

Vortrags- und Posterkurzfassungen

Are cactus urchins (Echinoidea: *Dermechinus*) filter feeders?

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Cactus urchins (*Dermechinus horridus*) are arguably one of the strangest groups of 'regular' sea urchins. While the shape of the calcareous endoskeleton has been strongly modified in most irregular echinoids, it remained remarkably constant in 'regular' echinoids. *D. horridus*, however, differs from this typical hemispherical body form by exhibiting a pronounced vertical elongation of its corona. Surprisingly, cactus urchins start out as '*Echinus*-shaped' juveniles and only attain a conical shape late during ontogeny, when the test diameter has reached 80 mm or more. Like other members of the Echinidae, specimens of *D. horridus* may attain a considerable size, but unlike others show strong allometric growth of lantern and peristome. In particular, Aristotle's lantern of adult *Dermechinus* is remarkably small, taking up only about one hundredth of the entire body volume, while in many other 'regular' echinoids lantern size accounts for about one fifth to one third of the entire body volume. In addition, spination in *Dermechinus* is unusual and provides for part of the peculiar appearance of these deep-sea animals. Primary and secondary spines differ considerably in size, with the primary spines sticking out as long needles from a dense, felt-like cover of secondary spines. These remarkable features call for an explanation, and in his PhD thesis J. FELL proposed that *Dermechinus* could be a filter feeder, a hypothesis which has remained untested so far. If found to be true, *Dermechinus* would be the third filter-feeding echinoid known to date. Here, we present data gathered from multiple sources, including novel deep-sea photographic and video observations, 2D and 3D morphology, soft tissue anatomy, and gut content analysis to critically evaluate the filter feeder hypothesis. The propensity of cactus urchins to populate elevated ridges, to form rows perpendicular to the prevailing current, and the orientation of individual specimens resembling that of co-occurring, known filter feeders support the hypothesis. Alternative explanations such as escalation of vertical growth in response to predation fail to explain small lantern size.

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