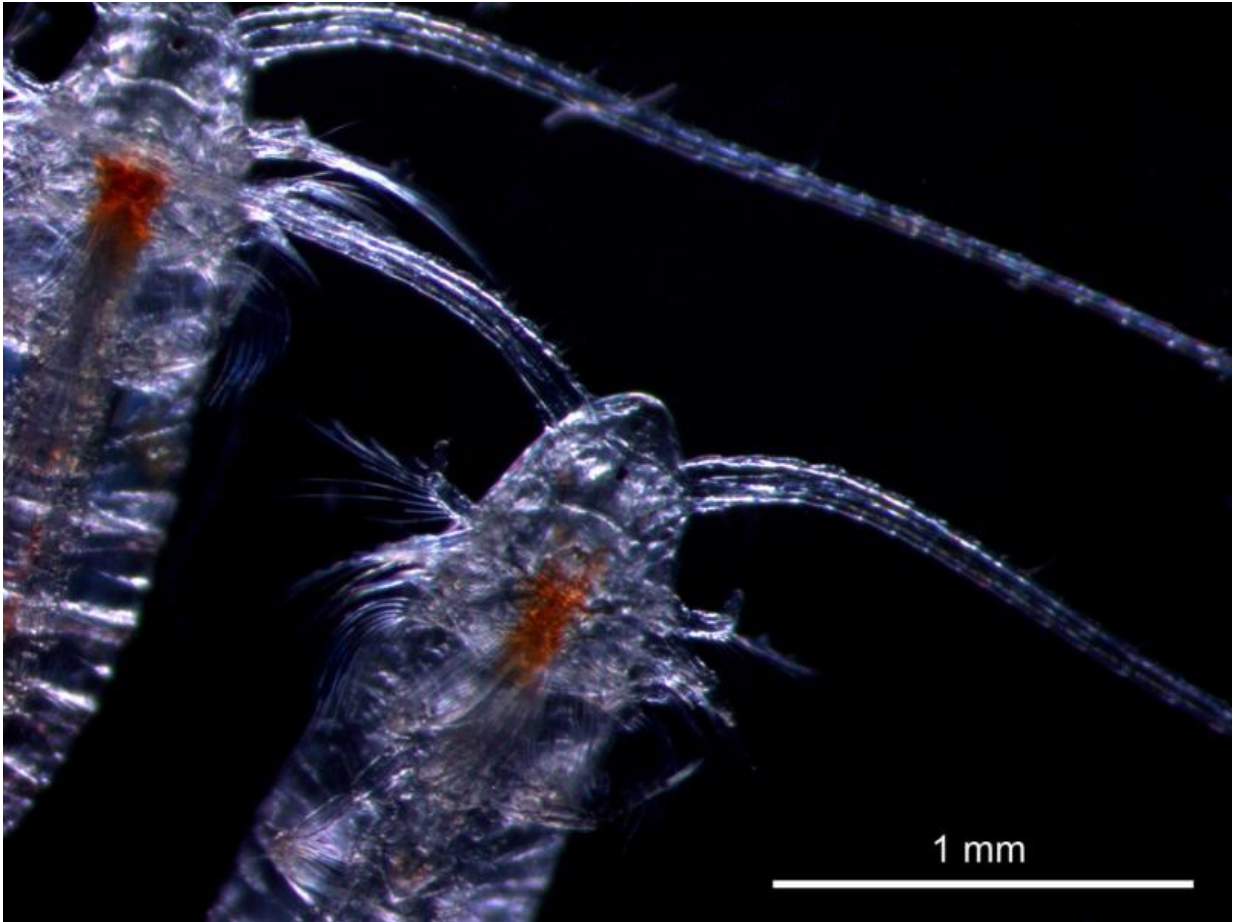


Omega-3's are vital for a healthy ocean

September 17 2015



The Cannalus copepod. Credit: The National Oceanography Centre

A new study published this week in Nature's *Scientific Reports* reveals the importance of omega-3 fatty acids for the health of the ocean.

This research shows that the 'ocean-fleas' that play a vital role in maintaining a healthy ocean depend on omega-3's to survive. These 2 mm long creatures, called [copepods](#), are distant relatives of crabs and lobsters and rank amongst the most abundant animals on our planet. They get omega-3's from eating microscopic plants in the sea that absorb carbon from the atmosphere. This carbon then gets transported into the deep sea by sinking copepod poo, stopping it returning to the atmosphere. Copepods are also a key source of food for fish larvae, therefore an abundance of copepods results in lots of fish as well as an ocean better able to remove carbon from the atmosphere.

Although copepods are relatively well studied, little is known about how they will respond to future environmental change. The lead author of this study, Dr Daniel Mayor from the National Oceanography Centre (NOC), said "Copepods are in many ways analogous to wildebeest on the plains of Africa. They undertake a spectacular annual migration, descending over 1 km into the deep ocean to spend winter in a state of suspended animation after fattening up in spring. This is equivalent to you having to walk 875km before being allowed to sleep off your Sunday roast.

We don't fully understand why copepods are so dependent on omega-3's but our study shows that these compounds underpin the health of the ocean."

The tiny plants that copepods eat, called diatoms, 'bloom' in the spring. It is thought that since the start of the diatom bloom is controlled by day length, whereas copepod growth is controlled by water temperature, global warming will increasingly separate copepods from their source of omega-3's.

The study exposed food-deprived copepods to predicted climate change scenarios and measured their response using a new technique called 'metabolomics' that simultaneously determines how animals process fats,

sugars and proteins. Dr Ulf Sommer, co-author of the study from the University of Birmingham, explained "Metabolomics is a powerful tool for simultaneously looking at all of the biochemical reactions going on within an organism. We're now able to peer into the inner workings of life and are discovering new and exciting molecules in the process."

The results of this study showed that the effects of seawater warming and acidification on the copepods were negligible relative to the effects of a reduced [food supply](#). Therefore, the copepods appear to be resilient to short-term exposure to future environmental change, although not in the long term since [environmental change](#) may well have an effect on food supply.

Provided by National Oceanography Centre, Southampton

Citation: Omega-3's are vital for a healthy ocean (2015, September 17) retrieved 26 April 2024 from <https://phys.org/news/2015-09-omega-vital-healthy-ocean.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--