

A LARGE LIVING GRYPHAEID OYSTER FROM THE NORTHERN RED SEA AS HABITAT TO NUMEROUS SCLEROBIONTS

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Oysters are typical accessory components in fossil and Recent coral reefs (e.g., Crame 1986, Zuschin et al. 2001; Zuschin & Oliver 2003a, b). The vast majority of such reef associated bivalves is small (mostly in the size range of a few cm), but frequently colonized by sclerobionts (e.g., bryozoans, serpulids, coralline red algae) (terminology after Taylor & Wilson 2002). The gryphaeid oyster *Hyotissa hyotis* is exceptional in that it can reach large size and is habitat to numerous hard substrate dwellers throughout the tropical and subtropical waters of the Indo-Pacific (Slack-Smith 1998, Zuschin & Oliver 2003a, b). For more detailed investigations, one living specimen of *Hyotissa hyotis* in the Northern Bay of Safaga was taken from a shallow water site (6m water depth), which was dominated by the soft coral *Sarcophyton* sp., and where it was found attached to a dead and degraded massive coral colony.

The total dry weight of the encrusted shell is 7219 g; three quarters of the weight (5450g) are made up by the massively encrusted lower valve. The upper (right) valve measures 27 cm (dorsal –ventral) x 22 cm (anterior-posterior). The corresponding values for the lower (left) valve are 29 x 22 cm. The size of the adductor muscle scar is 7.5 x 6 cm. The maximum thickness of the upper valve is ca. 4.5 cm, the thickness of the lower valve cannot be evaluated because of its massive encrustation. Growth increments in the ligament area suggest an age of more than 30 years of this oyster. The shell was colonized by soft bodied and calcareous sclerobionts.

The main constructors on the oyster are coralline red algae, encrusting bivalves, serpulid worm tubes and vermetid gastropods. The main destroyers are boring sponges and bivalves. The upper and the lower valve of the oyster, however, are colonized by different taxa in different intensities. As a general feature, the upper valve shows only scattered and thin calcareous crusts. Bioerosion is a dominant feature of the upper valve and consists mainly by the ubiquitous clionid boreholes and a single lithophigine borehole. In contrast, calcareous organisms densely encrust the lower valve. The thickness of these crusts is very variable but exceeds 6 cm at some places. The comparatively minor evidence for bioerosion on the lower valve consists mainly of lithophagine boreholes. Clionid boreholes are distinctly less abundant than on the upper valve, except for marginal parts of the shell, which are not covered with epizooobionts.

Vermetid gastropods and sponges were the main colonizers of the upper valve; crusts of coralline red algae are very thin and rare; semisessile soritid foraminifera and calcareous tubes of polychaetes are found in low numbers and a single degraded valve of encrusting chamid bivalves occurs. A xeniid soft coral colony was found; a small colony of the scleractinian coral *Montipora* sp. occurred at the dorsal part of the upper valve and was associated with a nestling mytilid bivalve (*Septifer forskali*). Surprisingly, a juvenile *Tridacna maxima* was bysally attached to the ventral part of the upper valve.

The lower valve is densely covered with chamid bivalves (*Chama* cf. *brassica*) and thick and extensive crusts of coralline red algae. This interaction produced a highly irregular, rugged surface, which is densely covered with serpulid tubes and offers many microhabitats to crevice-dwelling limid bivalves (*Lima paucicostata*, *Ctenoides annulata*). Empty serpulid worm tubes are occasionally settled by the nestling mytilid bivalve *Septifer forskali*, and some of the lithophagine boreholes are colonized by the nestling arcid bivalve *Barbatia* cf. *parva*. Other epizoozoans include numerous small oysters, a small colony of the scleractinian coral

Ber. Inst. Erdwiss. K.-F.-Univ. Graz	ISSN 1608-8166	Band 9	Graz 2004
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Porites sp. in the ligament area, few vermetid gastropods and several small sponge colonies. Interestingly, no bryozoan colonies were found on the shell.

A comparison of quantitative molluscan surveys reveals that such large, encrusted *Hytissa hyotis* are much more abundant around granitic islands of the Seychelles than in the northern Red Sea (Zuschin & Oliver, 2003a, b). This is probably due to higher nutrient concentrations in the shallow waters around the Seychelles. Correspondingly, in the Northern Bay of Safaga, the comparatively few large oysters mainly occurred in areas tentatively associated with higher suspension load.

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Zeitschrift/Journal: [Berichte des Institutes für Geologie und Paläontologie der Karl-Franzens-Universität Graz](#)

Jahr/Year: 2004

Band/Volume: [9](#)

Autor(en)/Author(s): Zuschin Martin

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