

Antarctic krill use 'hotspots' for their young

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Antarctic krill (*Euphausia superba*), a key species in the Southern Ocean food

web, choose different areas of the ocean at the various stages of their life cycle.

New research, published this week (24 July 2019) in the journal *PLOS ONE*, shows how Antarctic krill (*Euphausia superba*), a key species in the Southern Ocean food web, choose different areas of the ocean at the various stages of their life cycle. This understanding of their distribution and movement is essential for conservation of this important food source, which is the main diet for animals such as whales, seals and penguins.

Antarctic [krill](#) support a unique food web and are a valuable commercial fishery which is concentrated in the south-west Atlantic. Better understanding of the distribution of key events in krill's life cycle is needed for regional management and conservation in this region.

The study was carried out by a team from Plymouth Marine Laboratory, British Antarctic Survey, National Oceanography Centre and the University of Southampton, with support from the Natural Environment Research Council and the World Wide Fund for Nature (WWF). They compiled a large database with thousands of net hauls, comprising all available data from surveys of krill larvae that had been created over the last 41 years. They combined this with two other similar databases for the older krill, allowing them to compare the distribution maps of all the life cycle stages of krill for the first time.

Whilst adult krill are widely distributed, spawning may only be successful over a very small fraction of this area, mainly in the shallower waters near the Antarctic Peninsula. This results in nearby 'hotspots' of early larvae, mainly in the Southern Scotia Sea. However, as the larvae grow to become juvenile krill, their distribution shifts inshore, concentrating further north.

This partitioning of the krill habitat may serve a useful purpose, either reducing competition for food within the early developmental stages of krill, or reducing cannibalism from adults on the small larvae. Whatever the reason, the study highlights the importance of the Antarctic Peninsula for the life cycle of krill. This area is also a prime target for the krill fishery and the findings emphasise the importance of careful regional management to protect the populations of krill and the food web that relies on this key species.

Lead author Frances Perry, a Ph.D. student at Plymouth Marine Laboratory, commented: "Whilst fishing areas obviously overlap with areas of high adult density, this study shows for the first time that fishing also overlaps with spawning sites. It is important to protect these sites from the potential impacts of fishing. We need to understand the dynamics of this complex ecosystem so that it continues to support the diverse and commercially important Southern Ocean food web."

Dr. Simeon Hill, a Marine Ecologist at the British Antarctic Survey and an author on the paper, said: "The international fishery for Antarctic krill currently catches around a third of a million tonnes per year, which is a small percentage of the available krill. Catch limits are conservative and well enforced but it is also important to make sure that catches aren't concentrated in places where krill spawn and where their young develop. The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), which manages the krill fishery, is working to protect sensitive areas and this study has provided critical information to help with that work."

"Habitat partitioning in Antarctic krill: spawning hotspots and nursery areas" is published this week in the journal *PLOS ONE*.

More information: Frances A. Perry et al. Habitat partitioning in Antarctic krill: Spawning hotspots and nursery areas, *PLOS ONE* (2019).

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