

Protected Area Conservation Measures and Practices of Community: The Case of Biri-LAROSA Protected Landscape and Seascape, Philippines

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ABSTRACT

Biri-LAROSA Protected Landscape and Seascape (BLPLS) is a marine protected area in the Province of Northern Samar and is one of the country's protected areas facing biological degradation because of human exploitation. Thus, this study assessed conservation programs' implementation and community awareness to propose a policy redirection. Using qualitative descriptive research design, data revealed that BLPLS spans 33,492 hectares encapsulating 36 barangays with 18 known implemented conservation programs. The conservation programs investigated in this study covered ecological, economic, social, and cultural functions that aimed to benefit communities. Notably, the programs were well-planned, but the problem was generally on the implementation. Some of the conservation programs succeeded because of strong legal basis and proper execution, forged partnership and linkages, prioritization, constant program monitoring and evaluation, and research-based decisions, while other programs failed due to lack of commitment, lack of political will, lot of inconsistencies, Filipino negative traits, implementer's incompetence, lenient monitoring and evaluation, political intrusion, lack coordination, and people's passive and inadequate knowledge. Therefore, it is certain that successful conservation programs are advantageous to the integrity of the protected area, while failure poses a risk of increased vulnerability to degradation. Ergo, all successful programs must redound for the benefit of both BLPLS and the community people as it champions BLPLS's ecological integrity. Thus, there researchers highly recommended that various agencies connected with the protected area may imposed a stringent and harmonized implementation of conservation policies, institutional reform, strengthen the capacity of the implementers, community empowerment, creation of reward system, context-based environmental education, institutionalization of program impact, and evaluation studies, and data-based decision making for program development and plan of BLPLS.

KEYWORDS: *protected area, protected landscape and seascape, marine protected area, conservation programs, ecological services, protected area integrity*

1. INTRODUCTION

Protected areas play a pivotal role in protecting and conserving the remaining key biodiversity area around the globe. It is a critical tool in saving biodiversity in the face of environmental collapse and mass extinction spasm and detrimental to nature's

capacity to support all forms of life (Lopoukhine, 2008; and Djoghla, 2008). It ensures the functioning of the ecosystem services that provide ecological, cultural, social, and scientific benefits (Janishevski, Noonan-Mooney, Gidda, & Mulongoy, 2008). Topal

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and Ongen (2016) cited that 11.5 percent of the world's area is declared as protected areas tantamounting to more than 100,000 protected areas worldwide. Every year, there are new proclaimed protected areas, but the world population also increases exponentially, equating to an increase in natural resources demand, resulting in greater pressure making it more threatened by anthropogenic activities. Despite its importance, protected areas remain poorly understood and greatly undervalued by the market, politicians, the general public, and even the community as a whole.

According to Brokington and Schmidt-Soltau (2004), conservation programs help safeguard protected area's benefit such as ecosystem services, employment opportunities, preservation of culture, ecotourism, rehabilitation and sustenance of natural resources, protection of species and habitat, social development, and mitigation for natural disasters (Catibog-Sinha & Plantilla, 2012; Mika, Zawilinska & Pawlusinski, 2016; Major, Smith, & Migliano, 2018; Saviano, Di Manta, Montella, & Sciarelli, 2018; Morastil, 2013; Reinstar, Jakosalem & Paguntalan, 2015; Spiteri, 2007; Perrault, Herbertson, & Lynch, 2007; Suarez, 2001; & Steinkoenig, 2018). Its success or failure can adversely impact the integrity of the protected area. This situation put conservation program evaluation in the spotlight where most of it requires biological and biophysical data (Margalius, Stem, & Salafsky, 2009). Foundation of success (2007) stressed out that conservationists erroneously believe that measuring species and ecosystems can tell if it is successful neglecting the fact that the incremental change at various points in the implementation is more important than the intermediate intervention outcomes to its ultimate impacts. Furthermore, Hocking, Stolton, and Dudley (2004) emphasized a need to understand the strengths and weaknesses in the management. This made systematical evaluation programs monumental because a dysfunctional program can cripple the conservation effort, leading to biological catastrophe. Hence, there is a higher demand for a state-of-the-art program evaluation method.

In the Philippines, the pillars in establishing the national system of protected areas are Republic Act 7586 of 1992, known as National Integrated Protected Area System (NIPAS), and Republic Act 11038 of 2018, known as Expanded National Integrated Area System. Unfortunately, according to the Department of Environment and Natural Resources and Ateneo Schools of Government (2014), though protected areas experience a lower rate of habitat loss than those areas not protected, they still experienced

dramatic habitat losses within borders. Hence, there is a need for a more stringent measure for its conservation. One of the critical elements for the success of protected area is community awareness and participation (Ong, 2002; Buot & Carag, 2015; Perrault, Herbertson, & Lynch, 2007; Teves, 2002; Schwethelm-Munla, 2002; Benneth & Dearden, 2014; Major, Smith, & Migliano, 2018; Cervania, Pedro, Lave, & Zapante, 2015; Szell, 2012; & Nguyen, 2017). Another is the effective implementation of conservation programs (Brokington & Schmidt-Soltau, 2004).

In Northern Samar, there is only one existing protected area in the province. It is known as the Biri-LAROSA Protected Landscape and Seascape (BLPLS), established through Presidential Proclamation NO. 291, series of 2000 encompassing the Municipality of Biri and the coastal barangays of Lavezares, Rosario, and San Jose. The protected area is governed by various conservation programs/policies, such as the Ecological Solid Waste Management Act of 2000 (RA 9003), Revised Forestry Code of the Philippines (PD No. 705), Philippine Fishery Code of 1998 (RA 8550), and amended by RA 10654, Integrated Coastal Management (EO No. 533), and Ecotourism Planning and Management in Protected Areas (DAO 2013-19). Canoy and Roa-Quiaoit (2011) mentioned the BLPLS as one of the country's protected areas that are currently facing threats from destructive and human-invasive activities. The protected area only scored 26 percent in the Management Effectiveness Tracking Tool (METT), which is considered a very low score (Guiang & Baraganza, 2014). Prevalent problems in the BLPLS include illegal fishing practices, mangrove forest exploitation, dumping of garbage in the coastal waters, and encroachment in seagrass beds. These scarios prompted the researchers to assess the conservation programs implementation and the awareness of the community people with the end goal of providing relevant information necessary for policy redirection, crafting of local legislation, and other related interventions geared towards enhancing its effective management and addressing the pressing challenges it faces in sustaining its integrity.

2. Materials and Methods

2.1. Research Design

The study employed a qualitative descriptive research design. As a qualitative study, this undertaking sought to describe the implementation of conservation programs in Biri-LAROSA Protected Landscape and Seascape by obtaining and interpreting the participants' meaningful experiences in an in-depth manner to reveal information regarding what

components of the intervention worked, what needs improvement, and what are its consequences. It further aimed to improve the implementation of the conservation programs focusing on the strengths and weaknesses of the specific programs being assessed. All inquiries required description, and all descriptions were done through interpretation utilizing primarily the knowledge, perception, attitude, behavior, and sensibilities of the study participants.

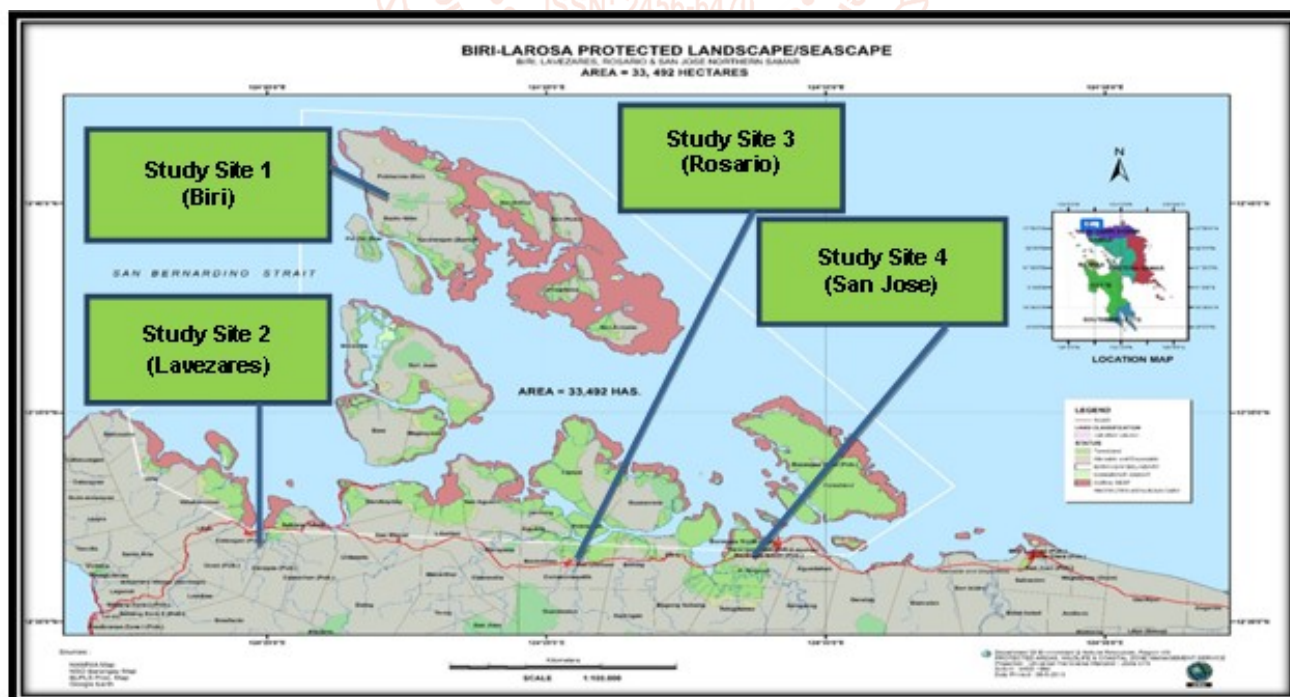
2.2. Study Site

This study was conducted at the Biri-LAROSA Protected Landscape and Seascape. It is a protected area stretching in the Balicuatro Area of San Bernardino Strait, covering the barangays of Biri's municipality and the island and coastal barangays of Lavezares, Rosario, and San Jose in the Province of Northern Samar. It was proclaimed as a protected area under the category of Protected Landscape/Seascape under Presidential Proclamation No. 291 on April 23, 2000, on account of its famous geological wonders known as "Rock Formations," tropical mangroves, diverse species of animals, and excellent display of benthic life forms making it as one of the Key Biodiversity Sites. It was chosen as the study's locale because it is the only marine protected area in Northern Samar with a high value for ecotourism and high biodiversity index of flora and fauna.

The protected area is endowed with magnificent and gigantic limestone and rock formations, beaches,

coral reefs, seagrass beds, and mangrove forests. Adventure with nature is always on the vie like camping, trekking, hiking, rock climbing, surfing, swimming, surf rowing, snorkeling, and scuba diving. It is also blessed with natural resources. Engulfing its coastal areas is a vast mangrove area spanning 445 hectares of 18 species. This mangrove forest is home to local and migratory birds, fish, crabs, and other shellfish species and serves as their breeding place. Nineteen(19) avian species are roaming around the area. Coral reefs cover 81.83 hectares composed of 13 recorded genera, primarily dominated by Acropora. These vast coral reefs serve as a refuge to 23 different reef fishes with a total of 67 species of fishes. The area also sheltered six(6) species of seagrasses covering 284 hectares which serves as the home of the siganids and sea turtles. As such, BLPLS is indeed an embodiment of the constant interaction of man and nature while providing recreational and economic activity. Therefore, protecting it from anthropogenic threats through conservation programs is of prime importance in maintaining its integrity.

The researchers utilized the municipalities' territorial boundary as the strata in forming four (4) study sites: Biri, Lavezares, Rosario, and San Jose; and PAMB executive committees as the protected area governing body where focus group discussions were conducted. This is shown in Figure 1 below.



2.3. Research Participants

The community living within the boundaries of Biri-LAROSA Protected Landscape and Seascape and the responsible authorities for its conservation were the study participants. The study used a stratified

purposive sampling technique; hence, the researchers purposively took samples of the participants and stratified them based on their specific involvement, i.e., implementers or beneficiaries, and location, i.e., municipality. This resulted in five (5) groups, four (4)

groups of beneficiaries, and one (1) group of implementers. Included in each group of beneficiaries were barangay officials, people's organization officials or representatives, fishers, farmers, civic group representatives, Municipal Environment and Natural Resources Officer, and MAO-BFAR and tourism office representative. On the other hand, the implementer sample included were partner NGOs and members of PAMB Executive Committees. Unfortunately, because of the unavailability of a synchronous interview with these concerned officials, the researchers opted to conduct individual interviews for the implementers. There were fifty-two (52) total participants composed of thirteen (13) from Biri Group, eight (8) from Lavezares Group, nine participants (9) from Rosario Group, thirteen (13) from San Jose, and two (2) members of Executive Committees. These individuals and subgroups were selected as participants because the researchers believed that they were the most knowledgeable about the different conservation programs implemented in the protected area. They were the ones who were directly involved in the implementation, and as such, these programs have affected them somehow, as well as the integrity of the protected area.

2.4. Research Instrument

Interview guide was the primary tool used by researchers in the conduct of the study. Two (2) FGD guides were crafted, one for the beneficiaries and the other one for the implementers. The instrument's credibility and validity were subjected to face and content validity. To address positivists' criticism on the reliability and validity of the result of the study, four components of trustworthiness (Guba, 1981) were established such as its credibility, transferability, dependability, and conformability. Further, researchers have observed the ethical considerations of the conduct of the study. Through informed consent, the participants have become aware of the specific objectives, and as a result, they willingly participated by affixing their signatures on the consent forms. The confidentiality of their responses and anonymity of their identities were secured in any part of the manuscript while the transcripts were made available only to them and selected evaluators (Shamoo & Resnik, 2015).

2.5. Data Gathering Procedure

This study gathers and analyzes both primary and secondary data. To access the needed information about Biri-LAROSA Protected Landscape and Seascape's profile, the researchers coordinated with the Northern Samar Provincial Environment and Natural Resources Office, Office of the Protected

Area Superintendent and Center for Environmental Studies and Advocacy-UEP through a communication letter to obtain a copy of relevant documents. On the other hand, focus group discussion and semi-structured interviews were used to collect data on the extent of implementation and awareness of conservation programs in the protected area. Each session was recorded in audio and video to obtain actual quotations. During the FGDs and interviews, the researchers also took notes for key phrases and major points. Afterward, recordings were checked, recorded details, and observations to determine the quality of the information. Lastly, de-briefing was made to ensure that the participants were back in their usual routines. After the FGDs and interviews, the researchers transcribed the sessions to recollect all the discussion details, including facial expressions, gestures, and intuitions of the participants.

2.6. Data Analysis

This study primarily utilized thematic analysis as a data analysis method, particularly on the participants' responses during the focus group discussions. On the other hand, various secondary data, such as documents, reports, and other media, went through an analysis of records to denote some significant data regarding the Biri-LAROSA Protected Landscape profile Seascape and their conservations programs. The recorded FGDs and interviews were initially converted to textual data through transcription using verbatim with a dialect and discourse-level approach. The generated transcripts were subjected to thematic analysis to elicit patterned responses or meaning from the data to make a bigger picture using Braun and Clarke's (2006) model. This model was used to assess the extent of implementation of the conservation programs in terms of ecological, economic, social, and cultural benefits, identify the reason why conservation is successful or not, and how it sustains the integrity of the protected area. All noteworthy statements were translated using context translation. Then, transcripts also underwent qualitative data analysis using Erlingson and Brysiewicz (2017) model to describe the level of awareness of the participants in terms of solid waste management, mangrove forest protection and conservation, seagrass bed protection and conservation, coral reefs propagation, sustainable methods of fishing, and eco-friendly utilization of its rock formation and coral beaches for recreation.

3. Results and Discussion

3.1. Profile of the Biri-LAROSA Protected Landscape and Seascape

Biri-LAROSA Protected Landscape and Seascape is a protected area in the province of Northern Samar,

encompassing the Municipality of Biri and the coastal areas of Lavezares, Rosario, and San Jose comprising 36 barangays with a total area of 33,492 hectares. It is made up of eight (8) barangays from Biri, eleven (11) from Lavezares, eight (8) from Rosario, and nine (9) from San Jose. There are eighteen (18) known programs implemented which aim to safeguard the protected area from human exploitation and environmental degradation, of which seven (7) are stipulated in the management plan, four (4) are national projects, and seven (7) are NGO-funded. Among the programs implemented in the management plan includes Habitat Management Program, Protection and Law Enforcement, Ecological Solid Waste Management Program, Enterprise and Livelihood Development Program, Community-Based Ecotourism Program, Capacity Development, and Management Zoning. The four (4) national projects implemented in the protected area are Coastal Resource Management Project (CRMP), Integrated Coastal Resources Management Project (ICRMP), Sustainable Coral Reef Ecosystems Management Program (SCREMP), and Coastal and Marine Ecosystems Management Program (CMEMP). Lastly, the seven (7) NGO initiatives include Coastal Ecosystems Biodiversity Enhancement Project, Protected Area Management Enhancement (PAME) Project, Securing People, Environment and Resources, Building Capacities on Biodiversity: Strengthening the Samar Island Seaweeds Value Chain, Increase Fish Catch to Increase Income through Protection and Rehabilitation of Coastal and Marine Resources, Coastal Biodiversity Enhancement Project, and Mangrove for the Future Project.

3.2. Extent of Implementation of the Conservation Programs of Biri-LAROSA Protected Landscape and Seascape

The conservation programs' implementation covered the protected area's ecological, economic, social, and cultural functions based on thematic analysis. The conservation program's ecological benefits are manifest (primary) and latent (secondary) benefits. Manifest benefits are the main target or intended benefits of conservation programs, such as improving marine conditions, diverse shelter species, protecting PA's major ecosystems, buffer natural disasters, and preserving PA's aesthetic beauty. On the other hand, latent benefits are unintended benefits brought by its implementation, such as the abundance of resources. This finding confirmed Brokington and Schmidt-Soltau's (2004) proposition that one of the advantages of conservation programs is their ability to safeguard the protected ecosystem services. Consequently, Spiteri (2007) called them to extract, conservation,

and mitigation benefits. Likewise, it coincided with Reintar, Jakosalem, and Paguntalan's (2015) findings that natural parks have the credibility of sheltering biologically diverse lifeforms through the successful implementation of conservation programs. Meanwhile, the programs also generated economic benefits, either ecotourism offshoot and conservation programs derivatives. Ecotourism offshoot is economic benefits brought by utilizing the protected area's rock formations, beaches, mangrove forests, crystal clear ocean, and historical sites for recreation. This also includes new business opportunities, income from environmental fees, new job opportunities, a boost in the tourism industry, and a spin-off in TV appearances. On the contrary, conservation program derivatives are economic by-products of other conservation programs like livelihood programs, extra income for beneficiaries, income from penalties, and improved buying capacity. These supported the assertion of Brokington and Schmidt-Soltau's (2004) and Mika, Zawilinska, and Pawlusinski (2016) that through conservation programs, there are economic opportunities like ecotourism, employment, and livelihood programs. It is also in consonance to Spiteri's (2007) enumeration of economic benefits of conservation, namely, accommodations, tourist facilities, entry fees, income, business, employment, market goods, transportation, and tourism.

In terms of social benefits, it generally provided a fountain of learning, social change, diversion, and community attachment. Fountain of learning refers to its ability to provide knowledge among beneficiaries, implementers, and other stakeholders through an opportunity for a new learning experience, research setting, and deeper understanding of nature. Conservation programs also able to bring social change in communities within the protected area. It is displayed through women empowerment, social control enforcement, prioritized assistance from government and NGOs, cooperation, harmonious living with nature, and responsible tourism. Another social benefit is a diversion, which refers to utilizing the protected area for activities that diverts from tedious and serious concerns in life. The protected area also serves as an avenue for recreational activities, relaxation, adventure, and celebration through the conservation programs. Lastly, conservation programs enforce the community's community attachment to the protected area, which refers to developing their cognitive and affective ties among themselves as a community and their place. People living in the protected area develop in themselves a sense of place. This finding proved that conservation programs benefit social development in

terms of social control, education, fun, and fame (Spiteri, 2007).

In the aspect of culture, it paved the way for preserving customs and tradition, art vitalization, and historic preservation. Preservation of customs and tradition refers to its role in sustaining the customs and tradition of the community. This is evident in preserving old ways of life in the coastal communities, the celebration of the annual festival, perpetuity of the belief in local myths, and the practice of local dishes. Furthermore, the constant effort of preserving the BLPLS aesthetic beauty had impacted the community and artists, resulting in art vitalization, strengthening the art production in the protected area as it fuels their creativity. On the other hand, part of the cultural benefit is historic preservation. It pertains to preserving, conserving, and protecting buildings, objects, landscapes, or other artifacts of historical significance. Through the conservation programs, historic preservation is present in the protected area through protecting historical sites. This claim has been proven by Saviano, Di Nauta, Montella, and Suarelli's (2018) proposition that a protected area has a cultural value and conservation program which helps protect it from degradation. This was also supported by Infield (2001) and Major, Smith, and Migliano (2018), and Perrault, Herbertson, and Lynch (2007) contention, which recognize the importance of culture-based and culture-sensitive conservation strategies which counterbalance ecological, economic, and social pressure for the continuity of aged practices and beliefs of the community.

3.3. Reasons for the Success or Failure of the Implementation of the Conservation Programs

Out of six (6) conservation programs assessed, four (4) were considered a failure, and only two (2) were successfully implemented.

A. Solid Waste Management

Solid waste management is integral in protecting public health and the environment. The implementation of solid waste management was considered to be a success in the following aspects: law enforcement, institutional cleanup, improved environment, use of varied methods of information drive, systematic waste collection, waste reduction initiatives, and reward system. In terms of law enforcement, the execution of the solid waste management has a strong legal basis through the presence of a localized ordinance based on RA 9003 where LGUs serves as the primary agency responsible for its implementation, providing an institutional mechanism for a systematic,

comprehensive, and ecological management of solid wastes. Additionally, each municipality has its own systematic waste collection. They have a standard procedure on how wastes from the source will be collected. The waste collection process, provision of garbage containers, and mechanical collection of wastes were all established. There are also existing waste reduction initiatives. Among the strategies or actions are taken to reduce community waste production were composting, reusing waste, eco-bricks production, and selling recyclable materials. The program was also deemed successful in conducting varied modes of information drive. These efforts were carried out to ensure that people are well informed of the government's solid waste management program. This includes zone by zone, house to house, community meetings, public announcement (bandillo), IEC sessions using flyers, seminars, and training. Consequently, solid waste management helped improve the environment in the protected area. The improved environment in the protected area was evident in observable cleanliness and reduced collected wastes. Another worth mentioning aspect was the reward system where people received incentives to reward their participation in the waste reduction at the source. They created the reward system to earn extra income by recycling solid waste to sleepers or bags involving mothers of the 4P's beneficiaries, 1kg cellophane=1kg rice, and 1kg cut plastic= 1 kg rice.

On the other hand, the implementation of solid waste management was confronted with some challenges such as sanitary landfill-related problems, waste collection-related problems, MRF-related problems, people-related problems, implementer-related problems, ecotourism-related problems, and irreversible impacts. Sanitary landfill-related problems pertain to the mandates of RA 9003 on the establishment of sanitary landfills. The study found out that in the protected area, two problems were identified, namely, the use of open dumpsites and the absence of machinery. On the other hand, waste collection-related problems were problems encountered in gathering waste from the source. The identified waste collection-related problems included the irregular collection of waste, partial implementation of segregation, selective collection, improper waste disposal, unregulated waste disposal on waters, and mishandled collection process. Among the identified MRF-related problems, which refer to problems associated with establishing and utilizing material recovery facilities, dysfunctional MRF, problematic MRF location, and absence in some barangays. Meanwhile, people-related problems where the implementation is confronted are local

communities' negative attitudes and lack of vigilance. Problems associated with the people involved in the operation or management of a program termed as implementer-related problems encompass light punishment, lack of political will, intrusion of politics, personal biases, and too much familiarization (pakikisama). There were also problems identified related to the operation of ecotourism sites and facilities. These issues were termed ecotourism-related problems and include irresponsible beach operations and uncoordinated collection of beach waste. The shortcomings in implementing solid waste management caused irreversible impacts such as fish kill and harbored wastes due to wave action.

Generally, the solid waste management program is a failure. Despite existing legal provisions to regulate wastes in the area, its implementation is very problematic. The absence of a sanitary landfill is the biggest loophole in the implementation of the program. The use of open dumpsite endangers the health of the soil, water, and the environment, as a whole. This is against the mandates of RA 9003, stating "protection of public health and environment." The established system of collecting waste becomes insignificant because it is irregular, unsegregated, on selected areas only, and often does not strictly follow the system. People's effort to segregate waste became pointless because, in the dumpsites, waste is not classified and remains unprocessed to something that would benefit both man and nature. This made cooperation and self-regulation among waste generators hard to achieve. Existing MRFs were dysfunctional because it is not used to the purpose it should serve. And some of the barangays in the protected area do not yet have MRF. It is also observable that "ningas cogon" culture among Filipinos was also evident in many communities in the area. The use of varied information drive is not equitable to participation and compliance. It is not a guarantee that people's negative attitudes will change and address this lack of vigilance. Findings in this aspect then confirmed the findings of Mado (2001) that despite people's awareness of solid waste management programs and other related ordinances, people still violate the legislation. Moreover, institutional cleanup is all for nothing when everyone does not realize the environmental principle of "everything is connected to everything else." The reward system focuses only on reducing the waste at the source level, but it is not promising in stopping people from throwing garbage everywhere. Adding to the severity of the problem in political intrusion, familiarization, and personal biases. All of these contributed to the failure of solid waste management as a component of the conservation program.

In particular, solid waste management was a failure due to the following reasons: a.) absence of sanitary landfill or at least a regulated dumpsite; b.) poorly utilized and established MRF; c.) poor implementation of segregation; c.) faulty and inconsistent implementation of waste collection system; d.) people's alienation for compliance; and e.) other contributing factors were "ningas cogon" trait, political intrusion, "pakikisama," no formidable penalties, and personal biases.

B. Mangrove Forest Protection and Conservation

Mangrove forest is one of the major ecosystems in the protected area. As part of improving it as a habitat, mangrove forest protection and conservation programs were implemented. Successful implementation of mangrove forest protection and conservation was manifested in reduced illegal activities, enhanced mangrove ecosystem, law enforcement, mangroves protection, conservation measures, and built a partnership. Its implementation has reduced destructive activities that were constituted as unlawful by a statute. It was able to halt the conversion of mangroves to fishponds. Enhanced mangrove ecosystem also achieved through the strategies that permit its recovery from the destructions it endures due to illegal activities. Also, law enforcement in the protected area is anchored on different enabling laws which legislate the mangrove protection policies, such as, Revised Forestry Code of the Philippines (PD 705) and DENR Administrative Order No. 15-90. Meanwhile, mangrove protection and management measures which refer to the different schemes that are made to safeguard mangrove forests in the protected area, were also achieved as manifested by the establishment of mangrove plantation, rehabilitation of abandoned fishponds, reforestation, mangrove forest maintenance, monitoring of illegal activities and intensified information dissemination. A network of people is also extending their hands together to actualize its protection and conservation measures. The partnership is remarkable in the established linkup among external stakeholders, interagency coalition, and community involvement at the grassroots level. However, on top of these favorable scenarios, there were some dissatisfying parts of the mangrove forest protection and conservation program implementation. These include prevailing threats on cutting and exploiting mangrove resources that persist, unresolved challenges in establishing mangrove plantations, people's habit of abusing nature, and ineffective enforcement. Specifically, the prevailing threats refer to existing pressures to mangrove forests in the protected area, namely mangrove logging, charcoal production, dried bark

(barok) processing, the practice of fine fishnet (sarap) crablets gathering, and encroachment. Mangrove plantation also faces problematic situations: unsound validation, no initial survey of the planting site, non-unified funding, prevalent avarice, privatized mangrove area, and destructive typhoons.

Another problem is the communities' habit of abusing nature in which they developed the tendency to violate or maltreat the environment; characterized by repetitive violation, exploit minors as crime scapegoats, and lack of commitment. Despite the presence of a legal basis for its protection, like penalizing destructive activities, effective enforcement still cannot be enforced. There is a struggle to provide a more engaging information drive and frequent night monitoring of violators. It can still be inferred that mangrove forest protection and conservation is still a success. An enhanced mangrove ecosystem was evident through the program due to the strict imposition of its protection and management measures, continuous rehabilitation, and maintenance. The continuing expansion of mangrove forests in the protected area can be attributed to the external stakeholders' efforts, interagency initiatives, and the participation of the local communities. This is reinforced with PD 705, which prohibits grant or renewal of mangrove timber licenses or permits. It greatly impacted the mangrove timberland because the conversion of mangrove areas into fishponds in the protected area was halted and instead reverted the abandoned fishpond. This means that there was compliance of DAO 15-90, where fishpond is not allowed to operate within mangrove forest reserves and wilderness areas. Although all pre-existing fishponds were still allowed to operate, they strictly follow all necessary protocols and regulations. It is beneficial for both the environment and economic endeavors of local communities as they receive remunerations. The establishment of mangrove plantations was also achieved as mandated by DOA 15-90. Unfortunately, few illegal activities like illegal cutting and encroachment because of inconsistent monitoring were still evident. However, it can be observed in the area that due to intensive information drive, there was a gradual decrease in illegal activities. Nevertheless, the program paved the way in conserving, protecting, rehabilitating, expanding, and developing the mangrove resources of the protected area.

Meanwhile, mangrove forest protection and conservation were successful in enhancing the mangrove ecosystem because of the following reasons: a.) strictly imposed protection and management measures; b.) reduced threats to

mangroves; c.) established strong legal basis; d.) rehabilitated and maintained pre-existing mangroves; e.) expanded the mangrove area through the establishment of mangrove plantation; and f.) halted unsustainable development of mangroves, e.g., fishpond.

C. Seagrass beds Protection and Conservation

Another major ecosystem that can be found in the protected area is seagrass. It forms underwater meadows, which serve as habitat and nursery ground for fishes. In some aspects, the implementation of seagrass bed protection and conservation is successful, particularly on seagrass protective measures, provision of alternative subsistence, and built partnership. Seagrass protective measures refer to the set of efforts made to secure seagrass beds from destructive activities. Among these measures are prohibit uprooting seagrasses, prohibit encroachment, prohibit destructive fishing activities, strict compliance to management zoning, and reforestation. In line with this effort, the program provided a supplemental livelihood to ensure an alternative source of subsistence for the people. Collaboration and involvement are also assured through the built partnership by engaging in a memorandum of agreement with the community, and tie-up with academe, especially in the research work. However, some setbacks in implementing the program include addressing deprivation, persistent seagrass threatening activities, and unaddressed predicaments. The implementation caused deprivation, denying people access to areas where seagrasses are growing. Its implementation brought inconvenience in docking, thereby withdrawing people from their livelihood source and causing their displacement. Seagrasses continuously experience degradation because of anthropogenic activities threatening seagrasses, namely, inevitable stamping, removal of coral rocks, disposal of waste to waterways, the practice of using fine fishnets (sarap), and unfriendly coastal development. Aggregate to the deterioration of seagrass has something to do with the unaddressed predicaments like lack of awareness on the importance of seagrasses, insufficient employment opportunities, inefficient supplemental livelihood, absence of legal basis, the overlapping authority of agencies, and authorities' negligence of duty.

As such, in general, seagrass bed protection and conservation were a failure. Relative to this, Executive Order 533 authorized the adoption of integrated coastal management as a strategy to safeguard the country's coastal resources. The instrument further mandates the rehabilitation and protection of coastal marine habitats like seagrass.

Unluckily, the seagrass protective measures were not complied with by many. Stamping is inevitable because their primary livelihood is fishing, and seagrass beds engulf most barangays. Disposal of animal manure negatively affected the seagrass's condition, which is also a violation of RA 9275. The use of "sarap," an active gear that destroys seagrass beds and is considered illegal under RA 8550, is rampant in the protected area. There were also unfriendly coastal developments, like encroachments, namely, expansion of human settlements towards the seagrass areas and planting mangrove propagules in seagrass beds. This can also be associated with people's lack of knowledge about the conservation of seagrasses and how it impacts their community and their fish resources, in particular, and the whole coastal environment, in general. The livelihood grants for them were the only short-lived solution and were not sustained and community-based. This resulted in bringing them back to illegal activities for survival. While some follow the management zoning, others disregarded it because of unresolved issues like ordinances that penalize violations, abuse of power, negligence of duty, and agencies' confusing role.

Seagrass bed protection and conservation, on the other hand, was a failure as it did not rehabilitate and protect the seagrass beds ecosystem. Among the details why its implementation was a failure were the following: a) no existing conservation law specifically penalizing destructive activities in the seagrass beds; b) conservation and management measures were not religiously followed and deprived people access to resources; c) unfriendly coastal development; d) release of water-borne pollutants; e) unsustainable and not community-based livelihood; and f) aggregates to abuses were an abuse of power, negligence of duty, and confusing roles of agencies.

D. Coral Reefs Propagation, Protection, and Conservation

The coral reef is another major ecosystem in the protected area. The conservation program targets providing protection and conservation measures and beneficent end effects. These protection and conservation measures are strategies aimed to safeguard and rehabilitate the coral reefs from the damages they sustained from past and present destructive activities. It included artificial corals, coral transplant, coral nurseries, coral monitoring, limited permit to the only extraction for research, and intensified information drive. Meanwhile, beneficence pertains to its implementation, including healthy corals and a decrease in illegal fishing activities. But in reality, the contrary has happened. The implementation failed to eradicate the threats to

corals, and lapses in the implementation were still evident. Threats to corals refer to activities practiced by the community that is harmful to coral reefs, such as, dynamite fishing, cyanide (sosa) fishing, and infestation of crown-of-thorns. Another was on the lapses in implementation. This referred to aberration in the process of accomplishing the program. These included the absence of validation for coral transplant, abuse of power, selective implementation, overlapping authority of agencies, and lacking integration of typhoon and global warming resiliency. However, despite all these lapses and shortcomings, the program was still considered a success. The program helped alleviate the coral threats through educational campaigns, constant monitoring of coral health stressors, and execution of the law penalizing violations. Hard corals extraction is now seldom observed, unlike before, where it is primarily used in making riprap. In compliance with RA 8550, coral extraction is permitted for research purposes only. As part of SCREMP of the national government, coral monitoring in study sites was conducted to assess the species in the area and its biodiversity, growth, and factors affecting the coral reefs ecosystem. In accord with EO 533, monitoring was conducted towards its protection and rehabilitation in securing the food security in the area. Some existing problems occurred due to varying degrees of enforcing the conservation laws. Admittedly, there was an overlapping of BFAR and DENR in penalizing perpetrators and limited monitoring in the climate resiliency of the coral reefs, including the artificial corals, coral transplants, and coral nurseries was concerned by the implementing agency together with the sponsor partner stakeholder. Nevertheless, though the said program was not perfectly implemented, it greatly reduced the threats and somehow safeguarded and rehabilitated the coral reefs.

Subsequently, the success of the implementation of coral reefs propagation, protection, and conservations was due to: a) execution of the law penalizing illegal activities; b) monitoring of coral species diversity and stressors affecting the health of the coral ecosystem; c) decrease of coral threatening activities; and d) prioritization in the restoration and rehabilitation programs, like coral transplant, coral nurseries, and artificial corals.

E. Sustainable Methods of Fishing

The positive implication of sustainable fishing methods as a conservation program includes fishery resources protection and conservation measures, and favorable outcomes. Fishery resource protection and conservation measures are schemes that warrant the sustainable harvest of marine and aquatic products.

These strategies include establishing the fish sanctuary, prohibiting commercial fishing in the municipal waters, the practice of seasonal fishing, the conduct of sea patrol, prohibit endangered species possession and harvest, and fish catch monitoring. Furthermore, favorable outcomes are positive impacts of the program manifested in the improved fish resources and marine habitat. However, the implementation of sustainable fishing methods still faces challenges, particularly on how to put an end to the use of destructive methods of fishing, predicaments related to fishery law enforcement, resistant violators, and people's lack of understanding. In line with this, destructive fishing methods are harmful procedures or techniques of catching fish which is against the principle of sustainability. Prevalent in destructive methods of fishing in the protected area includes compressor fishing, dynamite fishing, cyanide fishing, the practice of "sudsud," "tangab," and "sarap." Despite the effort extended by some agencies and individuals, fishery law problems persist, such as intruder's illegal fishing activities, varying/non-unified implementation of Bantay Dagat initiative, lack of funding, overfishing, lack of staff, unattractive livelihood, destabilized fish sanctuary, and lack of apprehension. For the past decades, it is noticeable that those perpetrators who become untouchable are overwhelming to the dominance of resistant violators. These resistant violators possess the following characteristics: a strong desire to survive, no fear in authorities, investment in illegal activities, use of the boat with a motor silencer, and an improvised weapon. People's lack of understanding, on the other hand, pertains to the community's inadequate knowledge relevant to sustainable fishing, evident by their cluelessness with endangered species, misunderstanding on the provision in crablet gathering, and outdated knowledge on imposed penalties based on the most recent amendments made to Fishery Code of the Philippines. There are also plausible problems due to the shortcomings of the implementers. Thus, these are called problems related to implementers. In the context of Biri-LAROSA, this included negligence of duty, frequent consideration, prevalent padrino system, and inadequate capacity.

It can be deduced that sustainable methods of fishing implementation were deemed a failure, in general. This affirmed the findings of Pabunan (2006) that it has a moderate impact on the occurrence of illegal fishing, community awareness involvement, resource regeneration, sustainability, and conservation. Despite the prohibitions cited in RA 8550 on the use of explosives, toxic or poisonous substance, and

electrocutes, there were still unreported illegal fishing activities that use compressors, dynamite, cyanide, and active gears. Though commercial fishing is not practiced under RA 10654, intruder fishers' fishing activities from nearby municipalities or neighboring barangays are also unlawful. According to the law, municipal waters shall be exclusive for the use of municipal fisher folks. It can be associated with varying execution of surveillance and conduct of patrols in their respective jurisdiction. Some municipalities are very active, while others are nonoperational. This affected the total rigor of enforcing the fishery laws in the protected area. Furthermore, it also confirmed that Bantay Dagat Task Force could not perform well because of a lack of funding and support from the PNP, LGU. LGU and BLGU also have inadequate capacity and skills, especially in apprehending violators with weapons. Resistant violators exist because of unsustainable and unattractive livelihood programs. The desire to survive pushed them to do illegal activities because only selected groups were granted financial assistance due to politics. On the other hand, RA 8550 is very specific that the fishery sector shall be supported to achieve poverty alleviation through the program. As a result, people lose their trust in the implementers because they saw the "padrino system" and frequent considerations to some close relatives and friends. The limitation of making underage liability is overly used to exploit children as crime scapegoats. RA 8550 prohibits fishing or taking rare, threatened, or endangered species. But, the general public lacked knowledge of what these species are. Moreover, the provision on crablets gathering in the wild was also widely misunderstood. Another pressing issue was the destabilization of fish sanctuaries due to the inability to maintain them. And lastly, people were not yet updated with the statute RA 10654, which magnify exponentially the administrative fines and penalties stipulated in RA 8550. All of these pointed out the failure of the conservation program.

Generally, sustainable methods of fishing implementation are failed programs because of the following reasons: a) Bantay Dagat Task Force cannot perform well due to lack of funding, support, and inadequate capacity, especially in apprehending violators with weapons; b) varying degree of implementation of Bantay Dagat; c) seldom conduct of seaborne patrols, d) rampant deep-sea fishing using harmful and poisonous substances; e) intruder fishing activities; f) unsustainable, unattractive and politicized livelihood programs; g) resistant violators; h) exploitation of children as crime scapegoats; i) implementers' lack of credibility due to observed "padrino system" and frequent giving of

consideration; j) people's lack of knowledge of marine species which are forbidden to be caught and possessed; and k) people's outdated knowledge on Philippine Fishery Code as amended by RA 10654.

F. Eco-friendly Utilization of Its Rock Formations and Corals Beaches

The implementation of the conservation program was successful in the following aspects: protection and conservation measures, a place for creation, and economic spin-off. Specifically, imposition of fines when committing prohibited acts is part of the protection and conservation measures in using the protected area's resources for ecotourism. This encompasses prohibition of activities, such as seashell collection, littering, grilling in the rock formation, use of single-use plastics, bringing of foods in the rock formations, sand quarrying, and camp firing. Also, an existing management zone is to be utilized to reference future development in the protected area. The program also provides people a place where they can relax and have an adventure.

Unfortunately, there were also some prevailing problems concerning the ecotourism, such as existing pejorative activities, problematic ecotourism services, unutilized ecotourism sites, and ecotourism drawbacks. Pejorative activities are degrading activities against the concept of ecotourism, such as unregulated rock fragment collection, lack of monitoring in the rock formation, no existing anti-vandalism regulation, illegal operation of beach owners, no computed carrying capacity, no legal instrument regulating recreational activities. Meanwhile, problematic ecotourism services pertain to the inconvenient delivery of services to cater to tourists' needs, such as lack of tourist assistance, lack of English-speaking skills tour guides, lack of systematic tourist arrival recording keeping, and poor security. Unutilized ecotourism sites signify the sectional advantage of ecotourism because there are many sites with ecotourism potential but are still underdeveloped. Unutilized ecotourism sites are evident in underdeveloped falls, rock formations, caves, beaches, and historical sites. The implementation has disadvantages, and these are called ecotourism drawbacks. Accordingly, there are already negative consequences to the environment. Another concern was that the revenue accumulated from payments of the environmental fee was misused.

With all of the above testimonies and observations, it can be deduced that the conservation program's implementation was generally a failure. According to DAO 2013-19, ecotourism's impact can be determined based on its effects on environmental protection and community benefits. The study

affirmed Mika, Zawilinska, and Pawlusinski (2016) states that an efficient ecotourism program brings economic advantage and development. It provided community people with business opportunities and a place for diversion. These economic opportunities include ecotourism services, recreational activities, and the construction of ecotourism infrastructures like eco-lodge, trails, campsites, visitor centers, toilet facilities, and watchtowers. Meanwhile, its effects on the environment, however, are negative. Ecotourism operators should only operate in the Tourism Enterprise Zones (TEZs) as prescribed by the management plan. But there are beach resorts that have constructed concrete structures in the no-build zones and are still operating not apprehended. Accordingly, part of the visitor management is to determine the carrying capacity of the ecotourism sites. But in the case of BLPLS, the sites are already in use without carrying capacity study. It turns out that the business operators, including the local community and implementers, were not yet fully capacitated, which led to problematic ecotourism services. This scenario confirmed the claim of Pambuena (2002) that ecotourism services are prematurely put in action. Other ecotourism service providers are very irresponsible in taking good care of their wastes which later end up in the ocean. Based on observations, the conservation measures were not strictly imposed. Worse, there were no existing regulations on recreational activities, and pejorative activities like vandalism and rock fragment collection were not yet penalized. The protected area could offer more ecotourism sites if a full site assessment were undertaken well. It would make a more significant economic impact since implementation only brought advantages to selected areas. But on the lighter side, it is a blessing in disguise since ecotourism site potentials were utilized and kept for conservation purposes. Another problem was the revenue generated from ecotourism, which was not utilized to maintain and manage the site. This contested Catibog-Sinha and Plantilla's (2012) idea that the program helps generate revenue from the environmental fee system to accumulate funds that can readily provide maintenance for the area. Instead, it was used for some other purpose since it was not accrued to the Integrated Protected Area Fund (IPAF). All of these were inimical to the principle of conservation and sustainable use of biodiversity. Hence, the program was deemed to be a failure. Indeed, it is very difficult to achieve conservation and development integration (Kremen, Menelander, & Murphy, 1994).

In terms of eco-friendly utilization of its rock formations and coral beaches for recreation, the implementation failed on the following grounds: a) it

was deemed advantageous to humans but had negative implications to the environment; b) operationalization of ecotourism industry without conducting carrying capacity studies on the identified ecotourism sites; c) construction of concrete structures in the no-build zone; d) poor ecotourism services; e) lack of capacity of the local community, private developer, and implementers large tourists' arrival and visits; f) environmentally irresponsible ecotourism service provider; j) no strict imposition of conservation measures; and h) non-utilization of ecotourism revenue for ecosystem maintenance.

3.4. How Conservation Programs Help Sustain the Integrity of Biri-LAROSA Protected Landscape and Seascape

Conservation programs are implemented to protect the Biri-LAROSA Protected Landscape and Seascape from human abuse and environmental degradation. Data revealed that the implementation provided some significant positive results in sustaining the integrity of the protected area, but alongside it were the failures that constitute risk on maintaining the quality of the ecosystem and the delivery of its ecosystem services. Specifically, solid waste management improved the cleanliness in the protected area, but as a whole, it is a failure. The failure of its implementation is equitable to the downfall of its environmental integrity. It causes further degradation of mangroves, seagrasses, corals, and other marine and coastal ecosystems in the protected area, putting biodiversity at stake. The leach ate from open dumpsites and quarrying sites poses a threat of contaminating surface and groundwater systems. It can potentially cause water and soil pollution. Plastics that were thrown anywhere jeopardize animals and marine life. The continuous disintegration of plastics into microplastics endangers human health as people consume salt from the oceans. Moreover, because of unsanitary and unregulated waste disposal, people are prone to skin irritation and speed up the spread of malaria and dengue since the carrier insects commonly breed in human trashes.

Meanwhile, mangrove forest protection and conservation have somehow improved the mangrove ecosystem in the protected area through the rehabilitation and maintenance of existing mangroves and the establishment of mangrove planting sites. It helps improve the mangrove forest ecosystem as a habitat of diverse species above and below the water. Besides, fishes, crustaceans, mollusks, birds, and mammals now have a bigger and better species, source of food, shelter, and nursery ground during the breeding season. Along with it is the strengthening of coastal protection. It reduces the impact of waves and

protects the coastal communities from the threat of rising sea levels and extreme weather. The growing mangrove area helps stabilize the coastal area, reduce erosion, and protect offshore ecosystems like seagrasses and coral reefs from siltation. The program, in general, has helped protected areas in ensuring the species, structure, and processes in the mangrove ecosystem. Conversely, seagrass beds which are regarded as the "lung of the sea" received the least attention among coastal ecosystems. Most of its conservation and management measures were not followed because of a lack of legislation penalizing destructive activities. The conservation program's implementation failed to protect and rehabilitate the seagrass beds ecosystem, resulting in persistent abuse like human pollution, fishing in seagrass beds, and scars from boat anchors and propellers. Hence, this resulted in further degradation of the functions of seagrasses in the coastal and marine environment. Seagrasses are supposed to provide habitat and nursery ground for many marine animals. They serve as a feeding area for prawns and juvenile fishes. However, all of these are at risk because of the introduction of pollutants and destructive activities. This has a domino effect on the health of seagrasses and, in effect, impacts the whole chain of processes in the marine environment. It will then severely impact marine biodiversity. The worst-case scenario will contribute to the extinction of species that depend on seagrass for survival, like siganids, sea cows (dugong), and green sea turtles. Seagrasses also have a major role as substrate stabilizers. Without them, corals will be greatly harmed. With these, seagrass beds protection and conservation's failure would negatively impact the protected area's integrity.

In terms of coral reefs propagation, protection, and conservation, the continuous battle against coral reef ecosystem degradation is paying off. Though there are still uncontrolled illegal fishing activities, the overall implementation is competent enough in rehabilitating and protecting the coral reefs. Intermittent coral monitoring aid implementers identify more corals species in the protected area and address prevailing environmental stressors. The program allows the rehabilitation and restoration of the coral reefs ecosystem and, in effect, permits regeneration. Hence, it continuously shelters various marine organisms and subsequently supports subsistence fisheries as an important food source for the local community. Other than that, it promotes other functions of the coral reefs like protecting the coastline from damaging effects of wave action, erosion, aid in nutrient recycling, and carbon sequestration.

On the other hand, the failure to implement sustainable methods of fishing poses ecological backlash to the protected area's ecological integrity. Accordingly, it destroys the marine ecosystems, especially the sensitive area in which the bottom-living species live. As revealed in the study, compressor fishing is rampant in the protected area. It endangers the diverse marine and aquatic resources. In the long run, this exploitation would deplete their population. Ultimately, depletes the food resources. The program's failure would mean more unsustainable fishing methods, which primarily destroy the structure of the marine environment and ultimately leads to the incapacity of providing for the needs of the people.

Apart from these, the integration of ecotourism in the protected area promotes environmental awareness, empowers communities, and preserves cultural heritage. It is undeniable that it brought economic spin-off, and community people had benefited from it. But unfortunately, the way the resources were utilized for ecotourism has stained sustainability, preservation, and conservation of the protected area. It has compromised the protected area's ecological integrity as it has brought more disadvantages compared to advantages. The increasing flock of tourists in the protected area would cause a higher demand for more development and encroachment in the area resulting in habitat fragmentation and destruction. New infrastructure, increase pollution, noise, camping, boating, and other activities would lead to wildlife disturbance. Tourists unsustainably collect or harvest things for souvenirs which unknowingly destroy the natural resources and cause instability in nature. Supposed strict compliance of the management zones, the full force of law, and carrying capacity study would have addressed these negative implications beforehand.

Overall, the conservation programs were rigorously supported with legislation providing legal instruments in penalizing unsustainable use of resources. This affirms Leverington, Pavese, and Lisle's (2010) claim that conservation efforts in the protected area have a strong legal backup in the global arena. Furthermore, the conservation programs put BLPLS in the spotlight and prioritize its biodiversity importance and enchanting landscapes. It gives people a place for diversion, a learning encounter on the intricate processes in nature, economic benefits, and an opportunity to work with other stakeholders, hand in hand. Unluckily, in terms of ecological beneficence, some programs have small to medium impact while most of the conservation programs under study were ineffectual. The failure to implement the conservation

programs poses a further threat of degradation instead of nourishing its capacity to enhance the biodiversity, quality of the ecosystem and maintain its structure and function. This finding is consistent with Brokington and Schmidt-Soltau's (2004) stipulation that development has to be sensitive to conservation needs and priorities that Kremen, Melender, and Murphy (1994) described difficult to achieve because their goals are naturally divergent. Therefore, it is significant to balance conservation, human need, and development for the protected area's welfare.

The impact of conservation programs on the protected area's ecological integrity depends upon how successful the implementation is. Failure to implement conservation programs has none to at least a few significant effects than successfully implemented programs. In the context of the study, four out of six programs under investigation failed in the implementation. Hence, its ecological integrity is at high vulnerability to anthropogenic threats and environmental degradation. In particular, solid waste management had at least improved the cleanliness in the protected area. On the other hand, mangrove forest protection and conservation were able to safeguard, rehabilitate, enhance, maintain, and expand its mangrove ecosystem. Meanwhile, coral reef propagation, protection, and conservation reduced the coral destructive activities and helped restore, protect, and rehabilitate the coral reef ecosystem. Sustainable methods of fishing, to some extent, have improved fish resources. Unluckily, seagrass bed protection and conservation and eco-friendly utilization of its rock formations and coral beaches for recreation have failed to significantly impact the sustenance of the protected area's environmental aspect. Notably, the conservation program's failure poses more danger as it will magnify the threat of degradation due to the integration of development focusing on human needs, which consequently put at risk the biodiversity protection of the delicate ecosystem structure and function, and aesthetic preservation of the area.

4. Conclusion and Recommendations

Based on the study's findings, the researchers concluded that Biri-LAROSA Protected Landscape and Seascape have rich biodiversity, which led to its declaration as a protected area by the Philippine Government. Additionally, various conservation programs are implemented to protect and maintain its biodiversity and natural resources. In general, conservation programs implemented have enhanced the ecological services of the protected area. They contributed some positive benefits to the people. Some of the conservation programs were successfully

implemented because they have a strong legal basis, productive partnership, prioritization, constant monitoring, proper execution of conservation laws, applied program phasing, and research-based decisions. On the other hand, other programs failed in the implementation due to lack of commitment, lack of political will, lot of inconsistencies, Filipino negative traits, negligence of duty, implementer's incompetence, absence of constant monitoring, political intrusion, aggravation of poverty, lack coordination, deviations to the standard implementation procedure, loss of people's trust and confidence to implementers, and people's insufficient knowledge on wildlife conservation and amendments to Philippine Fishery Code. The programs were well planned and studied, but the problem lies more in the implementation and management by concerned implementers and stakeholders. It is important to note that the failure and shortcomings in implementing the conservation programs generally deviate from the guiding principle of sustainable development, where human needs, conservation, and development should be in balance. In terms of awareness, participants already know about the conservation programs and their components. However, their level of awareness fluctuates depending on the extent of their involvement and how beneficial these programs were for them. Furthermore, despite their awareness, they were still passive in following regulations. They found it difficult to translate their knowledge and awareness into concrete actions to protect and conserve their resources. This coincided that most of them were not well-versed in the programs' education component as it also placed at the bottom or least aware as rated by the participants. Another conclusion drawn is that the more the conservation programs are successful in implementing protection, restoration, rehabilitation, and enhancement to the ecosystem, the more it would be advantageous in sustaining the integrity of the protected area. In contrast, the conservation program's failure would put the integrity of the protected area at risk and increase vulnerability that would eventually worsen the environmental condition of the area. Consequently, it would cause complications in the protected area's total health as a whole integrated system.

With these, it is recommended that since the municipalities of Biri, Lavezares, Rosario, and San Jose have a shared coastal and marine resources, they may develop an integrated management plan, such as integrated fisheries and aquatic resources management, integrated waste management of solid, sewage, hazardous, toxic, hospital, and other wastes, and integrated ecotourism management plan, that shall be implemented as a whole, not by jurisdiction.

Similarly, PAMB and the DENR may also restructure their units to make them more effective and efficient by creating new units/teams and imposing the different conservation and environmental laws needed to combat destructive activities in the protected area. Then, research-based and data-driven strategies and approaches will be adopted to craft the development and management plans and programs relative to the protected area. Some policy redirections may be advanced as results of the study aimed at improving the system of implementation of the various conservation programs of the protected area.

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