

Reef sites

A paradoxical reef from Varadero, Cartagena Bay, Colombia

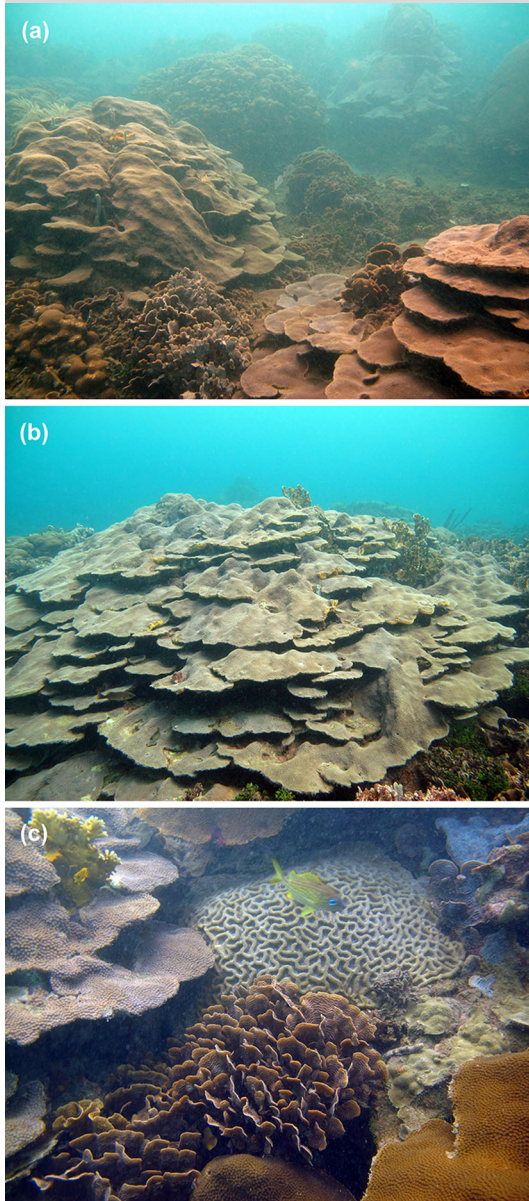


Fig. 1 Coral reef at Varadero: **a, b** massive corals (*Orbicella* spp.) reach sizes of >3 m in diameter and exhibit flattened growing forms, despite being at shallow depths (3–5 m). **c** Some areas the reef exhibit high species richness and coral cover (coral species shown include *O. faveolata*, *Millepora allicornis*, *Colpophyllia natans*, *Porites astreoides*, *Agaricia tenuifolia*, and *Montastraea cavernosa*)

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Coral reefs in the Bay of Cartagena, Colombia, have been heavily disturbed by anthropogenic perturbations since the founding of Cartagena in 1533. A prominent perturbation was the construction of Canal del Dique, a channel built by the Spaniards to shorten the access to the Magdalena River, a major waterway used by Colombian authorities for colonization and later for commercial purposes. Canal del Dique turned the clear waters of Cartagena Bay into a seasonally fluctuating, highly turbid, and eutrophied body of water with high sedimentation, and most coral reefs within the Bay disappeared (Restrepo et al. 2006). Even reefs outside the Bay, like those of Rosario Islands, were negatively affected. Only a few reefs remained, though they were also severely affected by human activities, such as the dredging of one of the natural mouths of the bay for seaport access.

Recently, while looking for excavating sponges at Varadero (10°18'10"N, 75°34'55"W), an area adjacent to the dredged channel, we found what might be one of the best coral reefs on the continental shelf of Colombia in terms of coral cover (up to 80 %) and dominated by *Orbicella* spp. (Fig. 1). The total extension of this formation is close to 1 km². A well-developed coral reef in such a highly degraded environment is contrary to expectations. With massive coral colonies >3 m in diameter and a total scleractinian richness of at least 30 species, this reef challenges traditional paradigms regarding ideal conditions for the growth and development of coral reefs (i.e., oligotrophic and clean waters with good sunlight penetration). The largest colonies found must have survived repeated human disturbances. Corals in shallow areas of this reef exhibit the flattened and encrusting growth forms typical of greater depths (>15–20 m). This coral formation is a unique resource that should be conserved and further studied considering its high species diversity, the large size of some of its coral colonies, and the atypical conditions under which it developed.

Reference

Restrepo JD, Zapata P, Díaz JM, Garzón-Ferreira J, García CB (2006) Fluvial fluxes into the Caribbean Sea and their impact on coastal ecosystems: The Magdalena River, Colombia. *Glob Planet Change* 50:33–49

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