

## Pangaimotu Survey Report

Pangaimotu Reef (Reef Flat)

Date: 6 Aug 2002

Participants: Asipeli and Seiji

Prepared by: Seiji Nakaya

### 1. Objectives

Obtain baseline data on Pangaimotu Reef Flat. It was the first time for DoE to gather information on the reef flat of Pangaimotu Reef, although DoE conducted other surveys (the Manga-tow and Reef Check) on the reef edge.

### 2. Methods

Spot check method was used by 2 people at 4 sites on the reef flat. Observation was for 10 minutes at each site.



Map of Pangaimotu Reef indicating survey sites

### 3. Results

Live hard coral coverage was as low as below 5% at all sites, with higher soft coral cover between 5 and 20%. Dead hard coral cover ranged from 0 to 15%. There were highly variety of coral types, with high proportion of branching corals (non-Acropora) at some sites. Large proportion of sea floor was covered by sand and rubble between 20 and 90%, where no corals seem to settle down. Sedimentation was low (1) to medium (2), as the reef located within a lagoon surrounded by Tongatapu Island and barrier reefs at both west and east sides. There were only a small number of plate-like (or corymbose) Acropora and the largest diameter was 50cm.

### 4. For Technical Improvement

Tide was too low when we conducted the survey. It is important to choose high tide for survey work. For this survey, we selected the sites haphazardly. It may be better (statistically sound to get to the sites previously chosen randomly on the map or aerial photos).

Figure 1. Photos taken in 4 directions at site 1.



##### 5. User information:

- a. 3 men and 1 boy on a boat with no motor, hook and line fishing; after 'Asipeli's explanation on MPAs they left somewhere. It is important to record where they are from for further follow-up.
- b. 1 woman skin diving for shell fish with a Tongan-style motor-boat; after 'Asipeli's explanation on MPAs they left somewhere. It is important to record where they are from for further follow-up.
- c. 1 open motor boat with 1 man, towing 1 open boat with 1 man carrying fishing net; just passing no fishing observed.



**[Importance of user information]**

Almost every time we visit Pangaimotu Reef, we observe people fishing or gathering organisms there. Pangaimotu Reef seems to be, due to its proximity to Nuku'alofa, one of the most heavily used fishing ground in Tonga. It is necessary to conduct a socio-economic survey to collect data on the use of coral reefs including MPAs and perceptions and attitudes of users. When DoE conducts a periodical surveillance, as Seiji suggested in Appendix 1 of the monthly report of June 2002, it is highly recommended to record the characteristics of use and users sighted. Such information is useful for understanding trends of use and impacts and effectiveness of enforcement. A format such the following may be used for data recording.

Sample of record sheet for use of MPA s

Date	Time	Site (GPS reading)	Activities	Users (number and characteristics)	DoE staff sighted	Users' reaction after contact
6 Aug 2002	1100	Pangaimotu Reef flat	Line fishing	3 men and 1 boy on a boat wo motor, reside in Sopu?	Asipeli and Seiji	Moved to out of the MPA.

Snorkel survey data sheet

Reef Name: Pangaimotu Reef Flat

Date: 6 Aug 2002

Diver: Asipeli and Seiji

#	Dvr	Time	Live hard coral %	Dead H C %	Soft Coral %	Dominant coral type*	No. COTs Size (cm)	Type of substratum with no corals (%)		Sediment (0, none – 4, a lot)	Largest Plate Acropora size (cm)	Depth range (Xm– Ym)	Other remarks	Photo *	GPS Site No.
1	S	1108	1	0	5	5	0	Sand	90	0 1 2 3 4	None	0.3-0.5	Sea grass (Halodula spp.); Pocillopora, Millepora, massive Porites, Favia		54; S21°07'16.2" W175°09'40.8"
	A		2.5	5	7.5	4	0	Sand	20	0 1 2 3 4		<1.0	(P. damicornis?)		
2	S	1125	1	5	15	5	0	Sand	40	0 1 2 3 4	50	0.5-1.5	Massive and branching Porites, plate Acropora, Montipora hisp., Stylophora, Fungia, branching Millepora, Bleaching (branching Acropora, Pocillopora) or COTS or Drupella-not observed		55 S21°07'16.3" W175°09'42.6"
	A		5	10	15	4	0	Sand, rubble	50	0 1 2 3 4			Branching		
3	S	1145	5	1	15	5	0	Sand	20	0 1 2 3 4	None	0.3-1.0	Acropora formosa?, Favia, massive Porites, corymbose Acropora, other brain corals		56 S21°07'16.4" W175°09'44.6"
	A		5	15	10	5	0	Sand, rubble	50	0 1 2 3 4			Branching non-Acropora		
4	S	1158	5	1	10	5	0	Sand, rubble (A. Formosa?)	40	0 1 2 3 4	30	0.3-1.0	Branching Acropora, massive Porites		57 S21°07'16.7" W175°09'47.7"
	A		1	20	20	4	0	Sand, rubble	45	0 1 2 3 4			Branching non-Acropora		

Photo: 20020806Pangaimotu

**Appendix A. Data sheet for Spot check method**

Snorkel survey data sheet

Reef Name: \_\_\_\_\_

Date: \_\_\_\_\_

Diver: \_\_\_\_\_

- Branching Acropora,
- Plate & Corymbose Acropora,
- Mixture of ① and ②,
- Specific type (SPECIFY),
- Various types without dominant types,

Point #	Time	Live hard coral %	Dead H C %	Soft Coral %	Dominant coral type*	No. COTs, Size (cm)	Type of substratum with no corals (%)	Sediment (0, none – 4, a lot)	Largest Plate Acropora size (cm)	Depth range (Xm–Ym)	Other remarks	Photo taken	GPS Site No.
1								0 1 2 3 4					
2								0 1 2 3 4					
3								0 1 2 3 4					
4								0 1 2 3 4					
5								0 1 2 3 4					
6								0 1 2 3 4					
7								0 1 2 3 4					
8								0 1 2 3 4					
9								0 1 2 3 4					
10								0 1 2 3 4					
11								0 1 2 3 4					
12								0 1 2 3 4					
13								0 1 2 3 4					

