

Surviving mass extinction by leading a double life

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(PhysOrg.com) -- Drifting across the world's oceans are a group of unicellular marine microorganisms that are not only a crucial source of food for other marine life -- but their fossils, which are found in abundance, provide scientists with an extraordinary record of climatic change and other major events in the history of the earth.

Now, planktonic foraminifera — single-celled shell building members of the marine microplankton community — have given up a secret of their very own.

A team of experts, including scientists from The University of Nottingham, have presented remarkable evidence that planktonic foraminifera may have survived mass extinction by taking refuge on the [sea floor](#).

Dr Chris Wade from the Institute of Genetics, said: "Using genetic data we have been able to prove that the planktonic species *Streptochilus globigerus* and the benthic — sediment living — foraminiferan *Bolivina variabilis* are one and the same biological species. Moreover, geochemical evidence shows that this species actively grows within the open-ocean surface waters, thus occupying both planktonic and benthic domains. Such ecologically-flexible species are eminently suited to the recolonisation of the extinction-susceptible planktonic domain following mass extinctions events, such as the end-Cretaceous event."

It had been thought that all modern planktic foraminifers were

descended from the few lucky survivors of the meteor impact that wiped out the dinosaurs and 65 to 70 per cent of life on earth 65 million years ago. However, this might not be the case.

Dr Wade together with PhD student Heidi Seears have shown that live specimens of the planktonic species *Streptochilus globigerus*, collected 600 miles offshore in the middle of the Arabian Sea, are genetically identical to the benthic species *Bolivina variabilis*, found off the coast of Kenya.

Their surprising discovery suggests that planktonic foraminifera may have survived the end Cretaceous [mass-extinction](#) by abandoning the poisonous oceans for a refuge in the relative safety of the sea-floor. When the oceans returned to normal, the survivors were able to recolonise the ocean surface once more.

The research, carried out in collaboration with the University of Edinburgh, has been published in the Journal *Proceedings of the National Academy of Sciences* (PNAS).

Dr Kate Darling, from the University of Edinburgh, said: "If some species can switch between free-swimming and bottom-dwelling lifestyles, then it's possible that most planktic foraminifers may have survived the late Cretaceous extinction in the sediment, not in the plankton. It seems likely that the foraminifer [species](#) which had the ability to occupy both habitats survived on the sea-floor, avoiding the meteor impact catastrophe in the oceans above.

Source: University of Nottingham ([news](#) : [web](#))

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