

# **A Review of Socioeconomic Work in the Commonwealth of the Northern Mariana Islands**

**by**

**Micronesia Islands Nature Alliance**

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## **Background**

This review takes a look at nine specific SEM-related reports that are based on surveys and information gathered in the CNMI that are related to natural resource management between 2009 and 2017. The purpose of this review is to identify what gaps, if any, exist that need to be completed in order for the CNMI to finalize its socioeconomic monitoring plan.

An over-arching theme of the reports is that more work needs to be done and a plan put in place that will protect coastal marine and terrestrial resources in the CNMI. The other theme prevalent in these reports is that public awareness, outreach and education, plus involvement from the appropriate government agencies, need to be improved across all disciplines to protect these resources.

### **1. *Commonwealth of the Northern Mariana Islands as a Fishing Community* November, 2012**

Written by Steward D. Allen, Pacific Islands Fisheries Science Center, and Judith R. Amesbury, Micronesian Archeological Research Services. Project developed by Pacific Islands Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

The introduction to the subject matter and historical context in which the discussion takes place covers about thirty of the initial pages of the report, and covers the time period beginning with prehistoric times leading up to 1979, post-World War II and the beginnings of the Commonwealth of the Northern Mariana Islands in political union with the United States.

The next section of this report discusses the economic boom beginning in 1980 with the advent of tourism, mainly from Japan, the arrival, and eventual demise of the garment industry, which leads up to the current status of this report in 2012. The historical events are accompanied by charts and information detailing the types and total weight of fish caught, plus anecdotal evidence of the “good times and the bad,” as described by individuals who lived through the recent rises and falls of fisheries and the CNMI economy as a whole since post-WWII.

The report moves at about mid-point into the importance of fishing in the CNMI, citing various statistics such as those gathered from a survey conducted in 2005 (Van Beukering et al., 2006). Given the changes in the overall CNMI economy over the years since this data was collected, and the fact that the majority of sources cited in the report and used to quote on the health of the fishing industry in the CNMI are dated more than ten years ago, the relevance of these outdated surveys at this time is doubtful. A recommendation would be to revisit this same series of questions in 2017 and make a comparison to previous years when it comes to formulating an SEM Monitoring Plan.

The authors conclude that “The social and cultural ties to fishing remain strong for both the indigenous peoples of the CNMI and immigrants, thus so is the need to fish on a sustainable basis.” While this assertion may be true in the CNMI, it will be important to gather current data that will substantiate this claim as it applies to all three islands of Saipan, Tinian and Rota.

## **2. Campaign Impact Report – Kodep Ogumoro-Uludong September 2012-September 2014**

Mañagaha lies within a high quality coastal lagoon marine ecosystem that contains a rich diversity of coral and fish species. Mañagaha Island and its surrounding waters are an important part of the CNMI's natural history, cultural history, and beauty. The area also is an ideal recreation destination that generates significant direct and indirect revenue for the CNMI.

The Managaha Pride Campaign began in July, 2012 with training on Rare's Theory of Change as a way to incorporate strategies to implement a social marketing campaign to bring about behavior change amongst a target audience to achieve a specific conservation result. In order to reduce the threat of poaching and maintain overall fish biomass and parrotfish biomass at the Managaha Marine Conservation Area (MMCA), the Managaha Pride Campaign used social marketing to:

- 1) increase the reporting of violations;
  - 2) increase the conversation and knowledge among community members about the historical, cultural economic, and biological significance of the MMCA
  - 3) increase the support for the prohibition of fishing.
- The focus group was fishermen, tourism industry workers and local residents of Saipan, with the messaging aimed at the entire user audience with the idea that these would trickle down and reach the targeted subset of marginalized fishermen.

Through the development of specific social marketing strategies, the campaign was able to craft messaging to select audiences in the community that included leaders, fishermen, government personnel and students, in order to begin a real conversation about the importance of one of the CNMI's most visited recreational locations. Additionally, specific objectives were developed with the aim of reducing or eliminating the poaching threat at the conservation area. Amongst these were the assistance with additional demarcation buoys and the establishment of a community monitoring team conducting surveillance activities on and around the island. The campaign also worked to gain a foothold into a nearby fishing community so that conversations could amongst them and the wider Managaha user audience about the importance of adhering to the rules and regulations of the MMCA.

As the campaign progressed, more and more focus was placed on social marketing activities to address the large target audience. There were still large segments of the local population that did not have the knowledge of the rules and regulations of the MPA. The materials developed took this into account.

With the overall challenges and barriers to the campaign, the initial strategies developed were sufficient. However, this campaign would have progressed more smoothly had there been initial buy-in from the local agency partner – CNMI Division of Fish & Wildlife (DFW). Collaboration should have started during application process so that there would have been an agency contact to help guide and inform campaign. DFW would gain a sense of being a part of the entire process, and subsequently come on board to support MINA's campaign strategies. The existing climate was not conducive, and was an ongoing challenge throughout campaign.

### **3. *Coastal Use and Management at Laolao Bay* as compiled by Brooke Nevitt, MINA. 2014.**

A follow-up SEM-Pasifika study undertaken in 2009 of resource users at Laolao Bay, Saipan, Commonwealth of the Northern Mariana Islands, September 29 to November 10, 2014. This study was undertaken by MINA in partnership with

#### **Why Laolao Bay:**

The Laolao Bay watershed drains into a bay containing a coral reef and contains steep up-land areas which experience severe erosion. The watersheds that drain to Laolao Bay contain the villages of Kagman, Dandan, and a small community within Laolao. Many of the homes in these villages are not connected to a public sewer system and use onsite sewage disposal systems. The roadway is held by both public and private landowners. Heavy rainfall causes rutting in the roadway and erosion of the upland soil.

Laolao Bay is also one of the most popular dive sites on Saipan, and is one of Saipan's most valuable—and visited—natural resources is its rich biodiversity. More than 100 coral species are found in the bay, several of which are found only in the Mariana Islands. Its creatures include sea snails, starfish, urchin, sponges, and numerous fish species. Laolao Bay is also a sea cucumber sanctuary, as well as a nesting ground for the endangered green sea turtle.

This survey was a follow-up to the initial 2009 baseline assessment to document users' current activities at Laolao Bay, and to monitor change and identify existing resource uses, threats and knowledge of damaging activities and their perception of the health of Laolao's resources.

A survey was planned to perform a follow up socioeconomic assessment to the 2009 baseline survey conducted in Laolao Bay, with the following objectives:

1. Conduct follow up assessment in order to monitor change
2. Identify recreational users for natural resources
3. Identify perceived threats and changes to natural resources
4. Identify perceived frequency of damaging activities
5. Explore perceived effectiveness of existing management
6. Provide baseline assessment of Micronesia Challenge indicators

#### **Indicators used in study**

Based on the study objectives, the following indicators, as in the baseline assessment, were selected from the SEM-Pasifika Guidelines:

1. Number and profile of visitors
2. Age
3. Sex/gender
4. Education/Literacy
5. Ethnicity/clan
6. Language
7. Occupation
8. Perceived resource conditions
9. Perceived threats to coastal and marine resources
10. Perceived coastal management problems
11. Community awareness of the Micronesia Challenge
12. Community support for Micronesia Challenge

### **Key findings of intercept survey**

A total of 158 people were surveyed, and data showed that respondents' residences were similar to the 2009 SEM-P survey results.

A review of activities as compared to the 2009 survey results showed the following: picnic increased by 6%; swimming/snorkeling decreased by 6%; fishing decreased by 1%; diving increased by 3%; walking/hiking increased by 2%; camping decreased by 10%; beach cleanup decreased by 11%; hunting decreased by 7%; collected herbal medicine decreased by 12%.

When asked about threats to Laolao Bay, responses showed increased percentages in most categories as compared to the 2009 survey with 74.4% responding that they thought that there are threats to Laolao Bay. As in the 2009 survey, erosion and runoff was listed as the biggest threat.

Perceived health of coastal and marine resources.

Since the last survey in 2009, few respondents perceived any of Laolao's resources to be *very unhealthy*, with the highest ranked in this category – coral – receiving this rating by 9.8% of respondents. More than half of respondents perceived all of Laolao's resources to be either *very healthy* or *somewhat healthy*. The resource receiving the highest response rates for *very healthy* was Laolao's forest/grasslands. The top three resources receiving combined responses of *very healthy/somewhat healthy*, and thus being perceived the healthiest, were: forest/grasslands, fish, and water quality. Changes noticed at Laolao over the past four years.

The top three most noticeable changes at Laolao were more garbage cans, barriers to prevent beach driving, and improved parking areas. All of these changes have shown positive results in the healthy coastline areas and prevention of litter and sediments from running into the ocean. Despite changes noticed over the past several years at Laolao, an overwhelming 93% of respondents still would like more changes or improvements to Laolao Bay

Perceived reasons for trash dumping and littering

Just as in 2009, the top two reasons perceived by respondents as strong reasons for dumping and littering at Laolao were because people "do not care" and "are lazy." The decrease in response rates for those who "don't know it is illegal" and those that "don't know it can harm the environment" can be an indication that more people are aware of the CNMI's anti-littering laws as well as the impact of trash on the environment. This may be attributed to the efforts of the Our Laolao campaign, which targeted users with anti-littering messages informed by the 2009 survey. Additionally, MINA's Tasi Watch Community Rangers performed focused outreach efforts in and around the site, educating users about the important of keeping Laolao "litter free on land and sea."

Some activities such as scuba diving and fishing have remained mostly the same but the activity seeing the largest drop between 2009 and 2014 was driving on the beach. This can be attributed to the placement of the large concrete beach barriers preventing beach access, which in turn has resulted in a healthier coastline, which has had a positive influence on the health of the subject

area. What the survey perhaps failed to address was the perceived threats to respondents' livelihoods or enjoyment of natural resources at Laolao Bay if they're not protected.

#### Perception of resource management and suggestions

The area cited highest for not being managed effectively was *road maintenance*. This corresponds to *paved road* being the most desired change at Laolao, but a lack of planning for proper drainage may cause more damage from non point-source pollution. *Beach use* ranked as the most effectively managed area by respondents; this likely corresponds to the increase in barriers preventing beach driving. Ranking second as the most effectively managed area at Laolao was forest/grassland management. This could partly be due to the fact that most activity at the site takes place at the beach/coastal areas, with little activity upland. There have also been a number of tree-planting events along the coast, possibly contributing to the perception of management of this area.

#### Conclusion

There were no major departures from the initial assessment conducted at Laolao Bay in 2009 and this one in 2014. Through the responses, it was clear that visitors to the Bay are noticing changes implemented by management, such as more garbage cans, the reduction of beach driving, and improved parking. Aside from the road and fire management, when asked, most respondents stated that Laolao is being managed effectively. One gap in the survey is lack of information gathered from the respondents on the correlation between the health of the Laolao Bay and their personal well-being.

Recommendations from respondents include additional signage about threats to the Bay, such as littering and illegal dumping; engages communities and groups with a vested interest in the site's health, addressing threats and building on the tree planting efforts to prevent erosion; regular and random patrol of enforcement agency to aid in reduction of littering and illegal dumping, outreach and education at the elementary and middle schools with field trips and activities to engage them in the protection of the natural resources at Laolao Bay.

#### **4. Rota SEM-Pasifika Training**

**July 14-July 20, 2014, as compiled by Brooke Nevitt, MINA.**

This training was done in partnership with the Luta (Rota) Soil and Water Conservation District, the CNMI Department of Commerce, CNMI Bureau of Environmental and Coastal Quality, and the CNMI Division of Lands and Natural Resources.

#### Objectives:

- Build socioeconomic monitoring capacity of the participants based on SEM-Pasifika
- Understand basic principles of data coding, management, and quality control
- Understand principles of qualitative research and data analysis
- Complete a socio-economic assessment for a field site in Rota
- Conduct a baseline assessment for long-term monitoring effort

- Communicate results of data analysis and effectively communicate data
- Use analyzed data in conservation planning and adaptive management
- Produce assessment reports
- Pilot Micronesia Challenge socioeconomic measures as appropriate.

Outputs/outcomes from workshop:

- Participants trained to undertake a socioeconomic assessment with some guidance from trainers
- Understand and appreciate mixed research methods with quantitative and qualitative approaches
- Greater understanding and appreciation of socioeconomic monitoring as an important tool for resource management
- Commitment of participants to future SEM-Pasifika activities
- Socio-economic assessment completed and data analyzed for Rota site
- Report back to community on assessment results

Building off of the Rota Conservation Action Plan (CAP), the workshop team developed and conducted an assessment focusing on the island's natural resources. The objectives of the assessment were driven by local management partners, and the information gathered was intended to be used to help inform and support resource management. In addition, this training was the first step in developing a longer-term monitoring program and provided an opportunity to test the proposed MC Socioeconomic Indicators.

The socioeconomic assessment was conducted in Rota to provide managers and the community with information regarding the island's natural resources. In addition the assessment was the first opportunity to field test the MC Indicators.

For this assessment, the following objectives were developed:

- Collect baseline demographic information
- Understand perceived condition of coastal and marine resources
- Understand perceived threats to coastal and marine resources
- Explore existing and potential coastal and marine activities
- Assess community's knowledge and understanding of Rota's natural resources and management
- Pilot MC indicators as appropriate

The following were the selected indicators for the survey, and a sampling of a total of 309 persons, male and female, over the age of 18, were surveyed.

1. Age
2. Education
3. Sources of household income
9. Perceived threats to coastal/marine resources
10. Resource conflicts
11. Awareness of rules and regulations

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| 4. Knowledge of coastal/ marine resources  | 12. Management effectiveness   |
| 5. Coastal and marine activities           | 13. Change in violations/ illegal activities related to fishing, harvesting and use of natural resources |
| 6. Coastal and marine goods and services   | 14. Awareness of Micronesia Challenge  |
| 7. Dependence on coastal/ marine resources | 15. Support for the Micronesia Challenge   |
| 8. Cultural pride in natural resources     |  |

The results yielded in this sampling of the citizens of Rota revealed that of the 309 people interviewed, an overwhelming majority thought that the Division of Lands and Natural Resources was responsible for managing Rota's natural resources.

When asked about their awareness of conservation areas in Rota, over half of all respondents were able to identify four main sites, but while others are listed, very few people were aware. This highlights an opportunity for further outreach and education to raise awareness regarding Rota's conservation areas.

Awareness was very high about which animals are protected in conservation areas – fruit bat, deer, coconut crab, birds, coral, fish; however, very limited awareness was demonstrated about which plants, including traditional medicinal plants, are protected.

The same is true about which activities are allowed in conservation areas. While the majority of respondents knew that activities such as hunting, fishing, burning, and cutting trees are not allowed, few people responded in the affirmative about whether taking medicinal plants, swimming, or scuba diving are restricted activities.

In terms of food supply, those respondents who depend on subsistence farming, fishing, or hunting was less than 40%. Of this number, 96% said they shared their catch with their families. When asked if they knew of traditional practices – such as farming, fishing, hunting, etc.– that people can do to care for the environment, less than 30% responded in the affirmative, with answers such as “planting trees” and “taking only as much as needed.” Other answers included crop rotation, using only natural pesticides, and traditional fishing methods.

Following the question of threats to the environment, respondents were asked to suggest potential solutions to perceived threats. For every threat (with the exception of typhoon and natural disaster), the top two solutions were more education and more/strengthened enforcement. When asked if they would report someone violating natural resource rules and regulations, only fifty percent answered “yes.” Interestingly, 34% of respondents chose not to answer the question at all. This is perhaps indicative of the sensitive nature of reporting a violation in Rota, and should be considered when designing outreach and enforcement efforts.

This assessment also marked the first opportunity to pilot the Micronesia Challenge in Rota. When asked if they have heard of the Micronesia Challenge, only twelve percent of those surveyed responded “yes.” The large majority of respondents (81%) had not heard of the Micronesia Challenge, and six percent were “unsure. Of those who responded “yes” to knowing about the Micronesia Challenge, most had a general understanding of the Challenge's main goals. This represents a clear indication that there needs to be more outreach and education in the CNMI about the Micronesia Challenge.

## **5. *Climate Change Vulnerability Assessment for the Island of Saipan, CNMI*** **January 2014**

As prepared for CNMI Coastal Resources Management and NOAA Climate Change Working Group, compiled and edited by Robbie Greene and Rebecca Skeelee.

“In the summer of 2012 a climate change working group convened on the Island of Saipan to begin climate change adaptation planning in the Commonwealth of the Northern Mariana Islands. In the year following this formation, the government agencies, non-governmental organizations, business associations and community groups that comprise the Working Group developed a distinct collaborative structure and process to achieve a series of goals and objectives. The first objective, which served as a source of cohesion and guidance for the Working Group, was to identify the social, physical, and natural features in the CNMI that are most susceptible to the impacts of climate change. To achieve this objective, a community-based vulnerability assessment was conducted. The assessment focuses on projected changes to sea level and rainfall patterns in the CNMI, the exposure and sensitivity of Saipan to these changes, and the Island’s capacity to respond to possible impacts. This document summarizes the process, results, and recommendations of the assessment.”

As listed in the table of contents, this report includes a vulnerability assessment, climate change phenomena and potential impacts, describes the physical situation on Saipan, the approach and methods to conducting the study. A community based assessment included a climate change working group, identification of stakeholder resources and data needs, resources of concern: character and configuration, qualitative vulnerability screening, and participatory mapping. The report also includes an outline of technical assessment: mapping sea level change scenarios, flood severity and focus areas, coastal flooding and social vulnerability. It closes with a summary of vulnerability, recommendations for adaptation, and the next steps for the CNMI.

The conclusion of this study summarizes steps that can be taken in terms of adaption to climate change in the CNMI:

“While some adaptation opportunities appear clear through streamlining efforts and integration with existing management and policy, taking advantage of these opportunities will require a deeper mode of action within the respective political institutions and management units. CNMI government agencies will need to adopt climate change as a standard consideration in project development and decision-making processes. Legislative bodies will need to evaluate policies that impact community structure, taking into account potential effects on income sources that rely on natural resources. This consideration also applies to the tourism industry and private enterprises in the CNMI, which are ultimately dependent on natural and physical systems that this VA identified as vulnerable.”

Greene and Skeelee advocate that “Saipan’s stakeholders . . . assume responsibility for their future interests and adapt.”

## **6. Economic and Social Characteristics of Small Boat Fishing in the Commonwealth of the Northern Mariana Islands**

**May, 2014**

Written by Justin Hospital, Pacific Islands Fisheries Science Center, National Marine Fisheries Service, and Courtney Beavers, Joint Institute for Marine and Atmospheric Research

In the Executive Summary for this paper, Hospital and Beavers state the following: “We find the CNMI small boat fisheries to be a complex mix of subsistence, cultural, recreational, and quasi-commercial fishermen whose fishing behaviors provide evidence of the importance of fishing to the people of the CNMI. This report provides important baseline information that can be used to inform future management alternatives and actions.” The survey was meant to update previous years’ work (1989, 2001, and 2006). Since this report is fairly recent, compiled in 2014, it is a fair assumption that data collected is relatively the same now, three years later.

The paper focuses on the small boats in the CNMI, current levels and behavioral aspects of fishing, market participation, expenses and investment levels. It also examines the social and cultural aspects of fishing in the CNMI. Hospital/Beavers sought to “. . . provide fishery managers with insights into the economic and social context of the fishery that could help guide the design and analysis of future management actions and alternatives.”

The approach to this survey started with village meetings in convenient locations where the purpose of the survey was outlined; the only criteria was that the respondent had been fishing in the past twelve months. A total of 112 individuals were eligible and participated in the survey. The information, however, is only deemed as anecdotal, as there are no corroborating facts to back up the assumptions; “there are no definitive measures of small boat fishing participation across the CNMI.” Nevertheless, the surveys were conducted, based on total catch of pelagic, bottom and reef fish.

The survey collected data based on demographics showing the average age of a fisherman to be 41 with the majority being of Chamorro ancestry, high school graduates, and having lived in Saipan for their entire lives. A slight majority of those surveyed about vessel characteristics own their own boats, with the average size being eighteen feet. Statistics were taken on number of hours spent fishing, which harbors are most utilized, and other information that will be valuable when considering a fisheries usage plan. The type of fishing activity, in addition to costs and social aspects relative to fishing as a livelihood or for recreation were also included in the survey.

Another major component of the survey was an area of controversial subjects in the CNMI, namely the Marianas Marine National Monument and Closed Areas (MPAs), and Military use and impacts on fishing in the CNMI. “When posed the question, ‘how familiar are you with the Marianas Trench Marine National Monument?’ the overwhelming majority (92%) of CNMI fishermen reported to be at least somewhat familiar with the Monument.” However, the majority of respondents didn’t know what, if any, economic benefit would be gained for the CNMI as a result of the Monument, nor could they respond when asked if the Monument may have an adverse effect on their catch rates. A note that this part of the study may already be a

mute issue in light of the current US administration to renege and repeal monument status throughout the United States and its territories.

The other concern for the survey was the negative impact that U.S. military bombing exercises on Farallon de Medinilla (FDM), an uninhabited small island in the CNMI located approximately 45 nautical miles (83 km) north of Saipan. Public warning announcements are made and during the bombing exercises to avoid the area. “More than a third of fishermen (35%) reported that military exercises affected pelagic trips, while 33% reported affected bottomfish trips and 28% reported affected reef fishing trips.” Since the military does have a lease agreement with the CNMI that was included in the Compact agreement, the fact is that the bombing is not likely to cease in the near future in an effort to improve fishing outcomes.

The authors conclude from this study that although fishing in the CNMI is more recreational than done for economic gain, they “find the CNMI small boat fishery participants to be a complex mix of subsistence, cultural, recreational, and quasi-commercial fishermen whose fishing behaviors provide evidence of the importance of fishing to the communities of the CNMI. This report provides important baseline information that can be used to inform future management alternatives and actions.

## ***7. Saipan Lagoon Use Management User Survey and Mapping Report March, 2016***

As prepared by Allied Pacific Environmental Consulting for CNMI Bureau of Environmental and Coastal Quality, Coastal Resources Management, and NOAA.

This report lays out the findings of research conducted between 2011 and 2015 for Coastal Resources Management for the purpose of assessing and mapping recreational and commercial uses for the Saipan lagoon, identifies areas of user conflict, and provides a guide for management, with economic activity and habitat conservation balanced in a way to most benefit the people of the CNMI. The end result will be in developing a Saipan Lagoon Use Management Plan (SLUMP).

Researchers and respondents in this report included BECQ-DCRM and MINA staff.

Major uses for the lagoon include; recreational scuba diving, free diving and snorkeling, swimming, paddling, surface board sports, recreational motorized boating, sailing, and beach use. Commercial use of the lagoon includes commercial scuba diving and snorkeling, parasailing, banana-boating and other boat-towing activities, jet skiing, commercial transit and dinner cruises, and commercial shipping. The lagoon is also used for fishing – hook and line, spear fishing, net-throwing, gill net, and harvesting.

The research was conducted with the help of 22 lagoon users, each with expertise in multiple lagoon uses, who attended the participatory mapping workshop and provided survey responses and mapping feedback. The report continues to describe the methodology of mapping lagoon

use, using a “common analytical unit of 30 meter hexagons . . . to facilitate use pattern comparison across the lagoon.”

The next step in the process was to analyze the survey results, which is summarized as follows:

“Recreational uses of the Saipan lagoon are likely the most prevalent uses of the lagoon and also the least documented [and] almost all of the commercial activity in the lagoon is based around off-island tourists. Commercial uses of the Saipan lagoon include any and all activities that occur within the lagoon where an activity is conducted in exchange for payment.” Extractive uses included several methods for fishing and harvesting certain marine plants and invertebrates, and mostly done for subsistence purposes only. (Commercial fishing in the CNMI occurs outside the lagoon.)

Heat maps were generated that identified and visualized the areas of the lagoon most heavily used and locations.

In addition to mapping, participant stakeholders were asked to respond to two questions: 1) “why do you use the lagoon rather than other areas around Saipan?”, and 2) what are your top concerns facing the Saipan lagoon?”

Most respondents indicated that the lagoon’s proximity to population and commercial centers is convenient, shoreline amenities such as pavilions, boat ramps, and parking are convenient. Many respondents praised the lagoon’s “clear waters, vibrant reefs, and diverse and beautiful fish.” At the same time, many also listed their top concerns as dying coral and poor water quality. Other negatives were the avoidance of areas near drainage due to it being “stinky” or “murky.” Other top concerns were overcrowding, too much shoreline development, too much commercial activity, overfishing, and lack of enforcement. They also identified trash and marine debris as a top concern.

The report concludes that although this project provided BECQ-DCRM “with a solid foundation upon which preliminary management decisions can be based . . . this survey and report serves to highlight areas that need further *investigation* in order to best manage the Saipan lagoon and its resources in a way that balances economic development and resource development.” Note: a subsequent SLUMP forum was held in April, 2017, conducted by Horsley Witten and Hofschneider Engineering. Lagoon stakeholders and CNMI agencies such as BECQ, Department of Lands and Natural Resources, Fish and Wildlife, and MINA were involved in a two-day workshop that further identified challenges and opportunities for the effective development of a Saipan Lagoon Use Management Plan.

The report concluded with several recommendations; management to avoid overcrowding and user conflicts; protect priority locations and resources; continue to prioritize water quality and erosion control; and continued and frequent stakeholder involvement.

**8. *The Economic Value of the Coral Reefs of Saipan, Commonwealth of the Northern Mariana Islands.***  
**2009**

Pieter van Beukerin (ed.) as prepared by Cesar Environmental Economics Consulting

Stepping back from the more recent studies and reports reviewed in this document, this report reinforces the general belief of the people of the CNMI that the coral reef is a critical component to their livelihoods, along with its cultural significance, food, and shelter. The study was conducted to ascertain the economic value of the coral reefs and their impact on the residents of Saipan, using five major methodologies: 1) household surveys; 2) discrete choice experiment; 3) total economic value calculation; 4) spatial analysis; and 5) sustainable financing.

A total of 375 local residents were surveyed in an attempt to determine the nature and level of use and non-use values of the coral reefs, covering their level of beach and marine recreation, their environmental awareness, fishing habits and importance of fish in their diets. The results of this survey reveal that the majority of the residents were strongly connected to the marine environment and worried about deterioration of the coral reefs. Main causes of concern were sewage outfalls and runoff into the lagoon caused by over-development. The importance of this survey for CNMI policy makers cannot be overstated.

Of the remaining analyses, the one that stands out the most is sustainable financing: “Governments need to recognize and accept that conservation and economic development are inextricably linked. Therefore, it is important to increase the financial flows to environmentally sustainable activities in general and to protected areas in particular.” This is especially relevant today, in 2017, as Saipan has seen an explosion in growth that, without proper planning of infrastructure to support this growth, could have major, negative impacts on Saipan’s lagoon and reefs.

The major areas of high usage in the CNMI are Managaha Island, Laolao Bay, and the Grotto. User fees are commonly in place around the world for major tour sites, and becomes a way to fund needed protective measures for these valuable economic and cultural resources. This report recommends several policy recommendations: 1) address non-point and point source pollution; 2) make use of the cultural importance residents place on marine ecosystems to improve coral reef management; and 3) develop a comprehensive system of user fees for visitors of the MPAs on Saipan. (In this regard, Managaha Island does impose a landing fee of \$5 for tourists, but no where else are “user” fees implemented.)

The authors go into a description of the background and description of the CNMI and its value to tourism which is “most dependent upon the island’s tropical natural resources.” As in other reports reviewed in this document, this study shows that pollution from over-development and improper sewage management is a major cause of concern for the future health of the waters surrounding the CNMI. The report is the first of many that uses household surveys to determine the economic and cultural value of the coral reefs to the livelihoods and sustainability of a thriving economy for the people of the CNMI. Based on the census data taken for this report from 2,000, 49% of the respondents, residents of Saipan, were of Chamorro descent, with the remaining 51% comprised of individuals from other countries or regions. The majority of respondents replied that fishing is of recreational value but no real economic gain. The majority also recognized tourism as the main industry driving the economy. Although many of the

respondents in the later studies discussed in this review echoed the findings of this 2009 study, some, if not all, recommendations have been implemented. It is evident, however, that now in 2017, much needs to be done to meet the long-term goal of protecting the coral reef surrounding Saipan so that it will retain its economic value for generations to come.

## **9. SEM-Pasifika Training, Tanapag, Saipan June, 2017**

As prepared and written by Kodep Ogomuro-Uludon for MINA

The report outlines the specifics of the village of Tanapag, located on the northern side of Saipan along the western coastline, is a “close-knit fishing community within close proximity to the Managaha Marine Conservation Area . . . [previously] a known fishing ground historically for fishermen from Tanapag.”

At a meeting held in 2015 with various stakeholders of the community, areas of concern were identified with subsequent key informant interviews and focus group discussions. Concern of the residents echoed many of those charged with protection of the coral reefs, such as disappearance of specific marine and plant life in the lagoon, damage to the reef due to foot traffic, concerns of over-development and non-point source pollution, dying coral, coral bleaching, increase in algae blooms, and other concerns previously discussed.

A table of five stakeholders’ concerns was compiled about the benefits of the conservation area, but there were more responses about the disadvantages to them, specifically, as fishermen.

Prior to the SEM-Pasifika training in June, “key team members” would be tapped from the government sectors of the Bureau of Environmental and Coastal Quality, CNMI Department of Commerce Central Statistics Division, Division of Fish and Wildlife fisheries biologist, as well as a CNMI SEM Coordinator. Discussions have been held on the determination of who may coordinate the SEM work in the CNMI.

Other discussions revolved around the fact that there is no central repository of SEM data, with the suggestion that one person coordinate this work and be based at the Department of Commerce. The author of this report advocates for one SEM coordinator for the CNMI, the expense to be shared among three different agencies.

The author of this report conducted a training for eight individuals from Tanapag village who attended a SEM-Pasifika training in June of 2017. A survey was developed with the primary objections of 1) providing preliminary socioeconomic baselines for Tanapag; 2) identify natural resource use; 3) identify perceived threats and changes to natural resources; 4) explore the community’s perceptions of management effectiveness; 5) gather feedback on general issues affecting the village; and 6) provide baseline assessment of Micronesia Challenge indicators.

A community survey was developed, but there has been no further action to date that would complete this study.



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To conclude this review, a theme that is recurrent throughout is the need for all of the recommendations in these surveys and reports to be implemented. Some have been, with some success, but there is much to be done to protect marine and plant life in the near-shore coastal waters of the CNMI.

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