

# Density and target strength measurements of the arctic copepod *Calanus hyperboreus* measured *in situ* at short range

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The volume density in clean layers of the arctic copepod (*Calanus hyperboreus*) was measured on selected stations north of Svalbard during the August 2015 survey using multi-frequency split beam echo sounders operating at 38, 120, 200, and 333 kHz. The transducers were mounted in horizontal mode on a profiling probe or Acoustic–Optical System (AOS), enabling short range target tracking from the surface to 700 m depth. Animal density was determined by standard echo integration methods in 10 meter depth bins, using the measured mean individual backscattering from this relatively large copepod, observed laterally. The measured target strength is compared to modelled backscattering using finite element models of the animal with its large oil sack. The layer density and purity was also estimated with stereo camera methods, and catches by multiple zooplankton sampling gears. The combination of observation tools provides a unique view of the vertical distribution and abundance of this important Arctic species.

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