

# Ecological zonation of the molluscan fauna of a late Pleistocene reef in southern Egypt, Red Sea

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Many studies focus on modern coral reefs and their associated invertebrate fauna, but not much is known about the paleoecology and diversity of molluscs from Late Pleistocene coral reefs of the Red Sea, which were formed during the last interglacial (MIS5e). The focus of this study is on the molluscan assemblage of a Late Pleistocene coral reef in southern Egypt, at the locality Sharm El Luli, in Marsa Alam. The locality is characterized by a variety of reef- and reef associated habitats, including a reef flat, reef slope, a transition zone between the slope and the bay, a bay, shallow soft bottoms, and coral patches. We quantitatively and qualitatively sampled 10 sites with a total of 70 samples and collected 2126 shells. 177 taxa were recognized, 61 bivalve species (17 families) and 116 gastropod species (32 families). The qualitative sampling approach revealed a higher diversity than the quantitative approach. The most abundant bivalve taxon was the epifaunal, encrusting *Chama* spp., the most abundant gastropod species was the cerithiid *Rhinoclavis vertagus*. Most bivalve species are infaunal filter feeders, while most gastropods are epifaunal carnivores. The diversity is highest in the coral patch and the reef top. Preliminary statistical results suggest two main environments: Reef associated hard- and soft bottoms. Hard substrata (reef flat, reef slope) are best characterized by encrusting taxa such as *Chama* spp. and *Spondylus* spp., and by *Tridacna maxima* and *Periglypta* sp., both well-known reef associates. Gastropods in this environment are predatory conids and cypraeids. All these species live today on – or occur cryptically in – structured hard bottoms. Reef associated-soft bottom environments – bay, shallow soft bottom, and soft bottoms around coral patches – are best characterized by infauna, such as the tellinid *Quidinipagus palatam* and the lucinids *Anodontia kora* and *Pillucina vietnamica*. Many soft bottom gastropod species such as the strombid *Gibberulus gibberulus albus*, the cerithiid *Rhinoclavis vertagus*, both with an herbivorous diet, and the nassariid *Nassarius fenistratus*, a scavenger, can be found here. A comparison with modern datasets from the Red Sea indicates strong similarities in faunal composition and habitat diversity between fossil and recent reefs. Furthermore, our results suggest that Late Pleistocene molluscan assemblages can aid in reconstruction of fossil reefs and reef-associated habitats.