Fossil molluscan fauna reflects zonation of a Late Pleistocene reef of the 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 of Late Pleistocene coral reefs, which were formed during the last interglacial MIS5e. This study is investigating the molluscan assemblage of a Late Pleistocene coral reef in southern Egypt, at the locality Sharm El Luli, in the area of Marsa Alam. The locality is characterized by a variety of reef- and reef associated habitats, including a reef flat, reef slope, a patch reef, and soft bottoms of a lagoon and in the backreef area. We quantitatively and qualitatively sampled 10 sites with a total of 79 samples and collected 2126 shells, which belong to 177 taxa, mostly identified to the species level. Most taxa were found with the qualitative sampling approach. The most abundant bivalves taxon was the epifaunal, encrusting *Chama* spp., the most abundant gastropod species was the cerithiid *Rhinoclavis vertagus*. Regarding the life habitats most bivalve species are infaunal filter feeders, while most gastropods are epifaunal carnivores. Alpha diversity is highest in the coral patch and in the upper reef region, which implies the reef slope, the reef flat as well as the transition between reef slope and the lagoon. Preliminary statistical results suggest a division in coral-patch, lagoon and backreef as well as a cluster of upper-reef habitats. From these two broad environments can be distinguished: hard bottoms associated to reefs and reef-associated soft bottom environments. The former are best characterized by encrusting taxa such as *Chama* spp. and *Spondylus* spp., and by *Tridacna maxima* and *Perigylypta* spp., which are well-known reef associates. Gastropods in this environment are predatory conids and cypraeids. All of these species live on - or occur cryptically in - structured hard bottoms. Reef associated-soft bottom environments are best characterized by infauna, such as the tellinid *Quidinipagus palatam* and the lucinids *Anodontia kora* and *Pillucina vietnamica*. Furthermore, 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 preliminary results suggest that Late Pleistocene molluscan assemblages can aid in reconstruction of associated fossil reef habitats.