COMMUNITY-BASED MANAGEMENT PLAN

for Malesso Coastal & Marine Resources

This Community Based Management Plan is a product of the village of Malesso through the auspices of the Malesso Mayor's Office.

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And finally the **residents of Malesso** who came out; spent many hours with us; and worked through some complex and challenging activities and exercises to arrive at this point.

DEFINITION OF TERMS

Community – for the purposes of this plan, the community is a group of people geographically located, who are substantially dependent on or substantially engaged in the utilization, harvesting and processing of marine resources to meet their social, economic and cultural needs.

Community-Based Management Plan – a plan for the management of natural resources that involves substantial participation of the local community so that resources are managed for the benefit of the community that is dependent on the health of those resources for their health and well-being.

Coastal and Marine Resource Planning – the process for analyzing and allocating coastal and marine space for multiple uses in order to achieve specific ecological, economic, and social objectives.

Ecology – Dynamic, complex interrelationships of biological and physical substances, materials and things that transfer energy in a natural system.

Guidelines – a set of general rules that indicate what uses and activities are permitted or prohibited in a given area and under what conditions those rules apply.

Management Action – an activity performed during plan implementation to achieve desired conditions and objectives.

Marine Preserve Area – a region or location set aside for the purpose of preserving or conserving natural systems; biological and physical objects and things. Human activity is usually restricted in the interest of conserving the natural environment, its surrounding waters and the occupant ecosystems, and any cultural or historical resources that may require special protection.

Monitoring – systematic process for collecting information needed to evaluate progress in meeting desired conditions or plan objectives and to gather data for analyzing emerging conditions and key trends in the planning area.

Objectives – statement of what you are trying to achieve through the coastal and marine resource plan.

Permit – a legal instrument granting permission for certain activities issued by a recognized authority under its rules of governance. The issuance of a permit generally recognizes that certain uses occurring in certain areas and during certain times of the year merit additional scrutiny.

Planning – a process in which community members, scientists, government representatives, private businesses, traditional authorities come to discuss and determine how to manage resources in a particular geographic area for the benefit of current and future generations.

Place-based Planning – a site-specific natural resource planning effort to manage resource uses and activities to reduce conflict, avert resource degradation and improve safety at specific geographical locations.

Place-based Marine Plan – a site specific plan for the fair and equitable enjoyment and utilization of marine resources that reduces conflicts, conserves resources and improves safety for users.

Regulations – used to regulate specific activities that can or cannot take place in a specific area of the management area and under what conditions. Among other things, regulations provide permitting authority with the rules and procedures for issuing permits.

Stakeholder – individuals and organizations that are affected by an enterprise or activity. All citizens could be considered stakeholders in managing ocean and coastal resources. The challenge is determining the degree of interest, responsibility, and authority stakeholders may have in the enterprise and the capacity they have to participate in the process.

Sustainable – relating to, or being a method of harvesting or using a resource so that the resource is not depleted or irreparably damaged.

Unique Value – brief description of the niche and unique features of the area, such as social, biological, and economic factors that characterize an area and provide a focus for the planning process.

Watershed – a drainage basin, an extent of land where surface and subsurface waters converge at its lowest point and empties into an estuary or ocean.

EXECUTIVE SUMMARY

This community-based management plan (Plan) for the marine and coastal resources of the village of Meriso (currently called Malesso) is built on the collaborative efforts of Malesso village community residents and participants from local businesses and agencies, federal agencies, the broader Guam public and other interested organizations. The Plan which is the product of more than two years of engagement with the Mayors' Council of Guam (MCOG), Mayor of the Village of Malesso, Department of Agriculture (DoA) and the Western Pacific Fishery Management Council (Fishery Council).

Through a series of public meetings and workshops held in Malesso in 2012 and 2013, a list of recurring coastal and marine resource issues important to Malesso residents were raised by community participants. Discussions centered around long standing and emerging issues, such as, the Achang Reef Preserve, Cocos Island PCB contamination, increasing competing uses in the lagoon, continued fishing practices for seasonal run fisheries, and overall lack of agency engagement and follow up on community issues. The outcome from these discussions resulted in commitments from the primary partners in this effort, DoA, the Fishery Council, Malesso community participants and the Mayor's Office, agreeing to use the village of Malesso as a pilot site for the development a community-based marine resource plan.

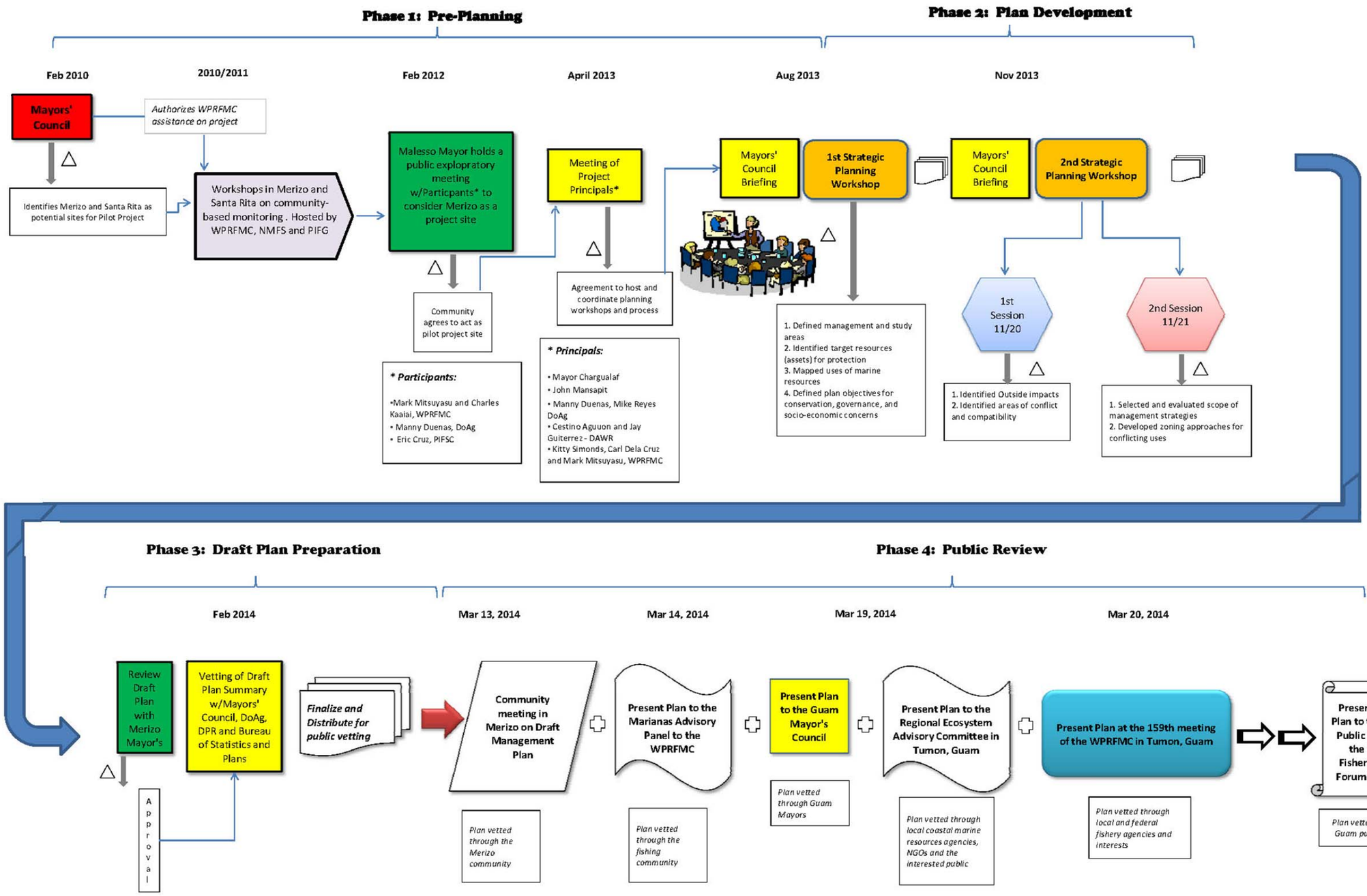
Since the 2012 agreement, the partners have coordinated efforts to host a strategic planning initiative to develop a community-based management plan for Malesso coastal and marine resources. A series of public strategic planning workshops were held in the village between August through November 2013 with community participants, partnering agencies and the public to discuss village resources, ongoing activities and community issues in an effort to develop village vision for the future, objectives and priorities for the future management of village coastal and marine resources.

The Plan is a product from the cumulative efforts of workshop participants in the facilitated strategic planning sessions. Chapter two shares what is important to the Malesso community with respect to village resources. It elucidates the process through which the community confirmed the need for a plan that provides the way forward for the sustainable management of Village resources. It confirms the area to which this plan is applied, or more importantly the area over which community participants accept responsibility. At the core this plan are three objectives constructed by the participants through open dialog, intense discussion and, finally, consensus. Objectives for the conservation of Malesso resources, sustaining socio-economic benefits for village residents and ensuring a voice in the governance of Malesso are detailed within the plan.

Natural, cultural, historical, social and economic resources important to Malesso participants are identified and detailed within Chapter three of this Plan. Through directed efforts, community participants prioritized these resources with respect to supporting the objectives as developed by the community. Chapter four describes the range of coastal and marine related activities currently occurring in the Malesso management area, highlighting compatible activities and those where overlap or conflict are occurring. By understanding the temporal and spatial dynamics of the ongoing activities, participants initially identified the users or players to be engaged as the process moves forward toward beneficial solutions for all involved.

Finally, this Plan puts forth a prescribed range of actions and activities targeted at supporting the conservation, socio-economic and governance objectives and findings as developed through the planning process. Chapter five details a suite of actions to be carried forward by the Malesso community through continued engagement with the Guam Mayors' Council, local and federal resource agencies, private sectors and other interested parties. Efforts shall be focused on addressing the increasing completing activities for use of coastal waters, establishing processes to ensure the community voice in policy development, supporting programs to enhance the biological and ecosystem monitoring of village resources and carrying forward the Malesso community's vision for the management of its coastal and marine resource through education and outreach efforts.

Merizo Flowchart



Chapter 1: Introduction to Malesso

Characteristics of the Community

The boundaries of a community can often be delineated by physical barriers, land-use patterns, political divisions, statutory authorities and agency jurisdictions, demographic characteristics, and the historical or customary observations and practices by its residents. The path to becoming a healthy community starts with broad community engagement, leadership, development of a shared vision and community goals, effective planning, local government commitment, collaboration and utilization of internal and external resources.

Physical Setting

Malesso is geographically located at 13°15'47" N latitude and 144°40'10" E longitude. It skirts Guam's scenic southern shoreline on a long strip of land between mountains and sea. It has an elevation of 13 feet (4 m) above sea level and covers an area of 6 square miles (16 km^2).

Malesso District includes Cocos Island and Babe Island on the southern leg of the lagoon as well as Tangon Rock, Asgadao Island, Fotos Island, and Agrigan Island in the Achang Reef Flat area to the east of Cocos Lagoon. The district is extremely environmentally and biologically rich due to its geographic location and features, including several rivers (Toguan, Bile, Pigua, Geus, Manell, Suyafe, Liyog, and Ajayan Rivers) (USGS 2000).

The District starts at the top of Mt. Sasalaguan at 331 meters (1086 feet) above sea level, south to the coast, and from the Toguan River and Toguan Bay on the west, to the Ajayan River and Ajayan Bay on the east.

The Geus River, which originates in the mountains to the north, bisects the village and empties into Cocos Lagoon. The triangular-shaped lagoon is protected on two sides by coral reef and on the third side by land. Mama'on Channel and Manell Channel offer deeper water access to the lagoon from each side. The waters in the district is characterized by coral reefs, mangrove habitats and seagrass beds. Together, the fresh water, protected lagoon, extensive reef and shorelines, and fertile valleys make Malesso unique to Guam.

Through the years, the village established an elementary school, Malesso Martyrs Memorial School, which was constructed in 1966. This public school is known as the "Home of the Dolphins." It serves grades K to 5. The school also sits atop Pigua, a high spur of land that forms one side of the Geus River Valley.

Merizo Martyr's Memorial School.

An important structure in Malesso is San Dimas Catholic Church. It was dedicated on September 29, 2002. The current church replaced a dilapidated tin-and wood structure that had served parishioners as a church for more than a decade. Mass and festivities honoring Malesso's patron saint, San Dimas, occur annually on the third weekend of April.

San Dimas Catholic Church.

Merizo Bell Tower.

The Malesso Bell tower,or *Kampanayun Malesso*, is a historical landmark just across the main road from the *Kombento* (parish priest residence and museum). This was built in 1910 by Father Cristobal de Canals and is included in the National Register of Historic Places. It was restored in 2000 to its original design under a grant from the Guam Preservation Trust.

Merizo Youth Recreation Center.

Across the street from the *Kombento* is a small park with a marble statue of Santa Marian Kamalen. According to local legend, the site is where a fisherman from Malesso spotted a statue of the Virgin Mary being carried by two golden crabs while he was fishing in the bay between Malesso and Cocos Island.

A youth recreation center, the Merlyn G. Cook School, is near the Malesso Pier Park. The building, which originally housed a naval radio facility in the early 1920s, was named for the Guam Public School System's first leader in 1931, and served as the village schoolhouse for a decade in the late '20s and '30s. The building was restored for youth sports and other developmental activities and is on the Registry of National Historic Places.

A system of well-maintained paved roads in the village is significant in contributing to the overall activity and social functioning of the community.

Historically, residents have been wary of the prospect of extensive development, and the village remains primarily residential. Commerce is limited to the privately-owned Cocos Island Resort, its concessionaires, and to a few, small, village-based retail stores, a gas station, and a branch of the Bank of Guam.

"Kombento", the testament of Spanish occupation of Malesso.

History of Malesso

While there are few accounts of the pre-Spanish colonial era on Guam, Malesso's abundance of fresh water, its protected lagoon, extensive reef and shorelines, and its fertile valleys suggest that the area likely sustained a large population. By 1833, however, disease, calamity and the Spanish-Chamorro wars reduced the population of native Chamorros, which then numbered around 318.

Despite the dramatic decrease in the Chamorro population during the *Reduccíon* (efforts to force Chamorros into accepting Christianity and Spanish rule), the population of Malesso was significant enough for Father Diego Luis de San Vitores to order the building of the fifth mission on Guam in Malesso in 1672. No trace of the original structures exists today. The recently restored Malesso *Kombento*, home to the parish priest, and the *Kampanayun Malesso'*, both Spanish-era structures, and the new church, attest to the church's enduring place in village life.

Some historical accounts of Malesso exist. One such account tells of a drunken British privateer captain, who in March 1721, angered over soured hostage negotiations, brashly tried to steal a Spanish supply ship anchored in front of the village in the Mama'on Channel. The British ship ran aground. Its beleaguered crew, fired upon from shore cannons at close range, finally wrested the vessel off the reef and escaped after a fifty-hour battle that killed two crewmen.

Life in Malesso, as is historically accounted for, went on more or less quietly at the turn

of twentieth century, as American naval rule replaced the Spanish on Guam. It remained this way until the dawn of World War II with the Japanese invasion of Guam in 1941. A contingent of 5,000 Japanese troops came ashore at Bile Bay on Malesso's western shore; but finding no road to Agat, they boarded their boats and headed north to join their comrades.

The Japanese occupation of Guam set Malesso on a course that, in July 1944, would make the village a locus of infamous brutality and stirring heroism. Almost four years after the Japanese invasion and occupation of Guam, the occupying army grew desperate as American ships bombarded the island in preparation for the July 21 landing and retaking of Guam. The Japanese troops stationed in Malesso rounded up two groups of thirty Chamorros each. Forty-six of them were slaughtered with grenades, bayonets, and swords.

At Tinta, in the Geus River valley, some escaped death by lying still under the corpses of their relatives and friends, while others were able to flee. Not one of the thirty in the second group survived the massacre at Faha, just behind the village cemetery. Each year in July, people hike for prayer services to the original massacre sites in remembrance of the forty-six villagers. Similar massacres took place in Fena, near the present day Santa Rita, and Yigo.

When word of the massacres got to villagers, who by that time had been marched inland to a camp, seven Malesso men killed ten Japanese soldiers and drove the rest from village. This left Malesso the first village on Guam to be liberated, and the only one to be liberated by the Chamorros themselves.

Following the liberation of Malesso, a group of six Chamorro men paddled and sailed a canoe out to a U.S. warship. The crew picked up the men, and the six served as scouts in the effort to retake Guam.

The People

Traditions and Culture

The most recent population figure (2010) shows that the village of Malesso has a population of 1,850 people making it the 16th largest population amongst Guam's municipalities. However, population estimates by the US Census Bureau show a decreasing population trend from 2,163 persons in 2000 to 1,850 persons in 2010 (Figure 1). Malesso's population consists mainly of persons age 16 years and older, with an overall equal amount of males and females, with more males in the younger age class (16 and older) and more females in the older age classes (18 and older) (Figure 2).

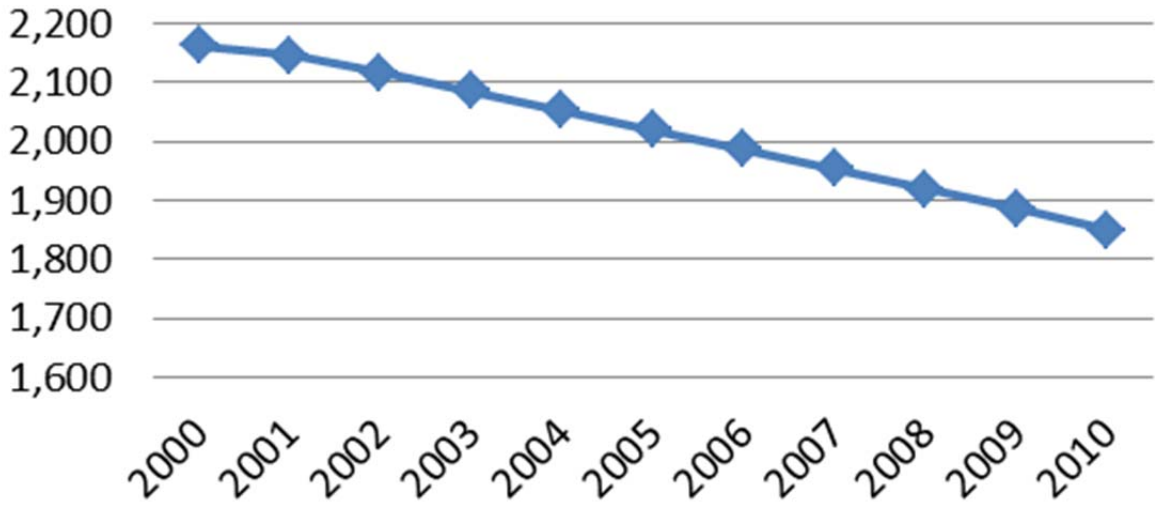


Figure 1. Population estimates for the village of Malesso from 2000 to 2010 showing a decreasing trend in the past decade. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

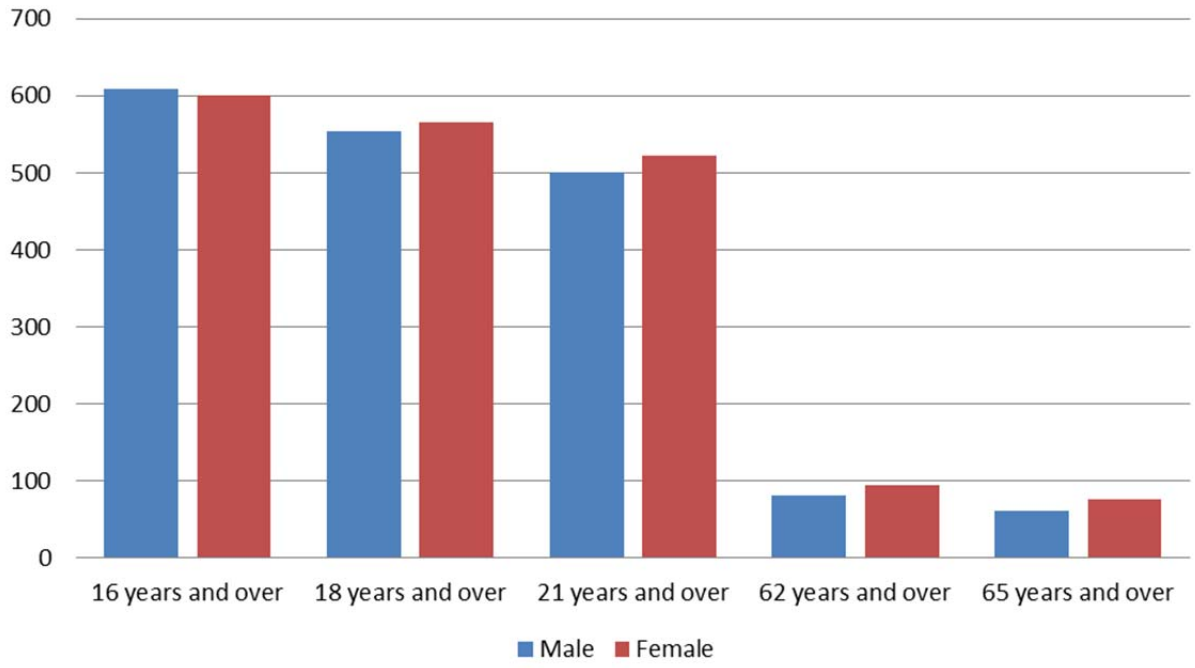


Figure 2. Population in Malesso by age and sex showing majority of the population are of young age. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

Race, Ethnicity, and Primary Language

The racial and ethnic composition of Malesso has remained primarily Chamorro, with a

mixed-race or ethnicity contingent growing. The 2010 census estimated that 89% belong to only one ethnic origin or race and the remaining 11% have two or more ethnic origins (Figure 3).

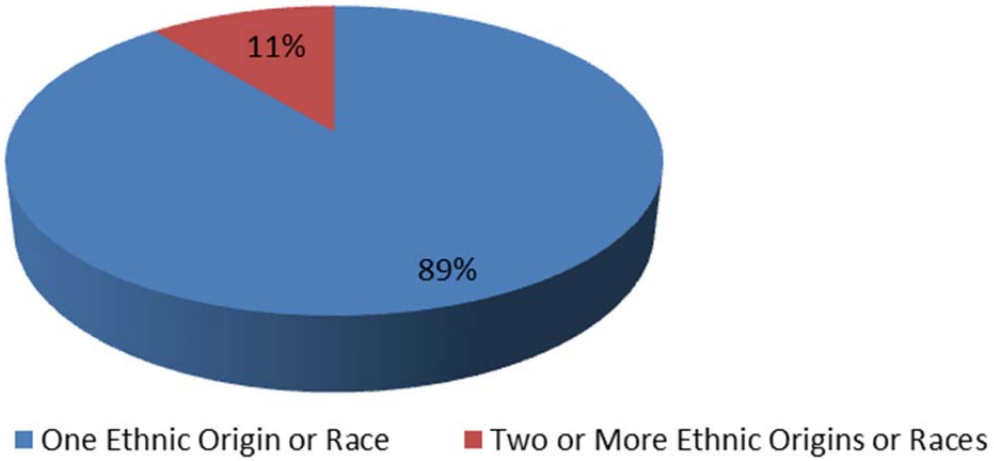


Figure 3. Proportion of Malesso population that has a single or more than one ethnic origin. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

Malesso's community is dominated by native Chamorros and other Pacific Islanders (Chuukese, Pohnpeian, Yapese, other native Hawaiian Islanders, Palauan, and Marshallese) (91.87%). The next largest ethinc group are Asians (mostly Filipinos, but also include Japanese and Koreans) at 4.12% followed by White at 3.27% of the population. The remaining <1% of the population include Hispanic or Latino, Black or African American and those that denote "other ethnic origin" (Figure 4).

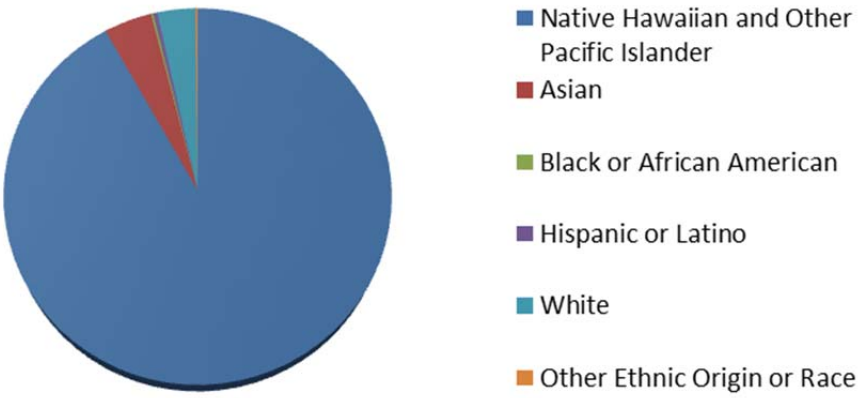


Figure 4. Proportions of different ethnic origins of the segment of Malesso population that has single ethnicity. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

US citizens make up 97% of the population with 85% of these citizens born in Guam, 7.9% born in the United States, 1% born elsewhere of US parents, and 0.8% born in other US Island areas or Puerto Rico. Foreign-born US citizens comprise 2.3% of the population and the remaining 3% are not US citizens or nationals.

Language

Malesso's diverse population brings with it fluency in a variety of languages. About 50% of the population in Malesso, ages 5 years and over, speak English only. Of the population who speak a language other than English, Chamorro is the most common Pacific Island language spoken at 87%, while those speaking Filipino make up 5% and 7.3% speak other Pacific languages.

Socio-Economic Setting

Socio-economic status is a measure of an individual's or family's economic and social position based on education, income, and occupation. These include measures of income (median family and median household income, and poverty levels), and measures associated with income status (educational level and employment levels).

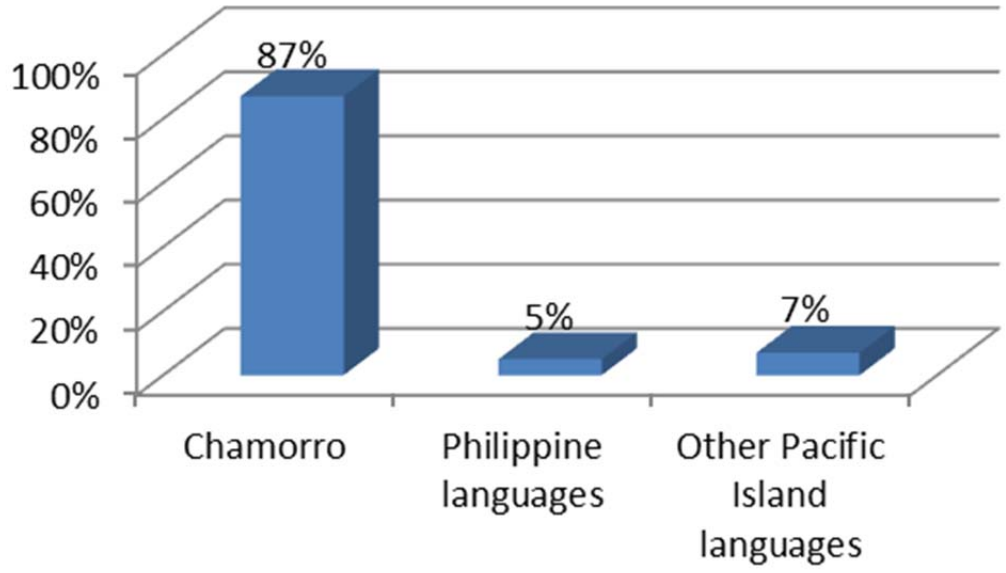


Figure 5. Proportion of the Malesso population by language spoken at home. SOURCE US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

Education

Many studies have found that a higher level of educational attainment is a strong predictor of access to economic resources. The variation in educational attainment may contribute to the differences in access and utilization of marine resources among different social groups.

Figure 7 shows that in 2010, 76% of the population had finished high school, 10.2% have their Bachelor's degree, 2.49% have graduated or have professional degrees, and 2.49% have their Associate's degree. Figure 8 shows there is a high percentage of those not completing requirements for the vocational training. Only 20.35% have completed their training in Guam and 4.80% completed their training outside of Guam.

Employment

Only two percent of working population of Malesso are employed in the Armed forces. Most of the working residents are employed as civilians. Less than half of the working population is in the labor force. It is estimated that 6.49% of that labor force is dependent on subsistence activity. For civilian workers, most work in a different municipality and use their own cars or truck in going to work (Figure 9). Management, business, science, and arts together with sales and office are most frequent occupations of the community residents (Figure 10).

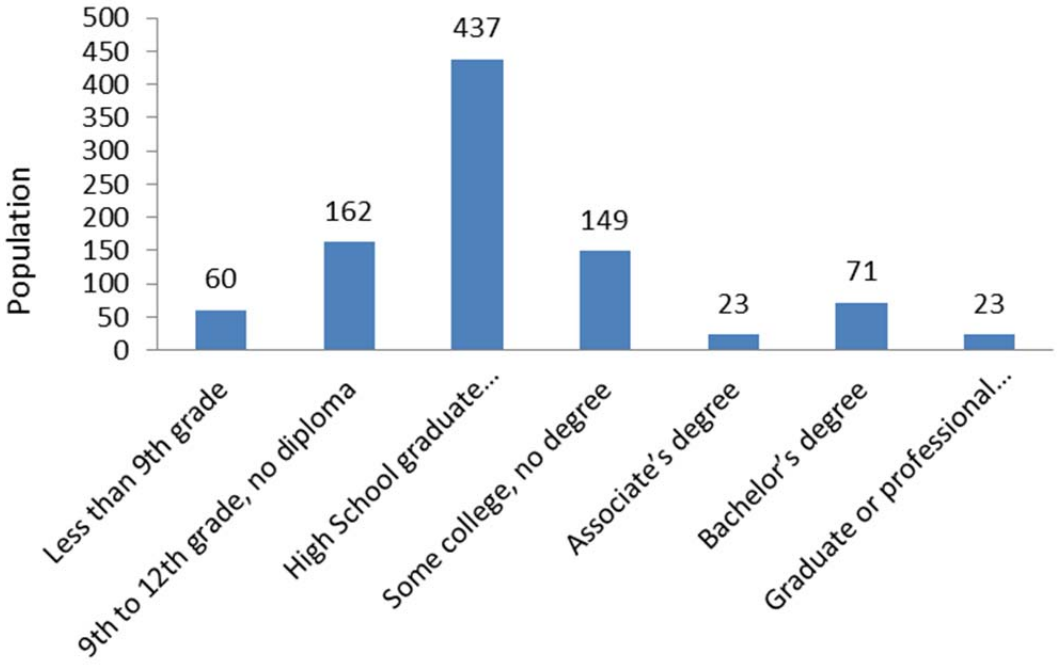


Figure 6. Proportion of the Malesso population by educational attainment. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

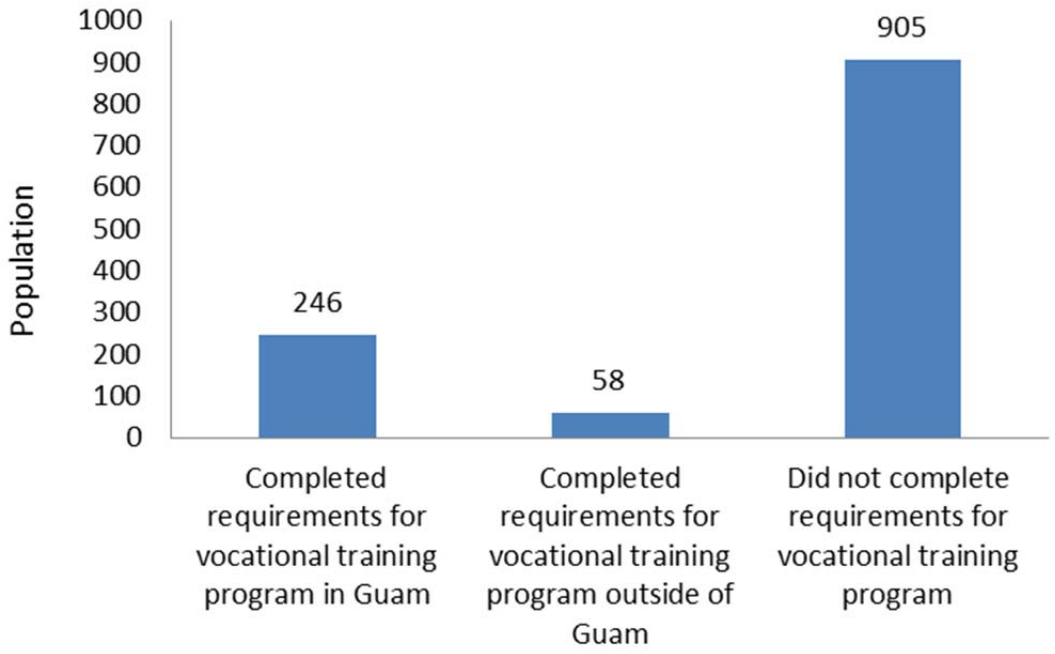


Figure 7. Proportion of the Malesso population by completion of educational attainment. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

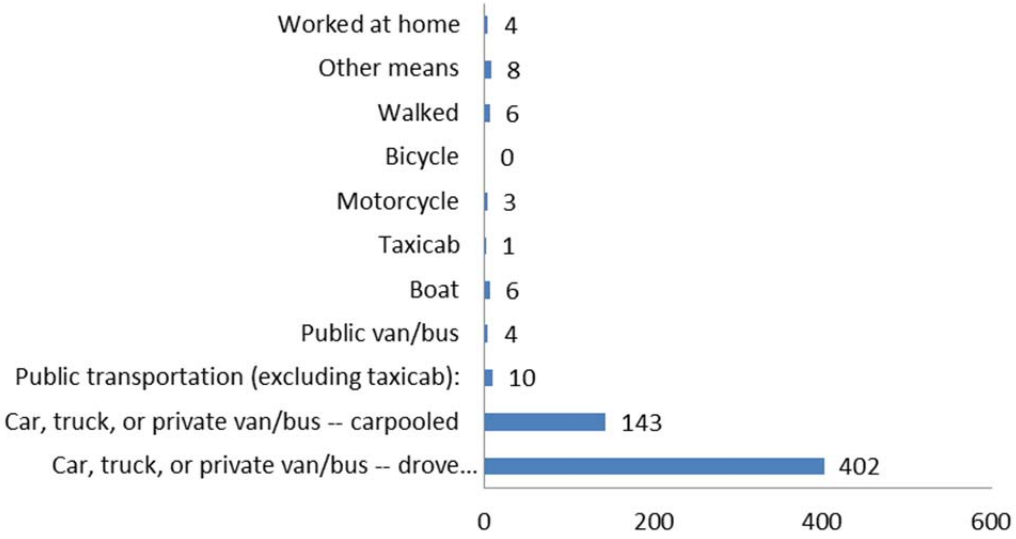


Figure 8. Proportion of the Malesso population by mode of transportation. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

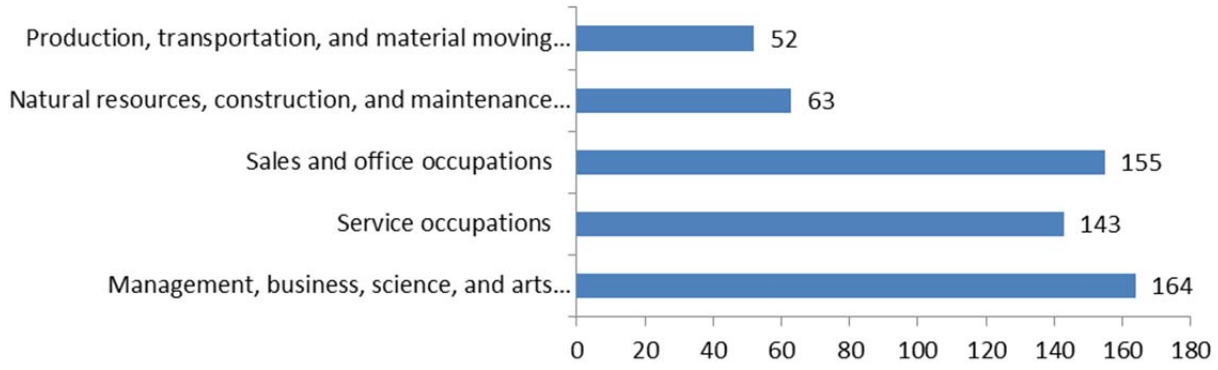


Figure 9. Proportion of the Malesso population by occupation of civilian employees. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

Income

A family household is defined as a household in which at least one other member of the household is related to the head of the house. 18.52% account for households earning $100,000 or more while only 0.74% had an annual income of $2,500 - $4,999 (Figure 11). In 2009, the median household income of Malesso residents was $55,673.

The U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to determine poverty. If the total income for a family household or for an unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being below the poverty level. Figure 12 shows that 53% of children under 18 years belong to households with income below the poverty level.

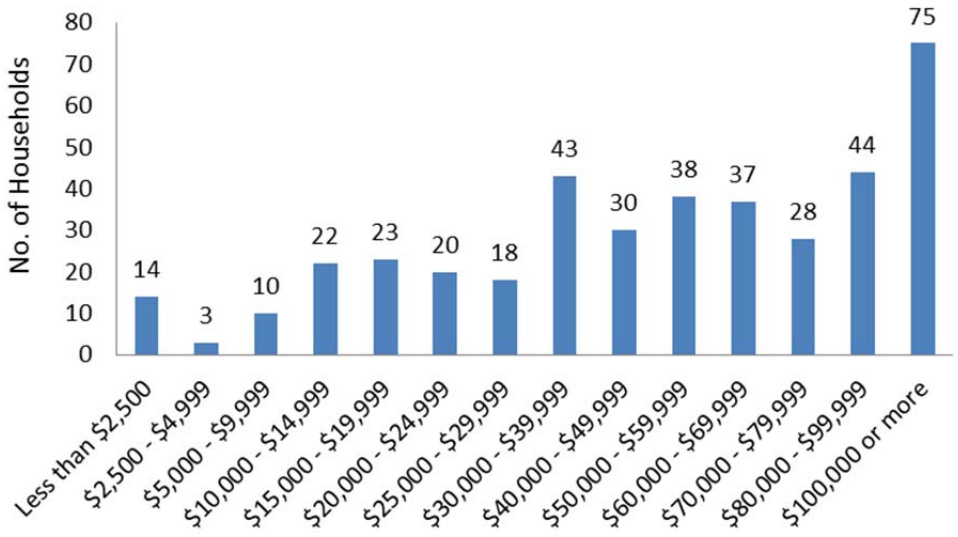


Figure 10. Proportion of the Malesso population by household income in 2009. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

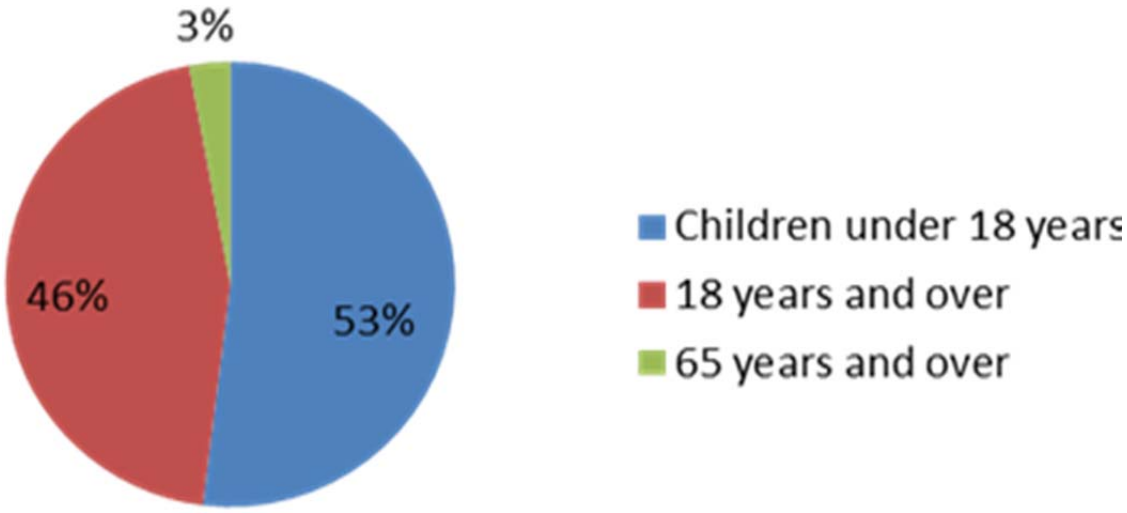


Figure 11. Proportion of the Malesso population below the poverty line by age in 2009. SOURCE: US Census Bureau, 2010 Census Guam and the Guam State Data Center, Bureau of Statistics and Plans, (May 2013)

Governance

To facilitate management activities, the Malesso Mayor's Office collaborates with non-governmental organizations (NGOs), community-based organizations, and other government agencies operating in the community. It plans and initiates activities for the orderly, balanced, and sustainable development of the community, for managing economic activity and supporting local wealth creation. The Mayor's office has the authority to make by-laws, regulations and rules for good governance of the community.

At present, the agencies that work with the community are NOAA, Department of Parks and Recreation, Guam Fire Department, Guam Police Department, Bureau of Statistics and Plans, Environmental Protection Agency, and the Department of Public Works. They help in developing, managing and maintaining infrastructure and public facilities such as roads, water supplies, sewage treatment and drainage, parks, recreational centers, cemeteries, public sanitary conveniences and public beaches. They provide local services such as emergency relief, public health, and street lighting. They also help in building and planning approvals and development control which include licensing of trades and businesses.

Malesso has cultural institutions that are important and traditionally valued by its residents that contribute to their own unique identity. These include the Malesso Martyrs Memorial School, San Dimas Catholic Church, *Malesso Kombento*, and the Merlin G. Cook Youth Recreation Center, which are managed by the Mayor's office.

Ecology and the Natural Environment

The natural environment is a valuable asset in supporting and sustaining human activities. Therefore, it is in the long-term interest of the community to manage utilization of these natural resources in a way that promotes wise use and sustainable development.

On May 16, 1997, the Achang Reef Flat Marine Preserve (ARFMP) was established by Guam Public Law 24-21. It restricted all forms of fishing in the marine preserve area except for those methods specifically allowed in a marine reserve. Bag limits and size limits for crustaceans and invertebrates were established.

The purpose of the marine preserves was implemented as a means of recognizing that: "Guam's fisheries are a fragile and irreplaceable resource and that the cultural identity and social fabric of the people of Guam are dependent upon sustained traditional use and a healthy natural fishery. Recent information has shown that near shore fishery is declining. The Guam Legislature has determined that measures must be taken to preserve local traditions and to protect the natural resource, which is so valuable to both the community and the economy." – Public Law 24-21 (1997).

The establishment of the marine preserve and the pollution of Cocos Lagoon limited the use of the ocean for the traditional fishing practice. However, restrictions on the use of gear, size and bag limits have not been monitored and no baseline of information is available to gauge the success or failure of the marine preserve to maintain or enhance local traditions and protect the natural resource.

The result of the creation of marine preserves in 1997 (Tumon Bay, Achang Reef Flat, Piti Bomb Holes, Sasa Bay and Pati Point) restricted fishing and had the effect of displacing fishermen to areas not traditionally used for fishing.

By participating in the planning process, the Malesso community increased their understanding of ecology and the need for proper planning and management of their natural resources. They shared their knowledge of the resources and the value that these resources represent to the community. They gained an appreciation of the need for resource planning and management and the importance of participation and collaboration in this effort. As a consequence the community is ready to proceed and take management responsibility for their natural and cultural resources.

Unique Value of Malesso

The Village of Malesso is the southernmost village in the United States territory of Guam. Its original name, Malesso', is derived from the Chamorro word *lesso'*, a juvenile stage in the growth of rabbit fish. The juvenile rabbit fish, or *mañåhak* in Chamorro, run in schools at certain times of the year in the bays and inlets of the village.

Running fish and edible reef fishes such as Rabbitfish, Goatfish, Atulai, I'e, Ki'tu, and Rudderfish are among the species that mostly inhabit the waters of the village. Aside from this, it is also rich with mollusks such as Aliling, Hima Clam or Spider conch, and Triton's trumpet. You would also find crustaceans such as Mangrove crabs, Ayuyu, and Panglao (Figure 13).

The mangrove plants in the area are a home to the large variety of fish, crab, shrimp, and mollusk species. The dense root systems of these plants trap sediments which help stabilize the coastline and prevent erosion from waves and storms. The presence of seagrass beds also provide ecosystem services to the coastal zone for instance, fishing grounds, wave protection, oxygen production and protection against coastal erosion. Large coral patches which include staghorn beds and large coral bommies as well as sand flats can be seen throughout the coastal area.

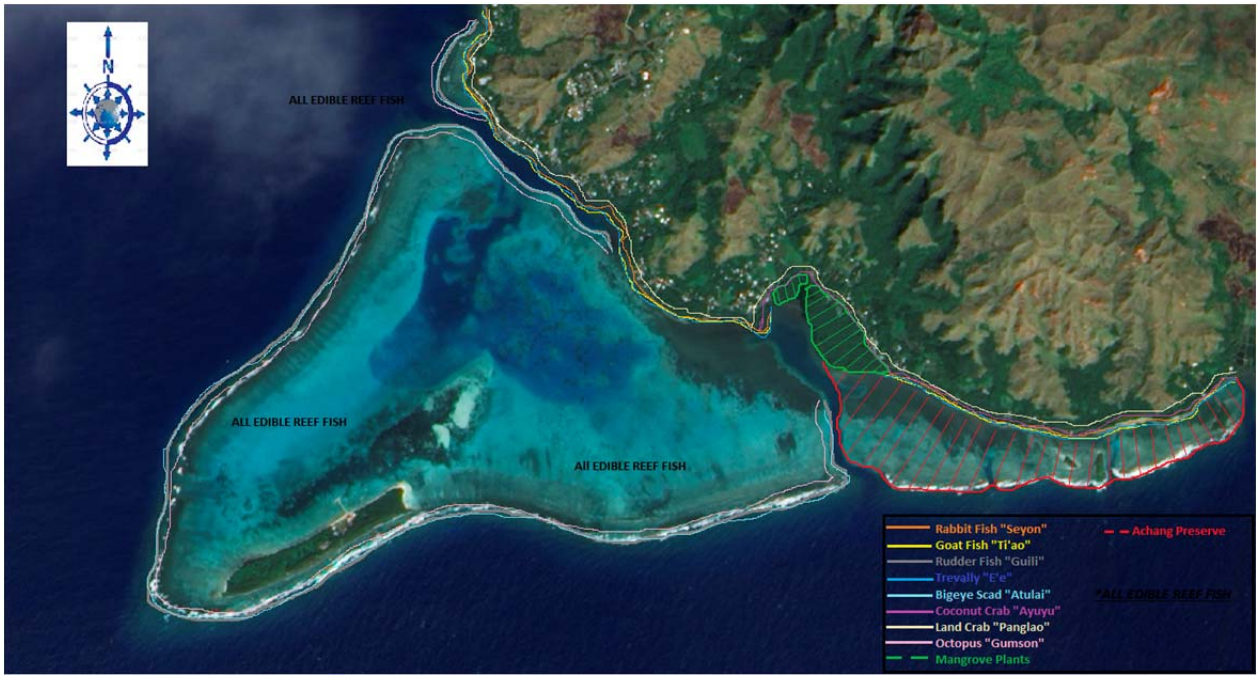


Figure 12. Map of Malesso marked with the community perception on the location of important commercial and traditional fish resources.

Malesso has a warm, humid climate. Daytime temperatures are usually in the middle to high eighties, and nighttime temperatures are in the middle to high seventies. Mean annual rainfall ranges from 85 to 115 inches. Soil composition is formed mostly of a volcanic sequence of Tertiary *e* age (early Miocene), the Umatac formation. This comprises the Facpi volcanic

member-about 1,400 feet of pillow lavas, flow breccia, and tuffaceous shale; the Maemong limestone member that tongues into the upper part of the Facpi and contains an abundant Tertiary *e* fauna of larger Foraminifera; the Bolanos pyroclastic member-a thick-bedded reworked tuff breccia and volcanic conglomerate containing fragments of limestone of the Maemong member; and the capping Dandan flow member-a thin lava cap that is present only as scattered weathered remnants (Tracey et al. 1964).

The highlands of Malesso looking at the vast ocean domain with the Cocos Island on the far end.

Description of the Planning Process

Coastal and Marine Resource planning is a process for analyzing and allocating coastal and marine space for multiple uses in order to achieve specific ecological, economic, and social objectives. Traditionally, the use of the sea was limited to transportation and commerce, food source, and disposal of effluent and solid waste. However, as population continued to increase, greater demand was placed on the marine environment. Because of this, there were spatial and temporal dispute, together with fragmented and/or overlapping management authorities, that often resulted in conflict and environmental impairment.

In 2010, the Mayors from villages of Malesso and Santa Rita were identified by the Mayor's Council of Guam (MCOG) as the points-of-contacts to engage in village-based ecosystem projects: ecosystem monitoring workshops and potential sites for developing a pilot project on community-based management of marine resources. Seizing this opportunity, a series of community meetings, in partnership with other government agencies and organizations, were held. These meetings introduced and demonstrated bio-sampling, tagging, water quality data collection, and an online data collection program to these communities. Building on this effort the Western Pacific Regional Fishery Management Council (WPRFMC) began in earnest engaging, developing and supporting a community marine resource management plan for the village of Malesso.

The Malesso community expressed the need for marine resource planning because of human activities that were adversely affecting their natural areas: i.e., boating, jetskiing, diving, fishing, etc. There was an array of incompatible human activities, policies and procedures that needed to be streamlined, anticipated new use activities, and a long-range vision for their marine

area that needed to be accommodated.

A series of community workshops and follow-up meetings were undertaken at the Malesso Community Center.

The first phase in the process was to engage the community and define the community objectives. These objectives were determined by the community participants. The next phase required matching objectives and resources, ensuring that the community was provided with the tools and materials needed to achieve their objectives. The final phase of the project will be the implementation of the community management plan by the Malesso community. They will monitor and evaluate the effects of the plan to include periodic review of the plan progress. Such evaluation would determine if progress is satisfactory and whether the community is facing some problems with plan implementation. This would be conducted based on fair and measurable standards.

Consultation and assistance in plan implementation would be provided by NGOs and government agencies such as Department of Agriculture (DA), National Oceanic and Atmospheric Administration (NOAA), Department of Parks and Recreation, UOG Marine Laboratory, Environmental Protection Agency (EPA), Army Corps of Engineers, Bureau of Statistics and Plans, US Coast Guard, Guam Legislature, Fire and Police Department.

Several issues were raised. Recommendations were made on topics such as fishing boundaries, motorized boating activity limitations, and involvement of *Sainas* (elders) in decision-making processes related to implementation of community projects.

The community was geared towards the protection of their marine resources congruent with their health and well-being. As part of their vision to continue what their forefathers have left, they strongly recommend the involvement of their *Sainas* because of the key role that they played in influencing community perspective, attitudes, and development.

Chapter 2: Determining What is Important

Purpose of the Plan

In general, a spatial management plan includes the description of the community's vision, objectives, priorities, timetable of activities to be undertaken, management measures, policy directives, education, funding requirements, and monitoring and evaluation activities.

The purpose of the plan is to allow the community to define their management area, identify and determine what resources exist and are important, how those resources should be used and by whom, and what type of management initiatives may be needed to support the plan. The elements of approaches to management planning may include regulations, permits, best management practices, voluntary compliance, educational initiatives, recommendations to other agencies, fee systems, and zones.

What is Place-based Planning?

Place-based planning refers to land and natural resource planning efforts that bring together diverse human values, uses, experiences, and activities tied to specific geographical locations (Kruger et al. 2008).

The Malesso Community actively engaging at the first Community Planning Workshop at the Merizo Community Center.

Building objectives for place-based marine planning enables the community to develop clearly-articulated multiple use objectives that define what they are trying to achieve in their coastal and marine spatial plan.

Through place-based planning, the community can focus on identifying current uses and values and exploring desired future conditions for their management area. This process

empowered the community and enhanced solidarity by encouraging discussions that articulated common goals and needs while diminishing the potential for polarization around false equivalencies. That camaraderie may have diminished in previous planning activities in the community through the inadvertent use of logical fallacies by discussion facilitators that would polarize discussions around unequal opposites and divide the community. In this process everything that was said was valid and on record, and the solution was validated by community consensus. It encouraged the community to seek consensus and cooperation. This resulted in a positive outlook while effectively addressing underlying sources of conflict in their management area.

Understanding the Management Area

The many influences in a proposed marine management area are from both from inside and outside sources. While defining the management area using the visible water surface, the true management area includes the water column, and the seabed and the additional dimension of the time. Different rights and responsibilities must be considered: public access, navigation, riparian, development, fishing, seabed use, and mineral rights. Temporal considerations such as seasonal, weather-dependent, and annual activities are significant.

An integrated management approach takes into consideration the needs of the ecosystem and the needs of the community. Management decisions are made collaboratively with the goal being the best development and protection of Malesso's marine resources. Malesso's community can then benefit from the management of these resources.

As a result of the workshops conducted, the community identified the whole village of Malesso as their management area and ranked resources according to priority. The resources in each of the categories listed below. Categories are explained in detail in the next chapter.

a. Species of concern
b. Habitats of concern
c. Special features
d. Socio-economic
e. Cultural and historical

The year-round activities that occur in the management area include jetski, power/motor boats, water ski, shuttle boats, banana boating, parasailing, dolphin watching, aquarium collecting, swimming, net fishing, and pole/line spear fishing. They also have races as part of their annual Water festival celebration, *Fiestan Tasi*.

To better facilitate the activities in the management area, infrastructure such as pier and

boat ramp, buoy/mooring anchors, and on-site emergency first aid/CPR and rescue station need to be constructed and maintained. Proper enforcement is likewise required to ensure that activities undertaken in the management area harmonize with sustainable use. The community's main concern is the protection and maintenance of their natural resources which include clean water, reef substructures such as reef and sand flats, coral beds, bommies, and the lagoon.

Assessing Malesso's Planning Needs

The Malesso community has a history of engaging government authorities on the management of its natural resources. Community concerns with regard to regulatory initiatives or the application of existing rules and regulations are well known and were discussed in prior forums. In this community engagement effort, the 2013 planning workshops, the first exercise challenged workshop participants to assess the need for strategic planning at this time. A series of worksheet exercises encouraged community members to determine, for themselves, if planning was needed. The exercises tested their commitment to continue the planning process and their willingness to commit the time and resources to support such an effort. The exercises brought to light resources (biological, cultural, historical, and others) that are of concern because of current or potential human use activities. It identified conflicting uses, effects of changes in management, perceptions of environmental changes and other indicators of problems that would benefit from resource management intervention.

Based on this initial exercise and following discussion, it was clear that the community supported the planning effort.

Plan Objectives

Developing and identifying community marine resource management plan objectives is one of the most important and often difficult steps undertaken in any planning effort. In many instances, initial community engagement and discussions would focus on specific resource issues relevant to that community. In this effort, issues raised included the management and enforcement of land crabs, establishment and monitoring of the marine preserve, user conflicts in the lagoon, and contamination of the Cocos Island fishery resources, among others. Allowing the community to step back from those immediate issues and discuss underlying community needs, priorities and processes that underpin many of those issues is often difficult. However, if the community can focus on visioning and goal-setting to identify objectives, the outcome of the community plan is reasoned and logical.

To develop and identify plan objectives, community participants worked through a number of visioning and defining exercises to clearly identify the boundaries of their

management area and the natural, cultural, social, historical, economic, and political resources within the area. The community discussed and reasoned through an array of social, cultural, natural resource, historical, political, and other components and values. Through active discussion by and with community participants, plan objectives were developed and prioritized that supported elements most important to the Malesso community. Three broad objectives were developed that supported Malesso's vision for the future to ensure its coastal and marine natural resources thrive to benefit the community culturally, socially, and economically.

The following objectives were formulated through deliberate planning by the community participants, with the input from their Sainas (elders) and a shared vision for their children's children.

Conservation Objective

> *"To ensure Malesso's living marine resources, along with their ecosystems and habitats, are restored, maintained and protected; and are monitored as prescribed by the community to assess environmental impact of external effects to mitigate any damages, in order to ensure the quality and health for its sustainability as a resource for the health and well-being of the Malesso Community and its future generations."*

The conservation objective aims to empower the community of Malesso in the prescription of conservation measures that will be implemented within the village. The community would like to restore damaged resources and protect existing assets and mitigate future impacts. The community recognizes the presence of the Achang preserve and notes the value and benefits of its existence. However, the village also asserts its traditional rights to access fish during seasonal runs as part of the community's traditions and cultural practices.

Socio-Economic Objective

> *"Protehe I Li'na'la'ta! To protect the local (indigenous) rights of the Malesso Community's resources for the community's sustainable livelihood, health and well-being, and to be able to educate and promote the traditional and cultural practices for the present and future generations."*

The community aims for their long-standing and continuous traditional practices and relationships to be preserved, supported, and maintained. Local resources in Malesso will be used to benefit the community; that is, for economic development opportunities to increase. In this way, more economic opportunities would be available for residents. All applicable services; such as water, fuel, transportation, emergency services; that can be obtained from outside sources shall likewise be sought to help Malesso residents maintain all their rights to the resources.

Sainas or elders shall be consulted on matters affecting or relating to their traditional practices such as accessibility and viability, among others, in determining the compatibility of local rights with the governing authority.

Governance Objective

> *"Ensure compatibility between federal, territorial and local management regimes that maximize obligations and local rights to the Malesso community for a sustainable livelihood, health, and well-being."*

To meet this objective, *Sainas* shall be consulted during planning and policy-making to incorporate their traditional knowledge in the monitoring and management of Malesso's resources. This will ensure that such plans and policies recognize the privileges that have been traditionally accorded to traditional leaders, elders, and cultural practitioners. Traditional practitioners are cognizant of the cycles, seasons, and ways of sustainable fishing livelihoods. Their skills and experiences make them significant stakeholders in any decision impacting the historical fishing grounds within the management area.

The community wants to keep and maintain their traditional way of fishing. Traditional ways of fishing should be respected. That style of fishing has been sustainable for hundreds of years and commercial fishing should be managed to ensure continued sustainability of fishery resources. Moreover, they want a moratorium, a stop, on the creation of any more Marine Preserve Areas (MPAs).

Chapter 3: Identifying Malesso Resources

As the next step in the planning effort, community participants were asked to identify "resources" important to their community that are found within the management area.

Most of the resources identified fell within the general categories of species, habitats, special features, socio-economic, and cultural and historical. These resources were listed within the general categories and ranked based on their correlation with the plan objectives and through detailed community dialogue.

Table 1. Community defined resources by categories (species, habitat, special features, socio-economic, cultural and historical) and ranked by importance.

RESOURCES	RANK
Species	
Seasonal run species (e.g. *manahak*/rabbitfish; *ti'ao*/goatfish, *atulai*/big eye scad, *I'e*/jacks, *ki'chu*/convict tang, and *guili*/rudderfish) and all edible reef fishes	1
Mangroves	2
Mollusks e.g. *aliling*, *hima* clam/spider conch, and triton's trumpet	3
Crustaceans (e.g. mangrove crab, *ayuyu*, *panglao*)	4
Habitats	
Large coral patches - Staghorn coral beds, large coral bommies, and Babi Island	1
Coastal (estuarine) Areas i.e. seagrass, mangrove, and streams/(Tinta)	2
Preserve Areas	3
Sand flats	4
Special Features	
Malesso Lagoon	1
Socio-Economic	
Cocos Island/water sports	1
Malesso Pier – Malesso Pier Park	2
Cocos Preserve (Navy End)	3
Water Festival (Fiestan Tasi)	4
Cultural and Historical – All Critical Resources; Not Prioritized	
Village Fiesta	1

RESOURCES	RANK
Cocos Island/Lagoon	1
Achang Preserve	1
Crab Festival	1
Water Festival (Fiestan Tasi)	1
Church Bell	1
Malesso Pier – Malesso Pier Park	1
Malesso Youth Center	1
Tinta (Streams)	1
Fa'ha – Massacre site – annual observance of this day	1

The following provides additional information on the resources identified and prioritized by the Malesso community.

Species and Habitat

Species and habitats are naturally occurring elements in their relatively unmodified form. Their value depends on what it is, its availability and the demand for it. The following are living resources which can renew themselves if not over harvested. The community protects and conserves these resources through traditional harvest practices.

Seasonal fish and all edible reef fishes

The seasonal fish and edible reef fishes that thrive in the area include Rabbitfish, Goatfish, Atulai, I'e, Ki'chu, and Rudderfish.

The Rabbitfish locally known as *manahak,* usually occurs around the last quarter moon in April and/or May and occasionally in October. During a good seasonal run, millions of these fishes invade the reefs where fishermen are able to scoop them in fine-mesh nets.

Bigeye scad also known as *Atulai,* spend most of their time in deep, near shore waters beyond the edge of the reef, migrating to shallow bays and channels at certain times of the year. It can reach a fork length of 15 inches but averages about 10 inches. *Atulai* fishing mostly happens from August to November. Atulai are taken using nets and hook and line. They can be taken both day and night.

Young jacks called *I'e* measure about three inches in length and migrate from the open sea to shallow shoreline waters during the summer months.

The Rudderfish or *Guili* mainly feed on plants including algae and seaweeds. The large

sizes of these fishes are mostly found along the reef margin and steep rocky areas. They are distinguished by local fishermen through color phases. The lighter phase is known as *guili* while the darker phase is known as *guilen puengi*, which means night in Chamorro. *Geppan* or small *guili*, measuring less than 10 inches, are mostly found on the upper portion of the reef. Great skill in the use of *talaya* is required to catch this species.

Goatfish or *Satmoneti* (over eight inches in size) are bottom dwellers which have a pair of long barbels or whiskers under the chin. The young ones are called *ti'ao* which can be caught through cast net, scoop net, and drag net. The larger ones which are called *Satmonetiyos* are caught with gill net, spear, and hook and line. The most common goatfish is the yellowstripe goatfish found on reef flats and lagoon waters. Goatfish can be seen in deeper parts of the reef near the shelter of corals.

Figure 14 shows potential habitats of gumson, guili, sesyon, tiao, atulai and I'e based on known biological information and habitat association. Majority of the hard bottom substrate are habitat for gumson, while the sand substrate and seagrass beds within the lagoon are for guili and sesyon. Ti'ao, atulai, and I'e habitats are found on the outer edge of the lagoon system.

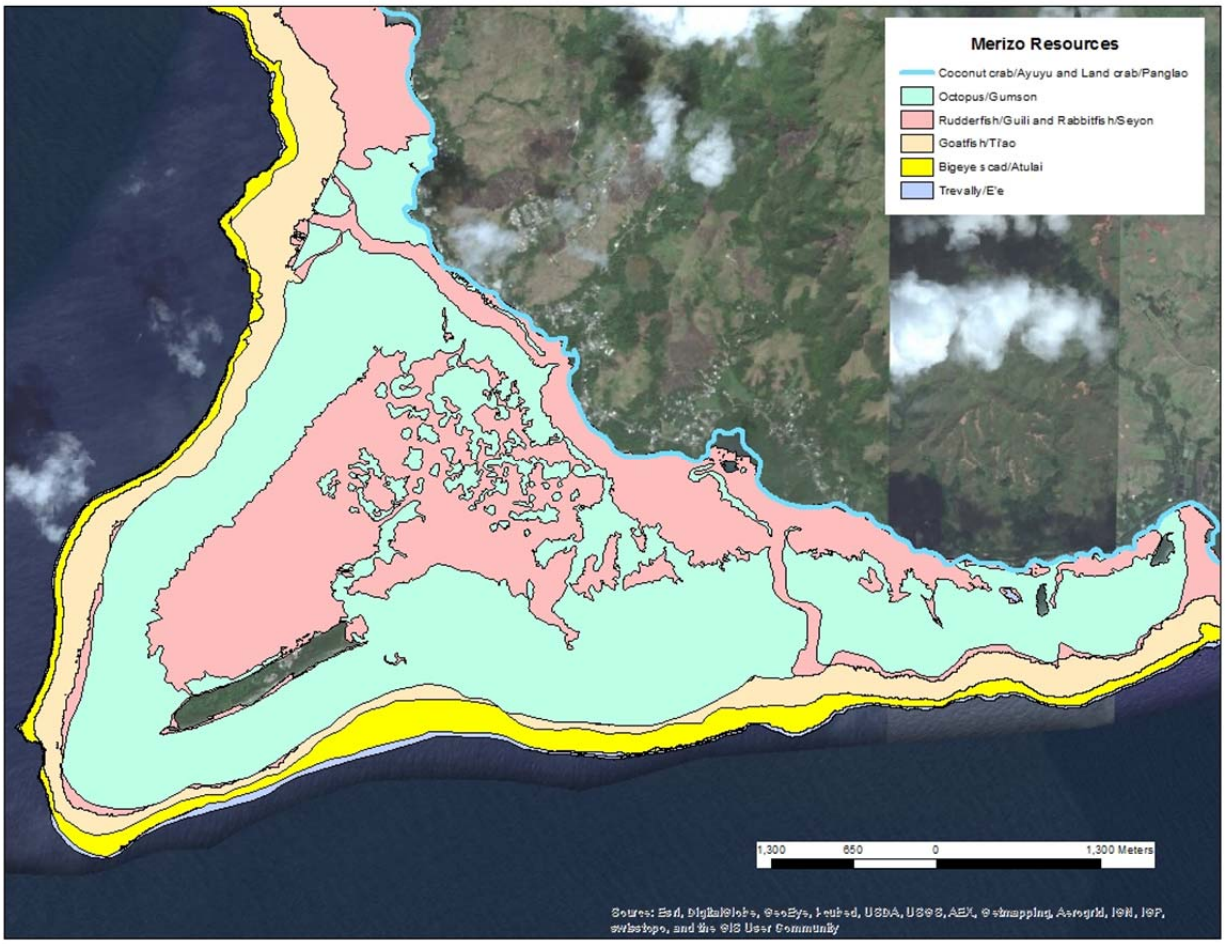


Figure 13. Map of the Malesso reef system showing the habitat distribution of commercially and traditionally harvested reef fishes

Ecological survey information is limited for Malesso. Much of the survey efforts are focused on the Achang Preserve conducted by the Division of Aquatic and Wildlife Resources. The NOAA NMFS Pacific Island Fisheries Science Center-Coral Reef Ecosystem Division conducts rapid assessment and monitoring at the outer reef areas every two to three years. Figure 15 shows the relative biomass of common reef fish families around the outer reef of Malesso. The southern outer reef areas are mostly dominated by herbivores like surgeonfish and parrotfish. One site at the Achang Preserve has a high biomass of barracuda. The western reef edges are dominated by surgeonfish, parrotfish, and triggerfish.

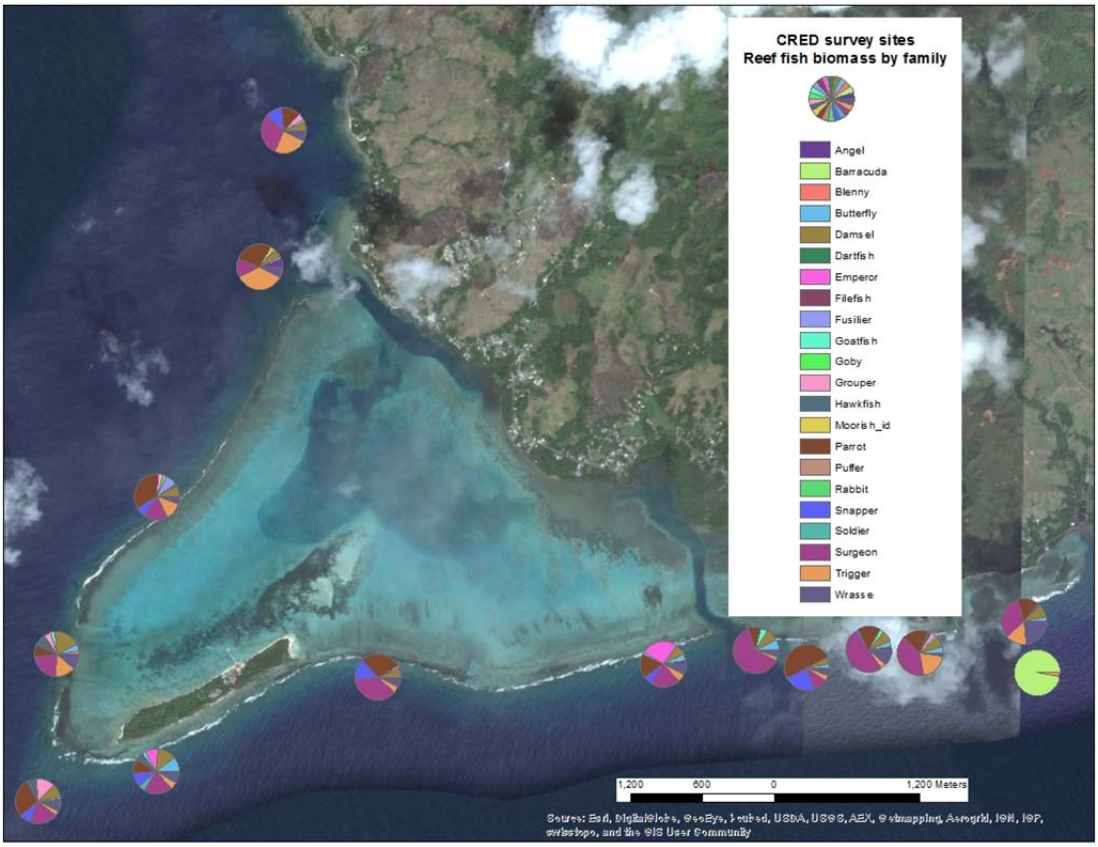


Figure 14. Relative biomass of the major reef fish families at the village of Malesso.

Coastal area (seagrass, mangrove, and streams)

It has already been described that the coastal area is extremely important for the social and economic welfare of both the present and future generations of Malesso residents. Malesso's coastal area include estuarine, coral reef, coastal mangrove and other wetlands, tidal flats and seagrass beds, which provide essential nursery and feeding areas for many nearshore and oceanic species.

Mangroves serve as a buffer zone against ecological disasters and protector of shorelines, breeding, and nursery for a variety of marine animals such as fishes, reptiles and amphibians, mammals, and both marine and terrestrial birds. Some reef fish require mangroves to complete their life cycle. Adult fish migrate to mangrove forests to spawn. The juveniles depend on the tangle of aerial mangrove roots for protection from large predators. As they grow, they move to a more open habitat such as seagrass and coral reefs. As adults, they return to the mangroves to spawn. Mangroves filter nutrients. They slow the movement of water and allow sedimentation to occur, thus, improving water quality for the seagrass.

Seagrasses are underwater flowering plants which grow in shallow coastal waters which act as a nursery for many species of reef and deep sea fish. Certain species of fish such as groupers, snappers, parrotfish, and barracuda forage on seagrass beds where they spend their juvenile stage. Other species that depend on seagrass include conch, spiny lobster, stingrays, shrimps, various species of urchins and crab. Furthermore, seagrasses improve water quality by filtering nutrients and providing for sedimentation before discharge into reefs. It protects the coastlines by weakening wave energy. Seagrass beds stabilize sediments.

Three species of seagrasses are found in the management area: *Enhalus acoroides*, found in sandy silt near the mouths of the rivers; *Halodule uninervis*, abundant in Cocos Lagoon; and *Halophila minor*, found on shallow sandy reef flats and in the deeper lagoon environments. Like mangroves, seagrass beds help to stabilize the sand during rough water conditions and serve as food and shelter for many marine animals. Green sea turtles (*Chelonia mydas*) feed on seagrasses, and the beds provide food and refuge from predators for juvenile fish such as *mañåhak* (juvenile rabbitfishes, *Siganus spinus* and *Siganus argenteus*) (Tsuda n.d.).

S. S. Amesbury et al. (1993) monitored recovery of a large *Halodule uninervis* seagrass bed in Cocos Lagoon after overgrazing by rabbitfish (*Siganus* spp.). They found that as seagrass cover and blade length increased, so did fish abundance and diversity. The first fish assemblages to return were dominated by invertebrate feeders, but later as herbivorous fishes became more abundant, seagrass cover and blade length declined. Amesbury et al. concluded that this was an example of an oscillating steady state driven by variations in seasonal fish recruitment.

Figure 16 shows the diverse habitat types that occur in the Malesso. Being a lagoon environment, the substrate is dominated by sand with scattered, non-contiguous patch reefs and pavement colonized with various marine fauna. Mangrove habitat occurs at the lower half of the village fronting the Achang Preserve. Aggregate reef and spur-and-groove reef constitute the ocean side of the village. Several natural channels line the shoreline providing an unobstructed passage to the village from the ocean side.

Figure 17 shows the flora and fauna that comprise the various habitats on the shallow reef system surrounding Malesso. The outer reef areas are predominantly corals with cover ranging from 10%-50%. Areas of the outer slope are also covered by high amounts of turf algae. Coralline algae cover, important substrate for coral recruitment, is very limited. Most of the back reef areas are covered with macroalgae, seagrass beds are found at the inner lagoon area and Sandy substrates that comprise the lagoon area.

Mollusks

Species such as snails and clams have commercial value as food and as sources of pharmaceuticals and medical research. They provide important sources of nourishment and shelter (discarded shells) for other marine organisms. As filter feeders, they keep the water clean recycling nutrients through their system and they are susceptible to water borne pollutants. In Malesso, the common mollusks found are Hima, Aliling, Spider conch, and the Triton's trumpet.

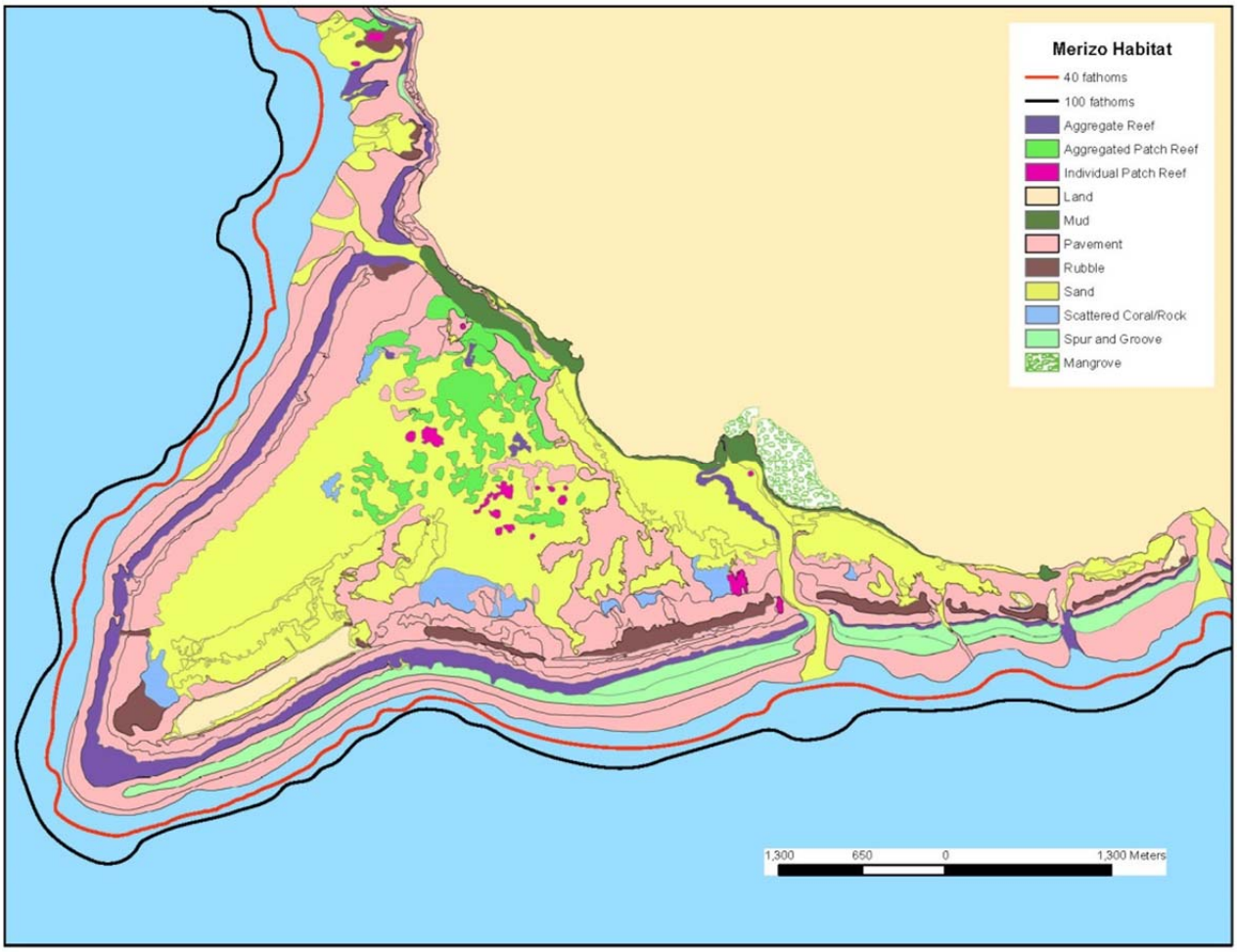


Figure 15. Benthic map of the village of Malesso indicating a diverse array of habitats that comprise the shallow water reef system.

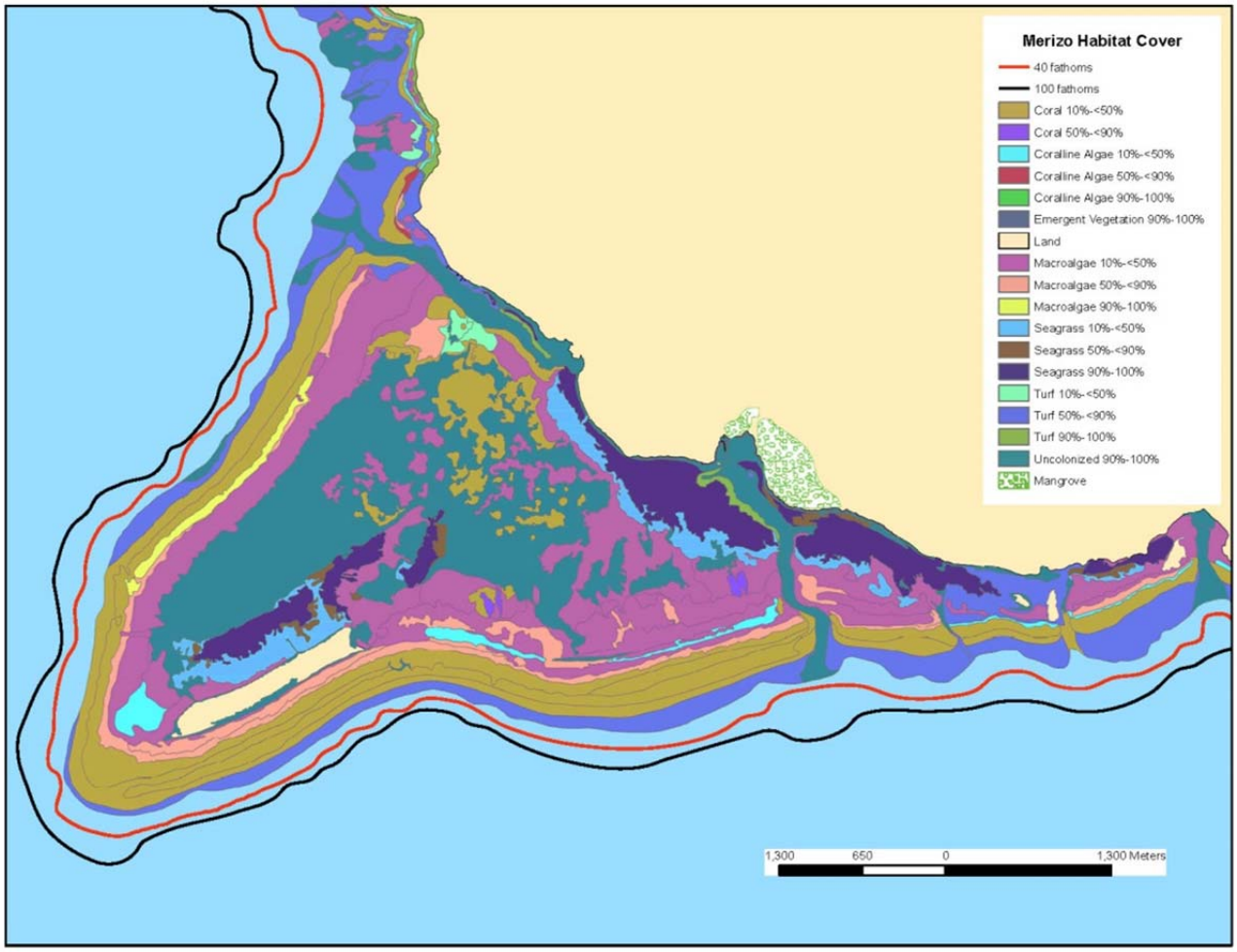


Figure 16. Benthic map of the village of Malesso showing the relative cover of benthic flora and fauna in the shallow water reef system

The giant clam or *Hima* is a prized delicacy which is most common in areas with strong water movement or shallow waters beyond the reef. According to Guam fishing regulations, these clams can only be taken for home consumption from April through July. Only 20 pounds (9 kg) of shells can be harvested per day during the season and each must at least be 5.9 inches wide and less than 11.8 inches. Harvest is prohibited in the marine preserve.

The commercial harvest of Trochus or *Aliling* is limited to shells with a base diameter of four (4) inches or greater for local sale only. Shells with a base diameter of no less than 3 inches can be taken for personal use. No more than one thousand (1,000) pieces can be taken per person per year for local commercial sale. The harvest season usually begins on the 1st of October each year. Once the total commercial harvest of 10,000 pieces is obtained island-wide, the season shall be closed. The commercial harvesting of these sea snails is prohibited shoreward of the outer edge of the fringing reef (reef margin). This includes the lagoons and channels that extend shoreward from the outer edge of the fringing reef. The harvest of trochus is prohibited in the

marine preserve. However, each person is allowed fifty (50) clams per day, including shells for personal use (Public Law 24-21, Chapter 2, Title 16, Subchapter C, Section 15312.1).

The triton's trumpet lives among shallow coral and sand. It is one of the biggest snails in the reef, growing up to 2 feet long. The shell is well known as a decorative object, and is sometimes modified for use as a trumpet such as the Japanese ***horagai***. The giant triton eats sea urchins and sea stars, and is reported as one of the few predators of the crown-of-thorns sea star.

Spider conches are fast growing marine snails that feed on algae. They move from the shallow water into deeper waters as they grow and return to the shallows to lay eggs. They reach approximately ¼ lbs. (0.2 kg) in their first year, and may attain a weight of about 4 ½ lbs. (2 kg) as adults.

Crustaceans

Crustaceans are a diverse group of arthropods that include lobsters, crabs, prawns, shrimp, barnacles, and pill bugs. The smaller ones have the ability to recycle nutrients as filter feeders while the larger ones are a food source for large aquatic mammals. The terrestrial crustaceans are important decomposers feeding on detritus and dead organisms.

Mangrove or mud crabs are an important food species. They have a high value and are prized because of their high flesh content, good flavor and good size. Adult females can reach a weight of 3.5 kilograms (7.7 lbs) and a shell width of up to 24 cm (9 ½ inches). They are very active, highly tolerant of ammonia and nitrates, grow rapidly and are indiscriminate omnivores. They are highly cannibalistic with a high moult mortality, when one crab is moulting it may be attacked and devoured by other mangrove crabs. While generally cooked in the shell at their hard shell stage, their soft shell stage may be treated like other soft-shelled varieties of crab: killed by freezing and batter fried.

Coconut crab or *Ayuyu* are large terrestrial hermit crabs that spend their larval stage in the ocean. Coconut crabs mate frequently during May through September. Adult males deposit a mass of spermatophores on the abdomen of adult females. It is believed that the eggs are fertilized as they are released from the females from an opening at the base of the females abdomen and are fertilized as they pass through the spermatophore mass. The eggs are extruded on land near the shore. Adult females glue the fertilized eggs to the underside of her abdomen carrying the eggs for a few months. When the eggs hatch the larvae are released into the ocean, usually at dusk at a high tide. The tiny larvae spend three to four weeks in a pelagic stage. After up to 33 days at sea the larvae moult into a post-larval stage and settle out to the bottom. Like a hermit crab they seek out a suitable shell and migrate toward the shoreline with other hermit crabs. In this stage they may forage on land periodically until reaching the stage where they take

up permanent residence on land as adults. Coconut crabs can live up to 60 years and reach adulthood five years after hatching. They reach their maximum size at 40 to 60 years old. As the name implies, coconut is their favorite food but they eat anything from plants to rotten wood. According to Public Law 24-21, Title 16, Chapter 2, Section 15314, the commercial harvest or sale of coconut crabs with a carapace width less than four (4) inches is prohibited (see illustration). Coconut crabs must be preserved whole until cooked or frozen. Any coconut crab not complying with the commercial harvest minimum size requirements must be released immediately. Any coconut crab in confinement will be considered taken and subject to harvest regulations. No coconut crabs shall be taken, while they are carrying eggs. Evidence of removal of eggs (orange to brown colored mass attached under tail) shall be considered prima facie evidence of violation of this Section of the Regulation. Any sub-legal crab injured due to attempted harvest will be viewed as take.

Land crabs or *Pång'lao* are most common and frequently harvested animals on the island. There are at least three species of land crabs harvested and *Pång'lao echong* (crooked crab) is the most common. These crabs build burrows and moult (shed their shells) in their burrows. The females can only successfully mate when their shell are still soft after moulting. The fertilized eggs are released into the sea near the mouth of a river. The larvae join the other plankton in the pelagic ocean until settling out in their post-larval, juvenile stage and migrating to shore. The eve of a full moon is the best time to go crab hunting. *Pang' lao* are indiscriminate foragers and so are purged for a two or three days after capture by holding them in a clean area and feeding them grated coconut and water. The crabs are scrubbed thoroughly before cooking.

Habitats

Large coral patches

Coral patches refer to comparatively small, isolated outcrops of coral surrounded by sand and/or seagrass. Patch reef communities are found in waters 10-30 feet in depth where the outer edge of each patch reef is surrounded by a ring of sand. Each patch reef is different in size, development, and species living on them. Mostly large colonies of star and brain corals make up this reef type.

Preserve areas and sand flats

Preserve areas are believed to help rebuild stocks, maintain biological productivity, and support marine fisheries. Tidal flats may consist of a number of different types of sediments: gravels, sands and mud. Intertidal flats may littoral: flats that are above water at low tide and below water at high tide. Mud flats are coastal wetlands that form when mud and clayey silts are deposited by tides or rivers. They are found in sheltered areas such as bays, bayous, lagoons, and

estuaries. Each tidal flat may have a unique collection of nutrients and biological constituents. They usually support a large population of wildlife and have a high degree of biodiversity sites. Tidal flats play an important role in preventing coastal erosion. Littoral zones are dynamic environments with mixing of fresh and salt water, wave and tidal action, and cycles of drying and immersion.

Sand flats within the lagoon are areas barren of vegetation that separate the coral reef patches. These are sand channels. They have a sandy or mixed substrate and serve as markers for navigation within the lagoon. The sand channels may isolate individual patch reefs and reef patch colonies can be differentiated and characterized by the distances from the main reef. Sand channels have complex tide, wave and current action and activity. While appearing largely absent of fauna sand channels, depending on the substrate, have a nutrient mix that service plants and animals that exploit that environment: fish, crustaceans, diatoms, dinoflagellates, protozoa, bacteria. The mix of these features contributes to the biological health and diversity of the lagoon. These elements taken together provide for the health and benefit of the community.

Special Features

The Lagoon

Cocos lagoon (and Cocos island) at Malesso is the most visible and powerful focal point of the Malesso community. Biological studies of the lagoon and its ecology have been conducted. Tourism and commerce exploit the lagoon. It is used to symbolize the unique natural beauty of Guam. But, largely, the community has been left out of the planning for the lagoon use. The lagoon lies between the shore and the outer reef. The coastal lagoon supports commercial, subsistence and recreational fisheries. It supports tourism and related commercial development. It provides storm protection for the community. It is a highly productive ecosystem supporting a variety of habitats and ecological niches. It is a favorable habitat for primary producers like phytoplankton and aquatic plants.

Socio-Economic Resources

In economics, a resource is defined as a service or other asset used to produce goods and services that meet human needs and wants. It includes entrepreneurship, land, labor and capital. The following resources have been identified as providing economic benefit or the potential of economic benefit to the village and residents of Malesso:

Cocos Island/water sports

The Cocos Island Resort conducts in-water and shore side tour activities in the lagoon

area. Commercial tour activities include recreational snorkeling, scuba diving, banana boating, kayaking, dolphin watching, parasailing, jet skiing, seawalker or underwater sea exploration and aquarium collecting. Tour packages are available for these water-based activities from the Cocos Island Resort and other vendors that operate from the Malesso Pier Park.

Malesso Pier

The pier is the jump-off for majority of Malesso's boat-based fishermen. Most do not derive the majority of their income from fisheries but fish on the weekends and holidays. However, it is sometimes difficult to clearly distinguish between non-commercial and commercial fishermen as recreational fishermen will sell some of their catch to defray the costs of fishing.

For tourists who want to go to Cocos Island, ferry boats are available at the pier during the day with guided tours.

Water Festival

Annually, the community celebrates the *Malesso' Fiestan Tasi*, or Malesso Festival of the Sea in the month of November. The Fiestan Tasi celebrates the importance of the ocean in Chamorro Culture.

The fiesta events include Little Miss Fiestan Tasi and Miss Fiestan Tasi coronation, Uso Fealofani, land events like tug of war, talaya throwing, tuba drinking, coconut grating/husking, karaoke contests as well as live music, and dancing.

Traditional canoe race during the Fiestan Tasi showing the importance of the ocean to the Chamorro culture.

Cultural and Historical Resources

The protection of these resources is an important management objective and may include archaeological, paleontological, cultural or spiritual sites that tell an important story about the history, value or traditions of a site. The historical resources comprise everything created at an earlier date by human society and available to us in the form of objects of material culture. It shows the history of development of the community.

Cocos Island/Lagoon

Panoramic view of Cocos Island.

Cocos Lagoon is one of only two places in the Mariana Archipelago where mangroves have increased in abundance in the last 2,000 years (Amesbury, J.R. 2007). Species present include *Rhizophora apiculata*, *Rhizophora mucronata*, *Rhizophora stylosa*, *Avicennia alba*, and *Bruguiera gymnorrhiza* (Wilder 1976). Mangroves are important in stabilizing shorelines, preventing erosion, trapping sediments, maintaining water quality, and serving as nurseries for reef fishes, crustaceans and mollusks by providing food and refuge.

A broad reef at the southern end of the island encloses Cocos Lagoon. The reefs and lagoon together with Cocos Island on the southeastern reef form an atoll-like environment about 4 square miles in area. The reef front is cut by conspicuous grooves that cross the algal ridge to form surge channels (Tracey et al. 1964).

Figure 18 and 19 shows the benthic habitats which can be best defined as bottom environments with distinct physical, geochemical, and biological characteristics. According to Tracey et. al., the broad shelf formed by the terrace of Cocos lagoon dips gradually to a depth of 90 feet at the outer edge. The outer part of the terrace, seen from a glass-bottom boat, is a rough flat floor cut by narrow cracks that are partly filled with rounded boulders and rubble. Near the reef front are erosional channels and hollows 3 feet or more in width and 3 to 6 feet deep, also partly filled with boulders. Hollows in the floor contain debris, but most of the terrace is bare rock on which corals grow only sparsely. The lower part of the reef front is cut by irregular erosional channels 3 feet or more in width and 3 to 6 feet deep, partly filled or nearly filled with well-rounded boulders. Many varieties of coral cover perhaps 10 percent of the reef front. The upper part of the reef front contains more numerous but much narrower erosional grooves. Corals and calcareous algae form a rough, irregular surface. The reef margin consists of a broad slightly convex debris-covered surface containing much small coral and knobby coralline algae on the seaward side. The outer reef flat on the other hand, is covered with packed debris that consists mostly of sub-rounded boulders of coral. Few coral colonies are present, and pink calcareous algae coats parts of the rock surfaces. The inner reef flat contains abundant small colonies on the outer part that grow on rubble and gravel floor. Lagoonward, the size and the height of the colonies increase, and the composition of floor changes from gravel to sand. Soft green algae and articulate algae are abundant. The inner part of the zone is a broad band of staghorn *Acropora* in thickets 1 to 2 feet high. The lagoon shelf is an almost barren zone 500 feet

wide, of medium- and fine-grained sand, containing Foraminifera and abundant *Halimeda* segments. Coral patches are rare. The zone was about 4 feet deep at low tide near the inner reef flat and about 6 feet deep near the lagoon edge.

Figure 17. Aerial photo of the Cocos Island and southwestern tip of the island of Guam

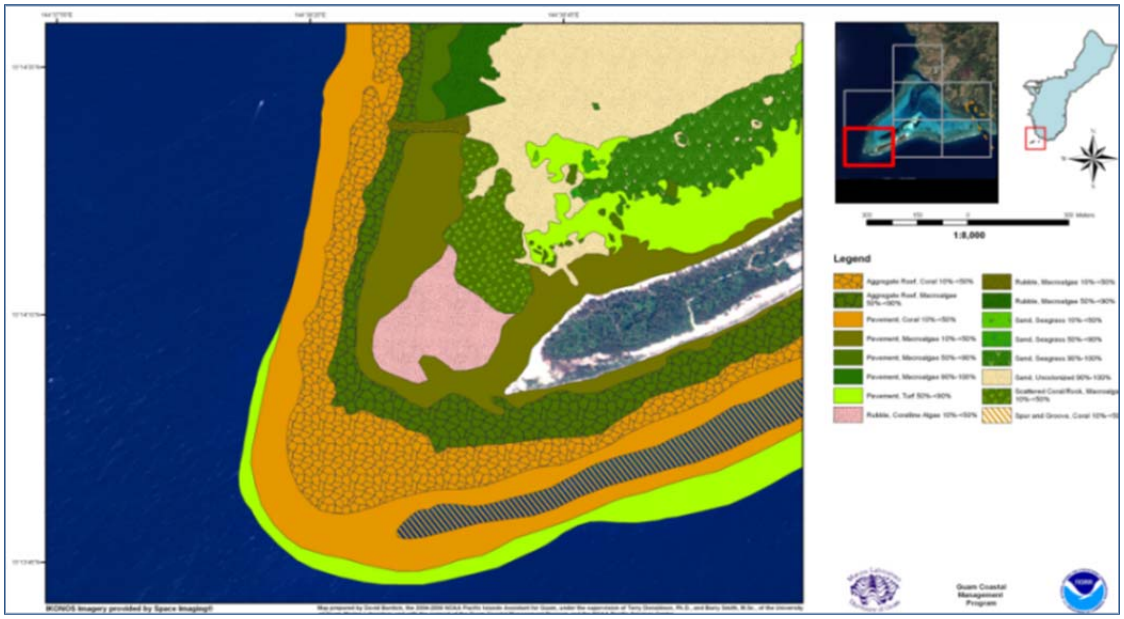


Figure 18. Benthic classification of flora and fauna surrounding Cocos island.

Cocos Island, originally called Dano, has an area of 386,303 m^2 (95.458 acres) which is located at the southwestern coral reef rim of the Cocos Lagoon. Made famous as the place where a Spanish galleon grounded and sank carrying silver and gold ingots and Spanish coins, Cocos Island has a storied history in the Spanish Galleon trade archives.

About a third of the island at the west end is a government-owned public park, and was the site of a U.S. Coast Guard LORAN station. The other two-thirds is a privately owned day resort owned by the Rothschild family, of banking fame, and were copra traders in pre-war Guam

The Coast Guard long-range navigation station operated on the island from 1944-1963. In 2006, high level of *polychlorinated biphenyl* (PCB) was discovered by the Guam Environmental Protection Agency, Department of Public Health and Social Services, and the Coast Guard which warned people not to eat fish caught in the lagoon. In 2008, an Environmental Investigation on the extent of PCB contamination of fish in the lagoon area was released by the USCG and Guam Division of Aquatic and Wildlife Resources (Figure 20) recommending the health advisory be revised to reduce the quarantine zone to 50 yards from the contamination site (Element Environmental Inc. 2008).

In 2009, the Cocos Island Resort, Guam Department of Agriculture and US Fish and Wildlife Service agreed to release native Guam rails or *ko'ko* birds, an endangered species, on the island in an effort to support captive breeding and repopulation efforts. In 2010, 16 captive bred *ko'ko* birds were released on Cocos Island (US FWS, Pacific Islands Fish and Wildlife). (See Appendix).

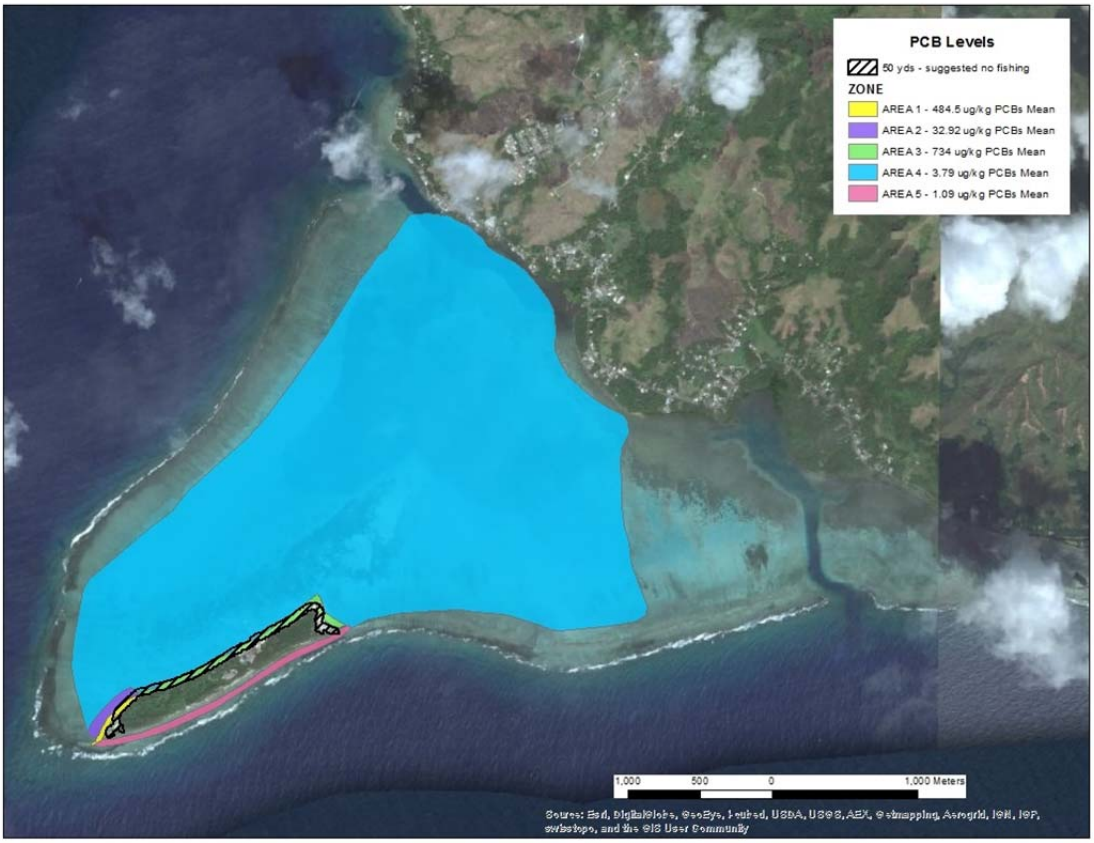


Figure 19. Concentration map of PCBs from the bioassay work by Element Environmental Inc in 2008 showing much of the lagoon area has very low concentration of PCBs in tested fish species and the advisory should be reduced to 50 yards (hatches area) on the lagoon edge of Cocos Island

Malesso Pier

Public Law 32-078 which was signed on November 27, 2013 declares the renaming of Malesso Pier Park as *Plasan Tantalan Beteranon Mansendalon Malesso'* (Malesso Veteran Sons and Daughters Pier Park). This is in honor and special recognition of the men and women from Malesso who have served in the US Armed Forces, and in acknowledgement of all Guam Veterans.

Malesso Veteran Sons and Daughters Pier Park.

The pier is a gateway to Cocos Island which faces the Mama'on Channel, the main pass into Cocos Lagoon. Travel tours to Cocos Island depart from the docks at Malesso during the day. Swimmers and tourists frequently visit this location as well as the local fisherman. A

local convenience store is available in the vicinity and the restrooms in the park are available as well especially for those who have stopovers during island tours.

Achang Preserve

Coral community on the fore-reef slope on the central portion of Achang Marine Preserve. Photo by Dave Burdick. Courtesy of Guam Marine Lab.

Achang Reef Flat Marine Preserve is one of the five marine preserves created in 1997 to protect coral reef habitats and aquatic animals. Legislature approved Public Law 24-21 and was implemented in 2001 to protect Guam's fishery resources. The preserves are managed by the Division of aquatics and Wildlife Resources of the Guam Department of Agriculture. These areas of restricted harvest allow reef fish to grow to larger sizes and thus produce more offspring for neighboring areas. Covering an area of 4.85 km^2, the marine preserve allows for limited fishing.

Boundaries: A straight line formed by markers aligned on the southern side of Manell Channel along the coast to a straight line formed by markers aligned on the northern side of 'Ajayan Channel'. The ocean boundaries shall extend seaward on a bearing of one hundred forty eight (148) degrees true from the seaward marker on the south side of Manell Channel to the six hundred foot (600) depth contour; then northerly along the six hundred (600) foot depth contour to the northern ocean boundary completed by a line drawn from the outermost marker on the north side of Ajayan Channel on a bearing of one hundred eighty (180) degrees true seaward to the six hundred foot depth contour (Title 16, Section 15311.2).

In 2004, Public Law 27-87 was implemented which created a marine preserve eco-permitting system to address non-fishing activities in Guam's marine preserves. After two years, Public Law 28-107 was enacted which expanded the purpose of Guam's marine preserves to include the protection and preservation of aquatic life, habitat and marine communities and ecosystems and strengthened the protection of the preserves by making all forms of fishing and the taking/altering of aquatic life, coral and other resources within the preserve unlawful unless specifically permitted. Trolling is allowed for pelagic species, and fishing is allowed by special permit only for *mañåhak* (juvenile rabbitfishes, *Siganus spinus* and *Siganus argenteus*), *atulai* (big-eye scad, *Selar crumenophthalmus*) and *achemsom* (juvenile fusiliers, such as *Pterocaesio tile*) (Guam Department of Agriculture n.d.).

Monitoring and targeted studies have demonstrated the potential utility of the Achang Preserve in maintaining and to some extent enhancing biomass in the area. Using a "before-after, control-impacted" design, DAWR had shown an increase in abundance and biomass after the implementation of the preserve (Gutierrez, unpublished report). Areas outside the preserves tend to have lower biomass. A population and life history study on a commercially important fish, *Lethrinus harak* (locally known as mafute) done by University of Guam Marine Laboratory, indicates that the preserve protects the spawning population within the boundaries (Taylor, M.Sc. Thesis). Mafute inside the preserve tends to be larger and higher abundance than those outside.

Church Bell

The Malesso Belltower, or *Kampanayun Malesso* can be seen just across the main road from the *Kombento.* It is a historically significant structure that is a symbol of the Mariana Islands long occupation and colonization by Spain. The main structure was damaged by earthquake and Typhoon Ross in 1992. The bell tower was established in 1910 during the tenure of Father Cristobal de Canals. It was included in the National Register of Historic Places. Restoration efforts were undertaken in the early 1980s.

Malesso Youth Center

The Merlyn G. Cook School is now a youth recreational facility near the Malesso Pier Park. The building originally housed a naval radio facility in the early 1920s. It was named for the Guam Public School System's first leader in 1931 and served as the village schoolhouse for a decade in the late '20s and early '30s. The Guam Preservation Trust restored the building which is now used by the village residents for educational and developmental activities.

Chapter 4: Shaping Management through Community Engagement and Consensus Building

Why is Consensus-Building Important?

Finding and achieving balance in resource management is challenging. While economic development opportunities emerge, they must be weighed against potential impacts to resources within the management area and local and boarder communities. Diverse user groups and community stakeholders must work to conserve and manage their marine resources to meet their management objectives. In doing so, community engagement at all levels is critical to supporting meaningful discussions in which residents and stakeholders take part in defining the plan's objectives and the respective follow-on recommendations needed for successfully carrying out its intended purpose. An array of options must be fully considered when finding the right tool for the job. From the spectrum of best management practices to complex mandatory regulations, the appropriate solution must be fully vetted ~~through~~ by the impacted community to ensure that a sensible, acceptable and enforceable solution results. Consistent with this need, the Mayor's Office, assisted by the Fishery Council, conducted a series of facilitated discussions in Malesso that was intended to build support and consensus for respectively moving forward with plan development and the principal objectives around which to build its findings and recommendations.

The consensus-building process for Malesso encouraged open dialogue and collegial deliberation among both the residents and other stakeholders external to the community that moved the discussion toward finding a "common ground" that would best accommodate the range of solutions benefiting the diverse parties involved. Through this process, the people of Malesso were able to claim ownership for the planning effort and ultimately, its outcome in the form of its findings, objectives, and prescribed actions or recommendations for plan implementation.

Issues for Discussion

An effective coastal and marine resource planning process can help to understand where compatible and incompatible uses occur within the management area. Working through a structured process, participants can sort through complex and often overlapping issues to develop agreeable solutions that meet community objectives. Community participants in this planning effort worked through an exercise that visually identified areas of compatibility and incompatibility among current activities and user groups. (Figure 21 and 22). Based on the scope of known activities taking place in the Malesso lagoon area, participants categorized activities into two groups: fishing and tourism. Each activity group was further separated into commercial and non-commercial activities tourism-based activities and recreational activities.

Commercial Fishing

According to Guam Regulation, commercial fishing is defined as the selling, bartering, trading or exchanging aquatic animals and/or aquatic plants for monetary or other consideration or the intent to perform any of these acts (Title 16, Chapter II, Section 15310).

a. Aquarium collecting – Fishing for tropical fish and/or marine invertebrates by free dive snorkel or scuba for home display or commercial saltwater aquarium trade. Fish are typically collected using a variety of nets and traps within the near shore reef and lagoon area.

b. Bottomfishing – A hook and line fishing method deployed from a boat or floating platform. Lines are generally deployed and retrieved using hand or electric reels with terminal gear consisting of multiple baited hooks with a lead weight. Targeted species generally include deep water snappers, jack, and emperor species off the reef slope to the offshore waters down to 150 fathoms.

c. Collection of mollusks – The gathering of assorted shells soft shell clams (top shells etc.) practiced for ornamental and decorative purposes. Mollusks are harvested for consumption primarily during the day, but sometimes at night. Fishermen free dive to harvest shallow and deep species. Another technique is to utilize a sand fork to dig up the sand for mollusks.

d. Spearfishing – any method which uses a spear (any shaft with a one or more sharpened pointed tips) to capture aquatic animals for commercial purposes (9 GAR Chapter 12, Fishing Regulations, Article 1, Subsection 12101 (43) and (44)). Spearfishing is commonly done using mask, snorkel and fins.

e. Trolling – a method using using hook and line gear that is dragged behind a moving vessel. Artificial lures or bait hooks can be used as terminal gear. Most common means of trolling utilizes multiple rod and reel gear targeting pelagic (tuna, mahimahi, billfish, wahoo) and other nearshore predatory species (jacks). Trolling is generally done near offshore ledges, banks and in open water areas, especially in the vicinity of a buoys and fish aggregation devices (FAD). Charter fishing, where clients pay to fish, often uses the trolling fishing methods.

Non-Commercial Fishing

Non-Commercial fishing includes fishing for subsistence, recreation or sport and do not enter

commerce through sale, barter or trade. Numerous fishing methods are used in the Malesso management area.

a. Bottomfishing – Same method as described above. Also known as handline fishing, this fishing method is considered a traditional fishing method.

b. Beachside rod and reel – Known as shore-based fishing, shore-casting, whipping and dunking. This fishing method is conducted from land, beach, dock or fixed structure. Fishing tackle commonly consists of a fiberglass or graphite rod, had powered reel, and monofilament line. Terminal tackle includes a swivel, hook, bait and weight.

c. Collection of mollusks – Same method as described above, but the fish caught are not sold, bartered or traded.

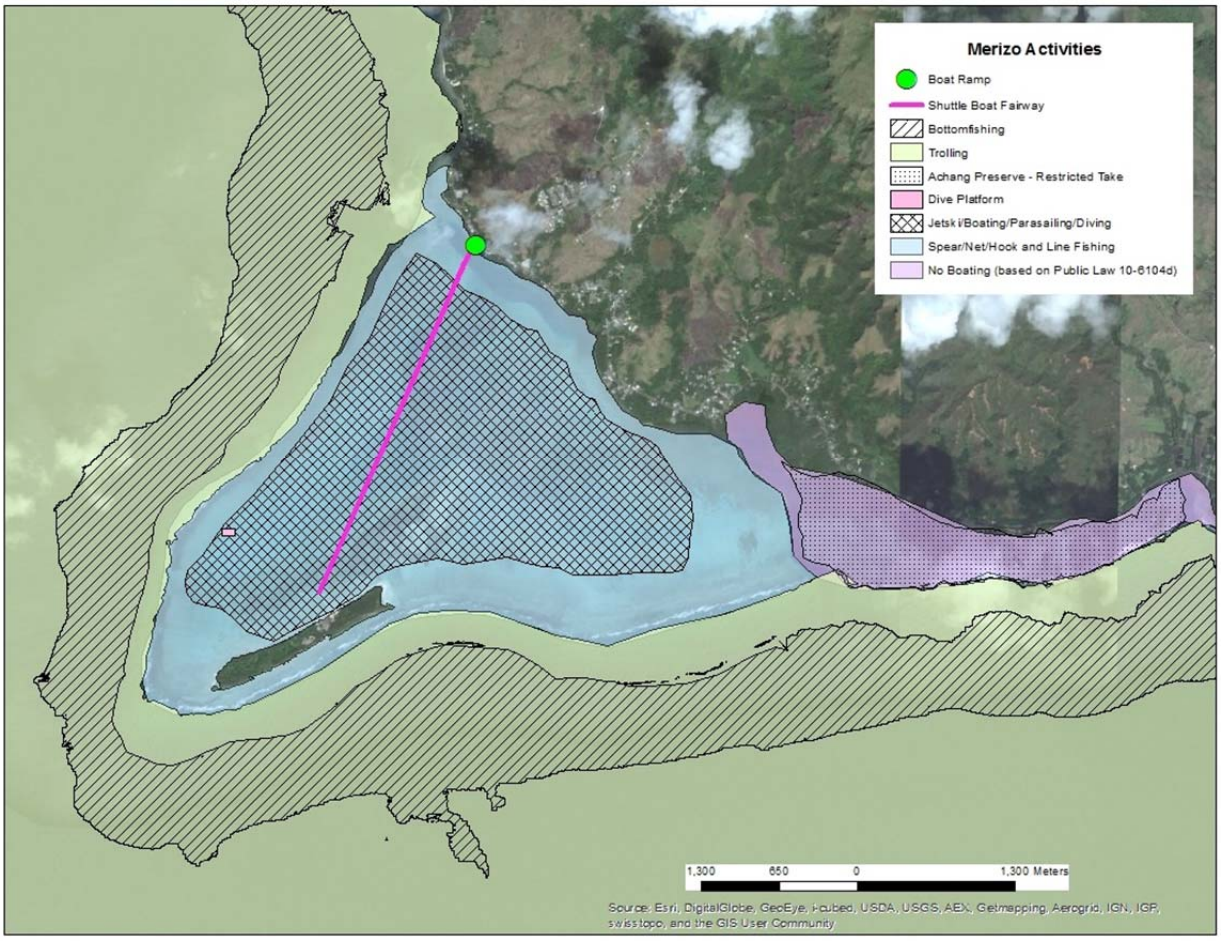


Figure 20. Community defined uses occurring at the Malesso coastal areas. The overlapping areas indicate potential conflict.

d. Coral collecting – Although now an illegal practice, harvesting of live and dead coral were used for decoration or ornamental proposes in saltwater aquariums. Corals were also collected traditionally for lime to be used in betel nut chewing.

e. Net fishing – Fishing using any type of net to harvest marine resources. The array of net fishing techniques is extensive. Many net fishing methods are traditional and are still in use today. Common methods include, but is not limited to, set nets, gillnets, cast nets, hand nets, surround/fence nets, ring nets, etc.

f. Sea cucumber – Sea cucumbers are an echinoderm of the class Holothuroidea, having an elongated body covered with a leathery skin and bearing a cluster of tentacles at the oral end. Sea cucumbers are harvested for food by hand by gleaning or diving. They usually creep on the sea bed or burrow in sand. It is named cucumber because of its cucumber-like shape.

g. Sea grapes – Hand harvesting of marine algae that are commonly called green caviar. They are harvested or gleaned along the shallow coastal areas for consumption.

h. Spearfishing – Same method as described above.

i. Trolling – Same method as described above.

Commercial Tourism-based Ocean Activities

Under this category, the activities are profit-generating wherein individuals are willing to pay to experience an activity for a certain period of time. These activities include powered vessels (motorized boats, jet skis, wind-powered crafts), self-propelled water crafts (kayaks, paddle boards, canoes, etc.) and other in-water activities (swimming, snorkeling, scuba diving, etc.). Many of these charter type activities are location-dependent, which means that visitors are taken to the same area to conduct the activity.

a. Banana boating – A large rubber inflatable craft shaped like a banana upon which up to 12 persons sit and are towed behind a motorboat.

b. Charter fishing – Patrons can hire a vessel and captain to take them fishing for negotiated period of time. Trolling is the typical method used on charter trips but rod and reel bottomfishing is another method that can be used.

c. Dolphin watching – This activity is done on a small or large boat in the open ocean where dolphin pods are present. Large charter vessels host dolphin watching with group

tours in the open water to look for Dolphin pods. Usually the dolphins find the boat and are attracted by the wakes of the boat and the sounds of the engine.

d. Jetski – a small motorized vessel resembling a scooter holding up to two persons, which skims across water on a flat keel, and is steered by means of handlebars. Jetski courses are provided with jetski services for a fee.

e. Parasailing – Parasailing is where a person is towed behind motor craft while attached to a specially designed canopy wing (sail) known as a parasail wing. The motor craft acts as the parasail anchor which supports the person manning the parasail. The boat drives forward and the tethered parasailor is carried aloft. This activity is a common coastal tourist attraction activity.

f. Scuba diving – SCUBA, "self-contained underwater breathing apparatus", is used by divers for recreational, commercial and other purposes worldwide. SCUBA is used for many purposes in commercial and recreational activities. In the tour industry, it is promoted as a safe in-water activity for experiencing the underwater environment and marine and aquatic life. Users of this ttrained and properly certified in dive safety before being allowed to participate in this activity. This training is offered to tourists who are then escorted on shallow dives in the lagoon area.

g. Seawalker – Underwater walking experience where the user wears a full-head diving helmet that alows the participant to draw air from a fixed and continuous surface supply. This activity is primarily found at resorts and protected lagoons as a tourist based activity. This activity is highly site specific. Walking tour routes are established on the seafloor for tourist to follow and observe coral reefs and other marine life.

h. Shuttle boats – Large boat or vessel used to carry (or ferry) primarily passengers and cargo across a body of water to service the visitor industry. Most shuttles in the lagoon operate on regular schedules and routes shuttling tourist from the Malesso Pier to the Cocos Island.

i. Snorkeling – Swimming activity using mask, fins and snorkels. Swimmers can rent the equipment to observe the marine life within the lagoon area. Snorkeling can take place from shore or from a boat.

j. Wind surfers/kite surfers – Surface water sport combining elements of surfing and sailing. Uses a board typically 2 to 3 meters long that is wind-driven by a sail or kite. Wind/Kite surfers can achieve high speeds and perform jumps and other aerial maneuvers.

Recreational Activities

Recreational activities are undertaken in leisure time, free of charge. According to Public Law 12-209, recreational boating activities shall mean utilization of watercraft for hobbies, sports or pleasure. This includes boats hired for recreational purposes and sport charter fishing and sailing operations. For the purposes of this plan, charter fishing has been included in the list of commercial tourist-based activates. This does not include vessels whose sole or primary use is for human habitation.

a. Banana boating – A large rubber inflatable craft shaped like a banana upon which up to 12 persons sit and are towed behind a motorboat.

b. Canoe paddling – The Canoe paddling activity can range from a single to multiple paddlers depending on the size and purpose of the canoe. Canoes are used for recreation and also in competitive races.

c. Jet ski – A small motorized water vehicle powered by a directional jet unit that skims across the water surface on a flat keel. Rider(s) steer by means of handlebars. This motorsport is usually done in offshore areas, open ocean or in lagoon areas designated for jetskiing.

d. Kayaking – Kayaks are generally single person water crafts that are self-propelled. Riders face forward using a double-bladed paddle while in a sitting position. Kayaks are constructed using numerous materials, including fiberglass, molded plastic, wood, carbon fiber and other light sturdy materials. Kayak races are built in eight general classifications: Polo, Slalom, Whitewater, Surf, Touring/expedition, Light touring/day tripping, Sprint/racing, General recreation. Fishing from kayaks are becoming a more popular form of recreational fishing.

e. Scuba diving – Same method as described above, but conducted as a private activity.

f. Snorkeling – Same method as described above, but conducted as a private activity for recreation.

g. Surfing – Surfing is the act of riding a crest of a wave toward shore on a surf board. Surfing is done for recreation or can be done professionally in local and national competitions.

h. Waterskiing – Water skiing is an activity that takes place on relatively calm waters as a person with mounted skis on their feet is towed behind a motor craft. This activity can

also be done on a surfboard, similar to that of a snowboard.

i. Wind surfers/kite surfers – Surface water sport combining elements of surfing and sailing. Uses a board typically 2 to 3 meters long that is wind-driven by a sail or kite. Wind/Kite surfers can achieve high speeds and perform jumps and other aerial maneuvers.

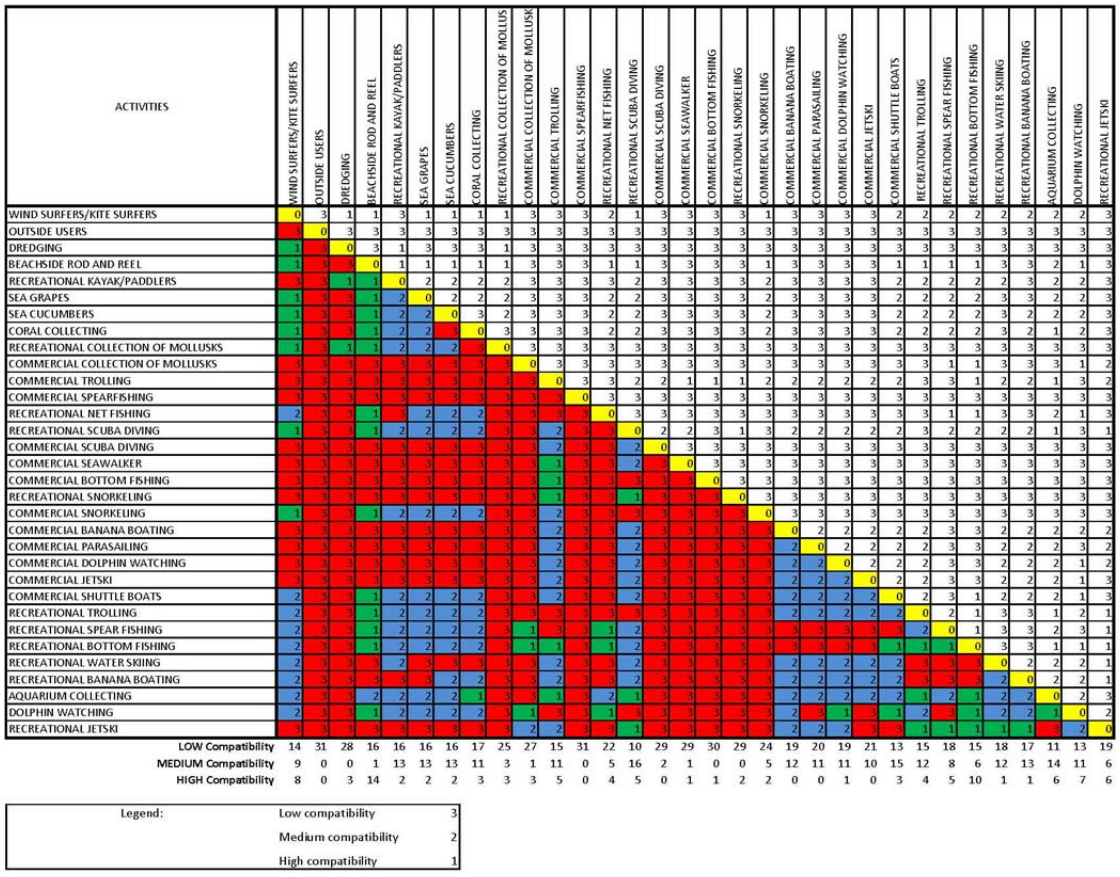
Other users or activities identified by the community that falls outside of commercial fishing, non-commercial fishing, commercial tourism-based, and recreational categories are described below:

a. Outside users – Local Guam residents or off-island visitors who do not reside in the village of Merizo but enter the village to fish or conduct other ocean activities. Outside users are differentiated from village residents. Residents immediately adjacent to the management area are perceived to have a greater dependence on and a greater responsibility for the resources of the management area: a stronger tie and relationship to the area. For many villagers, there are strong generational and historic ties to the area. Recent censuses indicate that theses long ties may be weakening. This may be the result of changing tenure and weakening cultural traditions.

b. Dredging – Excavation activity or operation commonly carried out in nearshore or partially underwater, in shallow seas or fresh water outlets. Dredging is used to keep waterways navigable or to prevent flooding during heavy rainwater runoff and in construction of coastal structures, such as piers and bridges. Dredging is also used as a method for fishing for certain species of edible clams and crabs.

Understanding Compatibility of Activities among Competing Uses

Finding the "best fit" among a range of potential users and uses is always a challenge. The community engaged in a planning activity to assess the compatibility or incompatibility of various activities among competing uses. By understating the conflicts with respect to their temporal (when they occur) and spatial (where they occur) dimensions, as well as the numbers participating in certain activities, resource managers are able to better assess potential impacts and act in support of the objectives as identified by the community. Particularly where it comes to meeting the community's objectives that place a premium on maintaining access to its marine resources and retaining continuity of its cultural practices against commercial activities and needed economic development.



ACTIVITIES	WIND SURFERS/KITE SURFERS	OUTSIDE USERS	DREDGING	BEACHSIDE ROD AND REEL	RECREATIONAL KAYAK/PADDLERS	SEA GRAPES	SEA CUCUMBERS	CORAL COLLECTING	RECREATIONAL COLLECTION OF MOLLUSKS	COMMERCIAL COLLECTION OF MOLLUSKS	COMMERCIAL TROLLING	COMMERCIAL SPEARFISHING	RECREATIONAL NET FISHING	RECREATIONAL SCUBA DIVING	COMMERCIAL SCUBA DIVING	COMMERCIAL SEAWALKER	COMMERCIAL BOTTOM FISHING	RECREATIONAL SNORKELING	COMMERCIAL SNORKELING	COMMERCIAL BANANA BOATING	COMMERCIAL PARASAILING	COMMERCIAL DOLPHIN WATCHING	COMMERCIAL JETSKI	COMMERCIAL SHUTTLE BOATS	RECREATIONAL TROLLING	RECREATIONAL SPEAR FISHING	RECREATIONAL BOTTOM FISHING	RECREATIONAL WATER SKIING	RECREATIONAL BANANA BOATING	AQUARIUM COLLECTING	DOLPHIN WATCHING	RECREATIONAL JETSKI	LOW Compatibility	MEDIUM Compatibility	HIGH Compatibility
WIND SURFERS/KITE SURFERS	0	3	1	1	3	1	1	1	1	3	3	3	2	1	3	3	3	1	3	3	3	3	2	2	2	2	2	2	3	14	9	8
OUTSIDE USERS	3	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	31	0	0
DREDGING	1	3	0	3	1	3	3	3	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	28	0	3
BEACHSIDE ROD AND REEL	1	3	3	0	1	1	1	1	1	3	3	3	1	1	3	3	3	3	1	3	3	3	3	1	1	1	1	3	3	16	1	14
RECREATIONAL KAYAK/PADDLERS	3	3	1	1	0	2	2	2	2	3	3	3	3	2	3	3	3	2	3	3	3	3	3	2	2	2	2	3	3	16	13	2
SEA GRAPES	1	3	3	1	2	0	2	2	2	3	3	3	2	2	3	3	3	2	3	3	3	3	3	2	2	2	2	3	3	16	13	2
SEA CUCUMBERS	1	3	3	1	2	2	0	3	2	3	3	3	2	2	3	3	3	3	2	3	3	3	3	2	2	2	2	3	2	16	13	2
CORAL COLLECTING	1	3	3	1	2	2	3	0	3	3	3	3	2	2	3	3	3	3	2	3	3	3	3	2	2	2	2	3	2	17	11	3
RECREATIONAL COLLECTION OF MOLLUSKS	1	3	1	1	2	2	2	3	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	25	3	3
COMMERCIAL COLLECTION OF MOLLUSKS	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	3	3	27	1	3
COMMERCIAL TROLLING	3	3	3	3	3	3	3	3	3	3	0	3	3	2	2	1	1	1	2	2	2	2	2	3	3	1	2	2	1	15	11	5
COMMERCIAL SPEARFISHING	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	31	0	0
RECREATIONAL NET FISHING	2	3	3	1	3	2	2	2	3	3	3	3	0	3	3	3	3	3	3	3	3	3	3	3	3	1	1	3	3	22	5	4
RECREATIONAL SCUBA DIVING	1	3	3	1	2	2	2	2	3	3	2	3	3	0	2	2	3	1	3	2	2	2	2	2	2	3	2	2	2	10	16	5
COMMERCIAL SCUBA DIVING	3	3	3	3	3	3	3	3	3	3	2	3	3	2	0	3	3	3	3	3	3	3	3	3	3	3	3	3	3	29	2	0
COMMERCIAL SEAWALKER	3	3	3	3	3	3	3	3	3	3	1	3	3	2	3	0	3	3	3	3	3	3	3	3	3	3	3	3	3	29	1	1
COMMERCIAL BOTTOM FISHING	3	3	3	3	3	3	3	3	3	3	1	3	3	3	3	3	0	3	3	3	3	3	3	3	3	3	3	3	3	30	0	1
RECREATIONAL SNORKELING	3	3	3	3	3	3	3	3	3	3	1	3	3	1	3	3	3	0	3	3	3	3	3	3	3	3	3	3	3	29	0	2
COMMERCIAL SNORKELING	1	3	3	1	2	2	2	2	3	3	2	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3	3	3	3	24	5	2
COMMERCIAL BANANA BOATING	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3	3	0	2	2	2	3	3	2	2	2	2	19	12	0
COMMERCIAL PARASAILING	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3	3	3	0	2	2	3	3	2	2	2	3	20	11	0
COMMERCIAL DOLPHIN WATCHING	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3	3	3	2	0	2	2	2	2	2	2	3	19	11	1
COMMERCIAL JETSKI	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3	3	3	2	2	0	2	2	3	3	2	2	20	10	1
COMMERCIAL SHUTTLE BOATS	2	3	3	1	2	2	2	2	3	3	2	3	3	2	3	3	3	3	3	3	2	2	2	0	2	3	1	2	2	13	15	3
RECREATIONAL TROLLING	2	3	3	1	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	0	2	1	3	3	15	12	4
RECREATIONAL SPEAR FISHING	2	3	3	1	2	2	2	2	3	1	3	1	1	2	3	3	3	3	3	3	3	3	3	3	2	0	1	3	3	18	8	5
RECREATIONAL BOTTOM FISHING	2	3	3	1	2	2	2	2	3	1	1	1	1	2	3	3	3	3	3	3	3	3	3	1	1	1	0	3	3	15	6	10
RECREATIONAL WATER SKIING	2	3	3	3	2	3	3	3	3	3	2	3	3	2	3	3	3	3	3	3	2	2	2	2	2	3	3	0	2	18	12	1
RECREATIONAL BANANA BOATING	2	3	3	3	3	3	2	2	3	3	2	3	3	2	3	3	3	3	3	3	2	2	2	2	2	3	3	2	0	17	13	1
AQUARIUM COLLECTING	2	3	3	2	2	2	2	1	3	3	1	3	2	1	3	3	3	3	3	3	2	2	2	2	2	1	2	1	2	11	15	5
DOLPHIN WATCHING	2	3	3	1	2	2	2	2	3	1	3	3	1	3	3	3	3	3	3	3	2	3	1	2	2	3	1	2	2	14	10	7
RECREATIONAL JETSKI	3	3	3	3	3	3	3	3	3	2	2	3	3	1	3	3	3	3	3	3	2	2	2	3	3	1	1	1	1	19	6	6
LOW Compatibility	14	31	28	16	16	16	16	17	25	27	15	31	22	10	29	29	30	29	24	19	20	19	21	13	15	18	15	18	17	11	13	19
MEDIUM Compatibility	9	0	0	1	13	13	13	11	3	1	11	0	5	16	2	1	0	0	5	12	11	11	10	15	12	8	6	12	13	14	11	6
HIGH Compatibility	8	0	3	14	2	2	2	3	3	3	5	0	4	5	0	1	1	2	2	0	0	1	0	3	4	5	10	1	1	6	7	6

Legend:		
	Low compatibility	3
	Medium compatibility	2
	High compatibility	1

Figure 21. Worksheet completed by community participants assessing compatibility of current ocean activities. Each activity was assessed on a scale from 1 being compatible (green) to 3 being incompatible (red).

A diverse range of fishing, both non-commercial and commercial, occurs throughout the lagoon and outer reef areas. Numerous types of commercial tour and recreational water craft activities also are conducted within the lagoon boundaries. As such, incompatibility exists between thrill craft-type (jetski, banana boat, parasail, water ski) activities and fishing and

recreational activities (snorkeling, swimming, paddle board). With a vision for toward the future, community participants clearly see a trend toward increased lagoon-type activities, especially in the recreational and commercial tour-based sectors. Monitoring and controlling expansion of these activities and impacts on natural, traditional and cultural resources, especially fishing, was a priority for community participants.

Community participants also highlighted conflicts between the commercial and non-commercial elements of the same or similar activity. With regard to fishing, this division was observed between several types of commercial fishing and non-commercial fishing methods, such as seen for bottomfishing and spearfishing. Participating residents clearly identified and prioritized a couple non-commercial fishing activities, especially for culturally important seasonal run fish, over the commercial harvest of those species. Other, more modern-types of fishing activities, such as commercial versus non-commercial trolling, are viewed as having similar impacts.

One of the underlying concerns raised through the series of planning activities was the impacts associated with a group of users characterized in this report as "outside users." Understanding the importance of this issue is captured in each of the plan objectives as developed by the participants. Benefits from all activities and the management of village resources (natural, social and economic) occurring within the Village of Malesso should be derived by the village residents. Residents of Malesso should be given priority in receiving benefits from all activities as they are the most impacted by activities occurring within and associated with their village.

Community Players and Partners in Plan Development

Players are groups and individuals who are directly and indirectly affected by the objectives and implementations of an effort – a project or program involving managed areas. They could be implementers, recipients of benefits, advisors, managers, technical experts, and those who are responsible for response-related project results.

Engagement at all levels is an on-going process of bringing parties with vested interests to the table to assess, develop, coordinate and implement coastal and marine management plans. Involving active players at every stage of the process ensures that their perspectives, knowledge, and support are included. At a minimum, they must be informed of the process and made aware of key decision points that may have direct or indirect impacts on their interest.

Toward the later stages of this planning process, community participants were tasked with identifying community members, resource users, sectors, businesses, organizations, agencies, institutions and other entities that would have a vested interest in the issues and

potential actions being discussed in this effort. As many elements of the plan were issue specific, interested parties would not necessarily be concerned and engaged in all issues. Therefore, community participants discussed and identified a compressive list of potential players that would need to be engaged as the management plan took form and specific actions and initiatives were proposed.

The following is a preliminary list as identified by participants in this planning initiative:

- Malesso families – Malesso residents, land and property owners, and traditional practitioners in the village were the most important stakeholders in the planning process. Their specific interest in the management area is to have a sustainable livelihood, better quality of life, preservation of cultural heritage, and sustainability of their remaining resources for the health and well-being of the future generations. They are best involved in the planning process through community engagement such as consultation meetings.

- Malesso fishermen – Malesso residents, landowners, and traditional practitioners who are interested in retaining access to marine resources while protecting, preserving, and maintaining those resources of Malesso. They are involved in the planning process through consultation meetings where their inputs are solicited and they shall be updated of information regarding activities undertaken in the management area.

- Local/indigenous-owned businesses – Malesso business owners who operate in the management area. Their interest is economic to support or sustain their livelihood. They are also residents, landowners, and traditional practitioners whose best interest is to preserve and protect the community's resources by engaging themselves in consultation activities.

- Indigenous families – Malesso residents of Chamorro decent with specific interest in practicing and preserving their cultural heritage and traditional practices in the management area. They are best involved in the planning process by keeping them informed of the management area's on-going activities and soliciting feedback on proposed activities.

- "Outside" commercial business owners – Business owners who operate in but do not reside in Malesso. Their main interest is economic, such as establishing tourist-based attractions in the area through acquired property lease or acquisition. To operate, they may be required to have a permit/license from a regulatory agency. They are best involved in the planning process by keeping them informed of the updates within the management area.

- Guam Government Agencies with Interest or Authority in Plan Elements
  - Department of Agriculture, Division of Aquatic and Wildlife Resources.
  - Bureau of Statistics and Plans
  - Guam Environmental Protection Agency
  - Department of Parks and Recreation
  - University of Guam, Marine Lab.
  - Guam Department of Education
  - Fire and Police Department
  - Guam Legislature
  - Governor of Guam
  - Chamorro Land Trust
  - Guam Preservation Trust
  - Mayors' Council of Guam
  - Guam Visitors Bureau

- Federal Agencies with Authority or Interest in Plan Outcomes
  - US Army Corps of Engineers
  - National Oceanic and Atmospheric Administration
  - US Fish and Wildlife
  - US Coast Guard

- Organizations and other interested parties
  - Guam Outrigger Canoe Club
  - Guam Sailing Federation
  - Guam Swimming Federation
  - Guam Paddling Federation
  - Guahan Napu Surfing Federation
  - Guam Waterman;s Club
  - Traditions About Seafaring Islands (TASI)
  - Guam Fishermen's Cooperative Association
  - Marianas Underwater Fishing Federation
  - Guam Association of Saltwater Anglers

Findings for Solutions

Community workshop participants worked through and processed detailed information going through the strategic planning process. Valuable knowledge was shared and recorded regarding the outcomes and work products used to structure the integrated Malesso community-based management plan.

Participants worked constructively, setting aside personal differences and conflicting agendas, to cooperate and engage in productive discussions resulting in the following statements:

1) Engage *Sainas* or elders during planning process in any community undertaking. Consult *sainas* to incorporate traditional practitioner's knowledge in the planning and development of policy for the monitoring and management of Malesso resources to ensure such policies afford special privileges to traditional leaders/elders/practitioners.

2) Fishery resources, especially the seasonal run fisheries, are of critical importance to the Malesso community.

3) Engage those who fish commercially to gain respect for their grounds to ensure sustainability through proper enforcement.

4) Ensure community engagement in any future processes that could result in more marine area closures being established.

5) Establish as process and schedule through the Mayor's Office for non-Malesso resident resource users to obtain a permit prior to fishing or using other village resources.

6) Develop and establish as zoning regime for the Malesso lagoon area to separate thrill craft activities from other marine activities, including fishing, to mitigate serious community safety concerns for all resource users.

To address the community outcomes above while meeting the objectives developed by workshop participants, the following initiatives were developed, vetted and recommended by the Village of Malesso Mayor and community.

Table 2. List of initiatives recommended by the village of Malesso to address the community management objectives

Objectives	Initiatives to Support Objectives
Conservation	*Fishing Access – Exempting Seasonal Runs* A process was established to provide fishermen access to seasonal run fish within preserve areas. Village Mayors are required to notify the Department of Agriculture that a seasonal run fish has occurred and request permission for harvest. At his discretion, the Director of the Department of Agriculture may provide the time and

Objectives	Initiatives to Support Objectives
	location of where the harvest is to take place. Problems with timing and delays for approval have occurred in the past requiring a new protocol. It is recommended that the Mayor, and his Peskadot advisors, engage the DoA and DAWR to develop an improved process that would provide the Village Mayor direct control of the permitting of seasonal run harvest and monitoring of fishing activities throughout the management area. *Assessment and Monitoring of Malesso Resources (Lagoon/Cocos Island)* Biological assessments of the fishery and marine resources in the Malesso village area have been done for the outer lagoon area by the NOAA CRED program and long-term reef fish monitoring stations in the Achang Reef Preserve by the DAWR. No regular monitoring or assessments have been established within the Merizo lagoon area. This plan recommends that the local and federal fishery agencies and university institutions be engaged to design, implement, and maintain long-term monitoring stations within the lagoon area. *Monitoring of PCB Contamination* Cocos Island and its surrounding waters remain contaminated by PCBs from prior use by the USCG. A bio-assay study of the fishery resources in and around the Merizo lagoon was conducted by the USCG with support from the Guam DAWR. Based on the study's findings, this plan recommends that the health advisory from Guam EPA be revised to follow the USCG and DAWR assessment and recommendations.
Socio-Economic	*Address Malesso Lagoon Conflicting Water Use Activities through Zoning* Recreational and commercial marine activities in Malesso lagoon continue to grow annually. Regulations governing these activities are managed through the Guam Department of Parks and Recreation. However, regulations over these activities in the Malessso lagoon are void at this time and should be explored to reduce conflicting activities and address community safety concerns. *Malesso Pier and Boat Ramp* The Mayor of Merizo (Malesso) has been provided control over

Objectives	Initiatives to Support Objectives
	activities and operations that occur at the Malesso pier and boat ramp facility. As part of address concerns over conflicting water use activities in the lagoon, efforts should be made to integrate a permitting scheme to control the commercial on-water activities that operate from this community facility. This scheme should be integrated within the zoning initiative to be established with the Department of Parks and Recreation.
Governance	*Historic Fishing Village Designation* The Division of Historical Preservation is housed with the Department of Parks and Recreation. As part of the initiatives facilitated through this plan, the community needs to engage this Division to explore opportunities to formally recognize and designate traditional fishing practices and the village of Malesso as historically important to the Territory of Guam. *Committee of Elders* Working through the planning process, community participants and organizers realized the significant contributions and critical input from village elders on all aspects of this plan. Understanding the past as it applies to current issues and the future of Merizo and the broader Guam community, is important and must not be overlooked. Efforts should be undertaken to engage the Guam Mayor's Council to consider creating a new committee of elders through which proposed economic, development, regulatory or other activities can be vetted prior to the Mayor's Council taking action. *Peskadot Advisors to Merizo Mayor* The Merizo Mayor should consider formalizing a body of fishermen and other community members from the Village of Merizo to assist the Mayor in reviewing proposed activities and actions that may impact the village's marine and coastal resources. The new advisory body can also assist the Mayor in planning, managing and hosting ocean-related community projects, events, workshops, and other activities. Consideration should be given to have the advisory body be a function within the Malesso Municipal Council working with the Merizo Mayor.
Education and Outreach	*Code of Conduct*

Objectives	Initiatives to Support Objectives
	Concern over non-Malesso resident resource users and their impacts on village resources, economics and community was a high priority for community participants. As crafting regulations directed at this "outside" community is not feasible for many reasons, participants agreed that an aggressive education effort should be undertaken to share Malesso village resource values, ethics and practices. As part of this plan, the Malesso community will work with agencies and organizations to develop a Code of Conduct that can be posted throughout the village to educate all marine and coastal resource users about what practices and activities are acceptable within the village boundaries. *Community-based Monitoring* Engage the Malesso community, educators, and organizations to work in partnership and coordination with the Mayor's office, local and federal agencies and organizations to establish monitoring programs for Malesso natural resources, ecosystem, and climate.

Chapter 5: Taking Positive Steps to Support Malesso Community Objectives

Understanding what is important to the community and identifying activities to support those priorities is essential in meeting Malesso's stated objectives. Malesso as a community is experiencing many social, economic, and natural resource challenges that are similar to other communities on Guam, but has also identified several unique problems because of their geography, socio-economic setting, and natural resources. The conservation, social/economic and political objectives are developed and vetted by the community that directly captures what is important to the broader Malesso community with regard to the management and conservation of their marine and coastal resources. The plan objectives were crafted from the perspective of sustaining or in some circumstances, restoring Malesso's vibrant and healthy community.

To meet these objectives, the plan includes an action strategy with recommendations for specific tasks and efforts to be pursued on a community, local agency, federal agency, and political fronts.

Conservation Objective

To ensure Malesso's living marine resources, along with their ecosystems and habitats, are restored, maintained and protected. In addition, resources shall be monitored, as prescribed by the community, to assess and mitigate environmental impacts from external effects to ensure the sustainability of the resources for the benefit, health and well-being of the Malesso Community today and in future generations.

Actions addressing conservation objectives

Localize fishing access to seasonal runs of traditionally harvested fish: Community based fishery management augment's the local government's efforts in managing and monitoring the fishery resources by collaboratively allowing the local communities be in-charge of their own village waters. Enabling management in a smaller scale effectively allows for easier monitoring, enforcement, and management of the users of the resources. The Mayor's Office of Malesso will engage the Department of Agriculture in forming an efficient and equitable arrangement that would allow the community of Malesso to harvest fish during seasonal runs. The proviso for this arrangement would include but not limited to: 1) formalize the agreement between the Mayor's

Office and the Department of Agriculture; 2) the Mayor's Office will be the central repository of permitting fishermen to fish during seasonal runs and will share information with Department of Agriculture; 3) monitoring of catches during seasonal runs and share this information with the Department of Agriculture.

Intensify the monitoring of catches at the shoreline and pier of Malesso: Monitoring the catches is important to determine the level of exploitation of the fishery resources. This will be done in collaboration between the Mayor's Office and DAWR. A resident port sampler could be trained by DAWR to monitor the Malesso Pier for commercial and non-commercial landings. This will particularly be useful when documenting catches for the seasonal runs of *manahak, atulai, ti'ao* and *i'e*. This monitoring can be implemented when the Mayor's Office declare the fishery for *manahak* and *i'e* open. This work can augment the limited surveys conducted by DAWR.

Conduct a collaborative monitoring of the fishery resources in Malesso: Aside from knowing how much fish are being harvested, monitoring the quantity of fish available for the fishery is important to determine what harvest level would be sustainable. Underwater census surveys are usually the methods used to determine biomass, abundance, and species diversity of the marine resources. This will be in collaboration between the Mayor's Office and DAWR. A staff from the Mayor's Office could be trained by the DAWR staff on survey techniques. The data can be used to monitor the effectiveness of the adjacent marine preserve as well as the overall effect of the village fishery management over time.

Reduction of the advisory following the 2008 report recommendation: The 2008 Environmental Investigation report recommended reducing the quarantine zone to 50 yards from the contaminated site (Figure 23). This would allow for better marketing of fish originating from the Malesso village as well as officially recognizing that the fish from the area is safe to eat. The Government of Guam should work with the Mayor's Council in facilitating the revision of the advisory and also collaborate in the proper implementation of the stipulation associated with the revision of the advisory. For example, in order to ensure that the revision of the advisory will not result in any untoward consequences whereby villagers become ill due to consumption of contaminated fish, the Government of Guam and the Mayor's Council should monitor PCBs in a more regular basis rather than the 5-year time frame.

Conduct regular monitoring of PCBs around Cocos Island and Cocos Lagoon: The community of Malesso is concerned about the potential effects of the PCB contamination in fishes and other marine organisms harvested within the village waters. The community had relied on the coral reef resources for traditional and subsistence living. Re-assessing the extent of the contamination and the levels of PCBs in fish are needed to determine the current potential risk of fish consumers. The last assessment was five years ago. The Ecotoxicology Laboratory of University of Guam Marine Lab has the ability to screen toxins in fish. This can be done in collaboration

between the Mayor's Office and UOGML. The collection of the samples could be done by the local fishermen and UOGML will process the samples. A report will be provided to the community.

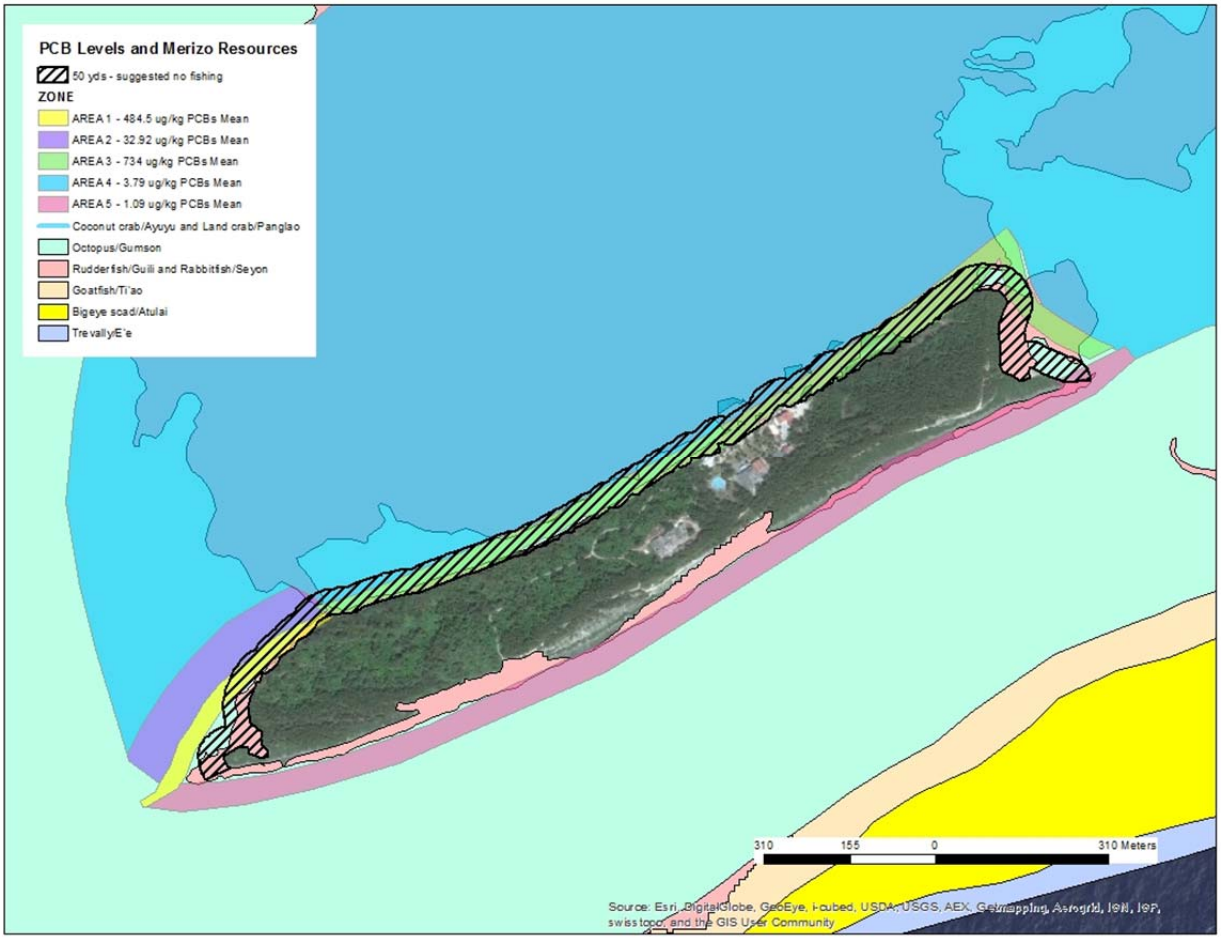


Figure 22. ArcGIS map of the contaminated area around Cocos Island and the proposed 50 yards bio-quaratine advisory area.

Determine oceanographic patterns to inform changes in the advisory: In conjunction with monitoring the PCB content in fish, determining the circulation pattern in the Malesso area would be beneficial to inform the changes in the advisory. The location of Malesso being at the southern tip of the Island of Guam holds a promising area for research. These areas are known for island generated gyres that hold various larvae for recruitment and also areas of good water circulation for flushing toxins and other pollutants. Determining the circulation outside the lagoon will provide insight on larval transport while circulation inside the lagoon will provide information on flushing time as well as residence time of PCBs. The longer the residence time of contaminated water increases the exposure of fish to the toxin thereby increasing the risk for consumers. Knowing the circulation flow will also allow for proper zoning of the quarantine area

and knowing the flushing time will inform authorities when to open and close the designated areas to fishing. This can be done in collaboration between the Mayor's Office and the NOAA Pacific Island Fisheries Science Center.

Socio-Economic Objective

"Protehe I Li'na'la'ta! To protect the local (indigenous) rights of the Malesso community to access and conserve its resources to support their sustainable livelihood, health, well-being and to educate and promote traditional and cultural practices for present and future generations."

Actions addressing socio-economic as proposed in this plan

Address Malesso Lagoon conflicting water use activities through zoning: The diversity and scale of water activities occurring in the Malesso management area, particularly in the lagoon, are increasing. Community participants, through the planning process, identified mitigating conflicting water use activities as a high priority. Traditional, commercial and recreational water activities in the lagoon area have coexisted for many years. Non-commercial (subsistence and recreational) fishing activities have been practiced throughout the management zone, but is now concentrated in and around the lagoon area as the Achang Reef area is now closed as preserve. The Cocos Island Resort has been among Guam's top visitor attractions offering easy access to the Cocos island and tour-based recreational water activities, such as snorkeling and SCUBA diving.

As the tourism industry matures on Guam, so does the diversity of commercial and recreational water sport and thrill craft activities. In addition to snorkeling, swimming and SCUBA diving, new activities such as jetski-ing, banana boating, parasailing, kite surfing, kayaking, and seawalking have sprouted in the Malesso lagoon. Safety is now a major concern arising from the operation of thrill crafts (jet skis, banana boats, etc.) in areas traditionally used by swimmers, divers and spear fishermen. Managing these expanding commercial tourist-based water activities (sea walkers, scuba diving, snorkeling) within the lagoon area is identified as a high priority in this plan.

In 1990, the Legislature passed a bill that provided the Guam Department of Parks and Recreation, Division of Recreation the responsibility for developing a comprehensive plan and policy of motorized water recreational craft use within Guam's territorial waters. The plan designation and descriptions of those areas where motorized water recreational craft may be operated and include compulsory safety regulations regarding noise levels and training requirements for their operation (21 GCA Real Property; Ch 77 Parks & Recreation, §77119 (f)).

Concurrent with this, the Governor issued an Executive Order (EO 89-31) approving the Recreational Water Use Management Plan (RWUMP) as the official Plan governing the types of water related activities, including mechanized crafts and water sports equipment, that will be permitted within areas managed under the RWUMP. These areas include the waters from the mean high water mark to outer edge of the reef shoring the villages of Agana, Asan, Piti and Tamuning. This area encompasses the waters from Oka Point to Tepungan Channel, Piti (Figure 24).

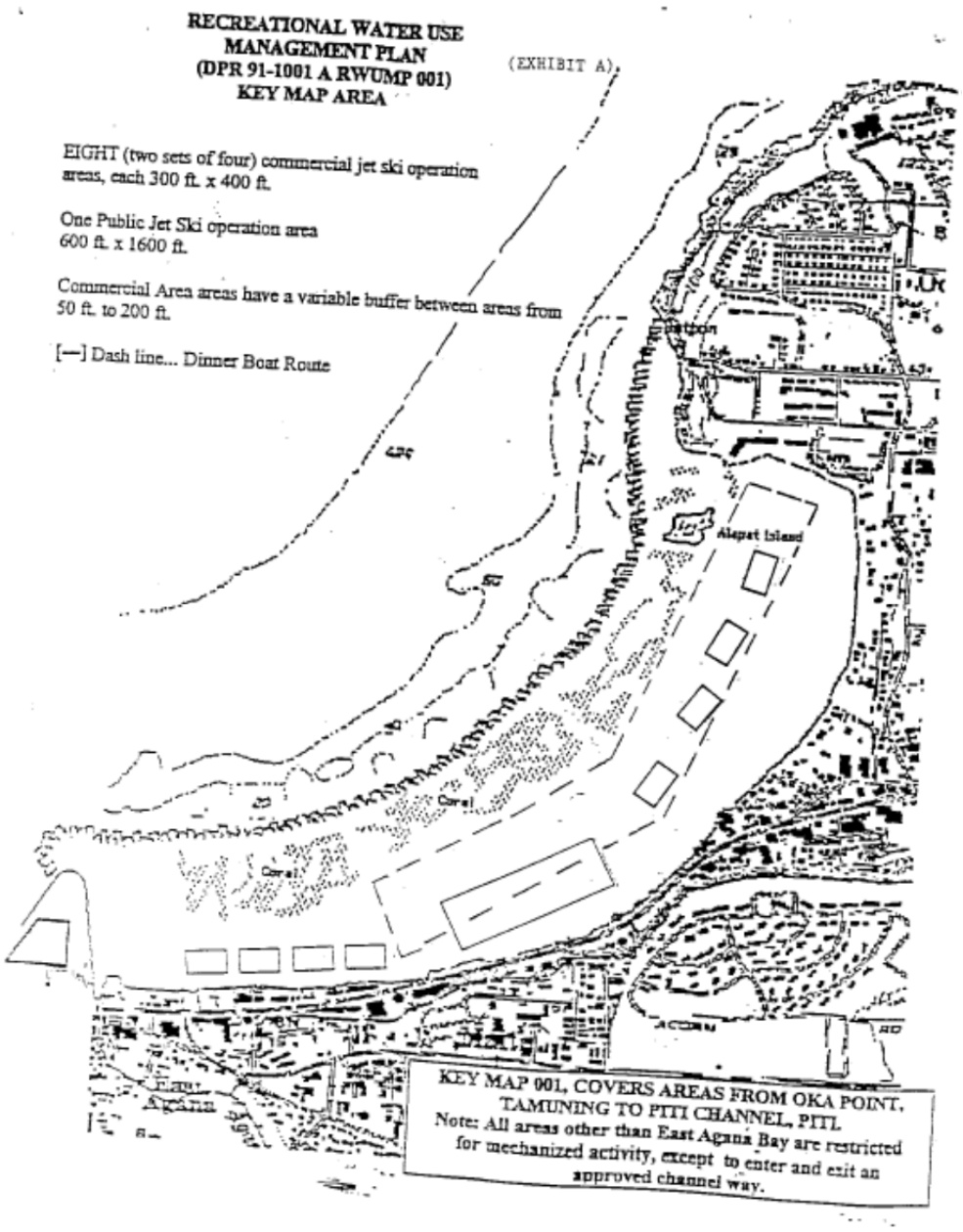


Figure 23. Map of the coastal areas covered by the Recreational Water Use Management Plan that governs water-related activities.

In 1996, the Legislature further amended the RWUMP as administered through the DPR to promulgate rules over the operation of motorized water recreational crafts (MWRC). Specifically, authority was given to control the operation of jet skis or motorized recreational craft within the reef or channel. “No person shall operate a Jet Ski or any Motorized Water Recreation Craft within the reef or channel from (Area 4) Mannel Channel to (Area 5) Pati Point, Yigo as shown in Key Map DPR95-1001 A RWUMP 003).” (Figure 25).

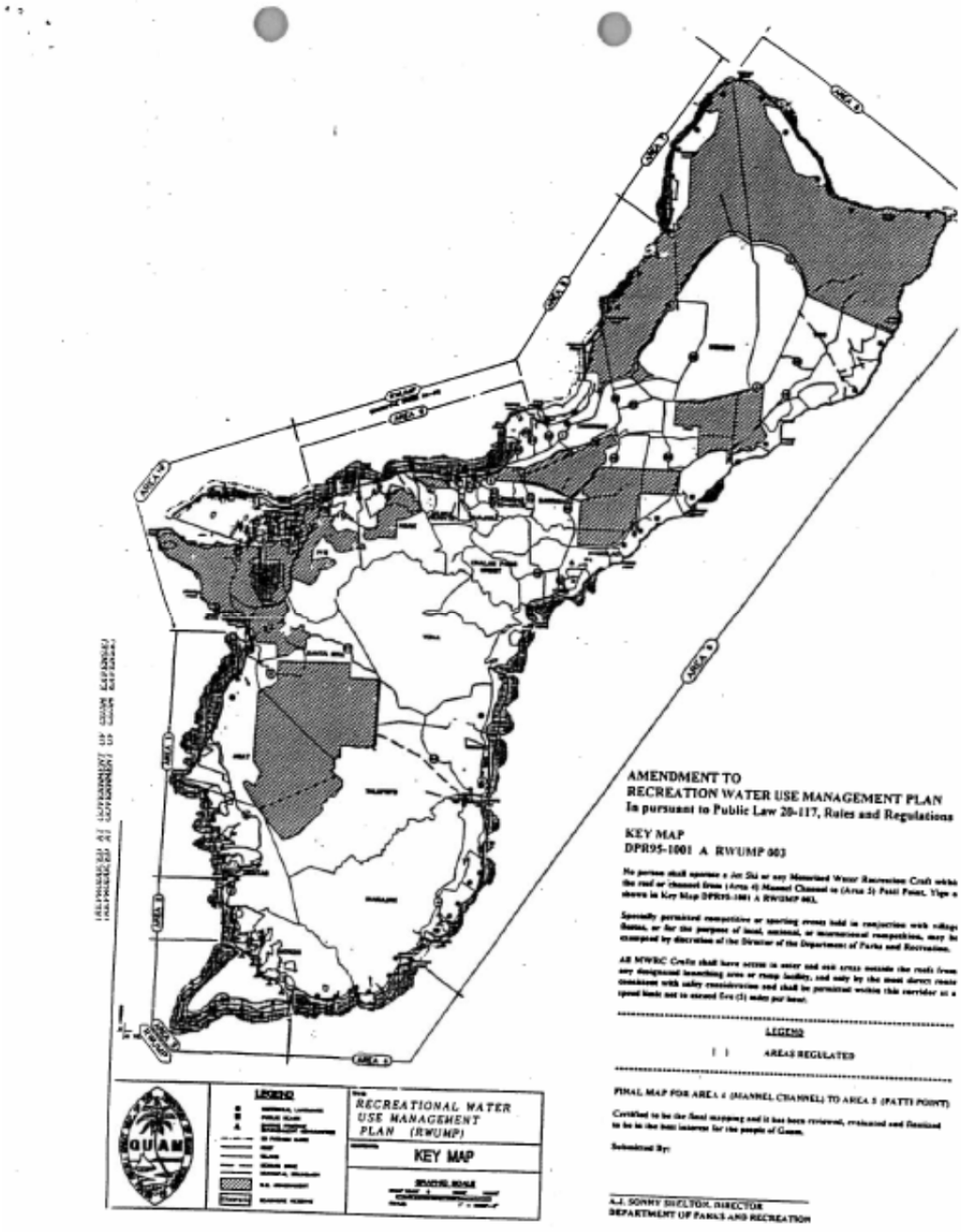


Figure 24. Map showing Area 4 and where motorized water crafts are prohibited on channels and reef areas.

Finally, an update to Guam's recreational water use plan was published in 2006 through the Guam Comprehensive Outdoor Recreation Plan Update by the Department of Parks and Recreation. This Plan update did not further amend the authority of the DPR or the RWUMP through which the management area and rules governing recreational water activities is administered. Therefore, the existing rules or regulations as established through the RWUMP under the DPR that govern recreational water use activities or MWRC does not include such management measures in the Malesso lagoon area. Given this lack of coordinated management or rules within the Malesso lagoon, the community developed strategies to address the growing recreational water craft activities through a zoning approach.

After assessing the range of water use activities, areas of operation, and existing conflicts between uses, the community developed a zone based management approach to separate "thrill craft-type" activities from passive types of water activities, such as: spearfishing, snorkeling, kayaking, canoeing, diving, etc. The community identified a specific area or zone for thrill craft activities to operate (Figure 26). A second zone is identified for existing and future tourism-based SCUBA and seawalker activities to operate. The remaining areas would be open to all ongoing activities. To accomplish this, Malesso community participants will engage the Guam Department of Parks and Recreation, tour operators, and other user groups to develop a zoning regime that will support this Plan's objectives to create management regime to mitigate user conflicts and address safety concerns as raised through this effort.

Malesso pier and boat ramp: In 2009, the Guam legislature, through Bill 193-30, placed Merizo Pier Park under the administrative jurisdiction of the Merizo Mayor's office. This in effect transferred Merizo Pier Park from the Department of Parks and Recreation to the jurisdiction of the Merizo Mayor's office. Guam Code Annotated Title 5, §40113(b) was amended to read "(20) The Mayor of Merizo is responsible for the Merizo Pier 7 Park."

In discussion with the community, one of the management strategies was to control activities in the lagoon by regulating the Park and Pier use. Commercial vendors and other lagoon users depend on the boat ramp to access the lagoon. Parking for vehicles and trailers are limited and that can limit access. Other strategies for regulating the lagoon use through regulation of the Park, Pier and boat ramp were discussed:

- Develop a fee structure for use of the ramp,
- Develop a permit system for use of the pier, park and boat ramp,
- Schedule user activities to reduce the impact of conflicting uses.

These actions could be initiated by the Merizo Mayor's office but any action to regulate the public use of these facilities, create rules or change the current use would need to be negotiated with the Department of Agriculture, Department of Parks and Recreation, and the Bureau of Statistics and Plans. Other agencies may need to be involved depending on the impact

of the regulatory initiative. And, ultimately, the Guam Legislature may have to initiate the action and implement the regulation.

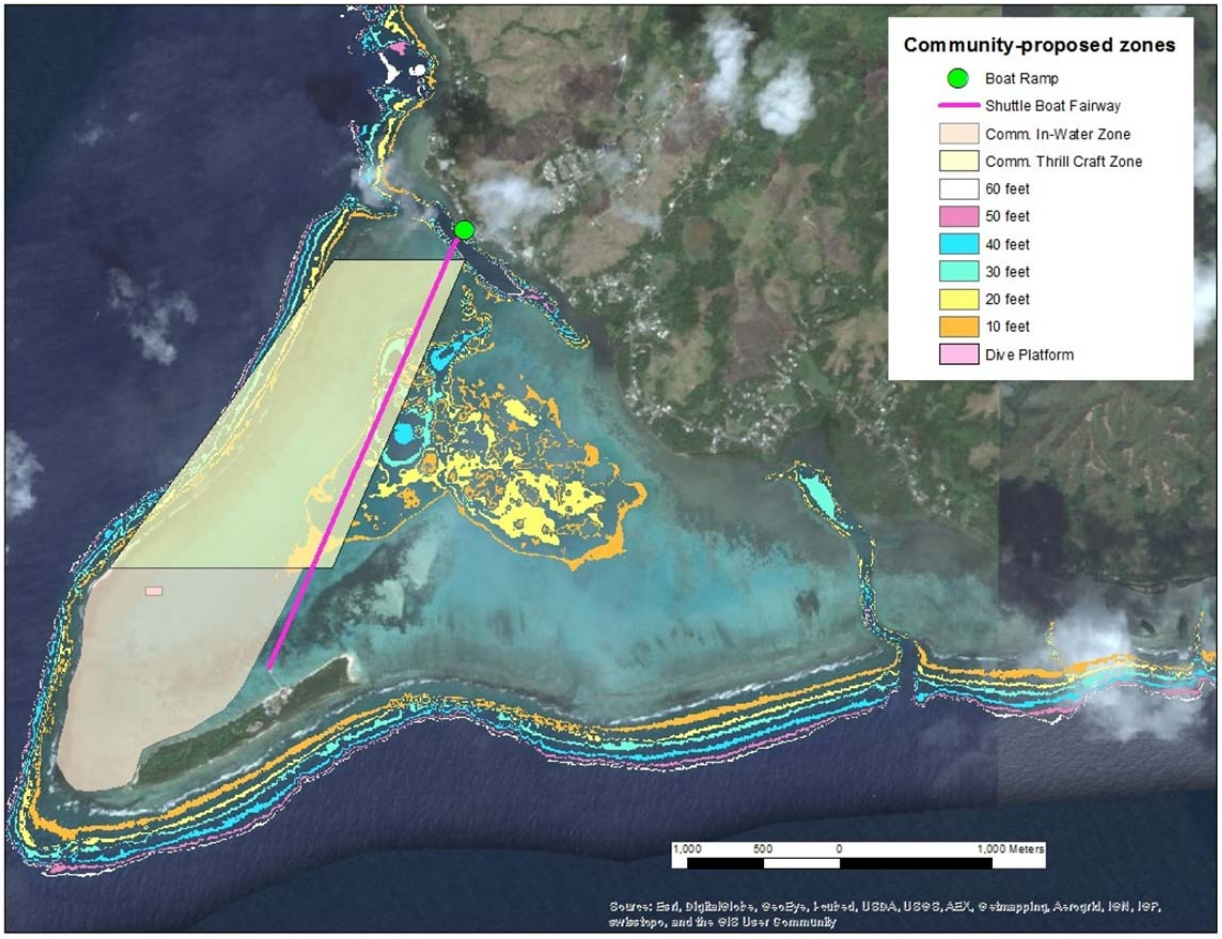


Figure 25. Proposed zoning map for commercial in-water activities and thrill crafts in the village of Malesso.

Any action on the use of the Pier, Park and boat ramp still requires further discussion at the community level. Any change recommendation should be assessed through a trial period to determine whether the effect and impact of the change achieves the objective and goal intended. A time limited trial for a recommendation may be within the authority of the Merizo Mayor's office and could be the subject for an inquiry with the Guam Attorney General's office.

Governance Objective

"To ensure compatibility between and to use federal, territorial and local management regimes to their full benefit to provide for and support the Malesso community's local rights for a healthy and sustainable livelihood."

Actions addressing governance objective as proposed in this plan

Committee of Elders: Workshops in Malesso indicated a desire to establish a Saina (Elders) committee to guide and advise the community in traditional practices and culture regarding fishing, Cocos lagoon, Achang reef flats and the village area. In Malesso, the community engaged their Saina by inviting them to the planning sessions so the elders were part of the planning and workshops. It may be advantageous for the Mayors' Council to establish and support a Saina committee.

Peskadot Advisers to Merizo Mayor: The Village of Malesso (Malesso) proposes to establish an advisory Peskadot Committee made up of fishing residents of the municipality of Malesso, under the authority of the Mayor's office. The committee will meet and review conditions at Cocos lagoon and make recommendations for the betterment of the environment and the benefit of the community.

Education and Outreach

Actions addressing education and outreach initiatives as proposed in this plan

Malesso Integrated Coastal Observing Network (ICON): Throughout the strategic planning process, community participants expressed interest in supporting community-based monitoring programs that will provide them expanded information on status of village resources. To address this interest, this Plan proposed development of an ICON program which is an educational STEM (Science-Technology Engineering Mathematics) immersion course designed to provide middle and high school students the opportunity of building advanced electronic instrument packages through the use of cutting-edge digital technology for monitoring the local and regional coastal and marine environment surrounding in their community. Through a three-week emersion course, students will build a monitoring network that will contain a weather satellite receiving station, weather station, and near-shore oceanographic mooring buoy. The network will collect continuous real-time data that will automatically be uploaded to a website for community use and monitoring. Environmental weather elements to be monitored may include: satellite images, air temperature, humidity, atmospheric pressure, light levels, wind speed, wind direction, and rainfall. Oceanographic elements may include: sea surface and subsurface temperatures, salinity, pH, and light level. See attachment for full Malesso ICON proposal. Tracking this environmental information can provide the community increased understanding of the status of village resources when integrated with biological monitoring programs being proposed to address the community's conservation objectives above.

Code of Conduct: An important recurring issue raised by the Malesso community throughout the workshop is the social and marine resource impacts from "outside" user groups. Concern stems

from visitors or business entering the village or management area participating in activities that may not be technically illegal, but may be socially unacceptable. For example, outsiders participating in new recreational water sport activities in areas where or at times when traditional fishing takes place. To address this, the Malesso community will work with local agencies and organizations to develop a standard code of conduct of acceptable practices within the Malesso village area. The code of conduct can be used as an educational tool through distribution at local business and agencies offices. In addition, signs with the code can be posted at the pier, boat ramp, parks and other public areas throughout the village where outside users may frequent.

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Public Laws, Guidelines, Executive Orders

1 GCA (Guam Code Annotated) General Provisions, Chapter 4 Political Authority; Jurisdiction, §403 (i)

5 GCA Government Operations, Chapter 40 Mayors of Guam

5 GCA Government Operations, Chapter 63 Fish, Game, Forestry & Conservation

5 GCA Government Operations, Chapter 63 Fish, Game, Forestry & Conservation, §63133.

21 GCA Real Property, Chapter 77 Parks and Recreation §77119 (f).

HRS (Hawaii Revised Statutes) §188-22.6 – 188-22.9 (repealed)

Guam Public Law 24 – 21, Twenty-fourth Legislature, First Regular Session, AN ACT TO ESTABLISH RULES AND REGULATIONS FOR THE CONTROL OF FISHERIES BY THE DEPARTMENT OF AGRICULTURE.

Bill No. B193-30 An Act to place Merizo Pier Park under the administrative jurisdiction of the Merizo Mayor's office.

EO No. 89-31 Adoption of the Recreational Water Use Management Plan (RWUMP) for the Waters of Guam. Dec 29, 1989

PL 20-117, Jan 18, 1990 "An Act to Add Subparagraph (f) to $26017 of the Goverment Code to give responsibility over motorized water recareational craft and their operations to the recreation Division of the Department of Parks and Recreation."

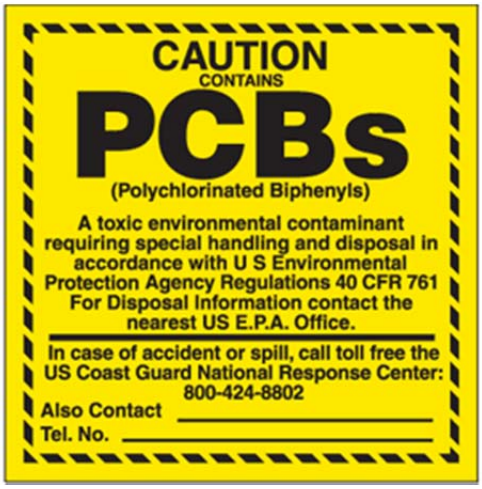
PL 23-89, May 1, 1996, "An Act to amend rules and regulation for the Department of Parks and Recreation relative to the Recreational Water Use Management Plan"

PL 24-219, June 4, 1998, "An Act to Amend rules and Regulations for the Department of Parks and Recreation, Relative to the Recreational Water Use Management Plan."

Procedures Guide for Achieving Federal Consistency with the Guam Coastal Management Program, Bureau of Statistics and Plans, Revised May 2011

Appendix 1: Supplemental Information for the Community Management Plan for Malesso Coastal and Marine Resources

1. **Fishing Access for Seasonal Fish Runs**
2. **Polychlorinated Biphenyl Contamination**



Fishing Access for Seasonal Runs

Fishery Resources in Malesso

Malesso being a traditional fishing village understands the importance of sustaining the fishery resources for the community. Traditional tenure of marine resources for communities with long history of marine resource use had been proven to be sufficient in sustaining fishery resources[1,2]. Monitoring of the boat based fishery catch in Guam showed Malesso landing an average of 2,993kg of fish per year ranking third of the three ports being monitored by the Division of Aquatic and Wildlife Resources (Figure 1).

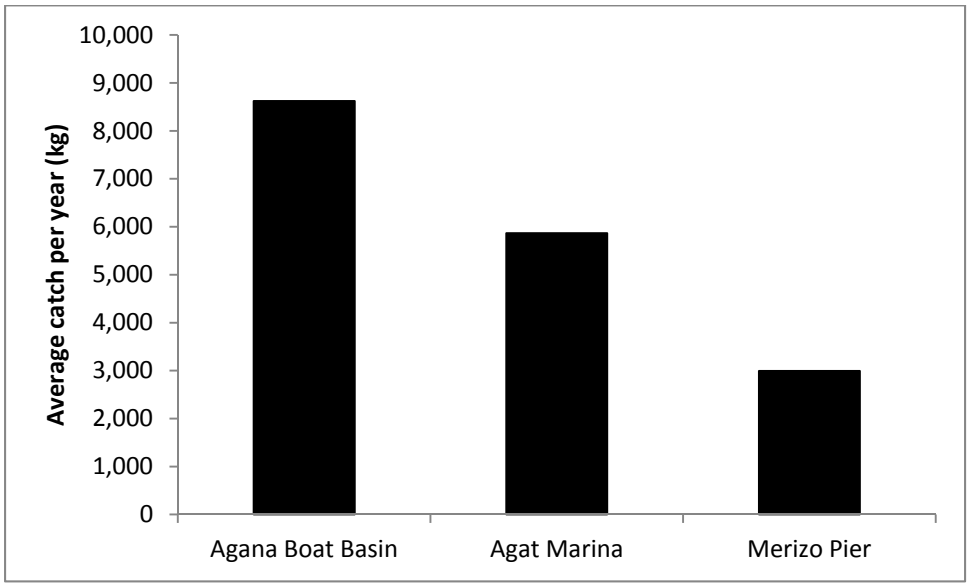


Figure 1. Average catch of marine resources from the boat-based creel survey in Guam by monitoring site.

A closer look at the Malesso boat-based fishery showed trolling as the dominant fishery that land at the Malesso Pier with an average landing of 8,923kg (Figure 2). This was followed by bottomfishing (4,144kg), gillnetting (3,377kg) and snorkel spearfishing (3,108kg). Hence, the dominant catches are mostly pelagic fish (Figure 2). Giant clams appeared to be second possibly from the snorkel spearfishing method. Sharks and rays are possibly by-catch from the troll fishery. The shore-based fishery is dominated by snorkel spearfishing followed by net fishing

[1] Berkes, Fikret, Carl Folke, and Madhav Gadgil. *Traditional ecological knowledge, biodiversity, resilience and sustainability*. Springer Netherlands, 1995.

[2] Ruddle, Kenneth, Edvard Hviding, and Robert E. Johannes. "Marine resources management in the context of customary tenure." *Marine Resource Economics* 7.4 (1992).

like gill and cast nets and hook and line. The net gear and hook and line gear from the shore-based fishery and the gill net from the boat-based fishery has the potential to harvest atulai.

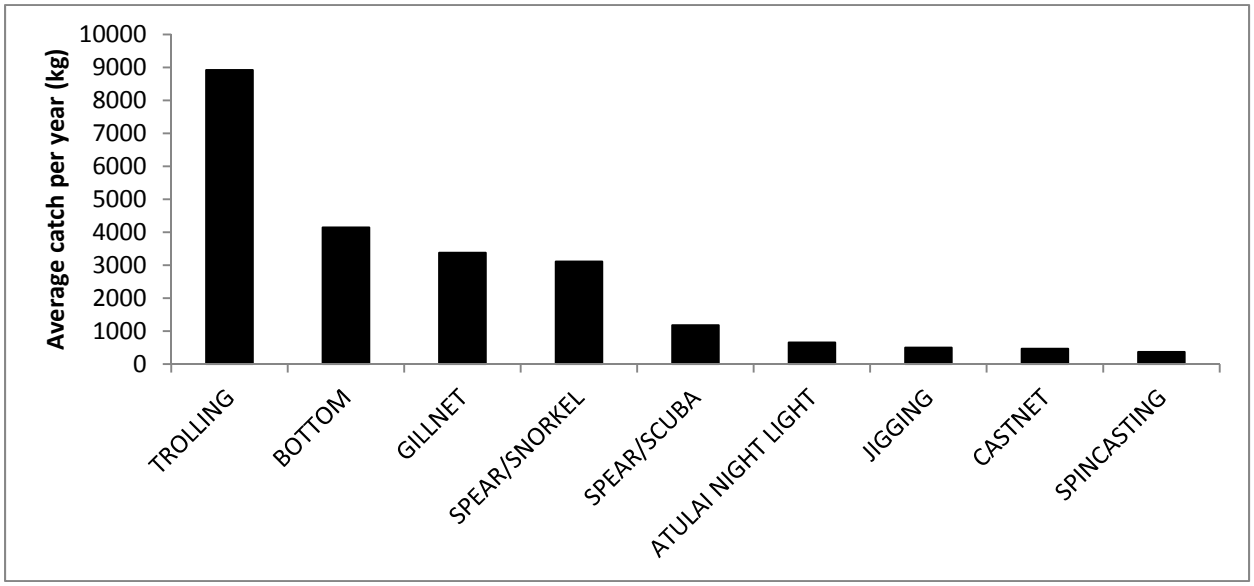


Figure 2. Average boat-based landing by fishing method per year at the Malesso pier.

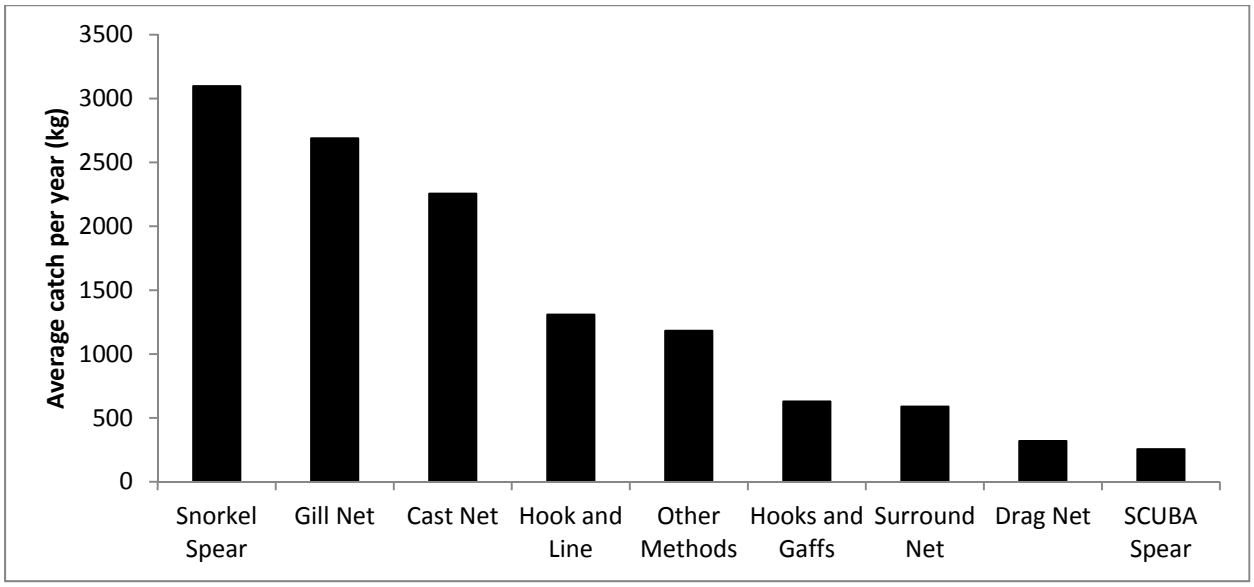


Figure 3. Average shore-based landing by fishing method per year at the Malesso shoreline

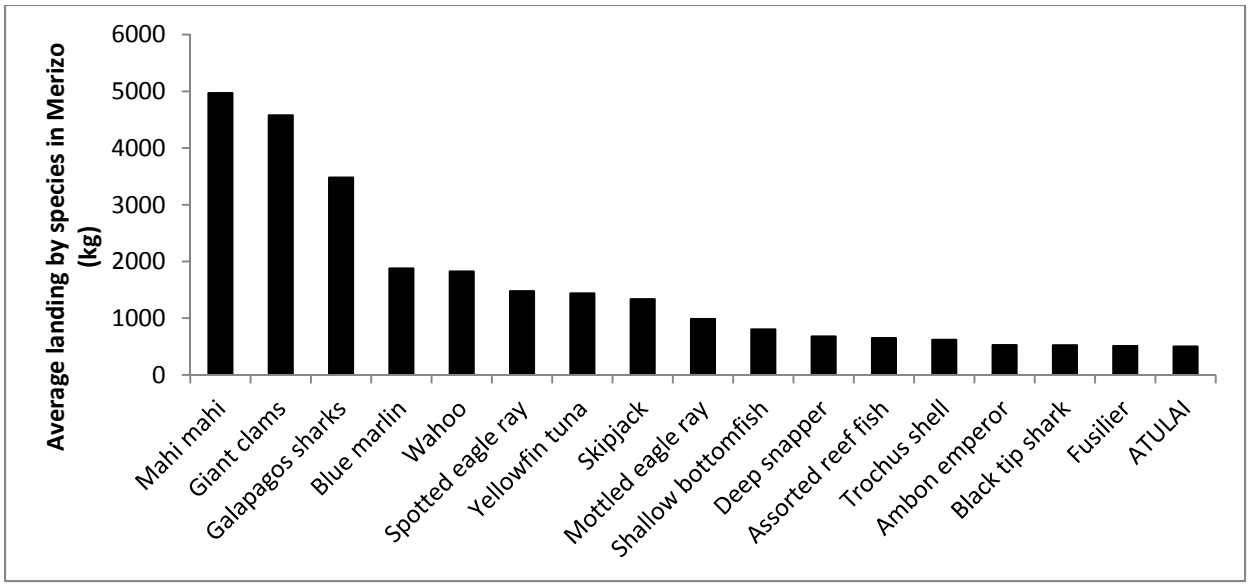


Figure 4. Average boat-based landing by species per year at the Malesso pier.

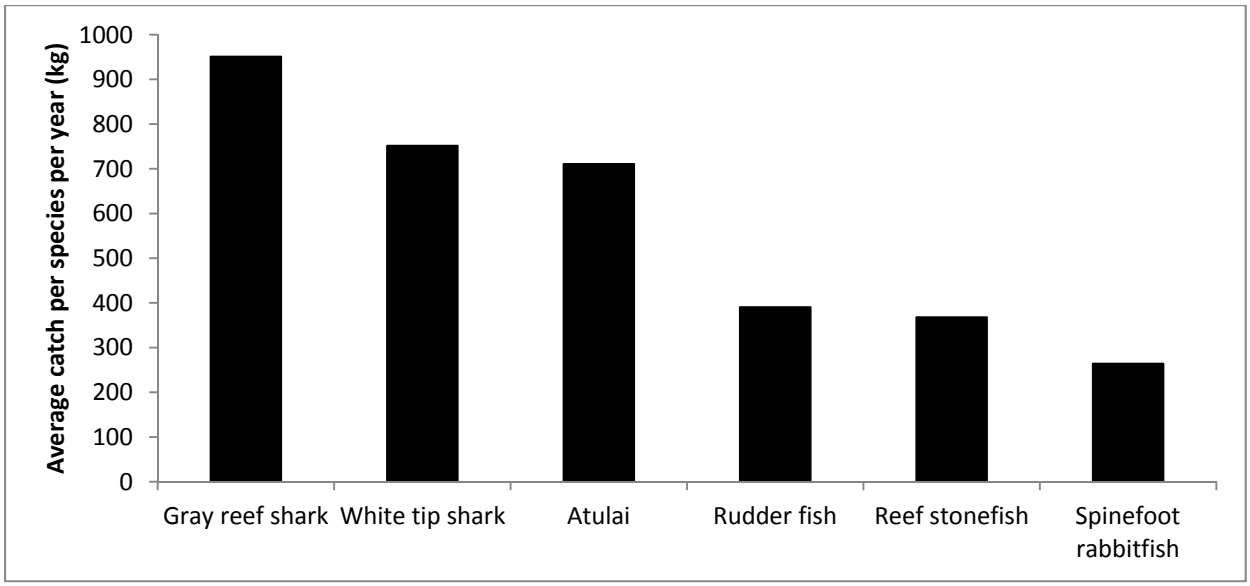


Figure 5. Average shore-based landing by species per year at the region 3 shoreline including Malesso

Figure 4 and figure 5 showed the dominant species harvested in the boat-based and shore-based fishery around Malesso. Aside from the sharks and rays, atulai and rabbitfish appeared to be one of the dominant reef fish being harvested in Malesso. These species are known to have high natural mortality during the recruitment and juvenile phase[3,4,5]. Traditional fishery in Malesso

[3] Dalzell, Paul J. "Small pelagic fishes." *A. Wright, & L. Hill, Nearshore marine resources of the South Pacific* (1993): 97œ133.

takes advantage of the opportunity of the higher catch per unit effort during the seasonal runs of these species. Harvesting the recruits of the rabbitfish (*manahak*), goatfish (*ti'ao*), jacks (*i'e*) and big eye scads (*atulai*) does not have significant impact to the fishery stocks because the exploited segment of the population will just be lost to the larger fish that preys on the juveniles.

The presence of the Achang Marine Preserve within the boundary of Malesso may provide support for sustaining marine resources in the area by limiting the fishing pressure on the local fish stocks. However, it is still to be proven that this preserve has fishery benefit through direct spill-over to areas around the boundaries or through recruitment of fish on fishing grounds outside the preserve. The marine preserve is also limited in terms of providing protection to highly migratory fish like atulai.

Recommendation

Intensify the monitoring of catches at the shoreline and pier of Malesso

Monitoring the catches is important to determine the level of exploitation of the fishery resources. This will be done in collaboration between the Mayor's office and DAWR. A resident port sampler could be trained by DAWR to monitor the Malesso Pier for commercial and noncommercial landings. This will particularly be useful when documenting catches for the seasonal runs of *manahak, atulai, ti'ao* and *i'e*. This monitoring can be implemented when the Mayor's office declare the fishery for *manahak* and *i'e* open. This work can augment the limited surveys conducted by DAWR.

Conduct a collaborative monitoring of the fishery resources in Malesso

Aside from knowing how much fish are being harvested, monitoring the quantity of fish available for the fishery is important to determine what harvest level would be sustainable. Underwater census surveys are usually the methods used to determine biomass, abundance, and species diversity of the marine resources. This will be in collaboration between the Mayor's Office and DAWR. A staff from the Mayor's Office could be trained by the DAWR staff on survey techniques. The data can be used to monitor the effectiveness of the adjacent marine preserve as well as the overall effect of the village fishery management over time.

Localize fishing access to during seasonal runs

[4] Roos, David, Olivier Roux, and François Conand. "Notes on the biology of the bigeye scad, Selar crumenophthalmus (Carangidae) around Reunion Island, southwest Indian Ocean." *Scientia Marina* 71.1 (2007): 137-144.

[5] Russ, G. R., and J. St John. "Diets, growth rates and secondary production of herbivorous coral reef fishes." *Proc 6th Int Coral Reef Symp*. Vol. 2. 1988.

Localizing fishery access refers to access to fishing areas adjacent to and within the village. Community based fishery management augment's the local government's efforts in managing and monitoring the fishery resources by collaboratively allowing the local communities be in-charge of their own village waters. Enabling management in a smaller scale effectively allows for easier monitoring, enforcement, and management of the users of the resources. The Mayor's Office of Malesso will be engaging the Department of Agriculture in forming an efficient and equitable arrangement that would allow the community of Malesso to harvest fish during seasonal runs. The proviso for this arrangement would include but not limited to: 1) formalize the agreement between the Mayor's Office and Department of Agriculture; 2) the Mayor's Office will be the central repository of permitting fishermen to fish during seasonal runs and will share information with Department of Agriculture; 3) monitoring of catches during seasonal runs and share this information to Department of Agriculture.

Polychlorinated Biphenyl (PCB) Contamination in Cocos Lagoon

Cocos Island had been used by the US Coast Guard as a Long Range Navigation station from 1944 to 1963. It was proven that potentially hazardous materials like PCB, Polycyclic Aromatic Hydrocarbons (PAH) and other heavy metals have been released to the environment during and after this period. The US Environmental Protection Agency warns that these materials poses serious hazards either through long term exposure or ingestion which would include cancer and other adverse effects to the immune, reproductive, nervous, and endocrine system. Cocos Island and the surrounding area exhibited high concentration of PCBs in the environment (soil and water) and the organisms found in the area[6] exceeding the EPA standards.

The environmental study showed increased PCB levels in 11 of the 12 reef fish samples taken from the vicinity and outside the contaminated area. The samples collected were damsel fish (sergeant major), snapper, convict tang, wrasse, trigger fish and moray eel. These species occupy various positions in the trophic chain specifically detritivores, planktivores, herbivores, and carnivores. The PCB levels ranged from 0.066 mg/kg to 5.3 mg/kg which are higher than the EPA recommended screening values of 0.02 mg/kg. Reef fishes had been used as an indicator of environmental changes within the area they inhabit[7]. PCBs also accumulate in the tissues of reef fishes and the concentration increases along the food chain[8]. PCBs were also detected not only at

[6] Environet Inc. 2005. Environmental Investigation of the Former LORAN Station Cocos Island Guam. Honolulu, Hawaii. 110pp.

[7] Stephens Jr, John S., Jo Ellen Hose, and Milton S. Love. "Fish assemblages as indicators of environmental change in nearshore environments." *Marine organisms as indicators*. Springer New York, 1988. 91-105.

[8] Giam, C. S., et al. "DDT, DDE and PCBs in the tissues of reef dwelling groupers (Serranidae) in the Gulf of Mexico and the Grand Bahamas." *Bulletin of Environmental Contamination and Toxicology* 11.2 (1974): 189-192.

the adult stage of the fish but also at the embryo, larval and recruit stages[9] indicating that the juvenile fish being harvested in the area are may also be contaminated. Ingestion of contaminated reef fish may have some adverse health effects to the local communities. In fact, it was shown that the concentrations of PCBs are higher on the younger life stage of the reef fish potentially increasing the health risk of ingesting juvenile reef fish.

However, due to the similar levels of PCB in fish caught inside and outside the contaminated area, the study was inconclusive in terms of determining the source and extent of the contamination. The study could not attribute the contamination from the relatively minor PCB levels found on the site but possibly to the ubiquitous nature of PCBs within the aquatic system. It is highly likely that the scale of the contamination extends far beyond the boundaries of the study. The study recommended additional sampling of areas beyond the immediate vicinity of the contaminated area to determine if the consistent low levels of PCBs in fish reflect the regional background level of a localized problem. The study also recommended expanding the bioassays to other species to determine biomagnification.

These recommendations were taken up in the 2008 report[10]. The 2008 investigation expanded the sampling sites to cover all of the lagoon area as well as the Pacific Ocean side of the island opposite the contaminated area. Results showed that higher concentrations of PCBs were found on fishes within 50 yard vicinity of the contaminated area. Also the levels of PCB vary between species depending on whether the species has a narrow or broad range. Higher concentrations are found on resident species like damsel fish which is not a species targeted in the fishery. Fishes with a broader home range tend not to exhibit elevated PCB concentration. A quarantine zone around the contaminated area was recommended and the fishery is open in areas with low PCB concentration. The concentration of PCB is higher in area 1 and 3 where the sources had been identified from disposed batteries and capacitors (Figure 6). Another recommendation was to conduct regular monitoring of PCB concentration in reef fish on a 5 year cycle. The last monitoring was conducted in 2008 and the next assessment is due at the end of 2013.

[9] Kerr Lobel, Lisa M., and Elizabeth A. Davis. "Immunohistochemical detection of polychlorinated biphenyls in field collected damselfish (*Abudefduf sordidus*; Pomacentridae) embryos and larvae." *Environmental Pollution* 120.3 (2002): 529-532.

[10] Element Environmental LLC. 2008 Follow-On Environmental Site Investigation Former LORAN Station Cocos Island Guam. Haleiwa Hawaii 96712. 115pp.

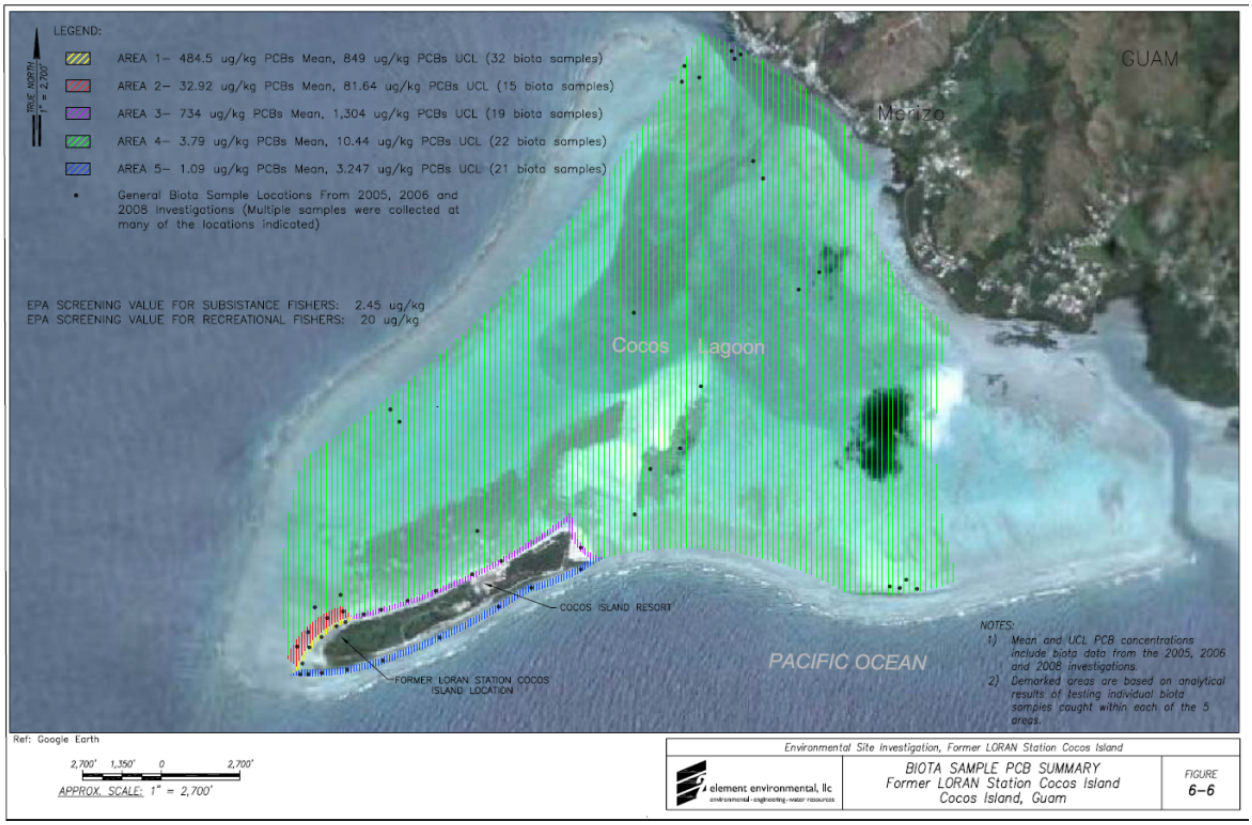


Figure 6. Geo-spatial map of the concentration of PCBs around Cocos Island and Cocos lagoon.

Recommendations

Reduction of the advisory following the 2008 report recommendation

The 2008 Environmental Investigation report recommended reducing the quarantine zone to 50 yards from the contaminated site. This would allow for better marketing of fish originating from the Malesso village as well as officially recognize that the fish from the area is safe to eat. The Government of Guam should work with the Mayor's Council in facilitating the revision of the advisory and also collaborate in the proper implementation of the stipulation associated with the revision of the advisory. For example in order to ensure that the revision of the advisory will not result in any health consequences whereby villagers become ill due to consumption of contaminated fish, the Government of Guam and the Mayor's Council should monitor PCBs in a more regular basis rather than the 5 year time frame.

Conduct monitoring of PCBs around Cocos Island and Cocos Lagoon

The community of Malesso is concerned about the potential effects of the PCB contamination in fishes and other marine organisms harvested within the village waters. The community had relied

on the coral reef resources for traditional and subsistence living. Re-assessing the extent of the contamination and the levels of PCBs in fish are needed to determine the current potential risk of fish consumers. The last assessment was 5 years ago. The Ecotoxicology Laboratory of University of Guam Marine Lab has the ability to screen for toxins in fish. This can be done in collaboration between the Mayor's Office and UOGML. The collection of the samples could be done by the local fishermen and UOGML will process the samples. A report will be provided to the community.

Determine oceanographic patterns to inform changes in the advisory

In conjunction with monitoring the PCB content in fish, determining the circulation pattern in the Malesso area would be beneficial to inform the changes in the advisory. The location of Malesso being at the southern tip of the Island of Guam holds a promising area for research. These areas are known for island generated gyres that hold various larvae for recruitment and also areas of good water circulation for flushing of toxins and other pollutants. Determining the circulation outside the lagoon will provide insight on larval transport while circulation inside the lagoon will provide information on flushing time as well as residence time of PCBs. The longer the residence time of contaminated water increases the exposure of fish to the toxin thereby increasing the risk for consumers. Knowing the circulation flow will also allow for proper zoning of the quarantine area and knowing the flushing time will inform authorities when to open and close the designated areas to fishing. This can be done in collaboration between the Mayor's Office and the NOAA Pacific Island Fisheries Science Center.

Appendix 2: Supplemental Information for the Community Management Plan for Malesso Coastal and Marine Resources

1. Regulatory basis for the Malesso Community Fishery Management Actions

Implementation of Community Objectives

The Malesso Community identified objectives in managing their resources: Conservation, Socio-economic Objectives, Governance objectives and Education and Outreach objectives. The challenge is to create a resource management regime that can achieve these objectives and be able to adapt to new or changed objectives to remain relevant and effective.

The Malesso Mayor's office is the point of contact for this initiative and the creation of Resource or Peskadot committee within the Mayor's office can achieve the objectives set forth in this management plan. The community has identified elders that can advise the committee. Actions are recommended in this plan and the Mayor has the authority to engage with agencies and organizations interested in resources at Malesso. The Mayor also is a member of the Mayors' Council of Guam and has the responsibility to report to the MCOG actions that have effect or impact on other municipalities.

Justification for proposed designation

The Village of Malesso is the southernmost village of Guam and the United States. It has a population of 2,152 (2000 census). In 2006, high levels of *polychlorinated biphenyl* (PCB) was discovered by the Guam Environmental Protection Agency, Department of Public Health and Social Services and the Coast Guard in Cocos Lagoon and the people were warned not to eat fish caught in the lagoon limiting the villagers to access their traditional foods and food sources.

In May 16, 1997 the Achang Reef Flat Marine Preserve was established by Guam Public Law 24-21. Public Law 24-21 restricted all forms of fishing in the Achang Reef Flat marine preserve area except for those methods specifically allowed in a marine reserve. Bag limits and size limits for crustaceans and invertebrates were established.

The establishment of the marine reserve and the pollution of Cocos Lagoon limited the use of the ocean for the traditional fishing practice. Restrictions on the use of gear and size and bag limits have not been monitored and no baseline of information is available to gauge the success or failure of the marine reserve to preserve local traditions and protect the natural resource.

The creation of the marine preserves in 1997 (Tumon Bay, Achang Reef Flat, Piti Bomb Holes, Sasa Bay and Pati Point) restricted fishing displacing fishermen to areas not traditionally used for fishing

Engagement with the village in 2012 revealed a list of issues and concerns of the community that began this initiative:

1. Access to Marine Protected Area for Traditional/Commercial Fishing
2. Regulation on harvest of land crabs

3. Maintenance of harbor and boat facilities
4. Enforcement – community wants more enforcement support
5. Boat access in preserve area. Need to travel 8-10 miles to dive. Travel back through reserve with catch is a problem. Change the preserve to open the boat channel. Legal opinion is that they have to be actively fishing in the preserve to be in violation.
6. Legislature does not want to change the marine preserves.
7. Rotate the marine preserves.
8. Mañahak – community wants to use motorized boats to scout

Plan Designation

This management plan is designed to establish a pilot project in Malesso (Malesso) that will empower the community and assist the Guam Department of Agriculture in establishing rules and regulations that address the intent of Public Law 29-127, Relative to Indigenous Fishing Rights, to establish special fishing rights for the indigenous Chamorro community. The Mayors' Council of Guam is a partner in this activity.

The recommended management plan is organized as a framework for the establishment of regulations to conserve and manage near shore ocean resources in Malesso Village, Guam. While primarily concerned with the near shore areas adjacent to the village, the plan will identify processes and activities that will enhance enjoyment of ocean, natural and cultural resources by the community and support the establishment fishing and resource use regulations and use practices and codes of conduct developed in consultation with the village community as well as address the mandates of PL 29-127, 2008, Indigenous Fishing Rights.

Process for the development and establishment of the framework management plan is based on the Coastal Marine Spatial Planning (CMSP) process developed for the Ocean Policy Task Force in 2009. It identifies stakeholders, agencies and organizations and recommends processes for:

- engagement of stakeholders,
- development of regulations,
- development of codes of conduct and,
- development of a protocol for the effective, efficient engagement for the community with the regulating authority.

For Malesso the management framework will consist of these elements:

- An Adaptive management regulatory regime;
- A Code of Conduct, a non-regulatory set of rules of behavior for the community;

- A community resource committee under the Mayor's office that will provide consultation, educational opportunities and resource monitoring.

Adaptive management

The establishment of an adaptive management regulatory regime would require assistance of the Department of Agriculture, the Guam Legislature and the Bureau of Statistics and Plans, who has responsibility for consistency and compliance with federal and territorial law.

The establishment of global longstanding rules and regulations and lack of, or inequitable, enforcement of those rules is detrimental to the health of the environment and places the community at odds with the central authority. The community is penalized for interacting with the environment and penalized again because they are prevented from accessing resources at the best times and in the best places.

Traditional ecological approaches fostered, in modern terminology, "sustainable use" of natural resources. They are not related the present-day preservation campaigns that discourage resource consumption. Traditional ecological approaches contrast sharply from present-day government resource management.

In traditional resource management processes, "projects," the regulatory actions, are designed to achieve goals related to long-term consumptive use of natural resources. Science is conducted in the context of everyday living. Implementation is built into this research; ends and means are not separated. Unlike the "ideal" scientific researcher, traditional resource practitioners are not neutral. Traditional practitioners are similar to scientific researchers in that they have an interest in understanding the environmental and ecological situation,, unlike researchers, traditional practitioners are interested in improving situations to avoid repeating the same mistakes. For the traditional practitioner, science is a system for adapting in a constantly changing environment. Subsistence practices involve a form of science that is at once a creative process (adapting to natural system), cultural expression (perpetuating traditional practices) and a problem-solving strategy (survival of the culture).Practices emerged from traditional roots and have meaningful links with the past as they adapt to the present.

In the real world, resource conservation problems are not givens. They must be constructed from problematic situations which are puzzling, troubling and uncertain. The work of traditional science (traditional ecological knowledge) is to convert a problematic situation to a problem, to make sense of an uncertain situation that initially makes little or no sense. Many problems are of modem origins and thus, were never addressed by the ancient traditional cultural practice. However, traditional ecological knowledge and traditional ways of thinking about nature are holistic. Traditional ecological knowledge and traditional science is adaptable and can deal with many present-day resource issues never faced by ancestors. The traditional practicing

community can thus serve as catalysts for both learning and conservation actions.

Unlike government agencies, traditional resource practitioners have the flexibility and opportunity to test what works and what does not. They are in a position to actually practice "adaptive management" — a cornerstone of ecosystem-based conservation. Adaptive management is an approach that treats natural resource management policies as experiments to foster learning, to improve imperfect understanding and to correct previous errors in management goals and directions based on what is learned. Adaptive management requires common sense but is not a license to just try anything.[11]

Governments have failed to conserve fish stocks, to protect endemic or indigenous flora and fauna, have ignored traditional agricultural, aqua cultural and marine practices, and, in many instances they have exacerbated problems through mismanagement[12]. Many fisheries agencies believe there is little public support for the aims of fisheries management and the necessities of fisheries regulations[13]. In fact, resource management as a whole is often in crisis mode and natural resource management decisions are sometimes being made in the courtroom as evidenced in three significant cases.

Ideally, in an adaptive management approach policies are designed and implemented as experiments to probe the behavior of natural systems. Managers and decision makers develop policy incrementally based on ongoing acquisition of new information. Adjustments in policies and practices are made based on this new information. Unexpected outcomes are instructive findings used to make timely adjustments. However, an adaptive approach requires public confidence in the State's capacity and commitment to make needed corrections responsive to real environmental information free of political bias[14]. This may be a major barrier in the Government's willingness to implement an adaptive management approach. However, this adaptive management approach would not be begun as an experiment to test the behavior of a natural system. It would begin as a community's desire to manage, protect, sustain and/or harvest a specific resource. Data and information would be acquired by the community as part

[11] Poepoe, Kelson K., Paul K. Bartram and Alan M. Friedlander, The Use of Traditional Knowledge in the Contemporary Management of a Hawaiian Community's Marine Resources, Paper presented at Putting Fishers' Knowledge to Work conference held in Vancouver, British Columbia, 2001.

[12] Jentoft, S., B.J. MCay and D.C. Wilson, Social Theory and Fisheries Co-management, Marine Policy, Vol. 22, No. 4-5, Ecopolicy Center, Rutgers University, New Jersey, Elsevier Science, Ltd., 1998.

[13] King, Michael, Ueta Faasili, Semisi Fakahau and Aliti Vunisea, Strategic plan for fisheries management and sustainable coastal fisheries in Pacific Islands, report to the Secretariat of the Pacific Community, New Caledonia, 2003.

[14] Umemoto, Karen and Krisnawati Suryanata, Technology, Culture and Environmental Uncertainty: Considering social Contracts in Adaptive Management, Journal of Planning Education and Research 25: 264-274, Association of Collegiate Schools of Planning, 2006.

of a community-based natural and cultural resource management plan in cooperation with the Government of Guam, the Mayor's Council of Guam, and relevant governmental agencies.

An adaptive plan for natural resource management requires that the central authority, the State, develop a management schema, or framework, that allows for quick adoption of rules and regulations and amendments initiated by a community organized along prescribed guidelines for natural resource management. The framework would have criteria for the adoption of management rules and regulations and require active review of the regulations and policies at prescribed intervals. Data and environmental information would be collected through consultation with the community and their environmental monitors. Resource management would be responsive to the community as well as the environmental conditions.

Adaptive management is an ongoing cycle of designing and checking a plan and then modifying management as new information is gathered. It implies that communities design a management plan that includes a method of checking and monitoring results, regular analysis and discussion of whether the plan needs modifying and action by the community to continue to manage the resource. The basic process can be summarized as:

1. Make a plan
2. Implement the plan
3. Check how it is going
4. Revise the plan (if necessary)
5. Carry on.[15]

Further, a community could be exempted from Government of Guam regulations if it self-manages, first planning and then rule-making, a natural resource within their area. The community would be responsible for monitoring the resource, enforcing (citizen enforcement with State enforcement support) the rules and regulations and providing the State with their management plan and natural resources data. The State, in cooperative agreement, and through an adaptive management framework, would assist the community by providing for an opportunity for the community to organize, standards for monitoring the resource and analysis of the information, support for enforcement of the community's rules and regulations and education on natural resource management, natural resource monitoring and enforcement procedures. The State would gain data and information that would otherwise not be available. The community is responsible for:

- Inventorying and prioritization of natural resources that are important to the community,

[15] Govan, H., Aalbersberg, W., Tawake, A., and Parks, J. (2008). Locally Managed Marine Areas: A guide for practitioners. The Locally-Managed Marine Area Network.

- Monitoring of the natural resource,
- Establishing rules and regulations for the management of the resource,
- Submitting these management plans to the State and County.

Government Assistance and community compliance with existing laws

This proposal does not change any existing laws, violate any existing laws, change existing uses or existing resources. The proposal establishes a committee within the participating mayor's office to advise on the traditional system of best fishing practices and resource use practices to guide rulemaking and other regulatory activities.

This proposal also makes recommendations for monitoring of identified environmental problem areas and defects. The monitoring will be educational for the community to improve understanding and to increase awareness of environmental health. Resource monitoring will require the commitment to train identified community members to properly monitor resources.

The Village of Malesso Guam is transmitting this document to the Mayors' Council of Guam. The charter for the Village of Malesso is found at 5 GCA Government Operations, Ch. 40 Mayors of Guam. The description of the location and boundaries of the marine Waters and submerged lands proposed designation is the nearshore marine environment adjacent to the Village of Malesso, municipal boundaries at 1 GCA General Provisions, Ch. 4, §403 (i).

The designated management area is Cocos Lagoon and the Achang Reef Flat area. Recommendations for zoning activity areas, with consideration of temporal and seasonal changes to activities, along with recommendations on resource uses and access for improved participation, will be made by the Malesso committee for consideration by the proper authorities. Recommendations for the management of biological resources in the managed area will be made to the appropriate authority.

Zoning is the responsibility of the Department of Parks and Recreation. Recommendations for the development of activity zones in Cocos Lagoon will be made by the Malesso resources management committee, the Mayor's office and the department of Parks and Recreation.

Compliance with the Guam Coastal Management Program (GCMP) and federal consistency National Coastal Zone Management Act is a responsibility of the Bureau of Statistics and Plans. This plan proposes a process that will promote the participation of a geographically designated population to engage with and participate in Guam Coastal Management Program so that the public can be served more effectively and efficiently. Rules and regulations, and laws may be recommended by the Resource Committee of Malesso, the Mayor of Malesso and the Mayor's Council of Guam but implementation, consistency and

compliance should be accomplished through the GCMP.

The community of Malesso agreed that management of the resources at Malesso need to be protected and the best protection comes from the community themselves. To achieve this protection, community members:

1. Agree that a resource is important for the community (inventory and prioritization of natural resources by the community),
2. Understand the resource by gathering available information of the resource for review and analysis and draw conclusions about their proper management and conservation. For live resources, understanding the behavior of the species in the specific location (biology and life cycles specific to the area determined by direct monitoring of the stock by the community or the community's representatives), and;
3. Agree to comply with the rules of behavior and conduct established by the community (voluntary compliance).

Seasonal harvest of mañahak, tiao, `i`e, and atulai is currently under the authority of the Department of Agriculture. The process is:

1. A request by the village Mayor is made to the Department of Agriculture to allow the harvest,
2. At the discretion of the Department director, a window of time is proposed for the harvest and a public notice of such action is published,
3. The harvest commences when the seasonal run occurs within the projected window of time,
4. If the run does not occur during the proposed window of time, harvest time may be extended, again at the discretion of the Director.

This system has been adequate since its inception, around 2006, but it can be improved. Currently, the exemption to fishing in marine protected areas for the seasonal harvest of these species is at the discretion of the Director of the Department of Agriculture. First, no data is taken from the harvest. With proper training, members of the community may retrieve data from the activity that would contribute to the understanding of these resources that could contribute to developing stock assessments for these species. Management is dependent on accurate data. Second, while the harvest is permitted at the discretion of the Director. The process would be streamlined by allowing the Mayor the discretion to permit and control the seasonal harvest. The Department would retain authority and oversight.

After meeting with communities and reviewing notes taken during these meetings, analysis of the comments shows that the best practice for traditional management of marine and

land resources is adaptive management - management that is responsive to the true state of the environment and ecosystem – and can be quickly adapted to environmental and other indicators. Understanding the true state of the environment and ecosystem requires real time monitoring of the environment and comparison to a real, not theoretical or some "ideal", baseline of data for each specific location or species, for review and management. This type of management is actually site specific empirical knowledge in active use.

Traditional resource management concentrates on the perpetuation of water, agriculture, aquaculture, near-shore and ocean practices that focuses on the sustainability of the resource. Specific practices that are part of the cultural identity of the traditional native community are still upheld. For example, the seasonal harvest of *Mañahak* (juvenile rabbitfish), *`i`e* (juvenile goatfish), *ti`ao* (juvenile jacks) and *atulai* (Bigeye scad)l are cultural practices.

In Hawai`i, The State has been given the power to recognize community-based fishery management planning in the past as Subtitle 5, Aquatic Resources, chapter 188, § 188-22.6. That authority expired July 1, 1997. However, the language is instructive and has guided the development of this initiative.

> "Haw. Rev. Stat. § 188-22.6: Hawaii Statutes - Section 188-22.6: Designation of community based subsistence fishing area. -
>
> (a) The department of land and natural resources may designate community based subsistence fishing areas and carry out fishery management strategies for such areas, through administrative rules adopted pursuant to chapter 91, for the purpose of reaffirming and protecting fishing practices customarily and traditionally exercised for purposes of native Hawaiian subsistence, culture, and religion.
>
> (b) Proposals may be submitted to the department of land and natural resources for the department's consideration. The proposal shall include:
>
> (1) The name of the organization or group submitting the proposal;
>
> (2) The charter of the organization or group;
>
> (3) A list of the members of the organization or group;
>
> (4) A description of the location and boundaries of the marine waters and submerged lands proposed for designation;
>
> (5) Justification for the proposed designation including the extent to which the proposed activities in the fishing area may interfere with the use of the marine waters for navigation, fishing, and public recreation; and

(6) A management plan containing a description of the specific activities to be conducted in the fishing area, evaluation and monitoring processes, methods of funding and enforcement, and other information necessary to advance the proposal.

Proposals shall meet community based subsistence needs and judicious fishery conservation and management practices.

(c) For the purposes of this section:

(1) "Native Hawaiian" means any descendant of the races inhabiting the Hawaiian Islands prior to 1778; and

(2) "Subsistence" means the customary and traditional native Hawaiian uses of renewable ocean resources for direct personal or family consumption or sharing. [L 1994, c 271, §1]"

Adaptive management allows for the quick adjustment regulations regarding resources by responding to the resource condition that can benefit the resource thereby benefiting the community dependent on that resource. Development of a framework management regime that allows the Mayor's office to establish temporary regulations regarding specific resources, limited by the time that the regulation remains in effect, a public notice requirement, monitoring requirement and a review process by the Department harmful effects on the resource, that may have long term results, can be reduced.

The Mayor's committee would be responsible for the development of a code of conduct to guide the behavior of people while enjoying, participating and engaging with the coastal and other natural environment. The code of conduct would be subject to the approval of the Mayors' Council of Guam and the Department of Agriculture.

Appendix 3: Supplemental Information for the Community Management Plan for Malesso Coastal and Marine Resources

1. Merizo ICON Program

Merizo ICON Program: An Advanced Educational Student-Built Observing Network for Supporting Community-Based Environmental Monitoring

Project Summary

The Merizo ICON (Integrated Coastal Observing Network) program is an educational STEM (Science-Technology-Engineering-Mathematics) immersion course designed to provide middle/high school students from Merizo (Guam) with the opportunity of building advanced electronic instrument packages through the use of cutting-edge digital technology for monitoring the local and regional coastal-marine environment surrounding their community.

While the ICON program enables students to learn first-hand about their natural environment through an integrated hands-on STEM approach, the program also promotes the interaction and engagement of Melesso's youth with their community for ensuring an effective and responsible community-based management effort, both in the present and in the future.

During the 3-week immersion program, students will learn about basic atmospheric and oceanographic concepts, electronics, microcontroller technology, solar power, and sensor integration for building environmental monitoring systems. By effectively merging lectures with hands-on laboratory and outdoor opportunities, students will be able to learn and apply real-world concepts within an applied real-world environmental framework. By the end of the course, students will complete three independent and autonomous environmental monitoring instrument packages that will comprise the Merizo Integrated Coastal Observing Network (ICON). When completed, these instruments will be installed and made available within the Merizo community.

The real-time local and regional atmospheric and oceanographic data acquired by the student-built environmental network will be automatically sent to a central computer that will upload the data to the web for public access and visualization. This student-built network will contain the following autonomous components:

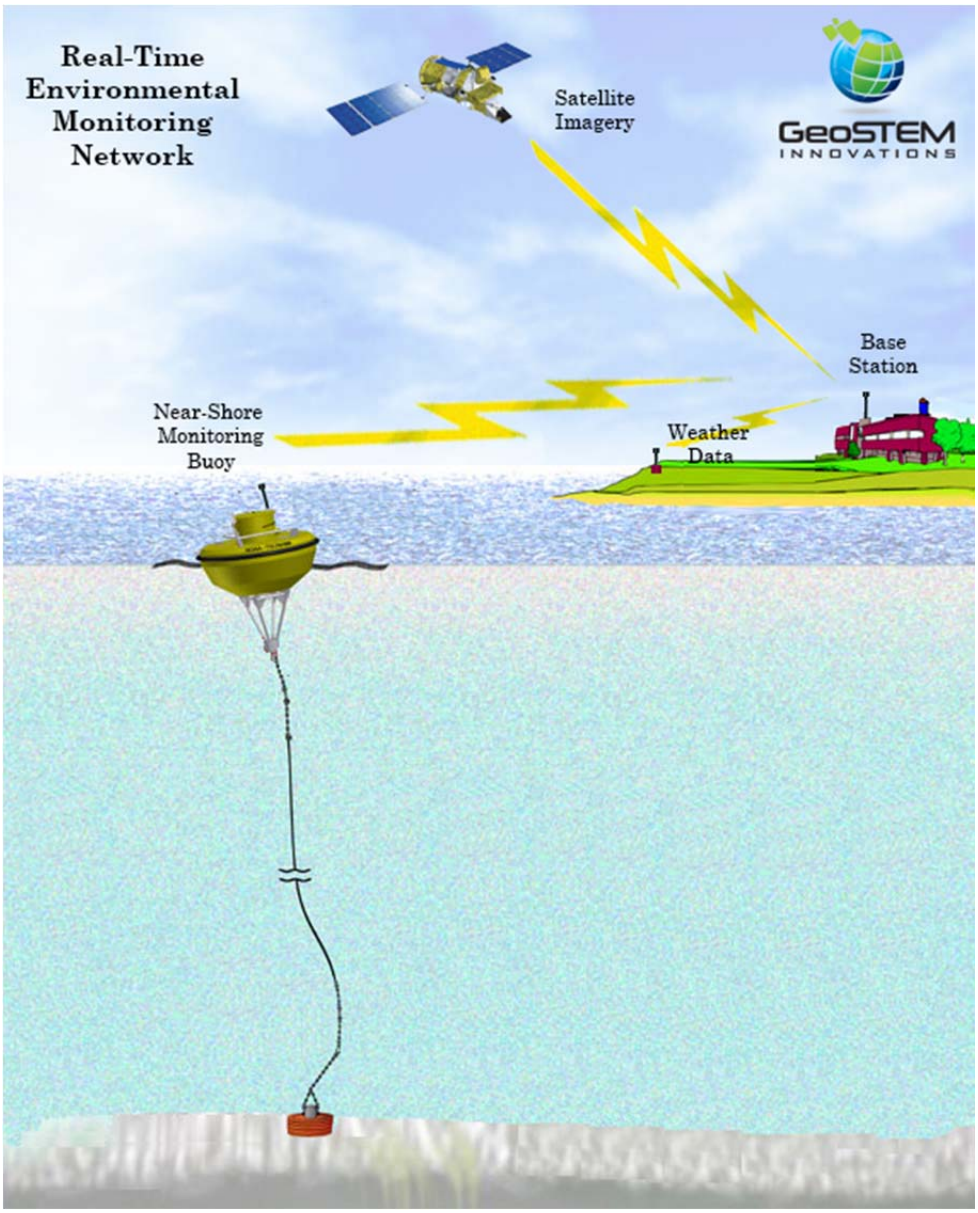
1. Weather satellite receiving station
2. Weather station
3. Near-shore oceanographic mooring buoy

With these instrument packages, students will be able to collect daily real-time data that include atmospheric (satellite images, air temperature, humidity, atmospheric pressure, light levels, wind speed, wind direction, rainfall) and oceanographic (temperature, salinity, pH, light levels) measurements.

The pedagogical design of the Merizo ICON program provides a unique learning opportunity that empowers its participants to become real-world *student-scientists* for

directly contributing towards the better monitoring, understanding, stewardship and sustainability of the natural environment that encompasses their community. Furthermore, by establishing the Merizo ICON network, the data collected will be available online for unrestricted use & visualization of the community, Guam & the Pacific Basin, and can contribute towards guiding of the overall Merizo community coastal and marine resource conservation and management efforts.

Lastly, the hands-on experiential nature of this program can significantly contribute towards fostering teamwork and collaboration skills of the participants, as well as their problem solving skills, and critical thinking. In addition, the incorporation of cutting-edge technology and electronics can promote overall STEM awareness and related college pathways & retention.



Appendix 4: Supplemental Information for the Community Management Plan for Malesso Coastal and Marine Resources

1. **Workshop agendas**
2. **Participant's list**

Community-Based Management Plan
for Marine Resources of Malesso (Merizo)
Workshop 1

August 24, 2013
Malesso Community Center
8:30 a.m. – 4:00 p.m.

DRAFT AGENDA

TIME	ACTIVITY	MATERIALS	LEAD
8:30-8:45	**WELCOME AND INTRODUCTIONS – Mayor Chargualaf** **OVERVIEW OF WORKSHOP – Mark Mitsuyasu** ▪ Context of workshop ▪ Workshop format ▪ Overview of CBMP Process	Poster: *Overview of Planning Process*	**Mark Mitsuyasu**
8:45-9:00	**FACILITATED DISCUSSION: A SNAPSHOT OF WHERE WE ARE TODAY** ▪ What models are we working under today? ▪ What's working and what is not? ▪ Where are there areas of conflict? ▪ What have been some of the innovative solutions to addressing these areas of conflict *Objective: to provide an opportunity to use the coastal communities' direct experience to point to the need for developing a Community Based Management Plan.*	Malesso Fact Sheet	**Staff**
9:15-9:30	**PRESENTATION 1.1: OVERVIEW OF PLACE-BASED COMMUNITY – BASED MANAGEMENT PLANNING** ▪ Overview ▪ Benefits of CBMP – Three dimentional ▪ Lessons Learned From Terrestrial Zoning ▪ Planning Principles - Ecosystem-based Management - Adaptive Management *Objective: to understand how strategic planning is a useful management tool for addressing the challenges and benefits of multiple use areas.*	Handout 1.1: *Planning Definitions – what are we talking about?*	**Staff**
9:40- 10:00	**EXERCISE 1.1: EVALUATING THE NEED FOR CBMP** *Objective: to use a simple evaluation tool to better understand whether there is a need and the site is ready to start the CBMP process.*	Worksheet 1.1: *Early Indicators of the Need for CBMP*	

BREAK			
10:10-10:20	**PRESENTATION 1.2: DEFINING THE AREA OF FOCUS FOR YOUR CBMP PROCESS** ▪ Dimensionality Defining the Coastal and Marine Environment ▪ Defining the Management Area ▪ Defining the Study Area *Objective: to understand the distinction between the management area (boundaries of area for which a community plan is being developed) and the study area (area of influence).*	Handout 1.3: *Examples of Management vs Study Areas*	
10:20-11:00	**EXERCISE 1.2: DEFINING THE AREA OF FOCUS FOR YOUR PLANNING PROCESS** *Objective: to understand the importance of considering the 3-dimensionality of the marine environment and areas of influence when defining the study area.*	Maps of Management Area	
11:00-11:15	**PRESENTATION 1.3: IDENTIFYING TARGET RESOURCES FOR MANAGEMENT** ▪ Ecologically and biologically important areas ▪ Conservation targets ▪ Cultural and historic resources ▪ Socioeconomic resources *Objective: to identify those natural and cultural resources and processes that need greatest protection in your area of focus, and will be considered when determining spatial allocation and management of your area.*		
11:15-12:00	**EXERCISE 1.3: IDENTIFYING, MAPPING & RANKING PRIORITY TARGET RESOURCES FOR PROTECTION** ▪ Teams will identify and map each of their target resources showing geographic location and distribution of the resources ▪ After all target resources are mapped, use worksheet 1.1 and the given criteria to rank the top 5 target resources. *Objective: to identify the priority target resources that are of greatest importance to your management area, then rank which of these are most important as you will have to know this later on when you make trade-offs.*	Maps of Management Area Worksheet 1.2: *Selecting and Ranking Target Resources*	
LUNCH			

1:00-1:15	**PRESENTATION 1.4: USING MANAGEMENT OBJECTIVES AS THE DRIVERS FOR DECISION-MAKING** ▪ Developing multiple use management objectives ▪ Addressing conflicts between objectives ▪ Learning how to make trade-offs in stakeholder interests and balancing decision-making *Objective: to understand how multiple use areas are also commonly trying to meet multiple management objectives, and how we start to address these challenges.*		
1:15-2:15	**EXERCISE 1.4: BUILDING OBJECTIVES FOR PLACE-BASED MARINE PLANNING** *Selecting from a range of provided management objectives, each team will assemble and weight their management objectives based on the following categories:* ▪ Socioeconomic objectives ▪ Biophysical objectives ▪ Governance objectives ▪ Cultural objectives *Objective: to develop clearly articulated multiple use objectives that will define what each team will be trying to achieve in their CBMP.*	Worksheet 1.3: *Developing and Weighting Management Objectives*	
2:15-3:00	**EXERCISE 1.5: MAPPING USES OF THE COASTAL AND MARINE ENVIRONMENT** *Objective: to identify specific uses in each management area as a baseline for identifying areas of potential conflicts and compatibilities.*	Management Area Maps and Human Use Data Guide Worksheet 2.1: *Understanding Uses, Their Requirements and Impacts*	
BREAK			
3:10-3:30	**PRESENTATION 2.1: IDENTIFYING, CHARACTERIZING AND MANAGING COMMUNITY PARTICIPATION/ENGAGEMENT** *Objective: to understand how to use the information generated thus far in the process to make a determination on relevant interested parties.*	Handout 2.1: *Preparing for the Challenges of Community Engagement* Handout 2.2: *Building Trust*	

3:30- 4:15	**EXERCISE 2.2: IDENTIFYING, CHARACTERIZING AND MANAGING COMMUNITY PARTICIPATION/ENGAGEMENT** *Objective: to identify relevant stakeholders in the marine spatial planning process, understand what their interests, values and positions might be coming into the process.*	Handout 2.3: *Desirable Characteristics for Engaging Community* Worksheet 2.3*: Community Identification* Handout 2.4: *Questions to Consider When Establishing a Planning Team*	
4:15-4:30	**WRAP-UP**		

COMMUNITY BASED MANAGEMENT PLANNING WORKSHOP
WORKSHOP 2

AGENDA

NOVEMBER 20, 2013
Merizo Community Center
6:00 to 9:00 p.m.

TIME	ACTIVITY	MATERIALS	LEAD
6:00 – 6:05	**Welcome and Introductions**		**John Mansipit**
6:05-6:15	**Overview of Planning Process, Progress made and Second Workshop Series Expectations**	**CBMP Progress Model Poster**	**Mark Mitsuyasu**
6:15-6:30	**REVIEW OF WORKSHOP 1 OUTCOMES** ▪ Facilitated interactive review	**Report from Workshop 1**	**Zita**
6:30-6:45	**PRESENTATION 2.2: USING MANAGEMENT OBJECTIVES AS THE DRIVERS FOR DECISION-MAKING** ▪ Developing multiple use management objectives ▪ Addressing conflicts between objectives ▪ Learning how to make trade-offs in stakeholder interests and balancing decision-making *Objective: to understand how multiple use areas are also commonly trying to meet multiple management objectives, and how we start to address these challenges.*		**Mark Mitsuyasu**

7:00-7:15	**PRESENTATION 2.3: CONSIDERING IMPACTS FROM OUTSIDE THE MANAGEMENT AREA & IMPACTS FROM FUTURE USES** *Objectives: to understand that the entire study area (beyond just the management area) needs to be evaluated to understand impacts that might come from outside and enter into the management area; to learn to take into account potential future activities and the impacts they might also have on the management area.*		**Charles Kaaiai**
Break			
7:30-7:45	**PRESENTATION 2.4: IDENTIFYING AREAS OF CONFLICT AND COMPATIBILITY** ▪ Identifying Uses That are Compatible with Management Objectives ▪ Identifying Uses That are Compatible with One Another *Objective: to understand that it is necessary to identify which uses are: 1) compatible with your objectives, and 2) are compatible with one another.*		**Mark Mitsuyasu**
7:45-8:45	**EXERCISE 2.4: THE COMPATIBILITY MATRIX** *Objective: to make a list of the current and potential future uses in the management area and determine how compatible they are with one another.*	Handout 2.5: *The Compatibility Matrix* Poster 2.1: *Compatibility Matrix*	**Mark Mitsuyasu**
8:45-9:00	**Report out and Overview for Next Day**		

2nd Workshop Session 2. November 21, 2013
Merizo Community Cener
6:00 to 9:00 p.m

TIME	ACTIVITY	MATERIALS	
6:00 – 6:05	**Welcome and Introductions**		**John Mansipit**
6:05-6:15	**Summary of Outcome and Overview Final Session**		**Mark Mitsuyasu**

6:15-6:30	**PRESENTATION 2.5: OVERVIEW OF A PLACE-BASED MARINE PLAN** *Managing conflicts and compatibilities in regards to human uses and meeting management objectives:* ▪ Principles of CBMP Management Planning ▪ Key Aspects of the CBMP Management Plan ▪ CBMP Management Tools and Approaches *Objective: to examine different management tools and options for addressing incompatible activities in the management area.*	Handout 2.6: *Examples of Coastal and Marine Spatial Measures by Sector* Handout 2.7: *Decision Making Flow Chart*	**Charles Kaaiai**
6:30-7:15	**EXERCISE 2.5: IDENTIFYING AND SELECTING MANAGEMENT STRATEGIES FOR MANAGING SPECIFIC USES IN THE MANAGEMENT AREA** *First review Handouts 2.7 and 2.8 and discuss the management options with your team. Then, use post-its on Poster 2.2 to make a preliminary assessment of the best management options for improving the compatibility of each of your human uses that have a medium or low compatibility rating.* *Objective: to identify appropriate management responses to each use based on how it will help to meet the management objectives of each management area.*	Handout 2.8: *Identifying CBMP Management Strategies* Poster 2.2: *Selecting Management Strategies (use post-its)*	**Mark Mitsuyasu**
Break			
7:30-8:00	**EXERCISE 2.6: DEVELOPING SPATIAL ALLOCATION (ZONING) CATEGORIES AND OBJECTIVES IF WARRENTED** *Objective: to consider spatial allocation (zoning) categories and accompanying objectives (what you want to achieve with each zone) that complement the management objectives.*	Handout 2.9: *Criteria for Integrated Ecosystem-based Spatial Allocation* Handout 2.10: *Spatial Allocation (Zoning) Classifications* Poster 2.3: *Spatial Allocation (Zone) Categories and Objectives*	**Mark Mitsuyasu**

8:00-8:45	**<u>SYNTHESIZING WORKING GROUP OUTCOMES OF MANAGEMENT STRATEGIES AND ZONES (POSTERS 2.2 AND 2.3)</u>** *Objective: to facilitate discussion among working groups and vet through differences in outcomes for consolidated plan.*	Posters 2.2 & 2.3	**Zita Pangelinan**
8:45-0:00	**WRAP-UP** *Outcomes and next steps*		**Mark Mitsuyasu**

WORKSHOP 1
Merizo Community Center, Merizo, Guam
August 24, 2013

LIST OF PARTICIPANTS

	Name	Village	Organization
1	Rosanna Dela Cruz	Malesso	Malesso
2	Jason Miller	Malesso	Malesso
3	Jesse Tainatongo	Malesso	Malesso
4	Lolita Ojeda	Malesso	Mayor's Office
5	John Ojeda	Malesso	Malesso
6	Frankie Champaco	Malesso	Malesso
7	Justin Elm	Malesso	Malesso
8	Arthur Doyle	Malesso	Mayor's Office
9	Arthur T. San Nicolas	Malesso	Malesso
10	John S. Mansapit	Malesso	MPC
11	Bernabe Barcinas	Malesso	Malesso
12	James Barcinas	Malesso	Malesso
13	Pete Barcinas	Malesso	Malesso
14	Vicky R. Laganse	Malesso	Malesso
15	Ernest Chargualaf	Malesso	Malesso Mayor
	Other Village Reps		
1	Cindi Terlaje	Asan-Maina	Asan-Maina
2	Joey Q. Rabago	Asan-Maina	Asan-Maina
3	Ken Borja	Barrigada	Barrigada
4	Jeffrey Soriano	Talofofo	Talofofo
5	Johnny A. Quinata	Umatac	Umatac
6	John G. Cruz	Umatac	Umatac
7	Sherry M. Aguon	Umatac	Umatac
8	Robert A. Quinata	Umatac	Umatac
9	Peter Quinata	Umatac	Umatac
10	Ha'ane Isa Fejeran	Umatac	Umatac
11	Frank A. Aguon	Umatac	Umatac
12	Ivan Aguon	Umatac	Umatac
13	Jesse Gofigan	Umatac	Umatac
14	Mayor Rudy Matanane	Yigo	Yigo
15	Rosie Quitugua	Yigo	Yigo

	Name	Village	Organization
16	Joseph Certeza	Yona	Yona
	Resource Reps		
1	Jesse B. Rosario	Tumon	AP
2	Lorilee T. Crisostomo		BSP
3	Christine I. Camacho	Mangilao	BSP
4	Jane Dia		DAWR
5	Tino Aguon		DAWR
6	Jay Gutierrez		DAWR
7	Adrienne Loerzel		NOAA
8	Judy Amesbury	Talofofo	SSC

WORKSHOP 2
Merizo Community Center
DAY 1 - NOVEMBER 20, 2013

LIST OF PARTICIPANTS

	NAME	ORGANIZATION	POSITION/ TITLE
1	Peter Crisostomo	Malesso	Resident
2	John Diego	Malesso	Resident
3	Bradley Aguon	Malesso	Resident
4	Jason Miller	Malesso	Resident
5	Connie Reyes	Malesso	Resident
6	Brent Tibbats	DAWR	Biologist
7	John A. Ojeda	Malesso	Resident
8	Peter Cruz	Malesso	Resident
9	James Barcinas	Malesso	Resident
10	G. ---		
11	Albert Acfalle	Malesso	Resident
12	John Mansapit	Malesso	Resident
13	Lolita Ojeda	Malesso	Resident
14	Mark Mitsuyasu	WPRFMC	
15	John Calvo	WPRFMC	
16	Christine Laurent	WPRFMC	Contractor
17	Carl dela Cruz	WPRFMC	Island Coord.
18	Marlowe Sabater	WPRFMC	Marine Eco. Scientist
19	Charles Kaaiai	WPRFMC	Ind. Coord.
20	Arthur Doyle	Mayor's Office	
21	Zita Pangelinan	LLT Pacific	Facilitator

WORKSHOP 2
Merizo Community Center
DAY 2 - NOVEMBER 21, 2013

LIST OF PARTICIPANTS

NAME		ORGANIZATION	POSITION/TITLE
1	Peter Crisostomo	Malesso	Resident
2	Jason Miller	Malesso	Resident
3	James Barcinas	Malesso	Resident
4	John Diego	Malesso	Resident
5	Bradley Aguon	Malesso	Resident
6	Shaelene Crisostomo	Malesso	Resident
7	John Mansapit	MPC	
8	Nathaniel Martin	DAWR	Biologist
9	Tom Flores, Jr.	DAWR	
10	John A. Ojeda	Malesso	Resident
11	Lolita Ojeda	Malesso	Resident
12	Lou B. Agustin	Malesso	Resident
13	Albert Acfalle	Malesso	Resident
14	Arthur Doyle	Mayor's Office	
15	Marlowe Sabater	WPRFMC	Marine Eco. Scientist
16	Zita Pangelinan	LLT Pacific	Facilitator
17	Paul Crisostomo	Merizo	Resident
18	John Calvo	WPRFMC	
19	Christine Laurent	WPRFMC	Contractor
20	Carl dela Cruz	WPRFMC	Island Coord.
21	Charles Kaaiai	WPRFMC	Ind. Coord.
22	Mark Mitsuyasu	WPRFMC	

Community Based Management Plan for Malesso Marine and Coastal Resources
2014