

# The feeding ecology of little auks raises questions about winter zooplankton stocks in North Atlantic surface waters

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## Abstract

Copepods are essential components of marine food webs worldwide. In the North Atlantic, they are thought to perform vertical migration and to remain at depths more than 500 m during winter. We challenge this concept through a study of the winter feeding ecology of little auks (*Alle alle*), a highly abundant planktivorous seabird from the North Atlantic. By combining stable isotope and behavioural analyses, we strongly suggest that swarms of copepods are still available to their predators in water surface layers (less than 50 m) during winter, even during short daylight periods. Using a new bioenergetic model, we estimate that the huge number (20-40 million birds) of little auks wintering off southwest Greenland consume 3600-7200 tonnes of copepods daily, strongly suggesting substantial zooplankton stocks in surface waters of the North Atlantic in the middle of the boreal winter.

*KeyWords:* DIEL VERTICAL MIGRATION; SEASONAL-CHANGES; STABLE-ISOTOPES; POLAR NIGHT; SEABIRDS; PREDATORS; COPEPODS; CARBON; ICE