here, we outline the stepwise evolution of the raptorial apparatus and present the latest addition of characters: a unique arrangement of maxillipeds 2–5. In two newly described specimens of mantis shrimps from the Early Jurassic Limestones of Osteno, Italy, the maxilliped insertion areas are not yet highly condensed as they are in modern mantis shrimps and representatives from the Late Jurassic limestones of southern Germany. Additionally, we highlight the importance of different documentation methods on fossil specimens to make all present details visible.