

Brief Report on Marine Survey and Ciguatera monitoring for Nonouti

Introduction

This report would outline the main activities carried out for Nonouti trip. The trip spent a total of 19 days starting from 22nd November – 11th December, 2017, whereas 1-day trip at sea aboard MV Tekinati and 18 days for completing the marine survey, potential site survey for recreational activities and ciguatera monitoring. Such activities were performed by the following officers – Senior Fisheries Assistant Toaea Beiateuea, Senior Fisheries Assistant Aranteiti Tekiau, Fisheries Assistant Max Peter and Handyman Tebwii Tererei

The objectives for the marine survey encompass the following: -

- To determine the status of coral reef system
- To provide a zonation on breeding and nursery area
- To identify potential site for recreational activities
- To monitor the impact of ciguatera

Methodology

Maps of Nonouti

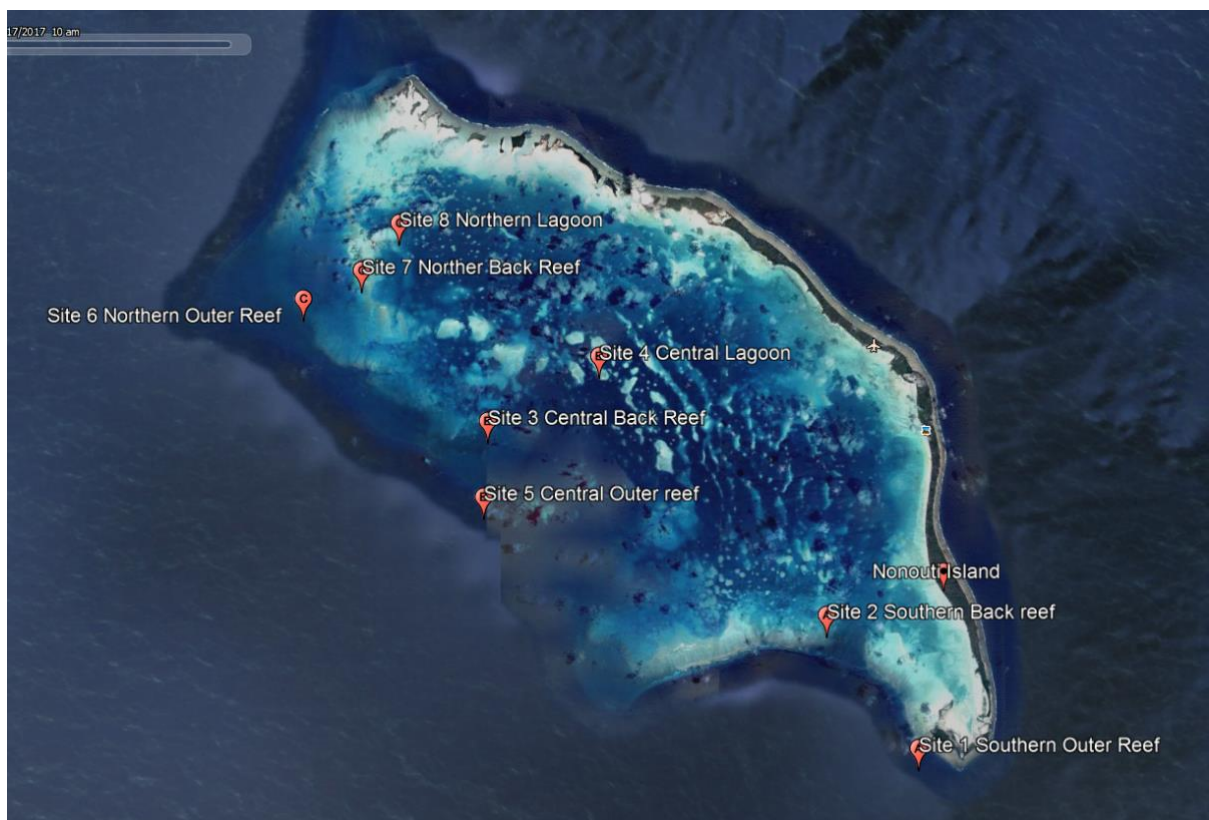


Figure 1. Nonouti Island Image and the 8 survey sites for coral monitoring.

To identify the survey sites, Nonouti Island was divided into 3 parts, North, Central and South. The North represented marine sites parallel with Noumwatong to Temwanoku villages. The central represented sites parallel with Matang to Rotimwa village. The south identified sites that parallel with Makauro to Temotu village. There were 3 main sites designed for North, Central and South. These are Outer reef, back reef and lagoon (mainly reef patches) sites as they represent different marine environment with respect to their depth, turbidity, ocean influences and zones. Therefore, the total number of sites expected to be done were 9 (3x3), given a total number of stations of 9 sites x 3 replicates total of 27 stations.

Site issue

However, there was a major constraint with selecting the lagoon site for the Southern part. There were no reef patches to carry out the PIT as no were corals sighted and the benthic was constructed by sand and mud, forming a turbid environment. Therefore, the total number of sites to represent the marine environment of Nonouti Island were 8 instead of 9; Northern site: Outer reef, Back reef and lagoon reef, Central site: Outer reef, Back reef and lagoon reef, Southern site: Outer reef and Back reef. This gives a total of 8 sites x 3 replicates is equal to 24 stations.

To achieve the objectives therein, the main activities implemented for determining the status of the coral reef system was Point Intercept of Transect (PIT) which is a renowned method to identify the status of corals and their spatial distribution and other critical habitats that also included Mangrove forests and Seagrass meadow. It also determines factors whether abiotic or biotic that adversely affecting coral ecosystem including diseases. Moreover, it determines the abundance and distribution of fish and invertebrates and contrasting the correlation of the abundance of fish with live coral cover. It also identifies breeding and nursery ground through counting and observing fish

Simultaneously, the identification of potential site for recreational activities was carried out with PIT survey. Potential sites were determining by the coral complexities, sandbank with healthy back reef, presence of sharks, clams, and shallow waters located around sandbanks that would be ideal for snorkelling and game fishing.

Based on the anecdotal information given from local fishermen and the villagers, stating that Nonouti Island is free from ciguatera toxic. Ciguatera monitoring was carried out closer proximity to the causeways. The sample collection was done at shallow and deep water for later analysis.

Activity

The following activities provide a summary of the marine survey for coral and recreational site, and ciguatera monitoring activities

Coral Monitoring

This activity was carried on the following days; 25th, 27th, 28th, 29th, 30th November, 1st, 4th, 5th, 6th and 7th December 2017. An 100m transect was used for the PIT survey with 3 replicates for each sites, given a total of 300m for each site. Additionally, the scuba dive was carried out throughout the survey days, except to the lagoon sites at the North, where water was shallow. Also the monitoring was carried out to the extent of fish and invertebrates diversity

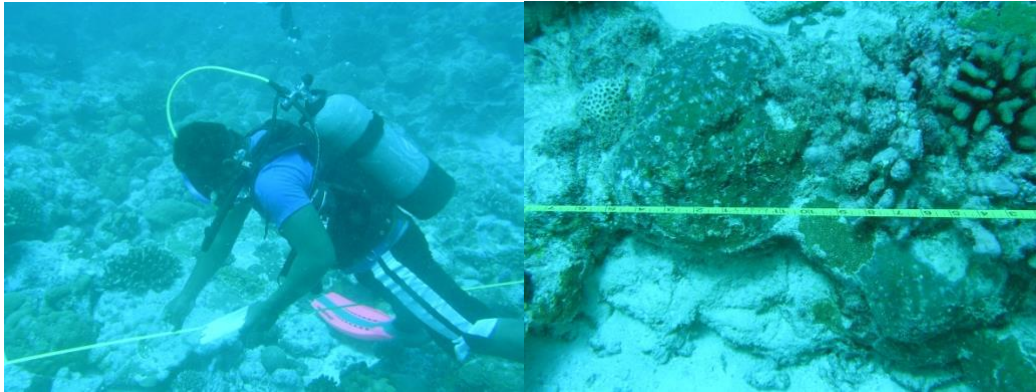


Figure 2: Underwater PIT survey carried out by FA Max Peter and a living encrusting coral under the transect tape.



Figure 3: The coral system which showed the impact of recent storm, and the Acropora coral digitate shows sign of whitish color and fragmentation

The impact of storm showed a significant and devastated impact to the corals, forming breakage of corals and accumulated as rubbles and rocks.

Recreational sites

The surveys of recreational sites ideal for tourism were carried out simultaneously with coral monitoring.



Figure 4: One of the potential sites Tebwereuri sandbank and a giant trevally caught by trolling around Tebwereuri sandbank

One of the potential sites Tebwereuri sandbank showed a remarkable area for game fishing and snorkelling.

Ciguatera Monitoring

This activity was carried out at the last day of the diving on the 8th December, 2017. The samples were collected at sites parallel to the Buariki causeway between Teuaabu and Mataboou villages. The second samples were collected parallel to the second causeway between Mataboou and Tebuangi villages.

These 3 main activities mainly coral monitoring, fish and invertebrate count, potential site survey for recreational and ciguatera sample collection were carried out at sea to answer the following questions: - What is the status of the coral reef? Where are the breeding and nursery ground for most reef fishes? Where are potential sites suitable for recreational activities to support tourism? And to confirm if there is any sign of ciguatoxic dinoflagellate that may lead to fish poisoning (ciguatera).