Diel vertical migration of individual jellyfish (Periphylla periphylla)

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ABSTRACT: Vertical migration of the mesopelagic jellyfish *Periphylla periphylla* (Scyphozoa: Coronatae) was studied by use of hull-mounted and submerged echosounders in a ~440 m deep Norwegian fjord. The research vessel was kept at a fixed position so that individual jellyfish remained in the acoustic beam for prolonged periods in the low advective environment of the deep fjord basin. The population of jellyfish was divided into different vertical modes with different migration behavior. A scattering layer (SL) of *P. periphylla* was located at 150-200 m during the day; it migrated coherently to the upper 50 m at night and returned to depth the next morning. A deeper SL seemed to remain below 250 m both day and night. However, focus on individuals revealed additional, asynchronous migration activity. A pulse of *P. periphylla* left upper layers already a few hours after sunset, and there was interchange of individuals between shallow and deep water throughout the night, including ascent of individuals from the apparent nonmigrating deepest SL. Vertical migration velocities were ~2 cm s^{-1} both during ascent and descent, irrespective of time. Different types of swimming behavior were reflected in the acoustic records, affecting the recorded backscatter.

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