

## Case Study

# The Mangrove System Stakeholders Management: A Case Study for Ecological Tourism

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**Abstract:** This study aimed to assess the mangrove ecosystem management of stakeholders in a selected community for ecological tourism. It sought to identify the responsible stakeholders involved in the mangrove ecosystem management of the identified community, the actions taken by each stakeholder in the maintenance of the mangrove ecosystem, the extent of implementation of the actions/programs of the stakeholders in the maintenance of the mangrove ecosystem and the feasibility of creating an ecological tourism program for the area. The study was conducted in the mangrove ecosystem of Cagsao, a village in the town of Calabanga, province of Camarines Sur, Philippines. The participants of the study were the stakeholders involved in the management system from the initial plantation until the present activities. The data collected covered all the programs/activities/actions taken by each stakeholder from the year of their initial involvement up to the conduct of the study. The results gleaned from the study shed light on the management system efficiency and sustainability derived from constant monitoring and training, creating a rich mangrove ecosystem that is not only ecologically sustainable but is opportune for tourism and economic benefit of the community.

**Keywords:** Mangrove, stakeholders, ecological tourism.

## Introduction

Mangrove forests are unique ecosystems and as such it needs to be taken care of. It is the home to many aquatic organisms, a secure feeding grounds for a wide number of fish, crab, shrimp, and mollusk species attracting bigger fish and providing gains to fishermen. It is also a support system to birds and diverse classes of insects. It is the host to many decomposers with its nutrient filled soil.

A mangrove forest is also a natural wall to protect the community from typhoons, storm surges and the like. It is no wonder then that many coastal areas around the globe have a parallel goal of nurturing a mangrove ecosystem. This natural bounty can also be of economical benefit to the peripheral community, hence a potential opportunity for ecological tourism, maintaining, preserving and showcasing nature's ecological beauty.

The barangay of Cagsao, Calabanga, Camarines Sur has one of those founding nurseries. Cagsao is a seven zone hilly coastal area hosting around 291 household situated in front of San Miguel Bay with a 130 hectares land area (Cagsao Factsheet, pg 1), the land faces a lot of challenges being perennially exposed to typhoon, floods and storm surges. The fish catch in San Miguel bay has been rapidly decreasing two decades ago, as a result an immediate intervention plan was immediately needed. This is a main concern of the inhabitants especially since 80% depends on fishing as their source of income.

The area has been blessed with active stakeholders that have done a lot in the past few years, because of this, the Cagsao mangrove ecosystem has been running for over a decade now and shows continuous growth in number and well nurtured seedlings. From a locality with plenty of challenges to solve, the barangay managed to become first class in just a span of ten years. This is because of the importance of support of the various stakeholders and their systematic management systems (Asmawi, 2011). It is therefore the aim of this research to conduct a case study to determine the stakeholders of the mangrove ecosystem, their contribution and the management strategies of the locality and stakeholder. All in the hope of helping the community and sharing to the field the advantageous actions of the different stakeholders in the group to take care of the species and to return these efforts to the community in the form of eco-tourism that aims to boost appreciation, awareness and economic opportunity beneficial to the community.

### **Methodology**

The research is a qualitative case study. In a case study, the research focuses on a particular subject, shedding light on the status or current state of a subject. In this case, the research focuses on the status of the mangrove system and its potential as an eco-tourism site. The study entails both primary and secondary data. The primary data are gathered utilizing the following methods: field visit on the site, interview, and survey. On the other hand, the secondary data is collected utilizing existing data available on online resources. This will be used to determine the stakeholders and the activities implemented.

### **Results and Discussion**

The Barangay of Cagsao coastal area is situated in the San Miguel Bay. The Coastline is roughly three kilometers in total. Around one kilometer of which is occupied by the mangrove ecosystem. The coastline of Cagsao has several separated mangrove ecosystems that for the purpose of this research will be divided into four: A, B, C and D. The coastline is divided into four sectors namely Bugiw, Kabaybayan, Centro and Parara. Bugiw hosts mangrove area D whereas Centro hosts area C. Both areas A and B are under the lines of Parara.

The actions of each stakeholder for the care of the mangrove ecosystem varies from the nature of their involvement, the continuity or time frame of their activities and the type of aid given by each stakeholder. To start on the background of the ecosystem, non-government office Care Nederland together with Smart Telecommunications started the mangrove ecosystem program anchored under the Disaster Risk Management Planning of the locality after several records of storm surges and decline in fish harvest.

The two organizations responded with training and mangrove planting in the coast of Bugiw Cagsao. Care gave an initial amount for the propagules whereas Smart got its initial propagules from European Union Sponsorship and has conducted three recorded mangrove planting. Since then the group has been actively continuing their aid and building ties with other organizations to present the locality of Cagsao. Advancing Safe Community and Environment Against Disaster ASCEND, also one of the maintenance and core planning groups, replaced the Care Nederland Flagship. The interview with the barangay pointed out that Care and ASCEND are working under the same goal but in 2007, ASCEND took over the care of the Mangroves; the two are still working hand in hand.

After ASCEND, ACCORD, Assistance and Cooperation for Community Resilience and Development Inc. Philippines continued the ongoing projects of ASCEND. They were able to install a 126 meter gabion wall in Centro Cagsao and contributed 180,000 propagules in two phases.

The group also conducted a series of training concentrating on small-scale mitigation, role implementation and delegation. They are also one of the founding organizations that organized the Ugnayan at Bahagian Seminar last October 2014 where the different supporting groups of the community all participated.

The European Commission Humanitarian Aid is the main funding sponsor of ACCORD and is also one of the active monitoring delegates of the area. Other non-government offices who have generously shared their time would be Junior Chamber Institute, Rotary Club Naga, Society of Junior Fellows, International Eucharistic Congress Organization, Kolping Family Goa who all did a mangrove planting. There are also the ACF International, MCRG and ASF for delegations, ORIX Metro for two planting in 2012, Registered Nurses for Health, ASA Philippine Foundation and BPI Development Com in research data gathering.

Kilos Kalikasan and HEC Paris also conducted monitoring whereas the Youth Camp did an educational visit. There are on the last count 13 government offices who has supported the program and undoubtedly, the first is the barangay Cagsao community that has the year round task of communicating with every organization willing to impart their time and other sources for the area. As such Cagsao populace is involved in all aspect. From planning, training, monitoring, conduct of planting and coastal clean-up, narratives. There are even specific individual funded by the Local Government of Calabanga who are paid to monitor the Mangrove ecosystem daily. The local government has been supporting this nine individuals since 2009. Aside from which, Calabanga Office also conducts mangrove planting and educational tour to the area. The Office of Civil Defense in 2014 was consulted for a hazard map of the barangay and its immediate surroundings and the Corporate Network for Disaster Response shows its support by sending monitoring teams and participating in group discussions. The provincial government has also done beach clean-up and mangrove planting activity as well as sponsors propagules for division areas that have the aim to conduct the same activity.

The Department of Environment and Natural Resources not only led a hand as consultant when Tussock moth pestered the area, they also participated in planting activities and acted as representatives in meetings. The Philippines National Army and Philippine National Police have both served as delegate security for a lot of times and they also participate in planting and clean-up activities. Other government offices who have done a clean-up drive or a planting activity will be the Coast Guard Camaligan, Bicol Medical Center, Municipal Risk Reduction Management Office, Bureau of Fire Protection and Red Cross. Of the schools, the nearest one happens to be Cagsao Elementary School that despite its young charges has also done a beach clean-up. On the secondary level category we have Naga City Science High School who attended the May 2012 mass mangrove planting. Suffice it is to say that the learners in the tertiary level have made considerable impact on the care and maintenance of the ecosystem. Naga College Foundation had its mangrove planting in 2009 while students from Central Bicol State University of Agriculture did their part in 2011 and just recently Systems Technology Institute STI joined the team with around 200 students who had their planting activity in January 2016.

Among the notables who have conducted an activity more than once will be Camarines Sur Polytechnic Colleges who did three mangrove planting in 2012. Mariners Polytechnic Colleges who has visited the field twice in 2014 and once in 2012 to plant. This 2016, 35 participants from the group did a coastal clean-up. Four times in 2012 a different group from the University of Nueva Caceres came to plant mangroves but before that the initial activity was held in 2011. Last tertiary school stakeholder is the Ateneo de Naga University who also has different groups having gone to Cagsao for activities varying from mangrove tree planting on the top, coastal clean-up second, monitoring and even a feeding program.

In all, there were 42 stakeholders recorded. Three of which were pilot organizations, 28 had volunteer group classification, 19 had done a site visit, and two were consultants. Majority of the continuity was done 'once' by stakeholders, second was done 'by project' time frame of the stakeholders, far next comes year round. Rarely was it recorded that an activity was done quarterly. On the type of aid, monetary category there were three recorded stakeholders namely Barangay Cagsao, LGU Calabanga and European Union. 40 mangrove planting has been conducted followed

by 12 monitoring and delegation purposes with around 6 coastal clean ups. Those stakeholders that have conducted training, research and law related activities tallied up to 14 counts while those involved in Health and Security totaled 11.

## **Conclusion**

The dependency of the mangrove development is anchored to their outside volunteer stakeholders whereas the maintenance is mainly due to the local community and the monitoring teams of other organizations. It is also reflected that one of the ways while the management program is effective is its relatedness to other programs such as Disaster Risk Management and because of the daily supervision of the community as seen by their member's in-charge and on their laws and ordinances. Stakeholders' mangrove planting activity and coastal clean-up is seen as key determinants in expanding the mangrove ecosystem shorelines. The Cagsao mangrove ecosystem is therefore blessed to have a good and solid organizing community and the help of the stakeholders all over the world.

It is therefore the recommendation of this paper that the local community be even more diligent in their record keeping, continue ongoing training and activities and look for avenues for the place to be known as an ecotourism destination to augment additional jobs needed in the community and to serve as model to other localities who also has the potential to be a successful mangrove sanctuary and to use these opportunities to create tourism out of this natural bounty. Hence it is also the recommendation of the researcher to seek assessment from the Department of Natural Resources and the Department of Tourism to look into the potential of the area for eco-tourism, which, from the results of the observations and literature, suffices to become an ecological tourist attraction.

**Conflicts of interest:** The authors declare no conflicts of interest.

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