

How Did the Trilobite Order Proetida Survive into the Carboniferous Period?

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The recent finds of trilobite larvae from southern France, have yielded a clue as to how the order Proetida managed to survive past the end of the Devonian period extinction event. Prior to the new finds, the ontogeny (growth from egg to adult) of Proetoid trilobites was fairly well known from Ordovician and Devonian period specimens. The new finds are the first Carboniferous period examples of protaspid period larvae (earliest stages of free-swimming larvae) to be found. The new site yielded just a few meraspid period larvae (intermediate stages).

All of the specimens were found in shale that was dissolved in an acid bath. No adults or complete specimens were found. The pieces are all extremely fragile and fragmentary. It is evident that several species are present.

What is most striking about the new fossils, is the size difference between earlier stage molts within the same supposed species. This is apparently due to extra molts within the protaspid period of their ontogeny.

It has been proposed that some of the extinctions at the end of the Devonian period were caused by increasingly anoxic (low oxygen) marine conditions, and by the shifting availability of shallow water habitats, all affected by fluctuating sea levels.

The authors of the article believe that the longer time spent in protaspid growth stages, allowed these Proetid trilobites more time as zooplankton, to float into far flung suitable habitats in which they could molt into they're benthic (bottom dwelling) stages of life.

This reviewer wonders if this sort of long growth pattern in other forms of zooplankton larvae, might also apply to other genera that survived into the Carboniferous period, or other past similar extinction events.

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First Carboniferous Protaspid Larvae (Trilobita)
Journal Of Paleontology 2005, vol. 79, no. 4, p702-718.