

**Decapod and algal associations from “Banco di Santa Croce” (a protected area in the Bay of Naples): a key pathway in local food webs**

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The decapod and algal communities were investigated at the “Banco di Santa Croce”, a protected area in the Bay of Naples, Italy, mainly composed of rocky projections. Samples were monthly collected by an air-lift sampler at 4 stations, which consist of two ecological levels (photophilic and sciaphilic environments). A total of 3121 specimens, belonging to 42 species was obtained. The stations located in the inner part of the area, less disturbed, exhibited the highest diversity. The communities were dominated by few species of natantia (*Eualus pusiolus*, *E. occultus*, *Athanas nitescens*) and one species of reptantia (*Cestopagurus timidus*). The seasonal trends of numerical abundance of the whole population, characterized by two yearly peaks (summer and winter), coincided with the trends of abundance of the dominant species. The algal cover exhibited an opposite depth trend in the various stations: the cover increased moving from deep to shallow stations in the outer part of the bank, and from shallow to deep stations in the inner part. A spatial gradient exists, however, as well as a marked specificity in the use of resources by decapod species. Algae, foraminiferids, molluscs and crustaceans were demonstrated to be important food items in the diet of the dominant species of decapods. Since these species were frequently found in the gut contents of fish, we may conclude that decapod crustaceans are important links between primary producers and the final consumers (exporters) in the food webs of the considered environments. These results may be crucial to optimise a correct program of protection and management for the protected area.