ReefKeeper International
Suite 162
2809 Bird Avenue
Miami, Florida 33133
http://www.reefkeeper.org
reefkeeper @reefkeeper.org

Desecheo Reef Monitor Update

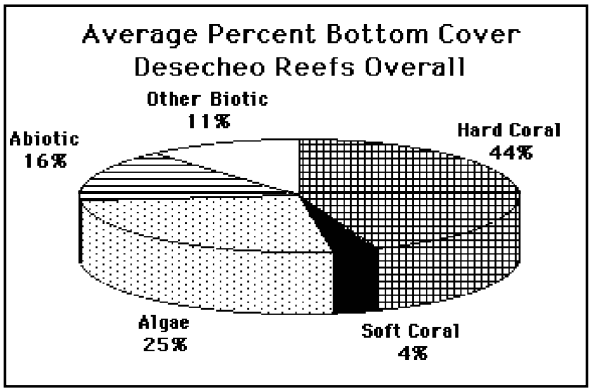
a joint effort of ReefKeeper International and
the Comité Profondo Marino de Desecheo
to protect Desecheo Island's coral reefs
WINTER 1997

Comité ProFondo Desecheo
P.O. Box 250350
Ramey, PR 00604-0350

Desecheo's Reefs Virtually Pristine

Four reef sites off Desecheo Island were surveyed on several occasions from March of 1996 to September of 1997, to establish their bottom cover composition, hard coral health and hard coral species richness. The reefs were found to be near pristine.

Located at varying depths along the southwest shore of the island, all 4 sites showed bottoms dominated by hard coral, with coral cover ranging from 40% to 49% and averaging 44%. There are at least 21 hard coral species present, which indicates considerable species richness. And the reefs were found to be significantly healthy, with sickness affecting only 1% to 10% of hard corals depending on site, and bleaching ranging from 1% to 5% depending on the season.



Establishment of a marine protected area is recommended to maintain the excellent condition of Desecheo's coral reefs.

****

Survey Locations: SW Desecheo's Reefs

Desecheo Island, a small uninhabited islet, is situated a little more than ten miles from Puerto Rico's northwest corner. Around the island, a narrow shelf sloping down to a depth of about 100 feet supports lush coral formations in an array of patch reefs that gird the shoreline. Currently, Desecheo Island is under the protection of the U.S. Fish & Wildlife Servide as a National Wildlife Refuge — but the coral reefs surrounding Desecheo are not part of the Refuge and are in need of stronger protection.

To document the ecological value of Desecheo's reefs, bottom cover surveys were conducted between March of 1996 and September of 1997 on 4 of the patch reefs that encircle the southwest coast of Desecheo Island.

The 2 deeper reefs surveyed were Candlesticks (in March '96, March '97, and June '97) and Candyland (in September '97). Depths at Candlesticks (GPS: N 18°22'08"/W 67°29'2") ranged from 53 to 78 feet. Depths at Candyland (GPS: N 18°22'738"/ W 67°28'102") varied from 62 to 80 ft.

The 2 shallower reefs surveyed were South Gardens (in March '96, March '97, and June '97) and Puerto Canoas (in September '97). Depths at South Gardens (GPS: N 18°22' 729"/ W 67°29'37") varied from 45 to 50 feet, while depths at Puerto Canoas ranged from 40 to 59 feet.

All sites are less than a 1/4 mile from shore.

Survey Results: What Was Found

Based on 1600 data points collected along 16 individual 50-meter transects on 4 reef sites, the percent of the bottom covered by hard coral and algae was consistent throughout the study area. Overall, the reefs off SW Desecheo are covered by 44% hard coral, 25% algae, 4% soft coral, and 11% other organisms, with 16% of the bottom covered by abiotic sand and rock (see pie chart). Desecheo's reefs are definitely coral dominated.

Hard coral cover varied little between reef sites, ranging from a low of 40.5% at South Gardens to a high of 49.4% at Candlesticks. Similarly, algae cover fluctuated in a narrow range from 21.8% at South Gardens to 31.8% at Candyland. (see bar chart).

Desecheo's coral reefs show limited signs of sickness or stress. None of the survey transects at any of the reef sites ever logged more than 10% of the hard corals as sick, with some transects recording less than 1% sick corals. Bleaching ranged from lows of 1% in the Spring to highs of under 5% in the Fall, which may indicate seasonal variation due to water temperature fluctuation.

A total of 17 hard coral species were identified from the transect

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 depth contour of the reef site. Point-intercept bottom cover data is noted at half-meter intervals along the 50 meters, 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.

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. The analogy strongly applies to coral reefs, and that's why ReefKeeper International sponsors reef monitoring by local volunteers. There's really no other way to catch problems before they become catastrophic — or even better yet, before they begin by having data to make a case against 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.

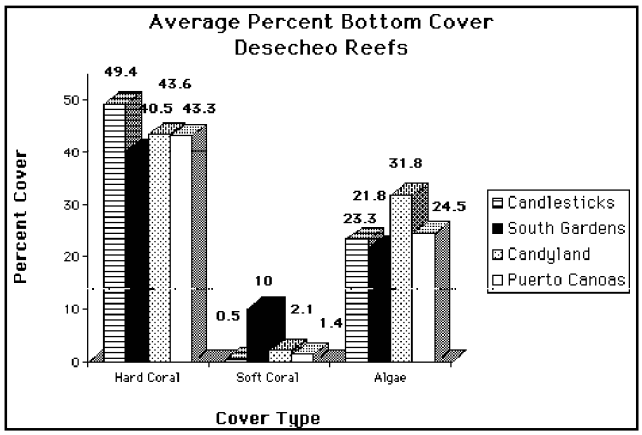
data points (see species table). Four more species were identified away from the transect data points (Blade Fire Coral / M. complanata, Branching Fire Coral / M. alcycornis, Elkhorn Coral / A. Palmata, Elliptical Star Coral / D. stokesii) and others remain to be identified. Desecheo's hard coral species richness is significant.

The dominant hard coral species on Desecheo reefs is Boulder Mound coral (M. annularis). It was the most abundant coral species on all 4 survey sites: Candlesticks Reef (23.3%), South Gardens Reef (22.8%), Candyland Reef (38.8%) and Puerto Canoas Reef (34.4%).

Finally, water clarity is high at Desecheo. All measurements of underwater horizontal visibility exceeded 20 meters (65 feet), regardless of season of the year. Some of the visibility measurements exceeded 29 meters (100 feet).

Significance: What Do the Results Mean?

The results indicate that Desecheo's coral reefs are in near pristine condition. They have a strong positive coral-to-algae bottom cover ratio (44% vs 25%), significant hard coral species richness (17+ species), and low incidence of sickness or bleaching. This data, and the consistently high underwater visibility, indicate little or no impact to these reefs from either coastal pollution or sedimentation.



	Candlesticks	South Gardens	Candy Land	Puerto Canoas
Acropora cervicornis (Staghorn coral)			x	
Agaricia agaricites (Lettuce coral)	x	x		
Colpophyllia natans (Boulder brain coral)	x	x		x
Dendrogyra cylindrus (Pillar coral)		x		x
Diploria labyrinthiformis (Grooved brain coral)	x			x
Diploria strigosa (Symmetrical brain coral)	x	x	x	x
Eusmilia fastigiata (Smooth flower coral)	x			x
Isophyllastrea rigida (Rough star coral)	x			
Manicina areolata (Rose coral)	x	x		
Meandrina meandrites (Maze coral)	x	x		x
Montastrea cavernosa (Great star coral)	x	x		
Montastrea annularis (Boulder star coral)	x	x	x	x
Mycetophyllia lamarckiana (Ridged cactus coral)		x		
Porites astreoides (Mustard hill coral)	x	x	x	x
Porites porites (Finger coral)	x			x
Siderastrea siderea (Massive starlet coral)	x	x		
Solenastrea bournoni (Smooth star coral)	x	x		

Damage to these reefs is much more likely to come from anchor and fishing gear impacts, dislodging of coral heads during fish hunting or collecting, and use of fish collection chemicals.

Recommendations: What Can Be Done

To protect and maintain the pristine condition of these reefs, the Comité ProFondo Marino de Desecheo and ReefKeeper International advocate the creation of a marine protected area to encompass Desecheo's coral reefs.

Within that protected area, measures are recommended to provide mooring buoys and/or nonreef anchoring zones, prohibit the use of potentially damaging fishing gear or chemicals, implement patrolling and enforcement, establish a user education program, and set aside part of the area as a no-take marine fishery reserve.

****

Boat Use Generously Donated By:

Capt. José Rafols Sallaberry
Aquatica Underwater Adventures
Aguadilla, PR
(787) 890-6071

Thank You, Volunteers!

Kathy Arbuthnott
Kathy Hall
Nilda Jimenez
Felix Lopez
José Rafols (photo)
Alexander Stone

ReefMonitor Update is one of the publications issued by ReefKeeper International, a tax-exempt, nonprofit, membership organization exclusively dedicted to protection of coral reefs and their marine life. Working from Miami (FL), Boqueron (PR), and Cozumel (Mex), ReefKeeper International conducts an integrated program of field survey investigations, reef monitoring, policy analysis, grassroots organization, technical assistance, advocacy and public awareness. ReefKeeper Activities are partially supported by Jamee & Marshall Field Fndn, Henry Fndn, Homeland Fndn, Curtis & Edith Munson Fndn, Elizabeth Ordway Dunn Fndn, Nathan Ohrbach Fndn, Orchard Fndn, Threshold Fndn and Turner Fndn. Memberships start at $25 per year.