

New discovery -- copepods share 'diver's weight belt' technique with whales

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A deep-sea mystery has been solved with the discovery that the tiny 3 mm long marine animals, eaten by herring, cod and mackerel, use the same buoyancy control as whales.

Reporting this week in the journal *Limnology and Oceanography*, researchers from British Antarctic Survey describe how [Southern Ocean](#) copepods – a crustacean rich in omega-3 oil – 'hibernates' in the deep ocean during winter when seas are stormy and food scarce. To reach the ocean depths the copepod's oily body fluids undergo a remarkable transformation. As the animals swim deeper, water pressure triggers a process that converts their oil to a more solid form rather like the consistency of butter. This change in density acts like a 'diver's weight belt', enabling them to be neutrally buoyant and spend winter in deep waters without wasting energy on constant swimming.

Lead author from British Antarctic Survey, Dr David Pond says, "This work is of particular value from a number of angles. Copepods may be exceptionally small creatures but they represent a vast reserve of ocean 'biomass' that provides a crucial component of the food chain.

"We've known for some time that there is a link between the copepod's large stores of energy-rich oil and 'hibernation' behaviour, but this is the first time that we've been able to understand the exact relationship between these two elements in the animal's life cycle. This discovery is a breakthrough and will help enormously with the development of simulations of their behaviour.

It's fascinating also to think that the largest and the smallest [marine animals](#) share this remarkable ability to change their body fats to adjust their buoyancy."

More information: The paper, Phase transitions of wax esters adjust buoyancy in diapausing *Calanoides acutus* by David W Pond and Geraint A Tarling is published in *Limnology and Oceanography*. 56: 1310-1318. www.aslo.org/lo/toc/vol_56/issue_4/index.html

Provided by British Antarctic Survey

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