

La Parguera ReefMonitor Update

A joint effort of ReefKeeper International and
Buzos Ecológicos de La Parguera
to monitor La Parguera's coral reefs

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Parguera Reef Sites: Some of Puerto Rico's Finest

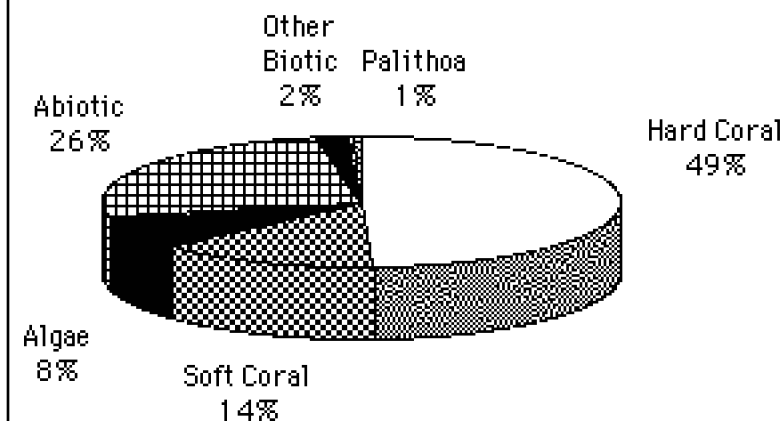
The coral reefs off La Parguera, Puerto Rico, located on the southwest coast 28 km southeast of Mayaguez, are considered to be some of the best developed reefs surrounding the island. According to Goenaga and Cintron (1979), La Parguera reefs experience high productivity due to (1) limited rainfall, (2) minimal soil run-off, and (3) large quantities of organic matter contributed by the mangrove communities. The La Parguera reefs have been subjected to little pressure from industry or development.

However, increased deforestation inland on the La Parguera limestone hills, resort development, domestic waste discharge and proximity to major industrial areas could potentially damage these reefs. Therefore, reef monitoring for selected reefs off La Parguera (Chimney, Hole in the Wall, Media Luna, and Turrumote) began in March of 1996, with the most recent survey completed in September of 1997, to watchdog against negative trends that may affect the quality of the reefs.

Survey Locations:

Reefs Off SW Puerto Rico
The 2 nearshore patch reef sites off Punta Parguera, Media Luna and Turrumote, lie approximately 1km from shore. They form a convex arc to the south, with depths of 20 to 22 feet, and each reef faces the incoming waves from the east-south-east. The 2 offshore patch reef sites off Punta Parguera, Chimney and Hole in the Wall, lie approximately 5km from shore and form the outer line of reefs with depths of 55 to 65 feet.

**Overall Percent Bottom Cover
La Parguera, Puerto Rico**



Survey Results: What Was Found

The bar and pie chart illustrating this report summarize the survey period from March of 1996-March of 1997 for Chimney and Hole in the Wall reefs, and the survey period from March of 1997-September of 1997 for Media Luna and Turrumote reefs. Cover data was collected for all reefs, while health data was only collected for Media Luna and Turrumote.

Chimney reef contained 53.3% hard coral cover and 0.4% algal cover. These percent-

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Why Monitor Reefs? If you don't monitor the oil level in your car's engine, sooner or later you're going to be out of oil and out of an engine. This analogy strongly applies to coral reefs, and that's why ReefKeeper International emphasizes coral reef monitoring. There's really no other way to catch problems before they become catastrophic, or even better yet, before they begin, than by having the data to make a case against a reef-threatening human action. These volunteer reef monitors watchdog significant coral reef sites for changes in coral health, coral cover and other key early warning signs of environmental impact. The gathered data is sent to ReefKeeper, where it's analyzed for use in conservation efforts. Most significantly, these monitoring activities act as a deterrent, serve as a catalyst for other local conservation action, and focus attention on the value of these reef sites.

ages indicate that Chimney reef is a well developed coral reef and is essentially free of algae in the monitored areas. Hard coral ranged from 53 to 14 coral points (mean=29.3) in 1996 and from 53 to 25 (mean=34.3) corals in 1997. Algal cover was negligible. Thus, for both survey events, Chimney reef maintained its high coral cover and low algal cover. Health data was not collected for Chimney reef.

Hole in the Wall reef contained a high percentage (56.7%) of hard coral cover and a low level of algal cover (8.9%). Similar to Chimney reef, these values indicate that Hole in the Wall is a well developed

coral reef, relatively free of algal encroachment. Hard coral cover ranged between 29 and 11 coral points (mean=22.8) over the monitoring period ('96-'97). Algal cover was slightly higher and hard coral cover was slightly lower than Chimney reef. No health data was available for Hole in the Wall.

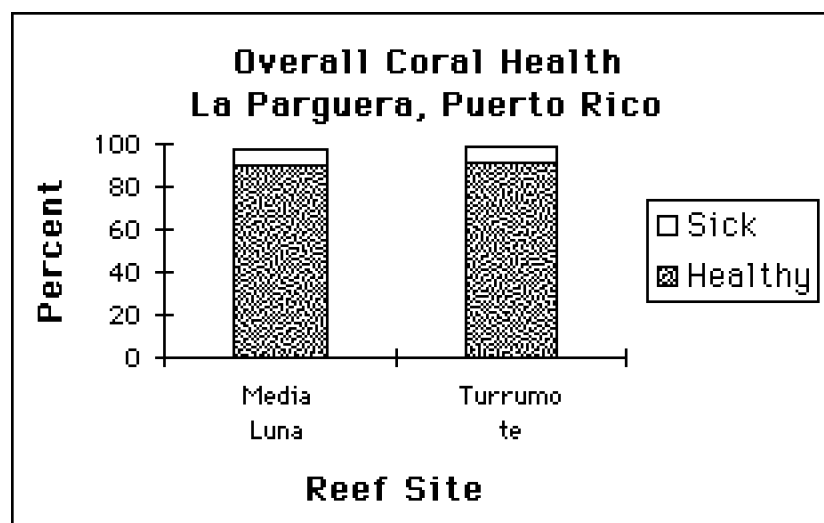
Media Luna reef expressed a hard coral cover of 49.9% and an algal cover of 9.5%,

which suggests that conditions on Media Luna are favorable for hard coral proliferation. Hard Coral ranged between 42 and 53 coral points from March to September of 1997. Health data was recorded for Media Luna, revealing that 90.3% of the corals were healthy, 7.4% were sick or bleached, and 6.4% were dead.

This data suggests that Media Luna is in excellent health and is relatively free of stress.

Turumote reef contains a relatively low (36.4%) hard coral cover, and a relatively high (21.7%) algal cover. These numbers do not bode well for Turumote, they suggest that nutrient levels may be enriched and

that the possibility exists for algal dominance of this reef. Hard coral cover ranged from 32 to 51 coral points for the monitoring period. Health data was generated off Turumote, revealing that 91.2% were healthy, 7.2% were sick or bleached, and 1.6% were dead. These numbers indicate that Turumote reef is in excellent health, and is relatively free of disease.



Thank You, Volunteers!
Nilda Jimenez Wilson
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Aldo

Boat Use Generously Donated By:
Capt. Efra Figueroa
Manuel Mercado
Parguera Divers

ReefKeeper's reef monitoring protocol uses 2 or more separate 50-meter transects laid out at each reef site studied using factory-marked fiberglass transect tape that follows the designated depth contour for the reef site. Point-intercept bottom cover data is noted at half-meter intervals along the full 50 meters of the transect, producing 100 bottom cover data points for each transect. For hard coral colonies at data collection points, health condition is noted and species are identified when possible. If feasible, a visual record of each transect is made with photos taken every four meters along each transect and/or with a continuous video of each transect. This monitoring procedure is repeated every three months.

Significance:

and Turrumote.

What Do the Results Mean

Reef survey results indicate that the coral reefs off La Parguera become increasingly covered with algae and soft coral as they approach shore

(Chimney to Turrumote).

Possible explanations for this phenomena include: 1)effluent from nearby industrial areas (carried on the currents from a south-

easterly direction) causing increased nutrient levels on the nearshore reefs, favoring increased algal growth and decreased coral proliferation, 2)oil pollution, in the form of tar balls,

smothering corals, 3)siltation due to inland deforestation, shading corals and increasing turbidity closer to shore, 4) and the effects of recreational pressure, including bilge water from boats, prop wash, and anchor damage to the reefs of Media Luna

Recommendations: Things to do Some suggestions that may maintain, or even increase, hard coral cover and coral

health off Punta Parguera would be to:

(1)identify outfall sources and locations, (2) assess hill clearing conditions and their effects on nearshore habitats, (3) implement the use of turbidity

curtains and silt screens to reduce the amount of suspended matter in the water and avoid coral smothering, (4) reduce the amount and concentrations of domestic waste (sewage

treatment plants, sanitary disposal, etc.) reaching Pargueran coral reefs, and (5) continued monitoring of nearshore and off-shore processes that may be affecting coral health and development.

