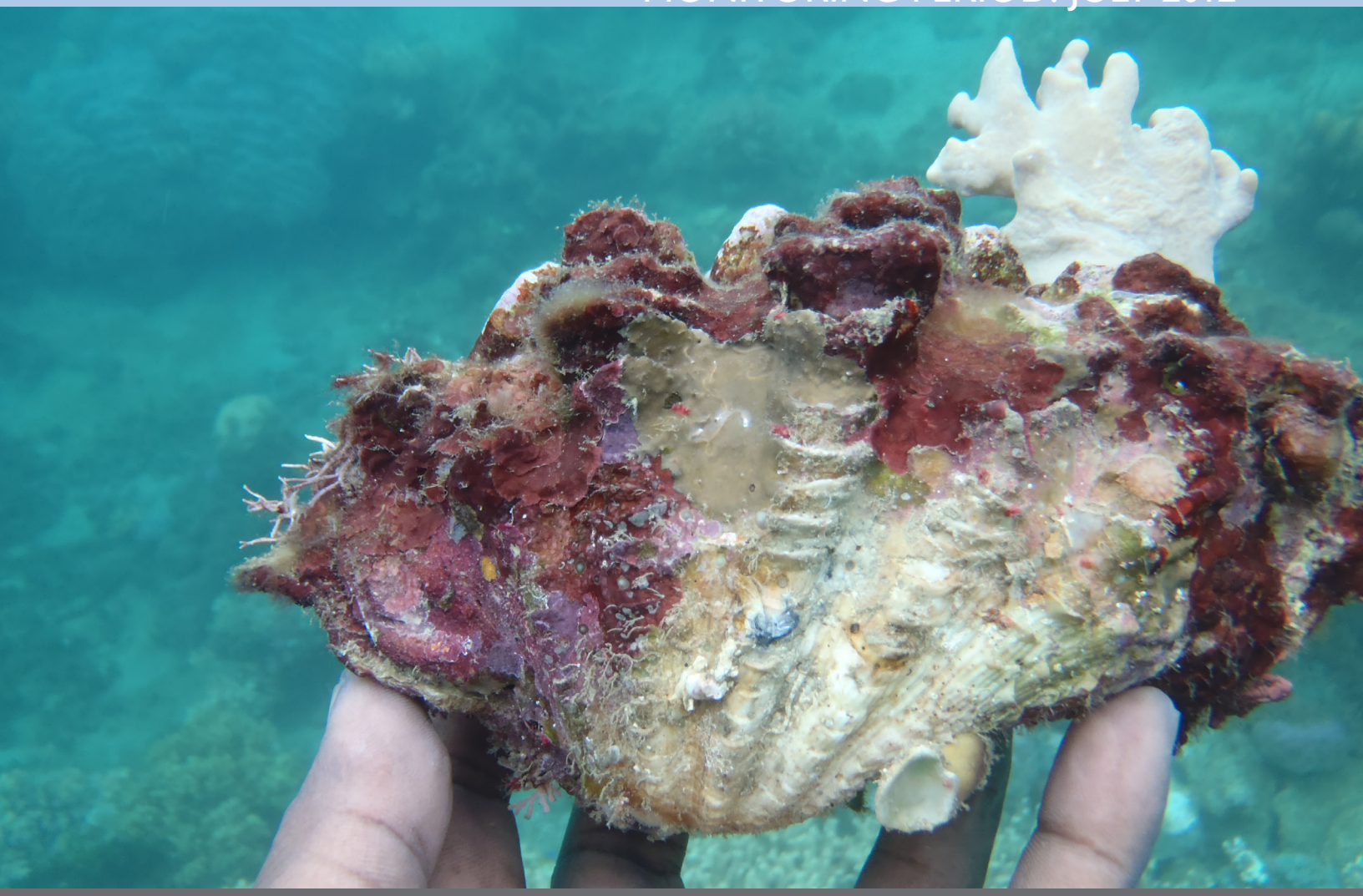
CORAL TRIANGLE INITIATIVE
ON CORAL REEFS, FISHERIES AND FOOD SECURITY

PAPUA NEW GUINEA

NUAKATA COMMUNITY BASED RESOURCE MONITORING PROGRAM SURVEY REPORT #: 7

MONITORING PERIOD: JULY 2012



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Nuakata Community Based Resource Monitoring Program Survey Report #: 7 Monitoring Period: July 2012

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NUAKATA COMMUNITY BASED RESOURCE MONITORING PROGRAM

SURVEY REPORT #: 7
MONITORING PERIOD: JULY 2012

MONITORING REPORT WRITTEN BY
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WELCOME READERS

I warmly welcome you all to this 7th monitoring report for Nuakata resource monitoring program. In this report our local data officers have analyzed the 7th monitoring data and have presented the findings to give you an update on our marine resources. Managing our resources is a hard task but I would like to thank the sincere effort put in by Conservation International through the support funding from USAID Coral Triangle Initiative and Coral Triangle Support Partnership for making this easy for us to be able to do what we have been doing for the last one and a half years.

I would like to take this time to thank all the local participants who have participated during this monitoring for your tireless efforts. I know it was though given that the South East Trade Winds was in our face throughout the monitoring period but your commitment has made it possible for this to happen.

I also acknowledge and thank those clans and sub clans whose reefs have been placed as management areas or no-take for 5 years and to those who have also allowed their reefs to have our community monitoring stations placed on. Your understand in the course of work we are doing is very much appreciated and I would like to also inform you all that the benefits in terms of resource recovery and sustainability will be for our community benefit and I commend you for your understanding.

Lastly, I would like to take this opportunity to thank our local data officer for your time and effort in putting this together and making it an informative report for our people to know and understand the status of our marine resources as we continue to manage for the collective benefit for the people of Nuakata Island.

About this report

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

All monitoring data and information gathered during field monitoring has been put together by our two local data specialists and have done a tremendous job in producing this July monitoring report for our community to read and be aware 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. Addition of new monitoring members to the team was a positive indication of high enthusiasm derived by youths in supporting old personnel who has been involved in the last 5 monitoring programs.

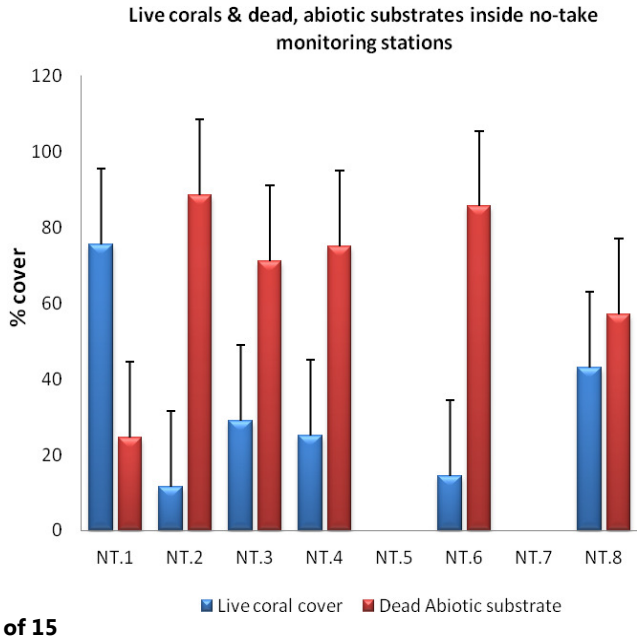
2.2. Data analysis

Analysis of all data in this monitoring is the same as those done in the previous monitoring surveys and data analysis. Same methods and procedures were again followed here to provide the results displayed in this report.

3. RESULTS

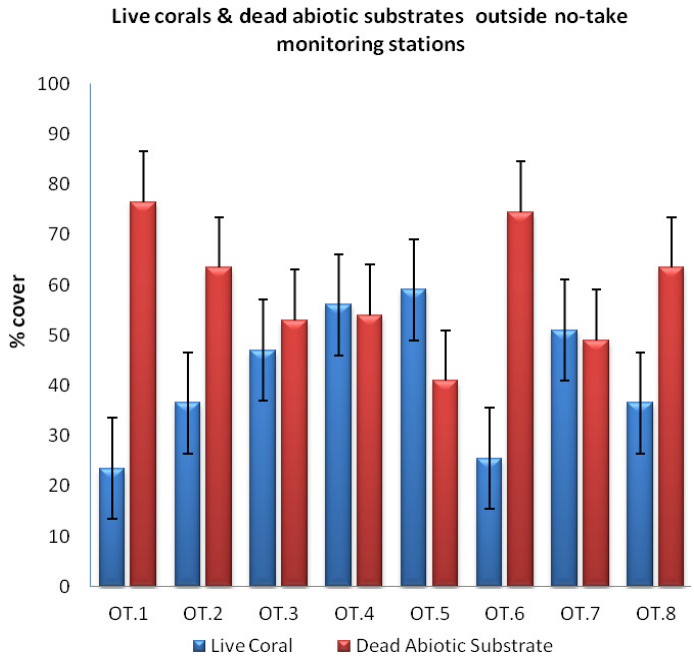
I. SITES INSIDE NO-TAKE

3.1. Benthic substrate for reefs inside no-take



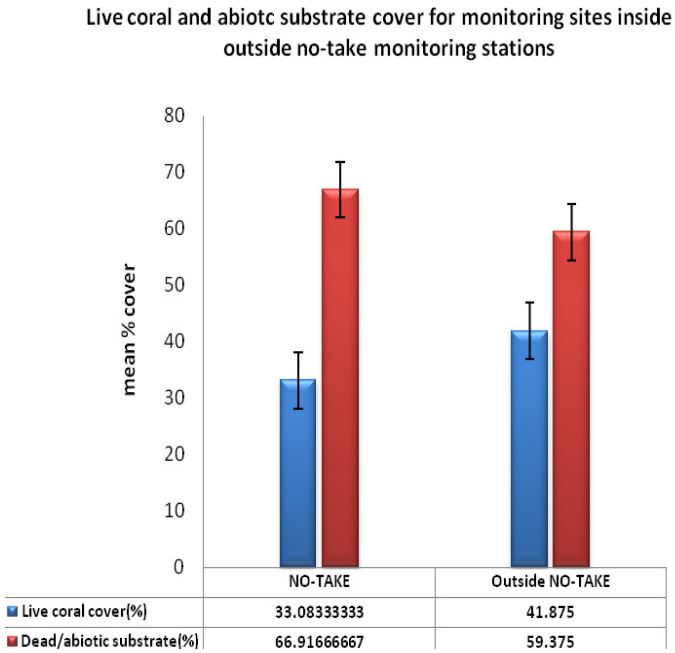
Results for July monitoring displayed in the graph indicate a low live coral cover for many sites inside no-take areas. The only site that recorded high coral cover was at Hibwa (NT.1), with 75.5% live corals. The primary composition of this percentage results from high abundance of sub massive corals (28%). All other monitoring stations had high dominance of abiotic substrate where Batutuli recorded the highest percentage cover of 88.5% which dead corals and rubbles comprised 45.5% followed by areas of sand 22.5% and dead corals (still attached) making up another 16. 5%. Benthic substrates at NT.5 and NT.7 were not assessed as a result of the bad weather conditions making it very difficult for local monitors.

II. SITES OUTSIDE NO-TAKE



The studies transacts for outside no-take showed that only 3 sites (OT.4, OT.5 and OT.7) had coral cover percentage what was over 50%. All other monitoring stations had low coral cover percentage. Thus, the least being recorded at OT.1 with a low cover of 23.5%. On the other hand, highest abiotic substrate was recorded at OT.1 (76.5%) and OT.6 (74.5%).

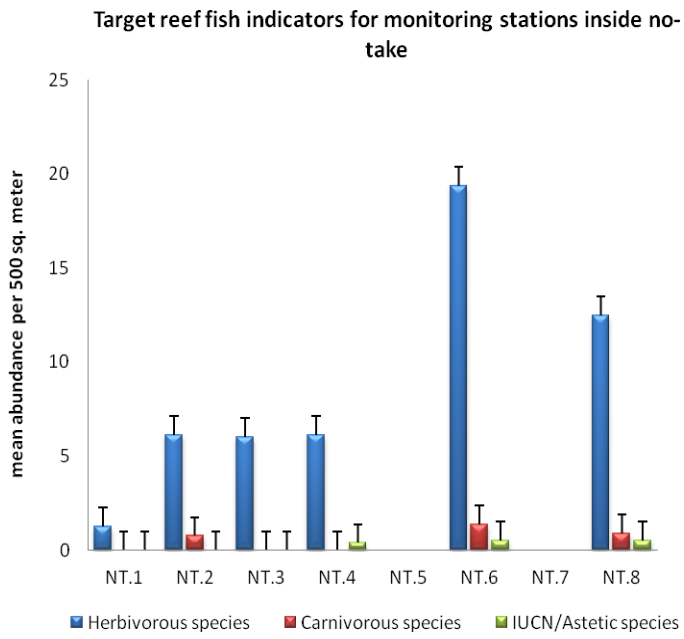
III. LIVE CORAL COVER (%) FOR SITES INSIDE & OUTSIDE NO-TAKE



When we compare the averages fo live coral cover for all 8 monitoring stations inside and outside no-take areas we can clearly see that live coral cover continued to be lower that dead, abiotic substrates. Mean live coral cover for reefs inside no-take was 33.1% while the mean cover for sites outside no-take was 41.9%. The main attributes to these characteristics have been explained in the previous monitoring reports and will also be highlighted in this report again.

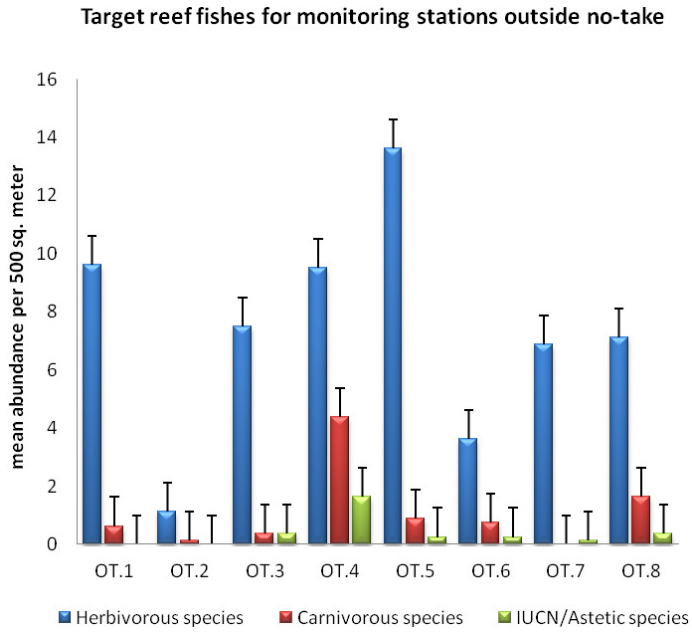
3.2. TARGET REEF FISH INDICATORS

3.2.1. Target reef fish indicators inside no-take



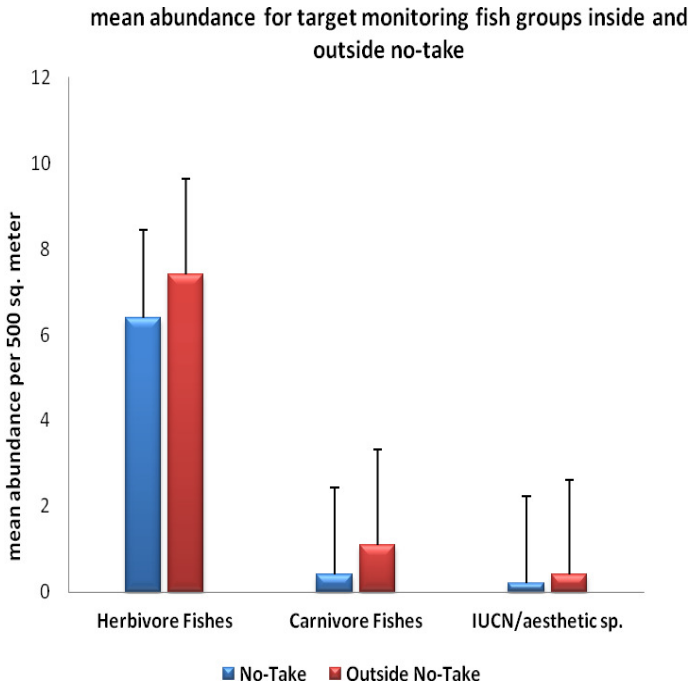
The population of herbivore continued to be higher than those from carnivore and IUCN/aesthetic groups. Abundance was somewhat lower that previous monitoring reports where high individual counts for herbivores were recorded in some specific sites. In this monitoring period, where the overall average was 8.6 herbivore/500m^2 and the highest average was recorded to be 19.6 herbivore/500m^2 and this was seen at Gallows (south) or (NT.6). Site with the second high number of herbivore fishes was at the north-eastern end of Grace Island, recorded an average abundance of 12.5 herbivore/500m^2. Population of carnivore fishes was the lowest in this monitoring period for all sites recorded inside no-take stations. Hence, the highest average per 500m^2 transact was 1.4 carnivore/500m^2 and was also recorded at the south east monitoring station at Gallows. All other stations had very low abundance. Mean abundance for IUCN/aesthetic species also showed a similar result with its highest mean at 0.5 species/500m^2 and recorded at Gallows (SE) and Grace Islands (NW) respectively.

3.2.2. Target reef fish indicators in reefs outside no-take



Population for reef herbivore fishes continued to show low mean abundance than those that were recorded inside no-take areas. On average, 7.4 herbivore/500m^2 was the record for all 8 monitoring stations outside no-take. Individual species average for this group further showed low figures with low average of 13.6 herbivore/500m^2 recorded at Tawali Gadohoa (OT.5). Mean abundance counts for carnivore fishes were also very low. An average of 1.1 carnivore/500m^2 for all 6 monitoring stations demonstrates low counts during the time this assessment was conducted. Illabo (OT.4) was the only site with an average of 4.4 carnivore/500m^2 while other 7 monitoring stations had very low averages. The monitoring station at Illabo (OT.4) again recorded a high average for IUCN/aesthetic species with an average of 1.6 species/500m^2. Thus, the overall average for all 8 monitoring stations was 0.4 species/m^2.

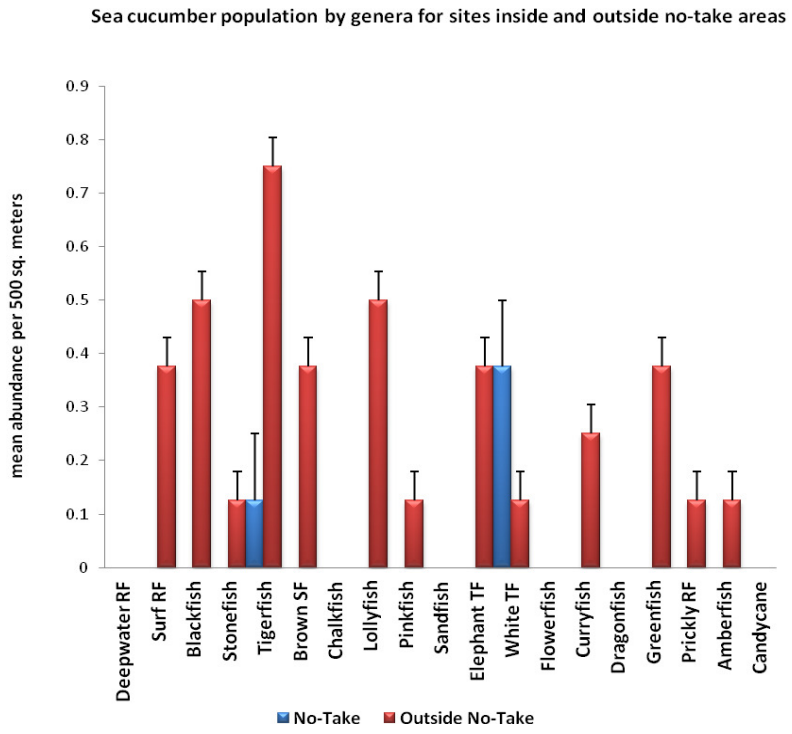
3.2.3. Mean abundance for target monitoring fishes inside and outside no-take areas.



Population numbers or mean abundance for herbivore fishes both inside and outside no-take were poorly represented. As shown in the graph above, mean abundance for those recorded inside no-take was 6.4 herbivore/500m^2 while sites outside no-take recorded a slightly higher average of 7.4 herbivore/500m^2 for 8 monitoring stations inside and 8 monitoring stations inside and 8 monitoring stations outside no-take areas. The same pattern was displayed for carnivore fishes. A very low average of 0.4 species was recorded inside no-take and 1.1 species was recorded outside no-take areas. The same pattern was again displayed by IUCN/aesthetic species.

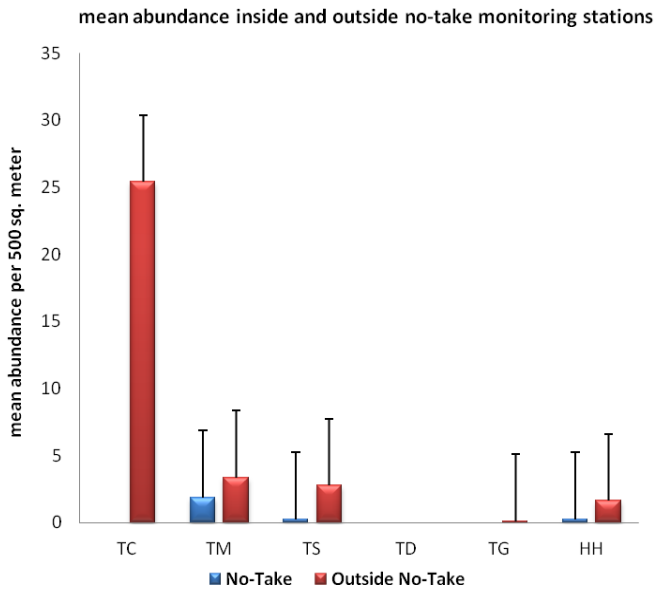
3.3. MARINE INVERTEBRATES

3.3.1. Sea cucumber population in no-take sites and outside no-take areas.



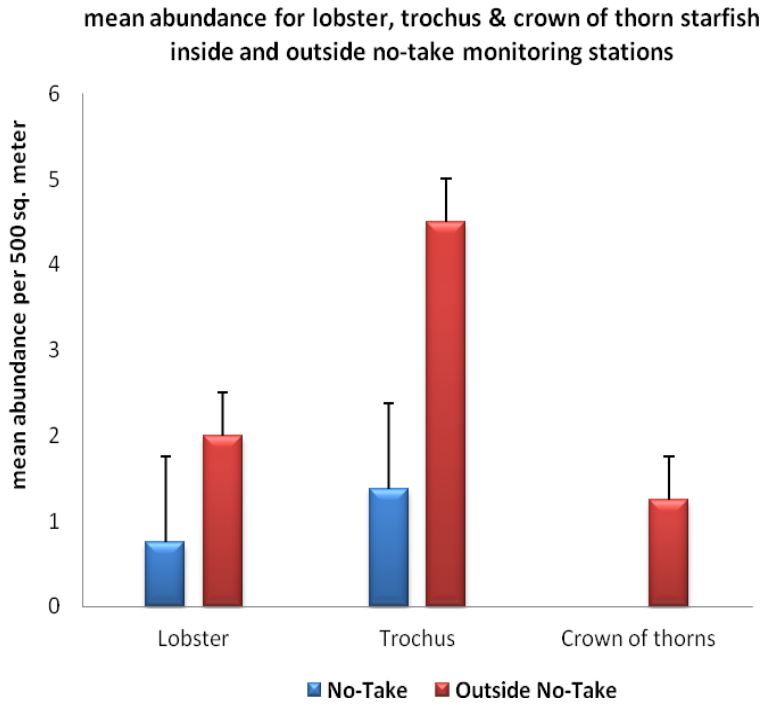
Data from sea cucumber presented in the graph above clearly showed some significance in the number of sea cucumber recorded in the study sites inside and outside no-take areas. Average population counts for species inside all 8 no-take monitoring stations indicate good averages of white teatfish (0.375 ind/500m^2 for 8 no-take stations) and tigerfish recording an average of 0.125 ind/500m^2 for the other 8 monitoring stations outside no-take areas). All other monitoring stations inside no-take areas did not record any species of sea cucumber. Monitoring stations outside no-take showed a very opposite result. The highest mean species abundance was recorded for Tigerfish with an average of 0.75 ind/500m^2 for 8 monitoring stations. This was followed closely by other species such as Blackfish (0.5 ind/500m^2); lollyfish (0.5 ind/500m^2), Greenfish (0.375 ind/500m^2); Elephant trunkfish (0.375 ind/500m^2); Brown sandfish (0.375 ind/500m^2) While other species like white teatfish and Prickly redfish having very low average of 0.125 ind/500m^2) for all 8 monitoring stations outside no-take.

3.3.2. Distribution of giant clam inside no-take and outside no-take areas



There was not much clam species recorded for the sites inside no-take. Thus, the only records were from the maxima clam (TM) with an average of 1.88 TM/500m^2; scaly clam (TS) having a record of 0.25 TS/500m^2 and the bear paw clam (HH) with an average of 0.25 HH/500m^2 for all 8 monitoring stations inside no-take. Distribution and abundance for the same species in areas outside no-take was a lot different. The boring clam recorded a high mean abundance of 25.5 TC/500m^2 while the maxima clam recorded mean of 3.38 TM/500m^2 and the bear paw clam (HH) recording a mean of 1.63 HH/500m^2 for all 8 monitoring stations outside the no-take zone.

3.3.3. Other marine invertebrates (lobster, trochus and crown-of-thorns)



Lobster, trochus and crown of thorn starfish

Lobster

Data for lobster showed that there was an average of 0.75 lobster recorded within the entire 500m^2 sampling area for all 8 monitoring stations inside no-take. This average was lower than the average recorded for sites outside no-take. Thus, an average of 2 lobsters per 500m^2 study area was the record for all 8 stations outside no-take.

Trochus

Data gathered for lobster this monitoring period showed low abundance for sites inside no-take and a slightly higher mean abundance for sites outside no-take. A mean of 4.5 trochus/500m^2 for 8 monitoring stations has come about as a result of 15 individual records from (OT 4) and 12 individuals from OT.8 which raised the average to a higher average

Crown-of-thorn starfish (CoT)

There were no sightings or record for crown of thorn in any of the 8 monitoring stations inside no-take areas. The only recorded was from stations outside no-take with an average abundance of 1.25 CoT/500m^2 for the 8 stations.

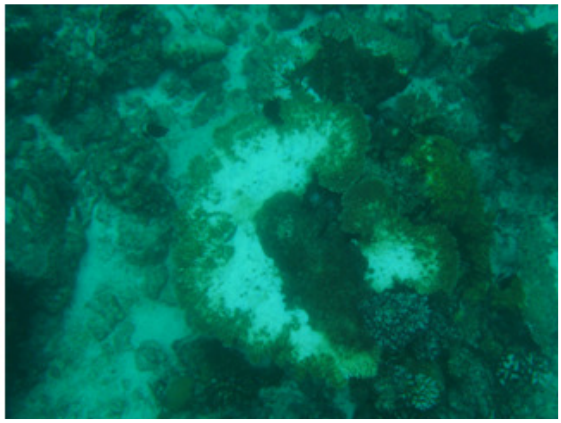
4. DISCUSSION

4.1. Benthic substrate

The southeast trade winds have been unkind during this time of monitoring and as such, it could have contributed to inaccurate data collection by the monitoring team. Thus, swells driven by winds as well as tides and currents are hereby identified as key encounters during the monitoring period.

The results for the benthic substrates illustrated and described in the respective graphs in sections (3.1) show no difference to those that have been previously described in the past monitoring reports. The explanations for why live coral cover has always been high on the fringing reefs or those small patch reefs and those on the immediate fringing the island of Nuakata has also been described over and over in the previous reports which is the same here.

One notable feature seen on many reefs in the monitoring stations as well as on many reefs was evidence of coral bleaching. The amount of bleaching on staghorn corals was similar to that recorded in December 2010 monitoring period. There may be many environmental factors that could have contributed to what we observed. Some of these bleached corals showed further signs of black band disease around coral heads. Many of these coral diseases cannot be fully understood at this stage because our community monitoring program is community is simple and cannot capture data and information on such.



4.2. Reef Fish

A big fluctuation to fish abundance in this July monitoring period. The number of herbivore and carnivore fishes were recorded highest in December 2011 then declined in the April monitoring and in this monitoring, the data further declined. As showed in the respective fish graphs for fishes inside no-take and outside no-take; there was very low mean abundance counts recorded for herbivore and carnivore fishes both inside and outside no-take. Proper explanations to these patterns cannot be provided now as it shall require further investigations to determine the cause of this. We can only speculate that the main reason for these fluctuations may be attributed to seasonal variation by species between different climate and environmental conditions. Thus, it could be a result of the strong SE Trade Winds having impacts on the environment and habitats for different target species. Two main factors that could have influenced the kind of pattern we have seen include different timing in times of the day where data is recorded for fish and other target species and tidal influences which determines food sources for fish and other marine organisms.

4.3. Sea Cucumber

Population numbers for sea cucumber fluctuates and varies with seasons. Reasons for these variation in abundance and occurrence can only be determined by specific studies with these objectives. Having said this, it is consistent to see that certain sea cucumber species are recovering faster than others. For instance, Lollyfish (*H. atra*), Tigerfish (*Bohadschia argus*) Brown sandfish (*Bohadschia vitiensis)* and Stonefish (*Actinopygra lecanora*) appeared to be consistent in their presence in many reefs both that have monitoring stations as well as those without monitoring stations. Occurrence of other sea cucumber has been inconsistent which their movements in the water column can be used as the explanation for these. Species also varied between different sites. Some species have been abundant in some and absent in others. Habitat conditions can be a key explanation for these but will need a more focused study to establish this information.

4.4. Clam Shell

Monitoring data for clam shells inside and outside no-take areas appeared to be the same with very similar averages, and in monitoring sites inside and outside no-take areas. TC and TM have always been common followed by HH and TS, while TG and TD has always been the two species that not been equally represented. Evidence from shell from many parts of Nuakata and Iabam-Pahilele Islands clearly showed the high levels of over harvesting that has taken place over years. There has also been numerous counts and sightings of new clam settlement on many reefs which this monitoring has not taken account of as they were found outside of the monitoring transacts for sites inside and outside no-take.

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

The population of other invertebrates was significantly lower than those recorded in the previous monitoring program. As shown in the graphs of section 3.3.3 many of the marine invertebrate population showed low abundance in many of the monitoring stations inside no-take. Sites outside no-take was also low however, there were some remarkable features including high averages for trochus in the sites outside no-take. An average of 4.5 trochus/5002 for all stations outside no-take indicate a positive sign of recovery. The average shown above may not be a representation of what was demonstrated in all transacts.

5. SUMMARY & CONCLUSION

Marine resources of Nuakata Island continue to be the same as those reported in the past monitoring reports. There is no major change in the number of animals recorded. Slight variation in individual data exist but is not significant to warrant any major changes in the overall composition of data for monitoring stations inside and outside no-take.

5. REFERENCE

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