Clearance rates of jellyfish and their potential predation impact on zooplankton and fish larvae in a neritic ecosystem (Limfjorden, Denmark) - DTU Orbit (29/03/2019)

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Clearance rates of the hydromedusae Sarsia tubulosa, Rathkea octopunctata and Bougainvillea superciliaris and the scyphomedusa Aurelia aurita were measured in the laboratory. Gut contents analyses of A. aurita were also collected in situ and subsequently used for estimation of clearance rate. The clearance rate of A. aurita varied widely with prey organisms. Large crustacean prey with low escape capabilities (Artemia salina nauplii and cirripede larvae) were cleared at high rates, whereas copepodites were cleared at lower rates, and clearance rates of small bivalve larvae and copepod nauplii were comparatively low. These data were used to assess the impact of jellyfish predation upon zooplankton and fish larvae in Limfjorden, Denmark. Repeated sampling of zooplankton, fish larvae and medusae was undertaken during the first half of 2003. Nine taxa of hydromedusae and 4 taxa of scyphomedusae were identified. Abundance estimates were combined with estimated clearance rates of individual medusae to calculate potential jellyfish-induced mortality on prey in Limfjorden. Copepoda was used as a model prey group to estimate the collective predation impact by all medusae. Medusa species with unknown clearance potential were given assumed clearance rate values, but the collective predation potential by these species was evaluated to be small. Hydromedusae dominated numerically and had their highest potential clearance impact in spring, but overall jellyfish clearance potential on copepods was low during this period. From May A. aurita was the most abundant jelly fish and the potential jellyfish predation impact became totally dominated by this scyphomedusa. Clearance potential was locally high on some prey, and predation by A. aurita probably controlled the abundance of cirripede larvae and fish larvae in Limfjorden. For these prey groups, half-life expectancy was less than 1 d at several locations.

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