

Dietary composition of scyphomedusae in the Gulf of Naples

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Project Summary

In recent years, scyphomedusae (Cnidaria, Scyphozoa) outbreaks appear to have increased in intensity and frequency, but the consequences of such increase on marine ecosystems and human activities at sea (mainly tourism and fisheries) are undetermined. Analyses of gut contents in scyphomedusae indicated that they prey upon a wide range in size and type of planktonic prey across sites and seasons. Although the dietary composition is key to define the effects of predation by scyphomedusae on zooplankton communities and food web dynamics, the diet of scyphomedusae has been determined in a limited number of ecosystems.

In addition to seasonal, species- and site-specific variability, knowledge of dietary composition in scyphomedusae has been challenged by methodological constraints. To extend the limited temporal framework of dietary reconstruction provided by analysis of gut contents, stable isotopes and fatty acids analyses have been integrating the former approach and are providing additional information on the prey assimilated by scyphomedusae rather than simply ingested.

Data about the ecology of scyphomedusae in the Gulf of Naples are fragmented and out of date. According to old records, the most abundant species in the Gulf are *Pelagia noctiluca*, which appears to dominate in spring and summer, and *Rhizostoma pulmo* and *Cotylorhiza tuberculata*, which seem to be more frequent in late summer/autumn. Their dietary composition in the Gulf is totally unknown.

Given the seasonality of the species in the Gulf, the dietary composition of scyphomedusae in the Gulf of Naples will be defined during summer and winter using three approaches: 1) morphological identification of gut contents; 2) stable isotope analysis; 3) fatty acids analysis. The combination of these approaches will provide information about the prey ingested and assimilated by scyphomedusae. The non-gelatinous plankton in the Gulf of Naples has been monitored for more than 30 years at the long-term ecological research station MareChiara (LTER-MC). By integrating the sampling within the long-term series at MareChiara station, the interactions between scyphomedusae and plankton communities will be defined, which will facilitate forecast potential effects on fisheries. Research on gelatinous zooplankton has been neglected in the latest years at the SZN, hence this project is a first step toward understanding in detail food web dynamics in the Gulf and enhancing the role of SZN as an international leader in plankton research.