



The Caribbean's westernmost algal ridges in Cozumel, Mexico

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Algal ridges, first described along the northeast coast of Cozumel, Mexico, by Boyd et al. (1963), may be unique for the western Caribbean (as seen in the first figure). The only other western Caribbean algal ridge system was reported in Panama (Glynn 1973), but recently this was found to be a coralline veneer over a storm deposit of coral (Macintyre et al. 2001). The Cozumel bioherms are "classic" algal ridges (sensu Adey 1978) in that the upper several meters are composed primarily of coralline algae; they possess a distinct, elevated seaward rim (25-50 cm above MLW), a pronounced horizontal constructional lip (>1 m wide), and "room and pillar" structures (sensu Tracey et al. 1948). The ridges are coalesced circular mushroom-shaped structures about 10-25 m in diameter and 2-3 m high. Seaward ridges are best developed, with progressively more diminutive ridges tailing off toward shore (as seen in the top of the second figure). It is possible that the shoreward ridges are oldest but became senescent when the seaward ridges reached the surface, reducing wave action on them.

Coralline species composition and zonation of the Cozumel algal ridges are typical of wave-exposed ridges of the eastern Caribbean (Steneck and Adey 1976; Adey 1978; Steneck et al. 1997; Macintyre et al. 2001). The elevated seaward rim was formed by the massive coralline Porolithon (Hydrolithon) pachydermum (100% of specimens examined). Behind it, the upper surfaces and sides were dominated by the branched coralline Lithophyllum congestum (50%), along with the unbranched corallines of P. pachydermum (25%), Paragoniolithon sp., the noncoralline crust Peyssonnelia sp., and the foram Homotrema rubrum (the latter three totaling 25%). Sides of the ridge just below the lip were composed of *P. pachydermum* (30%), L. congestum (17%), Neogoniolithon imbricatum (17%), and Peyssonnelia (33%). Near the base, thin and leafy morphologies of Paragoniolithon (42%),

Polystrata (28%), and *Peyssonnelia* (14%) predominated. The thickness of coralline thalli grades from massive (>10 mm thick) at the top of the ridge to thin (<1 mm thick) near the base.

The Cozumel ridges are restricted to a 2-km section of coastline approximately 9 km south of the northern tip of the island. Wave action is high at this site for much of the year, although there is no obvious difference from other areas further north and south. However, Cozumel experiences periodic calms that may be deleterious to algal ridges (Adey 1978). The possible role of the Yucatan current in fostering this regionally unique algal ridge should be explored.

Reef sites

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