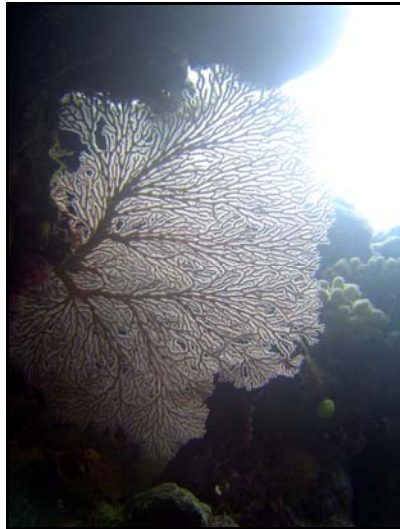


Health of the reefs of Eretoka (Hat) Island



Dates:

August 21st –22nd, 2005

Reef type:

The reef of Eretoka Island (also known as “Hat Island”) is a typical fringing reef, which surrounds the entire island. The island’s northwest tip extends half a mile into the sea. The reef forms caves and many deep crevasses.

The prevailing winds around Eretoka come from the southeast most of the year; hence the eastern side of the island is the windward side with the strongest wave action against the reef.

Five observational dives with attention on invertebrates, fish and coral diversity and bottom coverage were conducted at

- 1.) the southwestern windward reef,
- 2.) the northeastern leeward side, and
- 3.) both tips of the island (southwest and northeast).



1.) Southwestern windward reef



2.) Northeastern leeward side



3.) Northeast tip of the island

Average Water Temperature:

The water temperature of the leeward reef (measured from the *RV Heraclitus* anchored 0.25 nautical miles north of Eretoka) ranged between 25.2°C and 25.5°C.

Visibility:

During our dives around the island we observed visibilities between 15 and 35 meters as measured using a Secchi disk.

Bleaching:

No significant signs of current bleaching were found at any dive site around Eretoka.

Coral Disease:

We did not observe any of the coral diseases known for the South Pacific.

Crown of Thorns Starfish (COTs):

Not a single crown of thorns starfish was spotted during our dives.

Geography and Background:

Eretoka is a small island 2.5 nautical miles west of the mainland of Efate. It is only about two kilometers long and has a central hill about 100 meters high, giving the island its hat-shaped appearance. As the burial site of Chief Roy Mata, a historically

important chief, and an associated mass grave of his people, Eretoka holds historical and contemporary cultural significance.

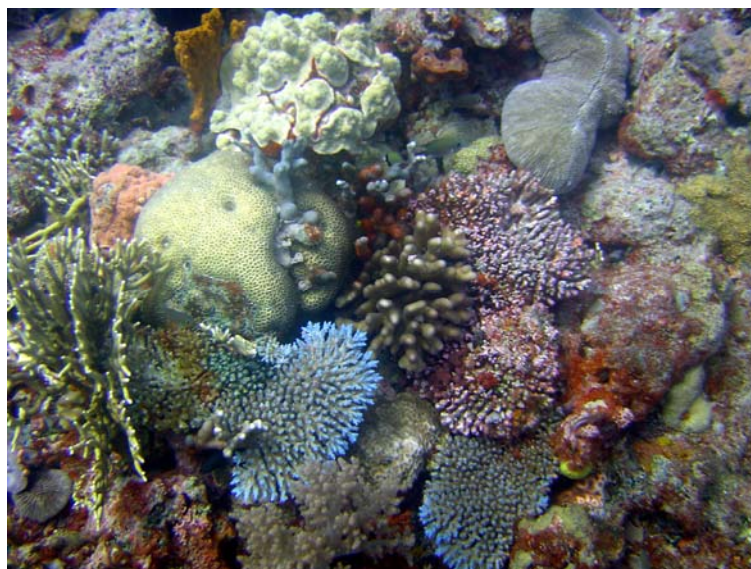
A small sailing operation brings tourists to the reefs of Eretoka to snorkel.



Patch reef at the northeast tip of the island, windward

Reef topography:

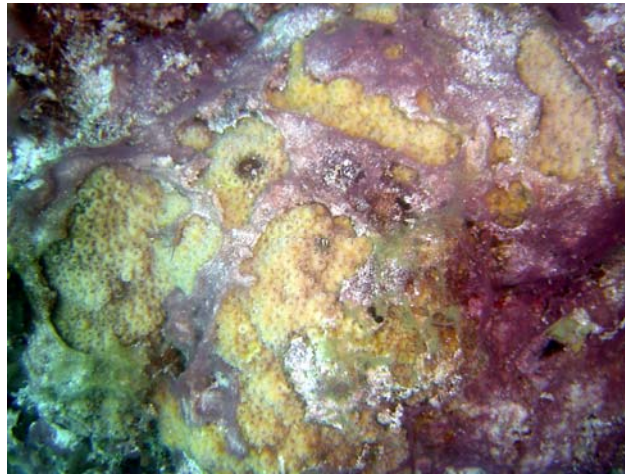
Gradual slopes with broken by crevasses dominate the reef topography of Eretoka Island. At the tip of the island the reef consists of different sized patches surrounded by sand. There are no steep drop-offs in the area. All shallow reef slopes become steeper leading to deep water from approximately 70-200 meters.



Coral composition at the northeast tip of the island

Coral Observations:

We found coral diversity to be relatively high, especially at both tips of the island. Here we estimated the hard coral coverage to be about 30-40% and soft coral coverage about 25%. However, dead *Pocillopora* and *Acropora* colonies, already overgrown by algae, were scattered throughout the reef. On the northwest windward side of the island we encountered vast areas of bare rock with rubble filling the crevasses. Even in deeper zones live hard coral coverage was estimated to be only about 10%, dead coral coverage about 40% and the rest of the area was comprised of old coral rock and sand. Dead corals were overgrown by algae, and some live coral colonies were smothered by filamentous algae mats, causing the colonies to decrease in size.



A *Cyphastrea* colony smothered by a filamentous algae mat



A *Leptastrea* colony smothered by a filamentous algal mat



Porites fingers smothered by filamentous algal



Acropora colony smothered by filamentous algal

Throughout all reefs the green algae *Halimeda* covered about 10% of the bottom. This algae poses no threat to corals but rather exists as a common part of the reef ecosystem.

At the tips of the island most hard coral colonies seemed to be in good condition. But even here the biggest threat seemed to be the abundant filamentous algal mats smothering some colonies.

Few coral colonies were bigger than 40 centimeters in diameter, and most were much smaller. One huge solitary standing *Porites* coral head of about three meters in diameter was losing its live tissue through degeneration beginning at the margins and moving inward. More than half of the colony had already died starting from the bottom. Wider areas around the borders of live and dead tissue had faded in color, indicating continued degeneration. This condition did not resemble any known coral disease.



Large *Porites* colony with degenerating tissue

Fish Observations:

Fish abundance and diversity were high at the tips of the island, where even some commercial fish, such as various snapper species, were abundant and a dogtooth tuna passed us on our dive. The fish live at the tips of the island contribute to a unique dive experiences. Along the flanks of the island diversity and abundance were not as high.



Bluestriped snapper at the northeast tip, windward

Invertebrate Observations:

Five observational dives were taken at Eretoka Island. There was good presence of Sea Cucumber with several species noted, though these were mainly low value, namely: *Holothuria fuscopunctata*, *Bohadschia graeffei*, *Holothuria atra*, *Bohadschia marmorata*. There was also one sighting of the high value species *Actinopyga lecanora*, nestling in the coral rock wall at the northeast tip of the island and therefore more difficult to find than those on the sandy bottom.

There was also a great wealth of sessile inverts such as sponges, bryozoans and soft corals throughout the area. Giant Clams, *Tridacna squamosa*, *Tridacna maxima*, were noted, though these were mainly small in size. Sea Urchins, *Diadema*, were present only at the northeast tip of the island. There was no presence of Crown of Thorns Starfish. Beautiful crinoids were in abundance on all dives taken, but in particular as well at the northeast tip of the island.

Marine Mammals:

Just as we were approaching Eretoka Island a pod of dwarf spinner dolphins appeared around our ship. At least five individuals within the group swam quickly along the ship and rode the bow. The next day two or three dolphins of the same species surfaced for a few breaths right next to our anchored ship.

From our anchorage we also observed breaching whales in the distance. Several times they jumped far out of the water creating massive splashes. Due to their distance they could not be identified.

Turtles:

We did not encounter any turtles around the island during our short stay.