

# 6 Ecology, physiology, feeding and trophic role of squat lobsters

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## **ABSTRACT**

Squat lobsters are conspicuous representatives of the benthic fauna in diverse marine environments. They may occur as solitary individuals or as dense benthic aggregations, sometimes associated with complex substrata. A few shallow-water species occur in massive pelagic swarms during a specific ontogenetic phase or during their entire life. These swarms are often associated with fronts or internal waves. In deep waters, the occurrence of squat lobsters is determined by the availability of food sources such as organic matter falls or seeps. Some squat lobster species oxygen-regulate and can cope with low oxygen environments. This ability changes ontogenetically, with the oldest/largest animals being best able to survive these extreme conditions. Air exposure as a consequence of fishing activities can cause physiological stress and increase mortality rates. Squat lobsters consume many different food resources, as suspension feeders, deposit feeders, algal grazers, scavengers, predators, and even occasional cannibals. They obtain carbon and nitrogen from different sources: photosynthetic, chemosynthetic or mixed. Feeding rates of squat lobsters vary on daily, seasonal and annual time scales, and oxygen consumption during digestion depends on the ingested food types. Squat lobsters play an

important role as recyclers in many sedimentary ecosystems, either by re-incorporating organic matter into the food web or by producing highly nutritive faeces. Feeding on primary producers, bacteria or detritus, and being consumed by several top predators, squat lobsters represent a direct trophic shortcut in many marine food webs.

## **KEYWORDS**

benthos, micronekton, continental shelf, deep sea, swarming, aggregation, grooming, O<sub>2</sub>-consumption, metabolism, specific dynamic action, trophodynamics, diet, food manipulation, food consumption.

## **INTRODUCTION**

Squat lobsters are versatile benthic organisms that inhabit diverse habitats ranging from the intertidal zone to the deep sea. They are especially dominant in extreme habitats such as oxygen minimum zones, methane seeps, hydrothermal vents, volcanic and anchialine caves, and even in Antarctica where the decapod fauna is otherwise extremely impoverished.

Massive swarms of squat lobsters impressed early explorers and researchers of the oceans. The first