

Ammonite Dinner in a Snapshot

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Ammonites are prominent in macroevolutionary studies because of their abundance and diversity in the fossil record, but their paleobiology and position in the marine food web are not well understood due to the lack of preserved soft tissue. Extremely well preserved ammonites belonging to the genus *Baculites* from the Upper Cretaceous of South Dakota (US) were scanned at ESRF on ID19 and are now revealing details hitherto unseen. The ammonites already shown some evidence of mandible preservation, but ESRF Phase Contrast microtomography has revealed the yet unknown upper jaw and a rare structure in all the specimens studied: the radula. The detailed anatomical study of the buccal mass as well as comparative studies with recent cephalopods, led to the hypothesis that all the ammonites with this kind of feeding apparatus, named here aptychophoran ammonites, fed on small plankton organisms. This hypothesis was reinforced by the discovery of a tiny snail and three tiny crustaceans between the jaws and flanks of the radula in one of the studied specimen. One of the implications of this discovery is that the radiation of aptychophoran ammonites might be associated with the radiation of plankton during the Early Jurassic. During the great extinction at the Cretaceous-Tertiary boundary when the plankton were hit, the loss of this food source most likely also contributed to the extinction of ammonites.