

Coral reefs in the CNMI are threatened by land based sources of pollution. Nonpoint source pollution is a leading cause of coral reef degradation in the CNMI. Water quality is impacted by urban runoff, failing sewage systems, unpaved roads, farms, land clearing, and development. Stormwater that drains to the ocean carries sediment and excess nutrients, which smother coral and cause algal blooms, impacting reef health, like the Great Barrier Reef, which has been experiencing for decades a deterioration in their ecosystem due to land based pollution.

In recent years more than half of Saipan's shoreline has been marked "red flag" or unsafe to swim in on a chronic basis. Each of the sites has measured high in the bacteria level more often. As a 2019 DCRM Coral Reef Initiative Intern, I conducted field studies with the Water Quality Monitoring and Nonpoint Source Pollution Team. We would go out with sample bottles and collect water samples from sites around the island and Managah that would be brought to the DEQ Laboratory to be tested. The results are able to inform the public whether the location sampled is red (not safe to swim) or green flag (safe to swim). In addition, I had the opportunity to do a stream assessment at Douglas stream located in Tanapag where we collected data on the stream conditions such as the embeddedness of the rocks, the flora and fauna, and if any contaminants and pollutants were present.

Initiatives like the Garapan Clean Water Campaign encourages businesses and the community to prevent land based pollution

from reaching the lagoon. I assisted in getting up to 13 businesses to participate in an Ocean Friendly Property Pledge, which is both a resource guide and good way for businesses to advertise their best practices. I helped to

raise awareness within the community about the issues in the environment I conducted door to door outreach with Micronesia Islands Nature Alliance looking for common environmental violations in the area. I

also had the opportunity to be involved in the Garapan Storm Drain clean up where I tracked the amount of sediment they collected during the clean out. They removed a total of 20-30 cubic yards of sediment.

To expand on these initiatives, I also placed eco cards next to ocean friendly products at all the major stores on the island in an effort to promote ocean friendly practices. Another highlight of this internship was the opportunity to travel to Tinian to help people of the island understand how important their watershed is and ways they can help protect it. Through all the work experience, I have gained so much knowledge on how much we have an impact on our environment, how storm water pollution affects our nearshore waters and coral reef.

It has shown me that the issue must be prevented and has inspired me to help others to do the same. The skills I have learned and will take with me after the internship is to take the initiative on protecting our environment by preventing these land based pollution from entering our ocean. My time as an intern for DCRM and DEQ has been a great adventure and I don't regret a minute of it.

Frederieke J. Kroon, Peter Britta, Schaffelke, Stuart Whitten (2016) Towards protecting the Great Barrier Reef from Land Based Pollution Global Change Biology (Volume 22, Issue 6) [accessed August 15, 2019] <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.13262>

## Our Ocean, Our Future

**Neildino Taisacan**

Mentors: Jihan Younis & Larry Maurin



## PROTECTING OUR REEFS

**Anela Duenas**

Mentors: Dave Benavente, Denise Perez, John Iguel, and Ton Tenorio



Coral reefs provide many benefits for the community including food, shoreline protection, and tourism. Protecting our marine life in the CNMI is essential for present and future generations. The CNMI Marine Monitoring Team (CNMI MMT) are our doctors of the reef. They collect data yearly on 52 long term monitoring sites across Saipan, Tinian, and Rota. These sites were selected based on association with management concerns such as runoff, sewage outfall, and urban development. They were also

selected based on management actions such as watershed restoration efforts and marine protected areas (MPA). This is to determine the current status and changes the reef has throughout the years. Without this information, immediate action cannot be taken to prevent damages to our reef.

CNMI MMT follows a procedure that requires scuba divers to gather data at a depth of 25 meters. They collect data by taking photos each meter along five transect lines per site. The transect lines

used are 50-meter ropes with markings used to indicate every meter. These photos are then taken back to the office and transferred into a Coral Point Count with Excel extensions (CPCe) system. 150 photos are uploaded per site. Each photo contains five random points placed by the CPCe and are identified by CNMI MMT biologists. They identify the genus of coral, algae, sponges, and invertebrate. Having randomized points allows the data to be accurate. After completing a site on CPCe the data is

transferred into the database with data from previous years along with data from different sites.

The data allows the CNMI MMT to observe changes in the coral reef and take proper action needed to protect and conserve it. This is done through marine protected areas (MPA) and restoration projects. The action taken is essential to allow our coral reef a healthy growing environment. Without these protection efforts we risk decreasing our food, shoreline protection, and tourism.

