

Salps are major contributors to carbon export in the UK Shelf Sea

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Zooplankton play a significant role in the biogeochemical cycle of the sea as they ingest particulate organic matter and transform it into carbon dioxide via respiration, dissolved matter via excretion, and particulate matter via the production of faecal pellets. The latter contribute significantly to the export of organic matter from the surface ocean, thus playing an important role in the biological carbon pump and oceanic carbon storage. However, little is known about the contribution of salps, which occur periodically in high numbers in late autumn/early winter, to carbon export. We carried out five faecal pellet production experiments in the UK Shelf Sea during November 2014. Salps were collected using 63- μm WP2 plankton net, carefully transferred into 10-L buckets containing filtered sea water, and incubated for 5 hours. Faecal pellets were collected, photographed, their sinking speed measured and preserved for analysis of particulate organic carbon and nitrogen. A total of 284 salp faecal pellets were measured. Faecal pellet size ranged from 2 to 10 mm in length and was correlated to the size of the salps. Pellet sinking speeds ranged from 600 to 2500 m d^{-1} . The combination of high pellet production, large pellet size and fast sinking speeds suggest that salps are major contributors to carbon export in the UK Shelf Sea.

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