CORAL TRIANGLE INITIATIVE
ON CORAL REEFS, FISHERIES AND FOOD SECURITY

PAPUA NEW GUINEA

IABAM & PAHILELE COMMUNITY BASED RESOURCE

MONITORING PROGRAM SURVEY REPORT #: 7

MONITORING PERIOD: JULY 2012

June 2013

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Iabam & Pahilele Community Based Resource Monitoring Program
Survey Report #: 7
Monitoring Period: July 2012

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7

IABAM & PAHILELE COMMUNITY BASED RESOURCE MONITORING PROGRAM

SURVEY REPORT #: 7
MONITORING PERIOD: JULY 2012

MONITORING REPORT WRITTEN BY
JAMESON SOLIPO
(Iabam-Pahilele CMMA Data Specialist)

PREFACE

I warmly welcome everyone to this July monitoring report. This monitoring report highlights findings for this monitoring period and is being written in the very similar manner as past monitoring reports. I would like to firstly thank the men, women and youths of Iabam and Pahilele Islands who have participated in the December monitoring program, and for making it successful.

I extend my sincere word of thanks to the new local monitors from Wiyaloki CMMA who have been with us during this period to build up their monitoring skills. I hope you have learnt the practical fun of resource monitoring and this training you have received will greatly enhance your community base monitoring program at Wiyaloki CMMA.

I also sincerely thank Conservation International and the USAID through its financial assistance through the Coral Triangle Support Partnership (CTSP) for providing this great opportunity to my community to be able to understand the need to managed the limited resources we have surrounding our island.

I would like to thank Mr. George Aigoma and Mr. Paul Tom of Conservation International for their time and contributions toward making this monitoring program concluding on a good note.

Mr. Terry Abaijah

Chairman
Iabam & Pahilele CMMA

ABOUT THIS REPORT

This July monitoring report is no different to the many other reports you have been used to. This report summarizes what has been observed in the monitoring stations located inside your no-take or managed areas and in areas outside of those no-take.

All monitoring data and information gathered during field monitoring has been put together by our local data specialists and have done a tremendous job in producing this July monitoring report for our community to read and be knowledgeable of the changes taking place in our sea and marine environment.

1. INTRODUCTION

This July monitoring program has been a real challenge compared to other monitoring programs done early this year over the last 12 months. The Southeast Trade Winds has been a major challenge for those who participated on the data collection. Strong wind and rough seas and cold water temperatures did affected some members of the monitoring team in terms of discomfort through cold that could have lead to monitors rushing to collect data, and to get out of the water to seek warm and refuge against what they felt while they were in the water.

Despite all that hurdle that has been stated, the monitoring ended successfully where all data were gathered, pre-organized and later analyzed by the teams local data officers which results from these analysis are presented in this 7th monitoring report.

2. METHODS

2.1. Field Data Collection

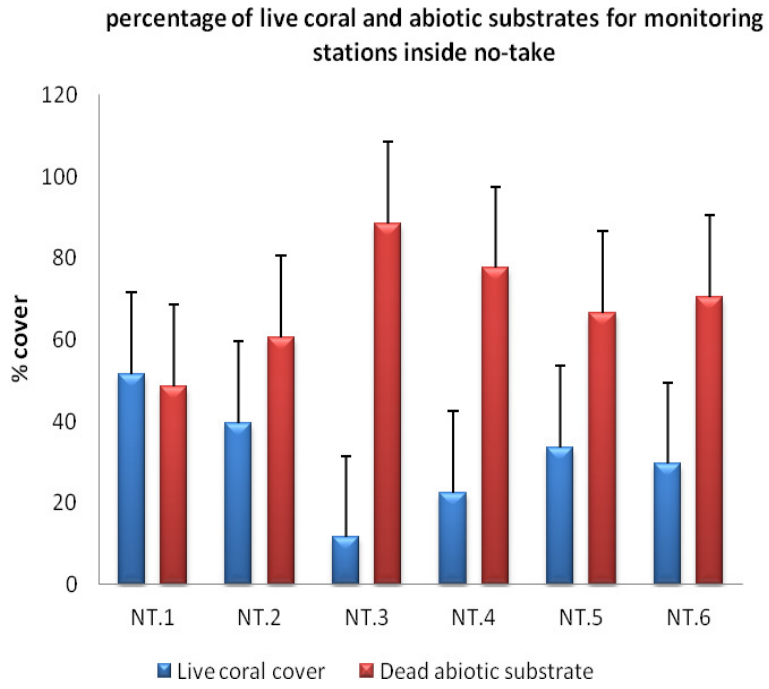
All field sampling methods and equipments used in this survey are similar to those used in past surveys. All logistics and financial support for this monitoring was coordinated by Conservation International's office in Alotau. The Iabam-Pahilele community dinghy was used to ferry local monitors to each monitoring stations for assessment and all camping and catering have been done by the local people of Iabam and Pahilele community.

2.2. Data analysis

Analyses of all data in this monitoring were done by Mr. Jameson Solipo at the Conservation International office in Alotau. The procedures by which these monitoring data were analyzed have been the same as those done for previous monitoring. The methods used by Mr. Solipo to analyze this monitoring data have been adopted from Wangunu 2011, community monitoring data manual.

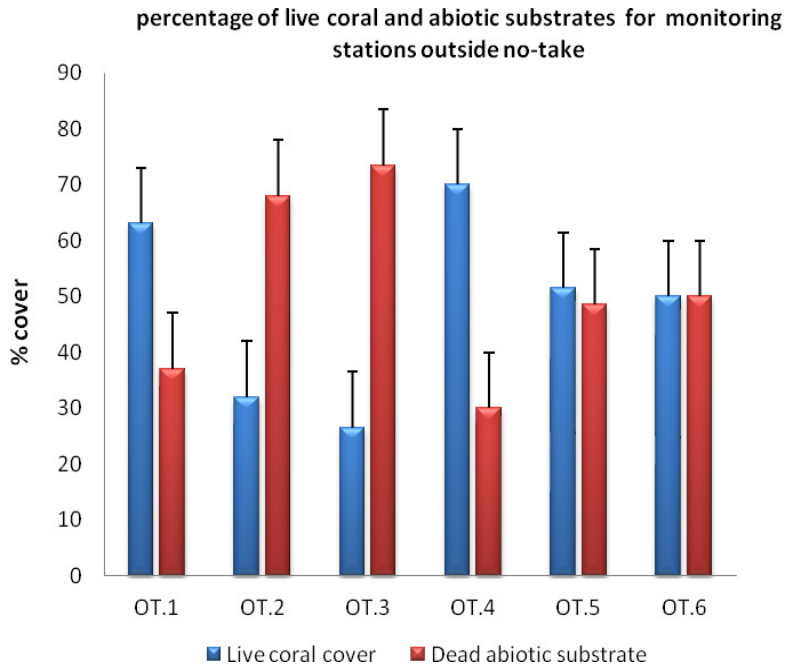
3. RESULTS

3.1.1 Benthic substrate for reefs inside no-take

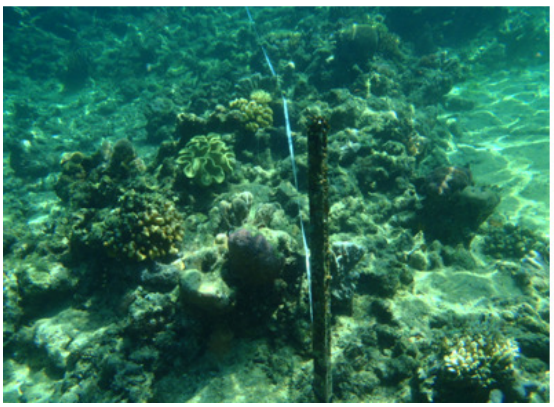


Benthic substrates for sites inside no-take in this monitoring indicate high abiotic substrate inside all monitoring stations. Sites with very high abiotic substrate composition include Dana Gedu (88.5%); Siasialina (77.5%); Banibani Siga (70.5%) and Hanakubakuba (66.5%). Live coral cover recorded on average was at Tawali Namonamo (51.5%). The live coral type that showed dominance at Tawali Namonamo were Acropora branched corals (20%) and those with submassive structures particularly Acropora and Pocillopora both making up 20% as well. Then highest abiotic substrate recorded at Dana Gedu (NT.3) was hard bed rock substratum which comprised 59% of all substrates in that monitoring transact.

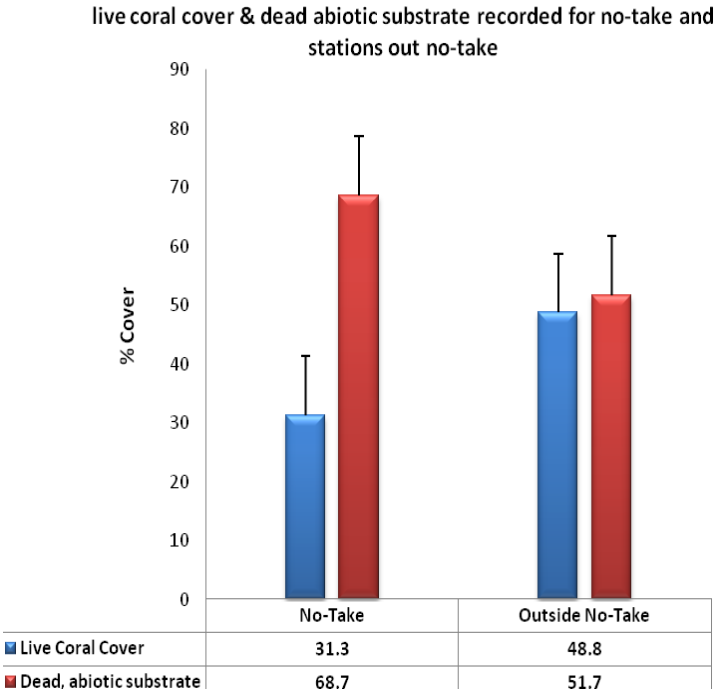
3.1.2. Benthic substrates for reefs outside no-take areas



Live corals showed the highest occurrence for Tawali Balabala with 70% of transact area having live corals. Branched corals were the highest dominated coral type with 59.5% followed by soft corals with a 7.5% distribution. The monitoring station at the NW point of Iabam island had the second highest coral dominated transact with 63% live coral cover where 54.5% of this live corals were soft corals of Sinularia and Sargophyton species. Manikutu and Kiwakiwa monitoring stations had an average live coral cover 51.5% and 50% respectively. Abiotic substrate was recorded the highest outside Pahilele (SE) were much of the abiotic substrates were hard bedrock (39%) and dead coral rubble (31%)



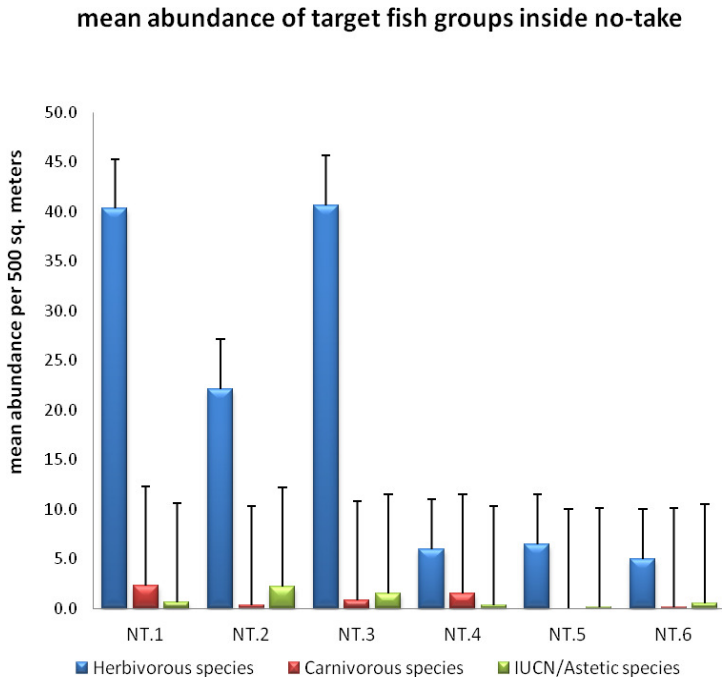
3.1.3. Benthic substrates for monitoring stations inside and outside no-take combined



A comparison of live coral cover inside and outside no-take and abiotic substrates inside and outside no-take monitoring stations clearly illustrate that no-take monitoring stations continued to have a low cover of live corals. In this monitoring we see that live coral cover was only 31.3% for 6 monitoring stations inside no-take and 68.7% were dead, abiotic substrates for all no-take monitoring stations. The other 6 monitoring stations outside no-take areas showed an almost equal distribution of live coral cover as well as dead, abiotic substrate. Live corals made up 48.8% while dead, abiotic substrate comprised 51.7% for all 6 monitoring stations.

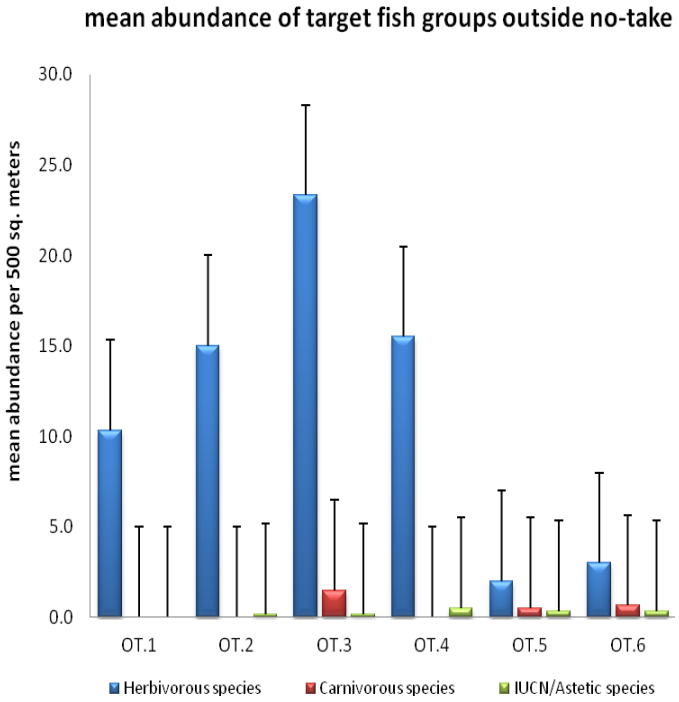
3.2 REEF FISH INDICATORS INSIDE & OUTSIDE NO-TAKE AREAS

3.2.1. Target Reef Fish indicators inside no-take



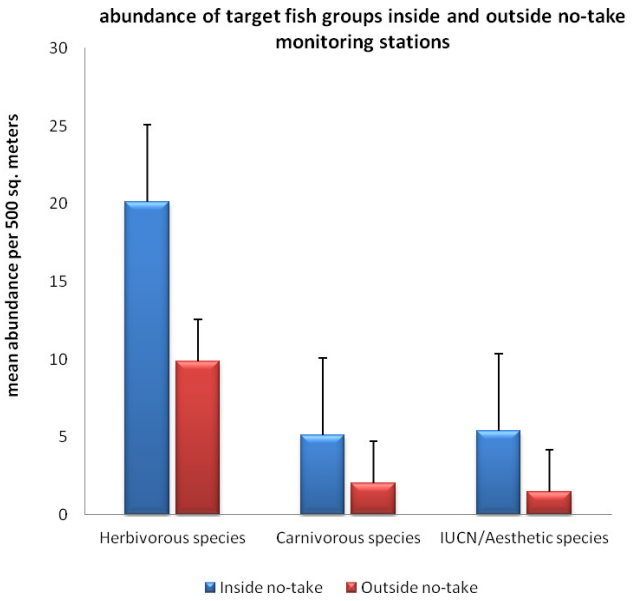
Mean population of herbivore fishes was recorded the highest at Dana Gedu (NT.3) and Tawali Namonamo (NT.1) each recording 40.7 herbivore/500m^2 and 40.3 herbivore/500m^2 respectively. Luluwalagena (NT.2) was another site that recorded an average of 22.2 herbivore/500m^2 while Siasialina (NT.4), Hanakubakuba (NT.5) and Banibani Siga (NT.6) all had very low mean abundance of 6.0, 6.5 and 5.0 herbivore/500m^2. Mean population estimation for carnivore fishes was significantly low in all sites monitored. Tawali Namonamo recorded an average count of 2.3 carnivore/500m^2 while all other sites had much lower averages. Recocrds for IUCN/aesthetic species was present at Luluwalagena (2.2 species/500m^2) and at Dana Gedu with mean abundance of 1.5 species/500m^2.

3.2.2 Target reef fish monitoring indicators outside no-take



Monitoring stations outside no-take appeared to have high mean counts for herbivore fishes with the highest mean abundance recorded for Pahilele (SE) with an average count of 23.3 herbivore/500m^2 followed by Tawali Balabala with an average of 15.5 herbivore/500m^2 then Iabam SE with 15 herbivore/500m^2 and Iabam NW with 10.3 herbivore/500m^2. Population count for carnivore fishes in the sites outside no-take recorded lowest avarages for all 6 monitoring stations. The monitoring station on the SE of Pahilele recorded an average of 1.5 carnivore fish/500m^2 while Kiwakiwalina recorded an average of 0.7 carnivore fishes/500m^2 and Manikutu recorded an average of 0.5 carnivore/500m^2. Records for IUCN/Aesthetic species show that Tawali Balabala was recorded an average of 0.5 species/500m^2 while Manikutu and Kiwakiwalina both recorded an average of 0.33 individual/500m^2 and Iabam (SE) and Pahilele (SE) also recorded 0.16 individuals/500m^2 each. The only site to record nothing for this group was Iabam (NW) or OT.1

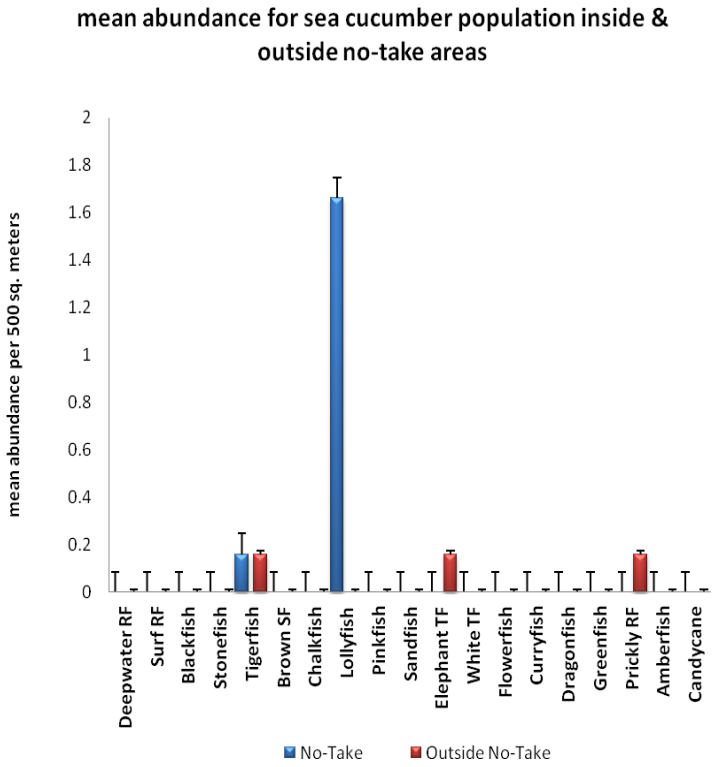
3.2.3. Mean abundances for target monitoring fishes inside & outside no-take areas combined



Data for both monitoring stations inside and outside no-take clearly indicate that all indicator species (herbivore, carnivore and IUCN/aesthetic species) showed higher abundance in the no-take areas than sites outside no-take. On average, herbivores recorded 20.1 fishes/500m^2; carnivore species recorded 5.1 fishes/500m^2 and IUCN/aesthetic species recorded 5.4 fishes/500m^2.

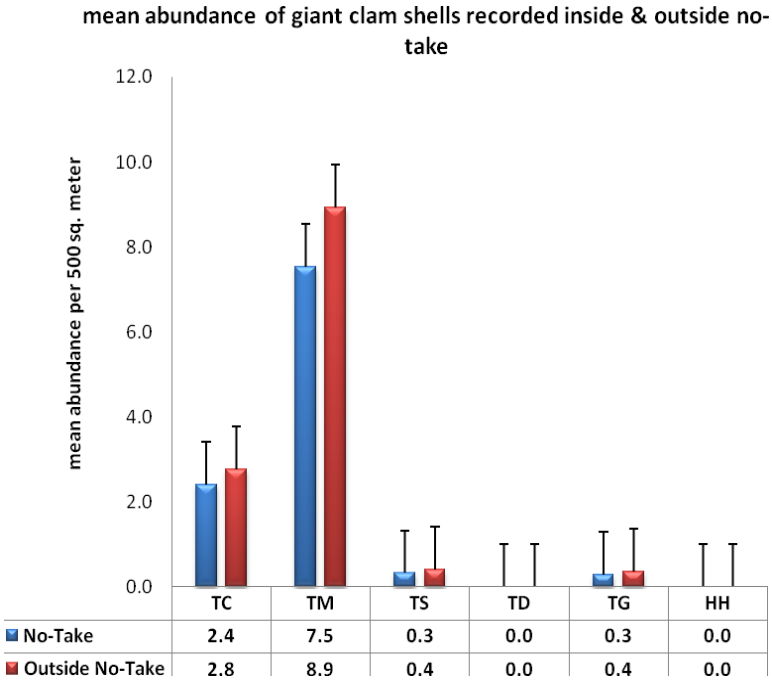
3.3 MARINE INVERTEBRATE

3.3.1. Sea cucumber



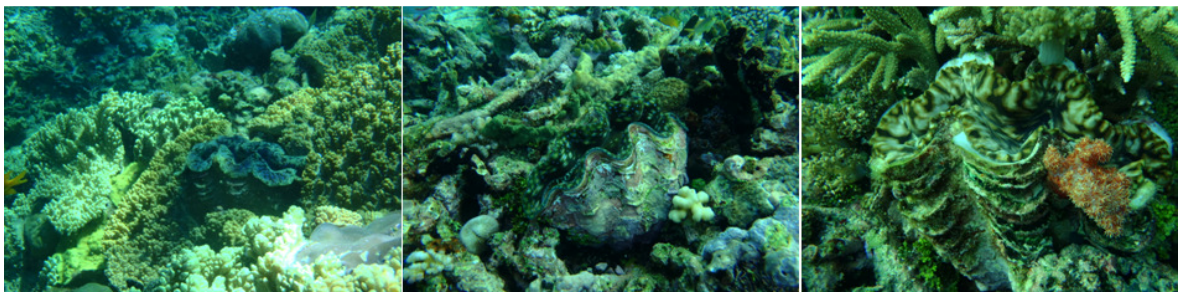
Monitoring of sea cucumber stock inside Iabam and Pahilele CMMA waters this July clearly show high abundance of lolly fish (*Holothuria atra*) with high mean abundance of 1.66 species/500m^2 for all 6 monitoring stations inside no-take areas. This record was seconded by Tigerfish (*Bohadschia argus*) with mean abundance of 0.16 species/500m^2 for both 6 sites inside and outside no-take monitoring stations. Other records for sea cucumber include mean avarage of 0.16 species/500m^2 for Elephant trunkfish (*H. atra*) and 0.16 species/500m^2 for Prickly redfish (*Thelenota ananas*) found in 6 monitoring stations outside no-take monitoring stations. Other species not mentioned werenot found in any of the monitoring stations.

3.3.2. Giant Clam

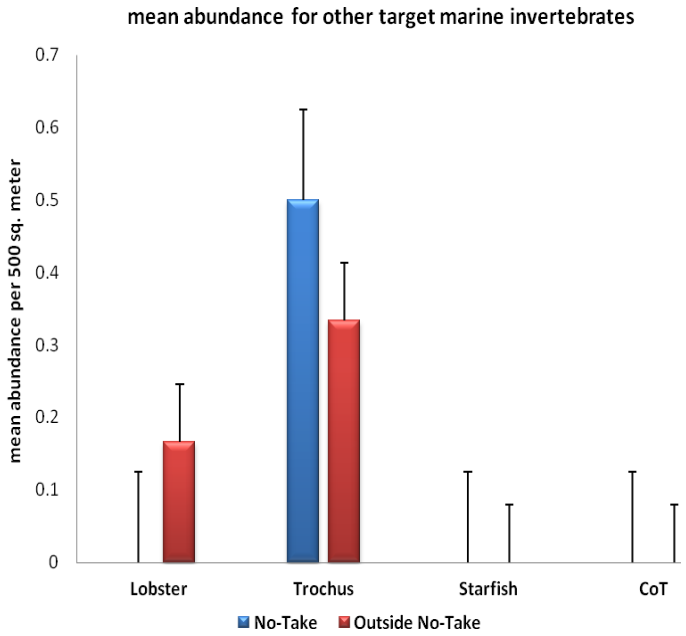


	TC	TM	TS	TD	TG	HH
No-Take	2.4	7.5	0.3	0.0	0.3	0.0
Outside No-Take	2.8	8.9	0.4	0.0	0.4	0.0

Monitoring data for giant clam for both monitoring stations inside and outside no-take areas in the graph above showed that the Maxima clam (TM) continued to show high mean abundance per monitoring stations for the 6 stations both inside and outside no-take with records of 7.5 TM/500m^2 inside no-take and 8.9TM/500m^2 outside no-take. Boring clam (TC) was the next species with average counts of 2.4 TC/500m^2 inside 6 monitoring stations and 2.8 TC/500m^2 for 6 stations outside no-take. Other clam species had low averages in terms of their abundance in 6 monitoring stations inside and outside no-take areas. The bear pow clam (HH) and southern giant clam (TD) were the only two species that was never recorded in any of the 12 monitoring stations for Iabam and Pahilele CMMA.



3.3.3. Other Marine sedentary resources (Lobster, trochus crown-of-thorn starfish)



In general, population counts for lobster, starfish and crown-of-thorn starfish in both sites inside and outside no-take was not present. Presence of lobster was recorded for sites outside no-take areas with avarage count of 0.17 species/500m^2 for all 6 stations outside no-take. Troch recorded a good average of 0.5 species/500m^2 for 6 monitoring stations inside no-take and 0.33 species/500m^2 for all monitoring stations located outside of the no-take areas.

4. DISCUSSION

4.1. Benthic substrate

Dead, abiotic substrate continue to be the main substrate for 5 monitoring stations (Luluwalagena, Dana Gedu, Siasialina, Hanakubakuba and Banibani Siga) while biotic substrate predominantly branched Acropora corals dominated Tawali Namonamo (NT.1). As it has always been recorded and reported in previous reports, the abiotic substrate comprise entirely of hard rock substratum and dead coral rubble for these sites. Such example is shown in the graph of 3.1.1 where site NT3. (Dana Gedu) showed high dominance of hard bedrock substrate which comprised 59% of the entire studied transact. Looking back at our previous monitoring results, these substrates will always be the same today and will continue to record in the coming monitoring. Having said that it is important to also highlight that there were a lot of new coral recruitment in many reefs we study. Recruitment of corals inside monitoring transacts and in many areas outside the transacts further illustrates this. Recruitment of Acropora, Montiopora and other coral species on shallow reef flat areas were evidence of recruitment. Moreover, the hard calcareous and rocky bedrock provided good foundation for new coral larvae settlement and as such the team observed good number of coral recruits during their monitoring.

Monitoring stations outside no-take areas was almost opposite in its biota and abiota. There was good coral cover in many sites like the sheltered reefs outside Iabam Island (OT.1) and Tawali Balabala (OT.4) which recorded significant live coral cover. The key reason for this lies with the locations by

which reefs are at. Many monitoring stations outside no-take have been located on the main island fringing reefs where these areas have often being sheltered from any harsh environmental actions therefore, will also have high coral species than those that are isolated and exposed to

Inconsistency in data recording by different monitors in different monitoring period is another as there is no designation of who is to be responsible for substrate which can ascertain standardization of data acquisition during each monitoring period.

Levels of anthropogenic materials were a little higher than those recorded in the previous monitoring period as a result of heavy torrential rain. Water clarity and underwater visibility was a reduced as a result of heavy flooding and sediment discharges especially for those mainland fringing reefs. Immediate impacts of these were very little as a result of continuous tides.

4.2. Reef Fish

4.2.1. Distributions herbivore, carnivore and Humphead Maori Wrasse.

As shown in the graphs for sections 3.2.1/3.2.2/3.2.3, population of herbivore fishes was higher than the other two monitoring fish groups. An average of 20.1 herbivore fishes was recorded for the 6 stations inside no-take areas and an average of 9.9 herbivore fishes recorded for 6 monitoring stations outside the no-take areas. The number of records for sites inside no-take showed a 3.4% increase when compared to the data gathered from March/April monitoring period. Records for this fish group decreased by 1.3% when compared to the data and results from the March/April monitoring period for 6 sites outside no-take. Population for reef carnivore fishes was lower for 6 stations inside and 6 stations outside the no-take areas. There was a further reduction of 4.2% of mean abundance for the records inside no-take take when we compare this result with that gathered in the March/April monitoring period. Sites outside no-take also showed a reduction of 5.7% in its mean abundance for the sites outside no-take as well. Mean abundance counts for IUCN/aesthetic species also showed a further decline of 12% for the sites inside no-take and 17.3% for sites outside no-take. The representation of Humhead Maori Wrasse not only observed in the monitoring transact but in many sites outside the transact indicated good representation of different cohort groups. Thus, there were sightings of large male adults, female sub adults and young sub adults on numerous occasions. The low record for displayed for these species per $500m^2$ transact does not mean that their population has been affected but this could only mean that they were not present or were not recorded inside the defined monitoring area during the time the survey was conducted. It will be interesting to see what the monitoring data for October monitoring period show in terms of mean abundance for all these target fish groups in the areas inside and outside no-take.

4.3. Sea Cucumber

Abundance of sea cucumber shows positive signs of recovery in many sites. Sizes for different cohorts indicate a high return of your juveniles and sub adults. Species such has lollyfish (*Holothuria atra*) continued to be the most dominant species on many reefs both inside and outside no-take. Other sea cucumber species like tigerfish (*Bohadschia argus*) and Prickly redfish (*H. ananas*) continued to show slight increase in their distribution and abundance as well. Brood stock size is still far from reach. More time is required for many species to reach their adult stage before they can be able to reproduce

4.4. Clam Shell

Population of giant clam observed in this survey showed very little very little variation and appeared to be the same those documented in previous monitoring. Observer error or data collecting error continued to be another common source. Misidentification between maxima clam (TM) and scaly clam (TS) continued to be a worry for inaccurate data collection.

4.5. Other invertebrates *(Lobster, trochus, crown-of-thorn starfish)*

Lobster
Data on lobster recorded in this monitoring was lower than that recorded in the last monitoring program. The only record for lobster was at Dana Gedu (NT.4) while other sites did not record any species. Lobster does move between habitats to feed and that could be the reason for their low numbers during this monitoring period.

Trochus
The abundance of trochus for all monitoring stations also showed low population and abundance counts for many sites inside and outside no-take. The low population of trochus in their usual habitats is an indication of high harvest rates by local communities for their cash value.

Crown-of-thorn (CoT) starfish.
This monitoring did not record any crown-of-thorn starfish in any of the monitoring stations. Their absences do not mean they are not around. It could mean that they have moved to new areas outside of the monitoring transact and/or they may be resting under thick coral thickets that there were not observed. Having said that there was evidence of feeding scars left on some coral reefs that indicate their predation on healthy corals both monitoring stations inside and outside no-take.

5. CONCLUSION

There is not much distinction or stand out feature of this monitoring compared to the last two monitoring programs. Everything appeared to be the same. The only obstacle faced in this monitoring period was rain and cold water condition which did affected a lot of monitors during their monitoring.

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