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**Three-dimensional structure of thin zooplankton layers is
impacted by foraging fish**

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The role of predation by fish in the formation and persistence of zooplankton thin layers was assessed from three-dimensional observations using a multibeam sonar attached to a mechanical rotator. Zooplankton in Monterey Bay, CA, USA were found in intense layers with vertical scales of 0.5-2.5 m at night. These features comprised more than 90% of the zooplankton biomass and had volume scattering strengths of up to -35 dB. These thin zooplankton layers showed complex structure with significant though gradual undulations in their depth, thickness, and intensity. Fish spent significantly more time within zooplankton layers than was expected by chance, suggesting concentrated foraging activity. Sonar tracks of individual fish showed them diving through zooplankton layers. These dives were correlated with a decrease in the intensity of zooplankton scattering at the scale of tens of centimeters, resulting in the appearance of holes in the layer. Continued observation of layers revealed that these voids slowly filled in with zooplankton after the fish's departure. At the level of foraging observed, fish can have a significant effect on the distribution of zooplankton layers, however, the layers are resilient to apparent foraging by fish with reformation of the distinct layer often occurring post-predation.