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Diploma Thesis

Adaptation of the Czech Touristic Trail Marking System for Increasing Visitation and User Satisfaction at Rajah Sikatuna Protected Landscape, Philippines

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Adaptation of the Czech Touristic Trail Marking System for Increasing Visitation and User Satisfaction at Rajah Sikatuna Protected Landscape, Philippines

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Objectives of thesis

The broader objective of this thesis is to conduct research into the feasibility of establishing a comprehensive trail marking system at a protected landscape reserve located in the high mountains of the Philippines. At preent, there exists a detailed network of nature trails, however their use is quite limited by local, national and international visitors to the protected landscape nature reserve because of uncertainty of the trails, their length, destination, and difficulty.

The goal is to test if the system of color coded trail marking used in the Czech Republic by the Czech Touristic trail marking group is feasible at Rajah Sikatuna Protected Landscape (RSPL), situated close to Bohol Island State University. CULS and BISU have a signed MOU for the past 4 years and this will be the first collaborative research effort.

The student will conduct original research, performing a visitor survey at RSPL and also testing the trail marking system on the campus at BISU within the undeveloped terrain.

Methodology

The student will conduct a comprehensive questionnaire survey of visitors who make a trip to experience and explore the Rajah Sikatuna PL. One goal of the survey is to determine if the trails of RSPL were marked, if this may encourage visitors to increase their exploration of the wonders of the Reserve. The survey will learn more about who the present day visitors are, from where they originate, what their expectations are during their visit, what they saw or experienced, and ultimately how to improve this through improved educational information, trail signage, and management practices. May Lugtu will conduct a rapid survey whereby visitors will be asked to read and respond to a printed survey-document upon the end of their visit at RSPL. The survey will contain approximately 30 questions and can easily be completed within 5-minutes. A draft of the survey is attached to this proposal.

Objectives:

• Conduct a questionnaire survey of visitors at Rajah Sikatuna PL;

• Determine the demographic mix of visitors to RSPL, such as age, level of education, income, home location, and the size of family or group accompanying them, etc.;

• Identify the locations at RSPL where the visitor reached and what they learned during their visit, either by tour books, hired tour guides, the web, etc.;

• Learn which landscape features the visitor found most interesting and which areas or features could be improved to become more educational;

• Determine what the visitor's impressions were of the physical site conditions at RSPL, such as roads, parking areas, information signs, comfort facilities, trails and trail surfaces, trail marking, etc.;

• Learn if the visitors felt safe and secure at RSPL. If yes, why and if not, why;

• Determine the level of satisfaction that the visitors experienced, based on their trip to RSPL. Specifically, would they choose to return or recommend it to others? If there were reasons for being dissatisfied or if they felt discouraged to return to this location in the future, what are the factors that contributed to that result; and

• Conduct a pilot program of marking trails within the BISU Bilar campus landscape.

The proposed extent of the thesis

60+- pages

Keywords

touristic trails, visitor survey, Philippines

Recommended information sources

Ryan, Karel-Lee. Trails for the 21st Century: Planning , Design, and Management Manual for Multi Use Trails. Island Press, Washington: DC

Young, Nigel. 2008. Long Distance Walking Tracks: Impacts and Experiences. VDMGermany: Saarbrucken.

Zeisel, John. Inquiry by Design: Tools for Environment Behavior Research. Cambridge University Press. UK: Cambridge.

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I hereby declare that I wrote this thesis independently, under the direction of doc. Peter Kumble, Ph.D. and Mgr. Tomáš Jůnek, Ph.D. have listed all literature and publication used to acquire the information included in this thesis.

May Ann Lugtu

In Prague 30.06.2020

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Abstract

A trail marker provides information regarding the trail (distance, conditions, descriptions of places, etc.) which are scarce in RSPL, so adopting the Czech trail marking system there provides a simple, smooth and easily applicable solution. Well-develop tourism can help in a self-financing protected landscape. Before the adaptation and implementation of the Czech Trail marking System, planning, surveying, and creation of a pilot study is imperative to test its significance and efficiency. This study is a two-part methodology the first part is a survey and an interview at the study site, and the second part is the creation of trail markings in the pilot study site. A survey was administered to be able to identify the PL weak points and know what to improve. Visitors' educational attainment significantly affects willingness to pay. Visitors' primary source of information was from tour agencies and tour package. While some facilities also affect visitors' interest to come back in RSPL. Yet, a significant number of respondents stated that they would recommend RSPL to their family colleagues and friends.

Key words:

Czech trail Marking System, Rajah Sikatuna Protected Landscape, protected landscape, trail marker, tourism, survey, interview, pilot-study

Abstrakt

Značka stezky poskytuje informace o stezce samotné (vzdálenost, podmínky, popisy míst atd.), které jsou v RSPL vzácné, a proto přijetí českého systému značení stezek poskytuje jednoduché a snadno aplikovatelné řešení. Dobře rozvinutý cestovní ruch může pomoci chráněné krajině financovat sebe samou. Před adaptací a implementací českého systému značení je nezbytné otestovat jeho význam a účinnost pomocí průzkumu a vytvoření pilotní studie. Tato studie je dvoudílná metodika, první část je průzkum a rozhovor na místě studie, a druhá část je vytvoření značení stezek v místě pilotní studie. Byl proveden průzkum, aby bylo možné identifikovat slabá místa CHKO a lokalizovat místa pro zlepšení. Úroveň vzdělání návštěvníků výrazně ovlivňuje jejich ochotu platit vstupné nebo jiné poplatky . Primárním zdrojem informací pro návštěvníky byly cestovní kanceláře a jejich zájezdové balíčky. Některá zařízení, či jejich nedostatek ovlivňují také zájem návštěvníků o návrat do systému RSPL. Přesto značný počet respondentů uvedl, že RSPL doporučí svým rodinným kolegům a přátelům.

Table of Contents

1 Introduction

Czech Republic is in the very heart of Europe. Czechs are known to be a keen avid hiker. The Czech hiking signs is an enormous network and most detailed in the world (Jana, 2017). According to Pavel Přílepek of the Czech Tourist Club *"There are currently over 43,000 kilometers of marked hiking trails in the Czech Republic".* They are not looking after walking trails or hiking trail but also cycling paths, cross-country trails, trails for wheelchair users and horseback riding trails (Radio Prague International, 2019).

The Czech Tourist Club or Klub českých turistů in Czech (KČT) is an organization responsible for maintaining the trail marking. Czech trail is so simple that even other countries in Europe started using it as well. It is also considered as the best sustained marking in Europe. The marks can be found on the tree throughout the path. There are three short horizontal bars approximately 10 cm x 10 cm, two outer white bars are called the notification color, and the innermost color is the path you are on is called the leading color. They are using different notification color for each type of trail (cycling, ski etc.) (see figure 1). There are four basic leading-colors used--blue, green, yellow and green for hiking trails. An arrow signifies a change in direction while some signs are found on signposts, and other handy marking spots.

Figure 1 Different kind of notification color used for each type of trail

Fingerposts and signs inform hikers where and how far it is to further points and this hiking signs are maintained by at least 1400 volunteers once every three years. Martin Pesler explains "*red color is the most important reserved for the long trails that can connect different regions of the country, lead down long river valleys or on the contrary, on top of long mountain ridges. The blue trails mostly connect some significant or scenic spots but only within a certain region. The green color is for shorter trails usually within*

a county. And yellow signs mark shorter trails connecting other more significant and longer trails. But, of course, like in every system, there are exceptions. So, you can find yellow trails that are 50 kilometers long" (Radio Prague International, 2018).

Philippines is starting to recognize its growing population and people (figuratively). According to Adair in 2004, the dominance of overweight and obesity escalated by six folds in 1983-1984 by 6%, while 35% in 1998-1999. Another prevalence study was conducted by Sy et al. from 1993 to 2008. There is a 3.4% obese in their study population and climbing to 5.2% in 2008. Many people started to appreciate the nature and how it will help them win against obesity. Activities like hiking entails a healthy lifestyle and environment.

Trails are often the channel of access within protected areas. A properly well-managed trail can bring a lot of advantages, it can enhance and improve the location by keeping it well organize, the scenery it can offer to people, helps in protection of natural and cultural resources from degradation (Wimpey et al. 2011), breeding ground for birds and promote tourism which is good for the economy of the country.

Protected areas are key elements in in-situ conservation covering almost 12% of land area (Chape et al. 2005). Protected areas such as parks, reserves, and forests provide ecosystem services that are significant to humans. such as water supply, flood control, food and recreational benefits. They are also becoming a famous destination for tourism, which helps the economy but also for the indigenous people by providing livelihood.

The inspiration of this study was the trail marking system adaptation and implementation in Mt. Kanla-on Natural Park, Negros Occidental last 2016 by the Mendel University students working with Rafael Salas Park and Nature Center. In one of the main islands of the Philippines- in Visayas, Rajah Sikatuna Protected Landscape is just another outstanding scenery that is slowly deteriorating because of lack of management of trails and people not fully aware of the wonders it can provide.

The adaptation and implementation of the Czech Trail/Hiking Marking System in Rajah Sikatuna Protected Landscape will help in reducing and/or eliminating the degradation of the trails and generate the marking system which will guide the visitors in maneuvering inside the forest with confidence that they are safe, a stepping stone in development and growth of tourism.

A pilot study is necessary to administer in order to test the effectiveness and efficiency of the marking system. By doing so, the materials needed can be estimated (paints, boards, brushes, measuring tools), the amount of work on a large scale and of course, the most important thing is to identify where each pathway leads the hikers. This will help in identifying what type of paint is advisable to use, how long the it will last, how often it needs to be repainted.

The success of this approach depends on the proper monitoring and maintenance of the system.

2 Purpose and aims of the study

The following are the aims of the study:

The major intention of this study is to adopt the Czech Trail Marking System and implement it in RSPL. Creating a simple and stable marking system that can guide the visitors in maneuvering inside the protected landscape and ensuring their safety.

1. Since trail markings in RSPL are scarce, we decided to adapt the Czech Trail Marking System and implement it in RSPL.
2. Evaluate the current status of Rajah Sikatuna Protected Landscape using the Visitor Survey Satisfaction.
3. Implementation of the Czech Trail Marking System
    a. Conduct a pilot study to assess the efficiency and effectivity of the marking system and the foreseeable conflicts such as:
        i. Maintaining in managing and placement of the markings and signpost,
        ii. Identifying the trails/pathways in each activity,
        iii. Establishing goals and objectives
        iv. Orientation of the trail
4. Identify how to manage undesignated trail in case of proliferation.

The information collected in this research will help the protected area managers to identify the weak points of the study area and how to improve their services.

3 Literature Review

3.1. Protected Areas and Tourism

As defined by the IUCN (2008), the designation of a Protected Area within the landscape, "is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values," while the Convention on Biological Diversity (CBD) described protected areas as "a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives" (Convention on Biological Diversity, 2006).

Protecting areas for specific uses have been common practice in Europe for over a millennium, however the reasons for and objectives to accomplish this have certainly changed. For example, in Europe noble families set aside protected landscapes for use as a hunting area for their personal use and not for use by the lower classes. Historically, the protection of special places occurred among the traditions of communities in the Pacific "tapu areas" and "sacred groves" in Africa (IUCN 2002). Tapu areas are considered divine, while sacred groves primeval forest patches that are protected by the local community are believed to be dwelling places of the divine being.

Protected Areas (national parks, protected landscapes and seascapes, nature reserves) are widely used in commercial tourism (Spenceley 2016; Sisneros et al. 2019), conservation of biodiversity, social, and economic benefits are where tourism can greatly help (Montaguti and Mingotto 2015; Lucrezi et al. 2017; Bushell and Bricker, 2016).

Global inventory of the world's protected areas can obtain from the World Database on Protected Areas (WDPA) (Chape et al. 2005). The terrestrial protected areas coverage increased from 14.7% in 2016 to 15.1% land surface in 2020, while marine protected areas increased from 10.2% to 17.2% in national waters. WDPA recorded a total of 244,898 designated protected areas, which are mostly on land with an area of 20,374,699 km^2. As for marine protected areas, there's an area of 26,927,425 km^2 of the earth, representing 7.4% of the world's oceans. Marine areas

with national jurisdiction (Exclusive Economic Zones or EEZ, 0-200 nautical miles [nm]), though, have more protection (17.2%) compared to Areas Beyond National Jurisdiction (ABNJ) (>200nm from the coast), with only 1.2% of protection (WDPA, 2020).

All types of protected areas (nature reserves, protected landscapes, national parks) when it is effective, can help in the preservation of feasible natural ecosystems and their habitats and species. Therefore, protected areas are a measurable indicator of development in preserving the world's biodiversity and for the success in achieving the Millennium Development Goals (Chape et al. 2005). The 2030 Agenda for Sustainable development is an action plan for people, planet, and prosperity and was adopted by all United Nation Members in 2015. There are 17 sustainable development goals (Figure 1) and all countries and stakeholders, acting in collaborative partnership, will implement this plan. The elimination of poverty in all its aspects partnered with techniques that will improve health and education, reduce inequality, and spur economic growth, protecting and preserving our oceans and forests while fighting climate change is the goal of the sustainable development goal.

Sustainable Development Goals
1. End poverty in all its forms everywhere
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Ensure healthy lives and promote well-being for all at all ages
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable and modern energy for all
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduce inequality within and among countries

11. Make cities and human settlements inclusive, safe, resilient and sustainable
12. . Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts*
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
* Acknowledging that the United Nations Framework Convention on Climate Change

Figure 1. The 17 Sustainable Development Goals

As stated by McNeely (1998, p. 189), "protected areas are a cultural response to perceived threats to nature. Because society is constantly changing, so too are social perspectives on protected areas and the values that they establish to conserve."

Protected areas are a wide range of natural resources that can utilize to maintain natural habitats and ecosystem candor (Lopoukhine et. al. 2012). Due to the increase in nature-based recreation, national parks, terrestrial and marine protected areas, reserves, and other sites are becoming the leading destination (Mandic 2019).

In the face of the continuous global loss of natural habitats, the solution was to innovate and increase protected areas to conserve biological diversity (Chape et. al. 2005). The establishment of terrestrial and marine protected areas plays a significant role as a core foundation in supporting and conservation of biodiversity while providing activities for human beings (Walden-Schreiner et. al. 2013; Walpole et. al. 2001; Sherman et. al. 2019).

Some protected areas, because of lack of funding, are poorly managed and ecologically damaged, thereby compromising other goals (Walden-Schreiner et. al 2013; Watson et al. 2014; Pringle 2017).

Tourism has been changing the economic, social, and ecological aspects all around the globe (Sisneros et. al. 2019). MacKinnon et al. (2008) and Mittermeier et al. (2008) proposed the term "nature-based solutions," which means not only to protect biodiversity, building capacity and fostering resilience but also to reduce the effects of climate change, and adapt to it. S. Biggs (2004) inferred that nature-based tourism can produce revenue as much as farming, forestry, and fisheries combined.

Income from recreational activities such as fees collected from different kinds of activities (hiking, bird watching and park tour), entrance fees, hotels, and meals can help in generating funds that can aid to finance the site, to use for conservation, and to persuade people to connect with the environment (Balmford et. al. 2009; Mandic 2019). In addition, it can also help the economy of the communities.

These activities may serve as steppingstone in showcasing the exotic wildlife, unique environments and landscapes, and indigenous communities and culture (Sisneros et. al. 2019). Consequently, as the intensity of visitor increases, sustaining a healthy natural environment and economic development also increases (Mandic 2019). Aside from tourism and recreation, protected areas can also be harnessed as an educational element (Walpole et. al 2001). Protected areas (reserves, parks, landscapes, and hotspots) can also be a source of information or knowledge to their visitors. Basic information on flora, fauna, native and non-native species, and the history of the area are just some of the things that can be featured as an educational activity.

According to the International Union for the Conservation of Nature (IUCN), there are six categories of protected areas (See table 1.1) based on their conservation goals, management objectives, and protection levels (https://www.iucn.org). Jones et. al (2018) and Leroux et al (2010) results show that protected areas with higher protection are more efficient and effective in preventing forest loss. Forests play an indispensable role in conserving and housing endangered and endemic species. It also offers a wide range of ecosystem services (Gibson et al., 2011; Moura et al., 2013).

Category	Definition	Objective
Ia (Strict Nature Reserve)	These are strictly set aside to protect biodiversity and geological/geomorphological features, controlled and limited for human use and visitation to ensure the protection of the conservation values. Serve as indispensable reference areas for scientific research and monitoring.	Preserve exceptional ecosystems, species, and/or geodiversity features.
Ib (Wilderness Area)	Large unaltered to slightly altered areas that maintain their natural character without human habitation which are protected to preserve their natural condition.	To safeguard the ecological integrity of natural areas that are unaltered by human activity and without the presence of modern infrastructure, so future generations can experience and see these areas.
II (National Park)	Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.	Protect the natural biodiversity with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.

III (Natural Monument or Feature)	Protect a specific monument may it be a landform, sea mount, submarine cavern, geological feature like caves or ancient grove. These are small protected areas with high visitor value.	To protect a specific exceptional natural feature and their associated biodiversity and habitats.
IV (Habitat/Management Area)	Protect particular species or habitats and management reflects this priority. This category needs regular and active interventions to address the requirements of species or to maintain habitats, but not a requirement of the category.	Maintain, conserve and restore species and habitats.
V (Protected Landscape/ Seascape)	A protected area where a distinct characteristic such as ecological, biological, cultural, and scenic value was made because of the interaction of people and nature. Safeguarding the integrity of this interaction is significant in protecting and sustaining the area and its associated nature conservation and other values.	Protect and sustain important landscapes/seascapes and the associated nature conservation and other values created by interactions with humans through traditional management practices.
VI (Protected Area with Sustainable use of Natural Resources	Protected areas that preserve the ecosystems and habitats associated with cultural values and traditional natural	To protect natural ecosystems and use natural resources sustainably, when conservation and sustainable

	resource management systems. They are considerably enormous with most of the area in a natural condition while some parts are under sustainable natural resource management, and one of the aims of the area is a low-level non-industrial use of natural resources.	use can be mutually beneficial.

Table 1. IUCN Protected Area Management Categories

Forest loss is still rampant in Asia regardless of any protection within protected area boundaries (Spracklen et al., 2015). Furthermore, because of an increase in yam farming, population, and road construction (Newman et al., 2014, 2018), there's been an incredible forest loss in Jamaica (Caribbean) including protected areas with high protection (Chai and Tanner, 2010). Due to the growing demand for agricultural and forest resources, protected areas have been declining and diminishing, which results in the expediting exploitation of its resources. (Mascia and Pailler, 2011; Pedlowski et al., 2005).

The rate at which organisms travel and reach locations with the same climate condition in the future is forward climate velocity, and areas with low forward climate velocity have the potential for the conservation of in situ refugia for species limited in their ability to disperse (Ashcroft, 2010; Carroll et al., 2015). On the other hand, backward climate velocity is a measure of how organisms can move quickly to a particular location from surrounding areas, and areas with low backward climate velocity are those where organisms can easily colonize and under novel climate conditions, potentially act as ex situ refugia for species unable to continually occupy their current ranges (Ashcroft, 2010; Stralberg et al., 2018). Haight et al. (2020) found out that protected areas comprise 26.95% of total abiotic climate refugia based on forwarding climate velocity, while 39.19% of abiotic climate refugia based on backward climate velocity cover 10.98% of the area. This means that protected areas have high numbers of low climate velocity making their ecological features less susceptible to climate shifts. Besides, their results also suggest that a great

contributing factor with the protected areas' success was the combination of utilization of biodiversity patterns and environmental factors with climate refugia based on climate velocity.

While tourism can provide a source of income to communities and fund the conservation of protected areas' flora and fauna, increasing visitation may result in degradation, which brings about difficulty in managing natural resources (Sisneros et. al. 2019).

Marine and terrestrial protected areas are essential tool in the conservation and preservation of the environment and biodiversity. When a protected area cannot self-finance, it has the potential to become "paper parks." Use and non-use values are means of self-financing a protected area. The former means visitor's willingness to pay in using the resource while the latter is a contribution of whether the resource will be used or not in the future (Dharmaratne et al. 2000). Besides, the lack of funds will result to diminished research and monitoring due to inability to pay staff, resulting in the degradation of the park (Dixon J.A et al. 1993).

In a positive way, taking advantage of protected areas for use to attract tourism can produce many financial benefits, provide economic justification and promote ecotourism or sustainable nature-based tourism (Boo 1992; Giannecchini 1993; Orams 1995; Goodwin 1996; de Oliveira 2005). It can contribute to the conservation of biodiversity and the preservation of natural areas, given the fact that there is a shortage of resources regarding environmental management (de Oliveira 2005). Furthermore, it can create jobs/livelihood for the local community resulting in indigenous people protecting and valuing this property (Goodwin 1996). The funds can be utilized for improvement and continuous monitoring of the site to have efficient and effective nature-based tourism (Su and Xiao 2009).

Aside from preserving the environmental values of protected areas, protected area managers and stakeholders should also take into consideration the importance of parks as cultural landscapes (Zeppel 2009; Munanura et al. 2017).

Protected area managers are highly pressured and criticized. They are criticized for so many restrictions and not focusing on a sustainable approach.

Protected areas' sustainability lies in its capability to self-finance (Whitelaw et al. 2014).

3.2 Protected Area Management

Protected areas (nature reserves, national parks, protected landscapes) offer an opportunity for people to interact with nature. Environmental services provided by natural ecosystems, such as provision of water, in some protected areas conserve places of value such as sacred natural sites (Dudley, 2008). Furthermore, protected landscapes offer hiking, bird watching and sightseeing, and marine protected landscapes offer diving.

Management of protected areas entails techniques to achieving the objectives of the Convention on Biological Diversity and the Sustainable Development Goals because of the influence of nature on human well being (IUCN, 2014). The Convention on Biological Diversity fights the threats to biodiversity with the use of scientific assessments, development of tools, incentives and processes, transfer of technologies and good practices, and the full and active involvement of relevant stakeholders including indigenous and local communities, youth, non-governmental organizations, women and the business community.

All around the globe, protected areas are managed to preserve their natural and cultural aspects and prevent any degeneration, to give the public a better service and access (Wimpey et. al. 2011). An efficient, functional and effective global protected area is vital in conserving viable, representative areas of natural ecosystems and their habitats and species (Chape et al. 2005).

To achieve equilibrium between protected areas catering access to public while protecting and conserving biodiversity, protected area managers can construct a more efficient or sustainable trail network and maximizing these trails with a trail-free habitat that will diminish impacts on resident wildlife. Also, governments started to see how vital these areas are and now established policies like in Canada's Canada National Parks Act, and the United States' National Park Service Organic Act. (Thompson 2015).

Parks Canada Agency Act, *S.C. 1998, c. 31 Assented to 1998-12-03*, is a "federal law that monitors the protection of natural areas of national significance. It also enables Parks Canada to designate and maintain national parks and national parks reserves. The national resources in the protected areas are devoted to the benefit, education and enjoyment of the people of Canada. All development in national parks must be accredit by the Agency. An act to establish the Parks Canada Agency and to amend other acts as a consequence" (https://laws.justice.gc.ca/eng/acts/P-0.4/page-1.html, https://www.ecelaw.ca/wildlife-and-biodiversity/legislation/canada-national-parks-act.html).

The organic act established the National Park Service to advocate the use of national park while protecting them from deterioration. The agency's mission is to conserve park resources and provide for their use and enjoyment "in such a manner and by such means as will leave them unimpaired" for future generations (16 U.S.C. §1).

There are two significant amendments on the organic act: (1) General Authorities Act states that "though distinct in character, [national parks] are united through their interrelated purposes and resources in one National Park System as cumulative expressions of a single national heritage," and (2) The Redwoods Act amendments "address the impacts of resources from logging outside the park, also amended the Organic Act. The amended provision states that all park management activities 'shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.'" (https://www.justice.gov/enrd/nps-organic-act, 2015).

The World Commission on Protected Areas (WCPA) is administered by IUCN's Programme on Protected Areas. They are helping the government by planning protected areas, policymakers by contributing strategic advice, strengthening capacity and investment in protected areas and gathering stakeholders to address conflicts (www.iucn.org/wcp). Chape et al. (2005) stated that the goal of the WCPA is to give guidance in the development of assessment systems, and to encourage standards for assessment and reporting. The framework comprises of six distinct stages:

1. It begins with understanding the context of existing values and threats,
2. Progresses through planning, and
3. Allocation of resources (inputs), and
4. As a result of management actions (processes),
5. Eventually produces goods and services (outputs),
6. That result in impacts or outcomes.

Visitor management and monitoring in protected areas, nature reserves, and other natural areas are indispensable due to increase visitation in these natural areas in the US and worldwide (Cordell 2008; Balmford et al. 2009).

Community-based mangrove forests restoration in the coastline of Myanmar with enough species diversity (mixed and native species) will be successful given the favorable environment conditions (Veettil et al., 2018). Due to the dedication to restore mangrove forests, people are starting to replant mangrove species in Cambodia and reduction in aquaculture and charcoal production (Veettil et al., 2019).

Protected areas socio-ecological success lies to the involvement, awareness and support of the public (Crandall et al., 2018; Lundquist and Granek, 2005; Pollnac et al., 2001). For a successful and functional reserve, the key element is to keep the public aware. Moristch et al. (2019) conducted a survey to assess the public awareness on the State Marine Reserves on the Central Coast of California. Their results showed that 90% of the visitors stated that marine protection is important to them, willing to follow the rules if they knew they are in a reserve but guidance to do it. According to Boerschig et al. (1993) Education is one way of changing one's behavior. An in-depth understanding of the problem is important for knowledge to effectively change behavior. For conservation efforts to be successful, its nature and goals must be widely known, understood, and accepted. So is public support being indispensable. To engaged public to support these conservation efforts, protected areas are important their contribution and nature conservation beget to people. In order to promote proper understanding of conservation while diminishing behavior that damages the environment, developing environmental information and better connection about the value of protected areas is imperative (Booth et al., 2009).

3.3 Informal Trail Management

Trails are one of the components of a protected area, within national parks, nature reserves, and protected landscapes. They affect the visitors' experience and travel patterns (Wimpey et al. 2011). Undesignated trails or commonly known as "informal trails" or "desire paths" are paths that are not officially or designated for use by site managers or are not part of the original pathway (Leung et al. 2011). Eliminating informal trails is imperative, because these trails are more susceptible to degradation and less sustainable, while properly executed trails promote a variety of uses and access to different points in the protected areas and prevent trampling damage (Wimpey et al. 2011).

The current situation suggests that increasing utilization of green areas (The Outdoor Foundation 2013; USDA Forest Service 2010) is foreseeable as a source of relaxation, recreation, tourism, and high environmental quality, which will result in an increase of visitation in protected and green areas but can lead to the creation of undesignated trails by users.

These informal trails can affect soil, vegetation, and wildlife. It can also alter hydrology, habitat, and potentially spread invasive species and fragment landscapes, that posits grave danger to ecological integrity, aesthetics, and visitor experiences (Leung et al. 2011; Schwartz et al. 2018; Wimpey et al. 2011). Small mammals and other wildlife are affected by the creation of undesignated trails; roads are also a contributing factor as a barrier (Knight 2000; Gaines et al. 2003). Continuous use of informal trails damages the flora and fauna, which threatens the ecological integrity, aesthetics, and visitor experience (Leung et al. 2011). The correlation between visitation and undesignated trails is directly proportional (Vander-Woude et al. 2015).

To better understand which action plans are needed in managing informal trails, one needs to integrate informal trail data with visitor data, which will help in the evaluation of the spatial distribution of impacts and areas with high potential for trail proliferation and meadows (Leung et al. 2011). By understanding the effects and turmoil of informal trails, one can formulate appropriate sustainable strategies, restoration, and monitoring of these trails (Sherman et al. 2019).

It is said that one of the key elements to manage trails is through communication, by communicating with the visitor through educational boards, and posters managers can diminish off-trail users. These are some of the most useful and effective ways of educating the public (Marynowski and Jacobson, 1999). With the use of social media, one can escalate awareness and education to visitors and local people. Communication and codes of practice are also another way, while mobile digital technologies can be used to send text alerts about wildlife (Leveque, 2015).

Educational and site management through messages threatening a sanction is more effective in reducing off-trail hiking than ethical, humorous, symbolic, and hybrid messages (Johnson and Swearingen, 1992; Swearingen and Johnson, 1994) in mitigating the impacts of undesirable trails. Some park managers, however, state that this technique will leave a negative impact on the visitor experience.

Using a single method approach such as physical barriers such as fences or retaining walls, brushing to close informal trails, or signage warning visitors not to use informal trails to reduce off-trail users is not recommended since visitors have varying reasons why they participate in off-trail hiking. It is best to incorporate multiple methods in managing undesirable trails (Hockett et. al. 2017) like interpretative messages interpretive messages, the presence of a role model, and verbal appeals were more efficient in reducing off-trail users. Educational signs combined with site management like fencing or barriers proved to be most effective in driving of off-trail users. A study conducted by Swearingen and Johnson (1994), found that using a yellow rope barrier is an effective site management technique. The same conclusion is reinforced at Acadia National Park, wherein they utilize low fencing partnered with signs located near informal trails found to be effective (Park et. al. 2008), while a study at Mt. Rainier National Park used the presence of a uniformed employee and rope barriers suggest being the most effective treatment (Rochefort and Gibbons, 1992).

Furthermore, educational messages with an awareness of consequences is one example wherein visitors are informed about the impacts of off-trail hiking. Aside from this, an “ascription of responsibility” is another way to connect with visitors by instilling the sense of responsibility to each visitor on their environment (Schwartz, 1975; Van Liere and Dunlap, 1978). On the other hand, Winter (2006) claimed that

"injunctive-proscriptive" wording (e.g. "Please don't go off the established paths and trails, to protect the sequoias and natural vegetation in this park") was also effective in keeping visitors on the trail than prescriptive (encouraging positive behaviors) or descriptive (telling visitors what other visitors do) messages. While an attribution-based educational message (e.g. "Your feet have trampled the vegetation on this island. Please stay on the main woodchipped trail") was effective in keeping visitors on formal trails than a non-attribution plea message according to Bradford and McIntyre (2007). Hockett et. al (2017) suggests that Personal Contact treatment was the most successful in reducing off-trail travel mixed with other techniques. Other studies (Fazio, 1979; Oliver et al., 1985) supported the same conclusion that personal communication ensures and leave greater impact to visitors. This gives the visitors to ask and clarify issues that are not well understood. Bradford and McIntyre (2007) suggest that the location where educational messages were placed highly affects and reduces the number of off-trail users. There is a reduction of approximately 65% of off-trail users when the signs placed at the intersection of formal and informal trails compare to when signs placed at an information booth.

Schwartz et. al. (2018) suggests that utilizing a barrier paired with educational message certainly was the most effective in managing undesignated trail. By using this technique, there is a significant reduction in creating undesignated trails. However, there are other ways on how to manage these informal tracks, first is to close them, second is the use of educational trails and lastly harden the surface (Liddle, 1997; Worboys et al. 2001; Newsome et al. 2002). It is noteworthy that the last option is quite expensive and is not applicable to any vegetation type. Furthermore, management interventions, signage and proper dissemination of information for the public and visitors all over the trail system is imperative to identify which are designated trails. Aside from this, Leung et. al. (2011) utilizes indicator measures and fragmentation indices that may help in identifying informal trail problems in Yosemite Valley meadows.

(Littlefair, 2004; Littlefair and Buckley, 2008) employed multiple techniques such as interpretive messages, the presence of a role model, and verbal appeals were most successful in diminishing off-trail users.

3.4 Impacts of unmanaged/informal trails

Exploration, avoidance, and shortcuts are some of the main reasons why informal trails are created (Bryan 1977; Root and Knapik 1972; Turner and LaPage 2002; Wimpey and Marion 2011). When trails are difficult and show some erosion, visitors tend to avoid them and use adjacent trails (Bryan 1977; Root and Knapik 1972; Bayfield 1973; Leung and Neller 1995), or create their own trails known as desire pathways. Informal trails that are formed by visitors are a key indicator of resource degradation in planning, managing, and monitoring of the area.

The creation of informal trails can have a negative impact upon the soil and vegetation, which is very crucial for any protected area, mountain, and forest. Off-trails are not sustainable, and therefore, they are expensive when needs to be fixed. Kosciuszko Alpine area, Australia lost its native vegetation with almost 28,402 m^2 because of the presence of "off-trails" (Hill and Pickering 2006). Increased use of trails can change the soils' physical, chemical, and biological properties (Sherman et. al. 2019). Trampling strongly affects any functional and taxonomic microbial community of the soil, and according to Sherman et. al. (2019), there is a positive correlation between trampling and phylogenetic diversity of the topsoil and negative correlation in OUT's richness. In addition, recreational activities can highly affect wildlife (Leveque et. Al. 2015).

Thompson (2015) stated that turmoil caused by informal trails is the main reason for the decrease of native species in protected areas. Despite this fact, protected areas are a vital medium for the conservation of biodiversity.

Research conducted by Marzano and Dandy in 2012 found another factor that may affect ground-nesting birds; dogs running loose or even on a leash often causes flight responses, but the results are not certain as to whether it affects the population level. One could speculate that disruption of a nesting area will lead to mortality of young or infant birds.

Other than trampling, cycling and mountain biking can highly influence habitats and may cause erosion and flight response in animals or direct mortality (Marzano and Dandy 2012.

Aside from this downside, it can modify the interaction, altering the nature of social interactions, cultural identity, and community cohesion in Arctic communities (Amundsen, 2012; Puhakka, Sarkki, Cottrell, & Siikamäki, 2009), whilst informal trails can affect wildlife and vegetation. Visitors and recreationists are also key elements that can affect them.

3.5 Health Benefits of Protected Areas

The World Health Organization decided to create a body-mass-indes (BMI) cut-off for Asians because they have a higher percentage of body fat compared to white people of the same age, sex, and BMI (Yajnik and Yudkin, 2004). Body mass index is a measure of weight relative to height. In 2009, and 2010 over 78 million adults recorded to be obese in the United States (Ogden et al. 2012). Almost 2.8 million people die each year due to overweight or obesity worldwide (WHO).

Overweight and obesity increase the risk of hypertension (HTN), coronary heart disease, type 2 diabetes (DM), gallbladder disease, respiratory problems, and various cancers (e.g., endometrial, breast, and colon cancers) (Jensen et al. 2013). The Filipino American obesity rate, which is 78.6% was higher than non-Hispanic whites (53.8%), African Americans (64.9%), and Hispanics (69.7%) using the World Health Organization (WHO) Asian BMI cut-off points (Jih et al. 2014). While another study showed that Filipino American men's obesity, the rate was 34.5%, which was similar to the national obesity rate (34.9%) (Mui et al. 2017).

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Physical activity promotes different kinds of benefits these includes reduce the risk of obesity, heart disease, and diabetes, stress reduction, improving moods, boost sense of wellness, increase social capital; as well as economic and environmental

benefits that may accrue to society resulting simply from the existence of the park in a community (Bedimo-Rung et al. 2005).

Rosenberger et al., 2009 concluded that parks, protected landscapes, natural reserves, and other protected areas were utilized for outdoor physical activity that offers recreational activities and promotes health benefits from physical activity. Stakeholders and policymakers can use this as an advantage for protected areas as health-related benefits aside from the other ecosystem services they provide like water and prevention of flood. Supply and demand for recreational activities are linked with physically active people. Their study also showed that there is a direct link between overweight adults and physical activity while indirectly proportional to the density and frequency in recreational activities cooperation, non-motorized trail recreational activities.

3.6 Other Threats faced by recreational Landscape

According to UNEP-WCMC in 2008, protected areas are facing an ecological pressure by anthropogenic threats that causes destruction and degradation of nature reserves, parks and protected areas worldwide. While informal trails can affect wildlife, there are other factors that are more detrimental to our natural resources or recreational landscape like global climate change, changes in the surrounding of the protected areas (Czech et. al 2000), water pollution (Venter et al. 2006), changes in disease occurrence (La Marca et al. 2005) and expansion of human settlements (Bailey et al 2016).

Human settlements' expansion affects the ecological flows and landscape integrity of nature reserves (Xun et al., 2014), it also causes habitat loss and fragmentation (He et al., 2014; Merlín-Uribe et al., 2013).

Carey et al. (2000; p. 18) have summarized significant threats to protected areas, in increasing order of importance, as:

1. Individual elements removed from the protected area without alteration to the overall structure (e.g. animal species used as bushmeat, exotic plants or over-fishing of specific species).

2. Overall impoverishment of the ecology of the protected area (e.g. through encroachment, long-term air pollution damage or persistent poaching pressure).

3. Major conversion and degradation (e.g. through the removal of vegetation cover, driving roads through the protected area, major settlements or mining).

5. Isolation of protected areas (e.g. through major conversion of surrounding land).

Deforestation and forest fragmentation are some of the reasons of loss of biodiversity and ecosystem services (Wang et. al. 2016). Mangrove forests are dominant in the tropics and sub-tropics and play a significant role in the protection of the coastal area from cyclones and tsunamis (Veettil et al., 2019), shoreline and inland natural resources and carbon sequestration (Sandilyan and Kathiresan, 2014). This special ecosystem is deteriorating because of anthropogenic activities like aquaculture, salt fields, charcoal production, illegal logging, pollution and climate change (Ward et al., 2016; Bann, 1997).

For protected areas to be fully functional and achieve its goal of conserving biodiversity, a well-connected system is needed. Most often than not, visitors are not aware with the regulations, policies, and locations and geographic boundaries prior to their arrival which will affect the locations' cleanliness and sometimes disturb the biodiversity (Ware, 2009). Humans use marine resources as livelihood and food sources. Increasing demand for food and products leads to overexploitation of these resources (Poe et al., 2015; Aswani, 2017).

4 Methodology

4.1 Introduction

This research study has a two-part methodology. The first part was the survey, and the second part is the creation of a pilot trail marking. A pilot study is "a small-scale test of the methods and procedures to be used on a larger scale." (Porta, 2008). The main purpose of conducting a pilot study is to test the usefulness of the trail marking in a larger scale study and applying it in the Philippines.

Trail markings are not present in RSPL, therefore, minimizing the ability of the visitors to explore RSPL's beauty. These trail markings will greatly help visitors in navigating inside of the RSPL.

4.2 Study Site

In 1987, the Department of Environment and Natural Resources (DENR) drafted the Philippine Strategy for Sustainable Development to "achieve economic growth with adequate protection of the country's biological resources and its diversity, vital ecosystem functions, and overall environmental quality" (Vitto, 2014, La Viña et al., 2010). To achieve this goal, one of the key strategies was to establish an integrated protected areas system, which emphasized the preservation of the "variety of genes, species, and ecosystems" (Philippine Government, 1989). National Integrated Protected Areas System (NIPAS) declares as state policy to "secure for the Filipino people of present and future generations the perpetual existence of all native plants and animals through the establishment of a comprehensive system of integrated protected areas within the classification of the national park as provided for in the Constitution." The Act further declares that the NIPAS "shall encompass outstanding remarkable areas and biologically important public lands that are habitats of rare and endangered species of plants and animals, biogeographic zones and related ecosystems, whether terrestrial, wetland, or marine, all of which shall be designated as protected areas." Figure 1 shows the Protected Areas in the Philippines while Figure 2 shows the difference between the definition of Philippine and IUCN

protected areas system and Figure 3 states the definition of each Protected System based on NIPAS Act.

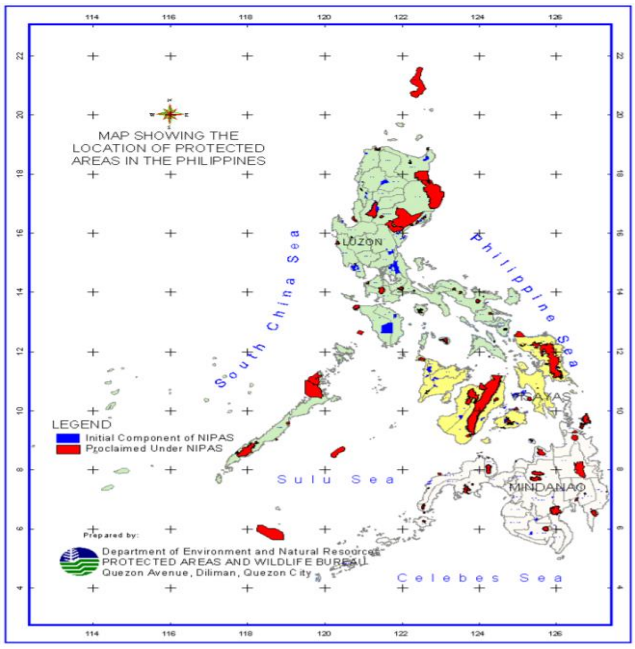


Figure 1: Protected Areas in the Philippines
Image taken from https://www.iucn.org/downloads/philippines.pdf

IUCN category	NIPAS Act (sections 3 and 4)	Remarks
Ia. Strict nature reserve	Strict nature reserve	Most restrictive category under the NIPAS Act that allows only scientific use for the area
Ib. Wilderness area		Included in strict nature reserve
II. National park	Natural park	Essentially similar; "national park" is a term used in the Philippine Constitution to designate a particular category of public lands that includes all protected areas, which is why it is not used as a category in the NIPAS Act
III. Natural monument	Natural monument	Essentially the same
IV. Habitat/species management area	Wildlife sanctuary	Essentially the same
V. Protected landscape/ seascape	Protected landscape/ seascape	The NIPAS Act emphasizes opportunities for recreation and tourism
VI. Managed resource protected area	Natural biotic area	The NIPAS Act emphasizes the preservation of indigenous culture associated with the area

Figure 2: Comparative features of protected area categories under IUCN and the NIPAS Act
Image taken from https://www.iucn.org/downloads/philippines.pdf

NIPAS Act Category	Definition
Strict Nature Reserve	*—"an area possessing some outstanding ecosystem, features and/or species of flora and fauna of national scientific importance maintained to protect nature and maintain processes in an undisturbed state in order to have ecologically representative examples of the natural environment available for scientific study, environmental monitoring, education, and for the maintenance of genetic resources in a dynamic and evolutionary state".*
Natural Park	*a relatively large area not materially altered by human activity where extractive resource uses are not allowed and maintained to protect outstanding natural and scenic areas of national or international significance for scientific, educational and recreational use".*
Natural Monument	*"a relatively small area focused on protection of small features to protect or preserve nationally significant natural features on account of their special interest or unique characteristics".*
Wildlife Sanctuary	*"an area which assures the natural conditions necessary to protect nationally significant species, groups of species, biotic communities or physical features of the environment where these may require specific human manipulation for their perpetuation"*
Protected landscapes and Seascapes	*"areas of national significance which are characterized by the harmonious interaction of man and land while providing opportunities for public enjoyment through recreation and tourism within the normal lifestyle and economic activity of these areas".*
Resource Reserve	*"an extensive and relatively isolated and uninhabited area normally with difficult access designated as such to protect natural resources of the area for future use and prevent or contain development activities that could affect the resource pending the establishment of objectives which are based upon appropriate knowledge and planning".*
Natural Biotic Areas	*"an area set aside to allow the way of life of societies living in harmony with the environment to adapt to modern technology at their pace".*
Other categories established by law, conventions or international agreements which the Philippine Government is a signatory.	

Figure 3. Definition of Protected Areas System according on the NIPAS Act. Taken from https://www.iucn.org/downloads/philippines.pdf (La Vina et al. 2014)

Rajah Sikatuna Protected Landscape (RSPL) in the Province of Bohol was first proclaimed by President Corazon Aquino on July 10, 1987 under Presidential Proclamation No. 129 as Rajah Sikatuna National park. It was President Joseph Ejercito Estrada, under presidential proclamation No. 287, who later proclaimed Rajah Sikatuna as a protected landscape. National Park is a protected area that is not modified by any kind of human activity, and siphoning resources are prohibited while a protected landscape is a protected area that offers recreation to humans and often used in commercial tourism. RSPL has a total area of 10, 452 hectares comprising of 7 Municipalities namely Carmen, Sierra Bullones, Garcia Hernandez, Valencia, Dimiao, Bilar and Batuan and 29 barangays. It has a steep slope and consists of large number of small limestone hills with an altitude between 200-800 meters above sea level. Due to its enormous area, there are a lot of activities that can be done such as bird watching, trail trekking, and viewing of the unique geological formation of the world's famous Chocolate hills.

Being a tropical country, there are considerable number of flora and fauna species that can be found in the landscape. An estimate of 195 fauna species are residing in the protected landscape and houses endemic species of birds that are part of the Philippine Red Data Book. These includes 25 bats species, 13 species of non-flying mammals, 120 species of birds, 20 species of frogs, 7 species of Lizards, and 10 species of snakes. Endemic species of birds listed in the Philippine Red Data Book are as follows: Philippine Serpent-Eagle, white-eared brown dove, Philippine hawk-owl, Philippine frogmouth, Philippine bulbul, coleto, yellow-breasted tailorbird, Visayan wattled broadbill, rufous-lored kingfisher, silvery kingfisher, Philippine scops owl, streaked ground-babbler, Mindanao bleeding-heart, steere's pitta. Flora species are mainly dipterocarp species. (Source: DENR-RSPL Profile)

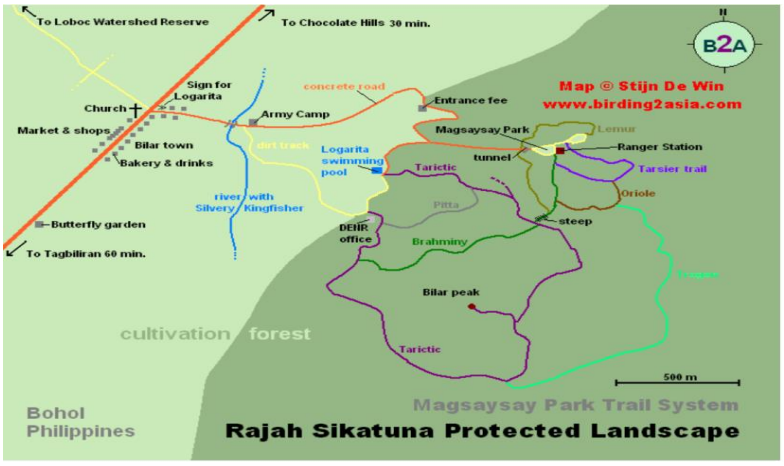


Figure 4. Shows the general overview of the site.
Extracted from https://www.birding2asia.cooverviewm/W2W/Philippines/RajahSikatuna.html

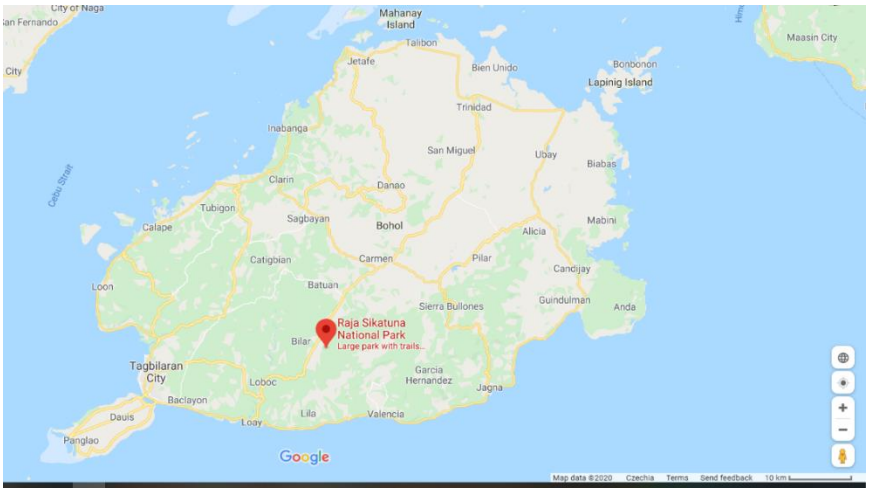


Figure 5. General Overview of Rajah Sikatuna and surrounding places.
Source: googlemaps.com

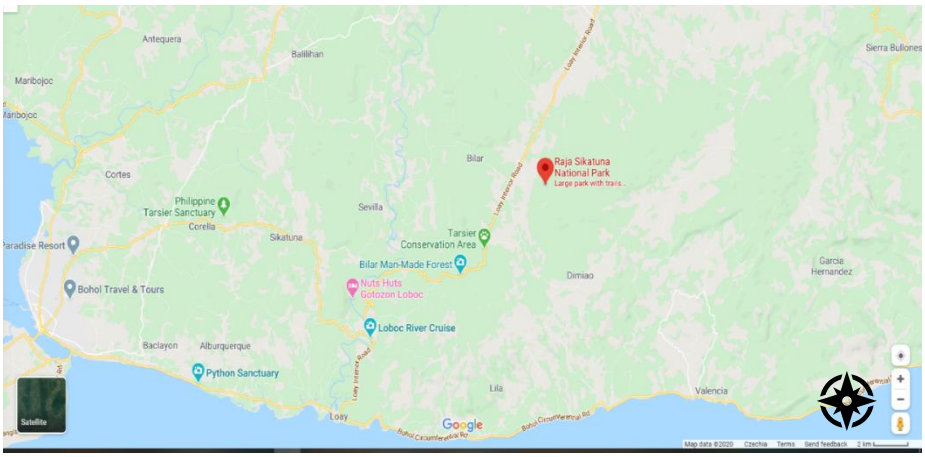


Figure 6. Shows a more detailed places surrounding Rajah Sikatuna Protected landscape. Source: google.maps.com

The easiest way to reach RSPL is via motorcycle through the entrance, where visitors are asked to pay an entrance fee which costs Php 100.00 for foreigners, and Php 30.00 for locals while children seven years old and below are free. The visiting hours start from 9:00 a.m. to 4:00 p.m.

4.3 Phase 1: Conducting of Surveys/Interviews

Preparation of the Project proposal

Since it is a protected landscape, a permit is needed to conduct a Visitor Survey Satisfaction at RSPL. The Department of Environment and Natural Resources (DENR) is the one responsible for overseeing all the activities in every protected landscape. Prof. Peter Kumble prepared a two-page proposal explaining the purpose of the survey, for how long, and how it will be administered. A copy of the questionnaire was given to the authorities (DENR) for better analysis. Figure 7 shows the copy of proposal prepared by Prof. Peter Kumble.

Endorsement of the Project Proposal

The proposal was sent personally to the Provincial Environment and Natural Resources Office of Bohol, informing them about a prospect research study at the RSPL. Then, it was endorsed personally to the City Environment of Natural Resources Office in Bilar since it is where the study site is located. After the acknowledgment of the proposal, it must be presented to the Protected Area Management Board (PAMB) members. They are the captain of each barangay that is part of the protected landscape. Barangay is a "basic political unit that serves as the primary planning and implementing unit of government policies, plans, programs, projects, and activities in the community, and as a forum wherein the collective views of the people may be expressed, crystallized and considered, and where disputes may be amicably settled" (dilg.gov.ph)

Presentation of Proposal

The proposal was presented at the PAMB meeting last November 15, 2019, at RDJ Mountain view Resort at 10:00 am. The researcher presented the objectives of the study (long-term and short-term), its goals and how it will help RSPL in improving its services. Figure 8 shows the PAMB meeting. Since the research does not include any introduction or collection of species, the board members had agreed to give a permit and gave the researcher a go to conduct the interview/survey.

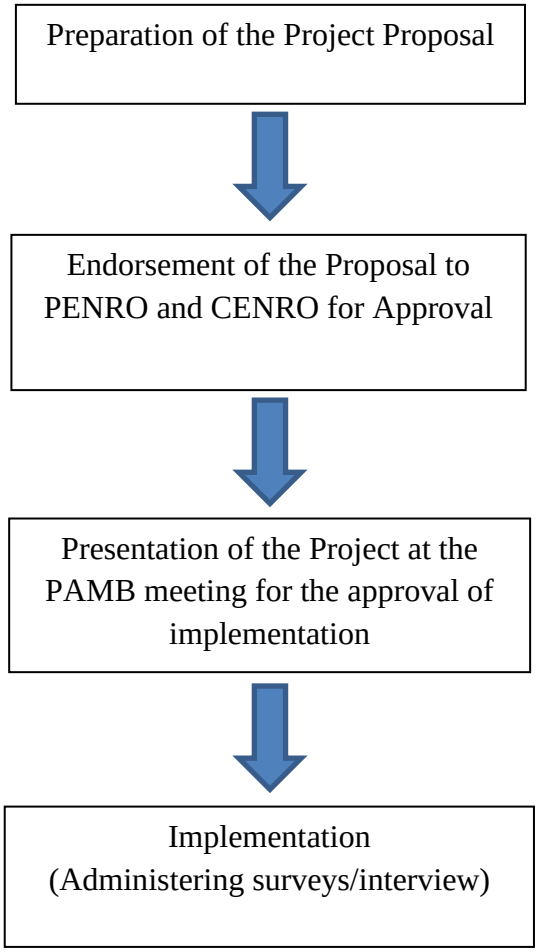
Survey/ Interview

The survey is a two-page form consisting of 33 questions that can be answered in approximately 5-7 minutes. The first part of the survey is about the visitors' demographic information such as permanent place of residence, age, sex, household income, highest educational attainment, and how long did they spend in RSPL. Next set of questions are about visitors' sources of information on how they knew about RSPL, mode of transportation in reaching the place, other places they have visited while in RSPL, reasons for visiting RSPL, features of RSPL that impressed them, if they are willing-to-pay a fee for the improvement of RSPL. The second page of the survey was mostly about the visitors' impression of RSPL, their satisfaction with the maintenance, facilities of the protected landscape such as toilets, interpretative signs, trail markers, directional signs, interpretative literature, condition of trails, pathways, roads, parking areas if they are planning to come back or visit RSPL again or the Province of Bohol in general.

There are two ways of how the survey administered. The first approach was by pen and paper, which is the typical approach. Every visitor needs to stop by at the ranger's station for the briefing and pay for their chosen type of activity. After the activity, the visitors will come back to the ranger station to answer the survey form (voluntary). They were informed about the purpose of the survey and how it will help the protected landscape in improving its services. Some visitors, however, do not have the convenience of time to answer 33 questions, because most of the time, the visit is just part of the tour package. This means that the visitors can only stay at a certain place at a specific amount of time. So, the second approach made to maximize the collection of respondents that was by interviewing the visitors to save their time using a recorder. The same questions asked during the interview. The collection of data happened every day between 9:00 a.m. to 4:00 p.m. (Figure 8 shows the survey form, a two-page survey form).

Flow Chart for Phase 1

This flow chart briefly shows the summary of the process undertaken before the researcher started with the survey/interview.



Brief proposal

Rajah Sikatuna Protected Landscape (RSPL) Visitor Survey

Peter A. Kumble, MLA, PhD
Associate Professor
Department of Land Use and Improvement
Faculty of Environmental Sciences
Czech University of Life Sciences Prague

Based on good practice of trail marking systems all over the World, this leads to a concept of bringing citizens back to nature. Such awareness and personal experience of the public in general helps to promote conservation, to increase the global knowledge about the wildlife and nature, and the importance of protection our environment.

The Czech trail marking system is one of the most advanced and successfully implemented concepts used throughout Europe and enjoyed by the public. Thanks to our long-term presence and cooperation between Czech and Filipino institutions, this system of trail marking has already been employed on Negros Island. We have an extensive experience in visiting the Rajah Sikatuna PL spanning from 2010 to present and we would like to propose implementing a similar system of marking trails there, as we have discussed previously with our colleagues from BISU in Bilar. The BISU Bilar's campus can serve as a pilot area where we can mark trails to demonstrate such an approach.

We propose to DENR that we can conduct a comprehensive questionnaire survey of visitors who make a trip to experience and explore the Rajah Sikatuna PL. We would like to find out if the trails of RSPL will be marked, if this may encourage visitors to increase their exploration of the wonders of the Reserve. Our goal is to learn more about who the present day visitors are, from where they originate, what their expectations are during their visit, what they saw or experienced, and ultimately how to improve this through improved educational information, trail signage, and management practices. We propose to conduct a rapid survey whereby visitors will be asked to read and respond to a printed survey-document upon the end of their visit at RSPL. The survey will contain approximately 30 questions and can easily be completed within 5-minutes. A draft of the survey is attached to this proposal.

Objectives:

- Conduct a questionnaire survey of visitors at Rajah Sikatuna PL;
- Determine the demographic mix of visitors to RSPL, such as age, level of education, income, home location, and the size of family or group accompanying them, etc.;
- Identify the locations at RSPL where the visitor reached and what they learned during their visit, either by tour books, hired tour guides, the web, etc.;
- Learn which landscape features the visitor found most interesting and which areas or features could be improved to become more educational;
- Determine what the visitor's impressions were of the physical site conditions at RSPL, such as roads, parking areas, information signs, comfort facilities, trails and trail surfaces, trail marking, etc.;
- Learn if the visitors felt safe and secure at RSPL. If yes, why and if not, why;
- Determine the level of satisfaction that the visitors experienced, based on their trip to RSPL. Specifically, would they choose to return or recommend it to others? If

there were reasons for being dissatisfied or if they felt discouraged to return to this location in the future, what are the factors that contributed to that result; and

- Conduct a pilot program of marking trails within the BISU Bilar campus landscape.

Methods:

We propose to use a printed two-page survey document containing 33 questions aimed at determining user satisfaction during their visit to the RSPL. The survey will contain a mix of multiple choice and open-ended questions to determine the demographic characteristics of each visitor, what they saw and experienced, what they found important and significant, or what they found to be lacking or in need of improvement.

Team:

Supervisor

Associate Professor Peter Kumble will be responsible for development of the visitor survey document, supervision of the graduate student from CULS who will administer the survey, and guidance in data analyses, and coordination in reporting the results of the investigation. Czech University of Life Sciences Prague (CULS).

Principal co-investigator

Tomáš Jůnek, PhD will be responsible for assisting with on-site project management, guidance in data collection, PR, documentation. Czech University of Life Sciences Prague (CULS).

Philippine co-investigator

Associate Professor Reizel Jose, PhD will be responsible for in-country local project coordination. Bohol Island State University (BISU).

CULS Co-investigator and Field Assistant

Graduate student May Ann Lugtu, a Philippine national, will administer the survey at RSPL. Czech University of Life Sciences Prague (CULS).

Field assistants

BISU student(s) will assist Ms. Lugtu during survey administration.

Timetable:

November 2019: Arrival of the team.

November – December 2019: Survey investigation period at RSPL.

January – February 2020: Analyses of collected data will be processed. Final report for our Philippine partners will be made available.

June 2020: Presentation of results and given to DENR.

Figure 7. Copy of the Proposal prepared by Prof. Peter Kumble

RAJAH SIKATUNA: Visitor Survey

The purpose of this survey is to learn more about visitors and their preferences at **Rajah Sikatuna Protected Landscape (RSPL)** in the Philippines. Professors and students from the Bohol Island State University (BISU) in association with the Faculty of Environmental Sciences at Czech University of Life Sciences in Prague, Czech Republic are evaluating visitor experiences while at Rajah Sikatuna Protected Landscape.

If you agree to respond to the survey questions, you can be assured that the information you provide will be kept confidential and will only be used to enhance future visitors' experiences.

Please return the completed survey to the student researcher scholar at the completion of your visit.

1. Where is your permanent place of residence?
City _____
State (Province or District) _____
Country _____

If you are originally from a country other than the one you now live in, please indicate it here:
_____

2. Including yourself, how many people are travelling with you? _____

3. How many children under the age of 16 are travelling with you? _____

4. What is the highest level of education you have attained?

____ High school or less
____ undergraduate degree (associate or bachelors)
____ graduate degree
____ PhD, M.D., J.D. or equivalent

5. Are you (*circle one*): *Male* *Female* *Transgender*

6. What is your age?

____16 to 19 years
____ 20 to 29 years
____ 30 to 39 years
____ 40 to 49 years
____ 50 to 59 years
____ 60 to 69 years
____ 70 years or more

7. What is your approximate household income in Peso?

____ 520,000 or less
____ 1040,000 to 1560,000
____ 2080,000 to 2600,640
____ 3120,000 to 3640,000
____ 4160,000 or greater

8. How many days did you spend at RSPL? _____

If you did not stay overnight, how many hours did you spend in the RSPL? _____

9. Including this trip, how many times have you visited Bohol? (*leave blank if you are a* Bohol *resident*) _____

If you are a return visitor, please describe why: _____
_____

10. What sources of information did you make use of during your visit to RSPL? *(check all that apply)*

____ self guided tours
____ tour guide books
____ park brochure
____ guided tours
____ visitor center exhibits
____ mobile data from web

11. Which places did you visit while in the RSPL? *(please check all that apply)*

____ Logarita Springs
____ Anislag Springs
____ Mabugnao Spring
____ Aghuban Springs
____ Water falls / cascade
____ Ranger Station viewing wild life
____ Cave sites
____ Viewing deck
____ Hiking trails
____ Camping hut
____ Bird watching
Other *(please describe)* _____
_____
_____

12. Why did you visit RSPL? *(please check all that apply)*

____ general sightseeing, vacation
____ business
____ research project or academic study
____ outdoor recreation
____ education
____ as part of a tour group
____ visiting family and friends
____ on my way to other tourist locations
____ other, please describe: _____
_____

13. Please describe the visual feature(s) of RSPL that impressed you most: _____
_____
_____

14. How did you first become aware of RSPL? *(please check all that apply)*

____ friend
____ family member
____ website / internet
____ word of mouth
____ part of tour package
____ tour book
____ magazine
____ by accident

15. How did you arrive at RSPL? (*check all that apply*)

____ multi-site tours
____ rental vehicle
____ hiking / biking
____ public buses / taxi
____ other, please describe: _____
____ personal vehicle
____ motorbike
____ tour vehicle
____ horseback

16. What other locations did you visit on your trip to RSPL? *(please check all that apply)*
____ Chocolate Hills
____ Loboc River Cruise
____ Butterfly Center
____ Taisier Conservation Area
Other: _____
_____

17. If your visit to RSPL included a tour guide, please rank the tour guide's ability to explain important features of RSPL to you on a scale of 1 to 5, 1 being very low and 5 being very high.

1 2 3 4 5

18. What RSPL features did you find most appealing?
(please check all that apply)

____ scenic beauty; nature
____ RSPL is easily accessible
____ RSPL is remote, "off the beaten path"
____ plant and animal life
____ local culture and customs
____ hiking trails
____ RSPL feels like a safe place to visit
____ good value for money spent
____ friendliness of people
____ other, please describe: _____
_____

19. Please rank your sense of personal safety in RSPL on a scale of 1 to 5: 1 being least safe and 5 being most safe.

1 2 3 4 5

20. If you felt unsafe in RSPL, please describe your reasons why:
_____
_____

21. Is information about appropriate visitor behavior clearly available in RSPL? (*Please circle one answer*)

Yes | *No* | *No information was present*

22. Please describe the following on a scale of 1 to 5, 1 being very poor and 5 being very good:

Condition of RSPL trails and pathways
1 2 3 4 5
Condition of roads leading to the RSPL
1 2 3 4 5
Condition of RSPL onsite parking areas
1 2 3 4 5
Road and information signs
1 2 3 4 5

23. If any of the above functions were poor or could be improved, please describe: _____
_____
_____
_____

24. Please describe the availability of the following in RSPL (*please circle your answer*):

Toilet Facilities
not present *not enough* *just right*

Waste Receptacles
not present *not enough* *just right*

Interpretive Signage
not present *not enough* *just right*

Trail Markers
not present *not enough* *just right*

Directional Signs
not present *not enough* *just right*

Interpretive Literature
not present *not enough* *just right*

25. If you noticed any trash *or* degradation of natural or historic features in RSPL, please describe:
_____
_____
_____

At which locations did you notice the trash or degradation?
_____
_____

26. Please rank the overall care and maintenance of RSPL on a scale of 1 to 5: 1 being very poor and 5 being very good.

1 2 3 4 5

27. Would you be willing to pay a fee to enter RSPL with the knowledge that funds would be used for maintaining and improving site conditions? (*please circle one answer*)

Yes | *Maybe* | *No*

28. What things would discourage you from returning to the RSPL?_____
_____
_____

29. Please rank your overall level of satisfaction with your visit to **RSPL** on a scale of 1 to 5, 1 being least satisfied and 5 being most satisfied.

1 2 3 4 5

30. Please rank how interested you are in returning to **RSPL** again in the future on a scale of 1 to 5, 1 being the least interested and 5 being the most interested?

1 2 3 4 5

31. Please rank your overall level of satisfaction with your visit to Bohol so far on a scale of 1 to 5, 1 being least satisfied and 5 being most satisfied.

1 2 3 4 5

32. Please rank how interested you are in returning to Bohol again in the future on a scale of 1 to 5, 1 being the least interested and 5 being the most interested?

1 2 3 4 5

33. Would you recommend the RSPL to another person? (*please circle one answer*)

Yes | *No* | *I am not sure*

Please explain your reasons:
_____
_____
_____
_____
_____

Thank you for your time – it is sincerely appreciated!
If you would like to receive the results of this survey or to learn more about our work in Bohol, please contact:

Associate Professor Peter Kumble, PhD
Faculty of Environmental Sciences, Czech University of Life Sciences, Department of Land Use and Improvement
Kamycka 129, Prague, 165 00 Czech Republic

email: kumblep@fzp.czu.cz http://www.fzp.czu.cz/en/

Figure 8 shows the survey form, a two-page survey form

Figure 9. PAMB Meeting

Figure 10. RSPL Entrance and Ranger Station. Ranger Station is where briefing happens.

Figure 11. Respondents answering the survey form.

4.4 Phase 2: Pilot Marking System

Finding of suitable Marking site

A private and developing land owned by a retired professor and a former campus director Joe Travero at Bohol Island State University, was found during the search of a pilot study site. It was much easier because there's no need to apply for a permit, which accelerated the process. Mr. Travero calls his place "Oikos". It is used as a recreational area and offering only organic food. Communication signals here is too weak, which is good for guests who seek solitude since it is found inside a forested area.

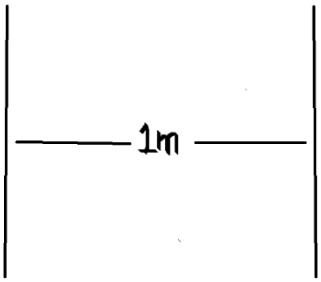
Figure 11. Oikos. Main Site for the Trail Marking

Checking/Surveillance of the Target Site

Before the application of the marking system, the researcher visited the area to identify pathways that can be used and target places/sites that will be seen in each pathway, to know how much and how many paints are needed relative to the area of the pilot area, how to set up the markings, and where we can put the signs and trail marks.

Preparation of Materials

There are two types of paints (spray acrylic paint, and an oil based) utilized to know its longevity and to identify when it requires repainting. The weather in Bohol (Philippines) is almost always raining especially, during October and November. The colors used were green, yellow, and white based on the Czech Trail Marking System. According to Martin Pesler "*The green color is for shorter trails usually within a county. And yellow signs mark shorter trails connecting other more significant and longer trails. "* (Radio Prague International, 2018). The horizontal bars created using hard material (plastic) with dimensions of 10cm x 10 cm, one piece for each color to prevent the color from smudging. The gap between markings (see below) was approximately 1m, with some exceptions, such as when there is no tree to put the paint, or that the next mark cannot be properly seen. Another feature added to building the trail marking system was the signboards, which are made from wood.



The gap between two markings

Figure 12. Materials used in Creating Trail markings.

Establishing the marking System

In establishing the trail marking system, there are two different ways on how to get at Oikos, which is the main site. The first was quite simple: through the yellow pathway, where visitors pass by hope nipa hut. It is noteworthy that processed food is not allowed in the entire site, because it’s a way to keep our body healthy aside from that organic food partnered with some meditation can cure some disease. The green pathway, on the other hand, is the longer path. It is comprised of two points, the peace there is a small river and a great scenic view overlooking a diverse forest and farmlands. Approximately 10 m gaps placed in each point except when there is no tree a tree to put the paint on or the marks cannot be seen properly.

During the creation of the trail markings, Prof. Reizl Jose's (Associate Professor, Ph. D) student helped me in painting and measuring the pilot study site. To make the work faster, a division of labor was organized. While some students (with the supervision of the researcher) were measuring the distance of 1m between trees, some were painting white bars on each tree while some painted green and yellow according to their spot.

Flow Chart for Phase 2

This flow chart briefly shows the summary of the process undertaken in order to complete the pilot study.

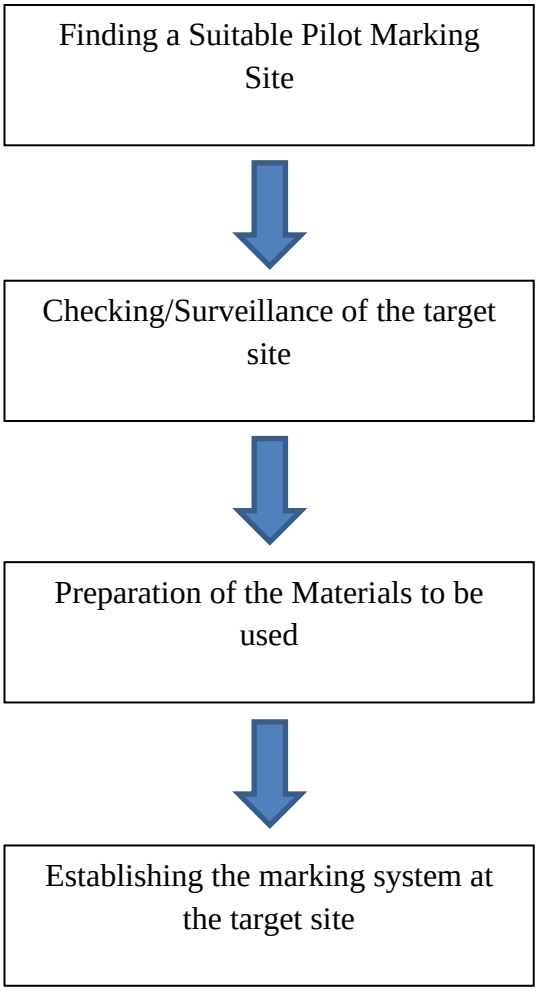


Figure 13. Oikos. Main Site for the Trail Marking

Figure 14, Small Water Body (River)

The pathway leading to this area is easy because it is a flat surface. But visitors can choose not to go here ang go directly to “peace”.

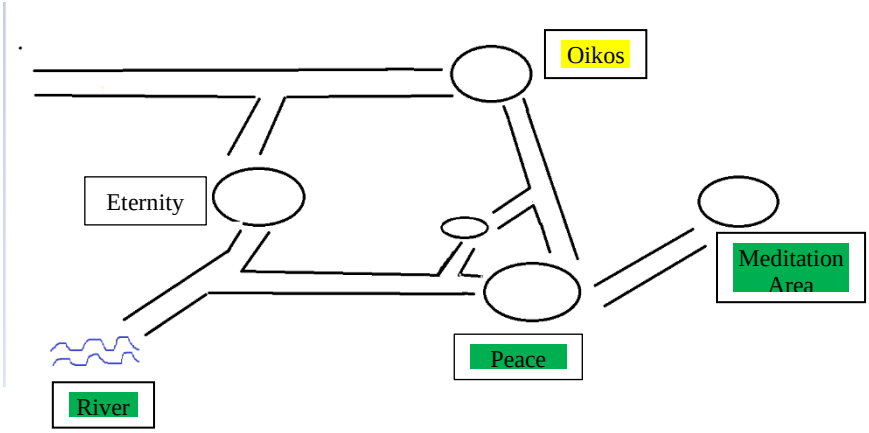
Figure 15. Peace

The trail going to peace is an easy trail. But once you are on the trail going up, the soil is a bit muddy, so it is quite slippery, while the slope is average.

Figure 16. Meditation Area

The pathway leading to this area is a difficult trail. The slope is almost 45 degrees. Since the place is under continuous development, the trail/pathways are not clean. If a hiker chooses to go to the river, the hike will be at least 1.5-2 km. But if they choose to go directly here from the entrance it is more less 500 meters.

Figure 17. Trail Marking Output


Oikos
Eternity
Meditation Area
Peace
River

Definition of Terms:

"The Department of Environment and Natural Resources (DENR) is the primary government responsible for the conservation, management, protection, proper use and sustainable development of the country's environment and natural resources."

"Community Environment and Natural resources Office (CENRO) refers to the DENR Office, headed by a Community Environment and Natural Resources Officer Appointed by the Secretary of DENR, which is responsible for the implementation of DENR policies, programs, project and activities and the enforcement of ENR laws and regulations in the community level."

"Provincial Environment and Natural Resources Office (PENRO) refers to the DENR office, headed by the Provincial Environment and Natural Resources Officer appointed by the Secretary of the DENR, which is responsible for the implementation of DENR policies, programs and projects in the province."

"The Protected Area Management Board (PAMB) is composed of the Regional Executive Director, one representative for Autonomous Regional Government, at least one representative from Provincial and Municipal government, one representative from NGOs/Pos, and at most 3 from ICCs. The PAMB is responsible for making sure that the Management Plan is properly implemented. Originally, the PAMB only make recommendations for approval of DENR but when the revised Implementing Rules and Regulations was released in 2008, the PAMB gained power to make decisions except for granting of permits and setting of fees."

5 Results

This chapter presents the results and statistical analysis from the survey that was administered at RSPL whether a specific categorical variable is independent or not from another variable. There was a total of 133 (n=133) respondents for the survey and interview in a span of almost three months, with a response rate between 97.74%-95.48%.

5.1 Demography

The survey is a two-page form consisting of 33 questions that can be answered in approximately 5-7 minutes. The first part of the survey is about the visitors' demographic information such as permanent place of residence, age, sex, household income, highest educational attainment, and how long did they spend in RSPL. The next set of questions are about visitors' sources of information on how they knew about RSPL, mode of transportation in reaching the place, other places they have visited while in RSPL, reasons for visiting RSPL, features of RSPL that impressed them, and whether they are willing-to-pay a fee for the improvement of RSPL. The second page of the survey was mostly about the visitors' impression of RSPL, their satisfaction with the maintenance, facilities of the protected landscape such as toilets, interpretative signs, trail markers, directional signs, interpretative literature, condition of trails, pathways, roads, parking areas, and whether they are planning to come back or visit RSPL again or the Province of Bohol in general.

Among the 133 respondents, 2.26% chose not to disclose their place of residence. The visitors were group according to continents. As we can see from the pie cart (figure 1), most of the visitors are from Europe which consist of 69.53 % of the data, while 57.44 % are from Asia, and the remaining 4.3% are from North America.

Continents	Name	Codes	Number of Visitors
AF	Africa	1	0
NA	North America	2	4
AUS	Australia	3	0
AN	Antarctica	4	0
AS	Asia	5	57
EU	Europe	6	69
SA	South America	7	0

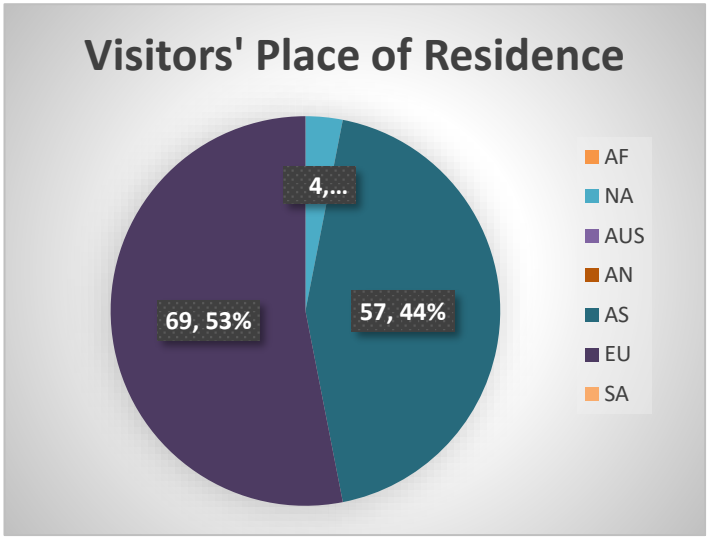


Figure 1 shows the demography of the respondents.

Majority of the respondents have a graduate degree. Out of 133 respondents, 47.69% or 62 respondents have graduate degree, while 20.77% are undergraduates, and 18.46 have masters' or doctoral degree. Only 13.08% of the respondents are high school graduate or less. Figure 2 shows the highest educational attainment of the respondents/visitor.

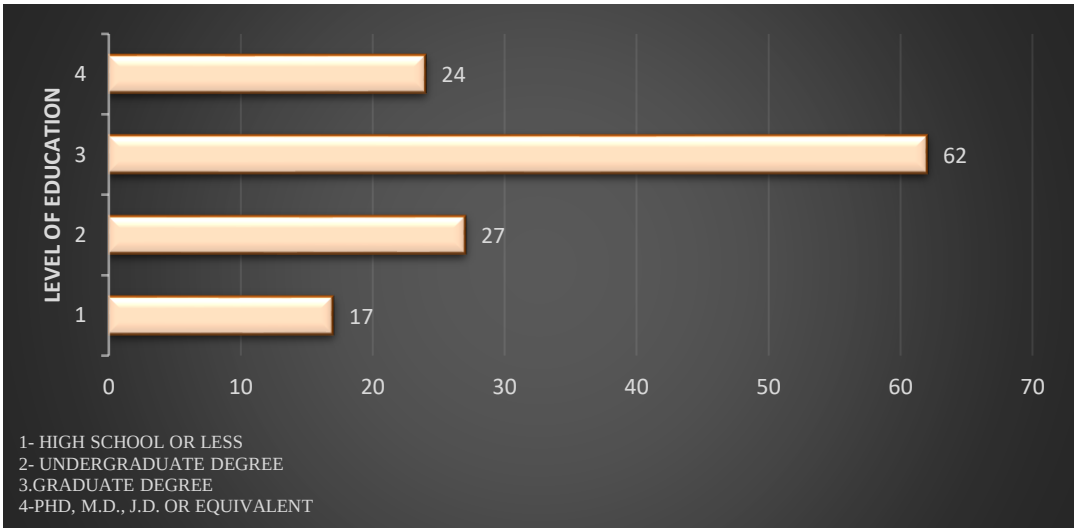


Figure 2 shows the highest educational attainment of the respondents.

More than half of the respondents are female (53.54%) and 46.46% are male. Figure 3 shows in a pie chart the percentage of female and male respondents.

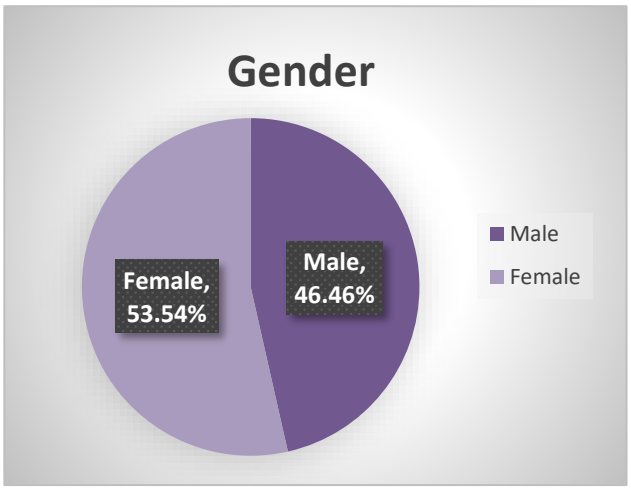


Figure 3 show the proportion of Female and Male respondents.

The age of 30-39 is the most common age group of the respondents, which composes 37.12% of the population. The rest of the respondents fall under the age group of 50-69. None of the visitors are aged 70 and above (see figure 4).

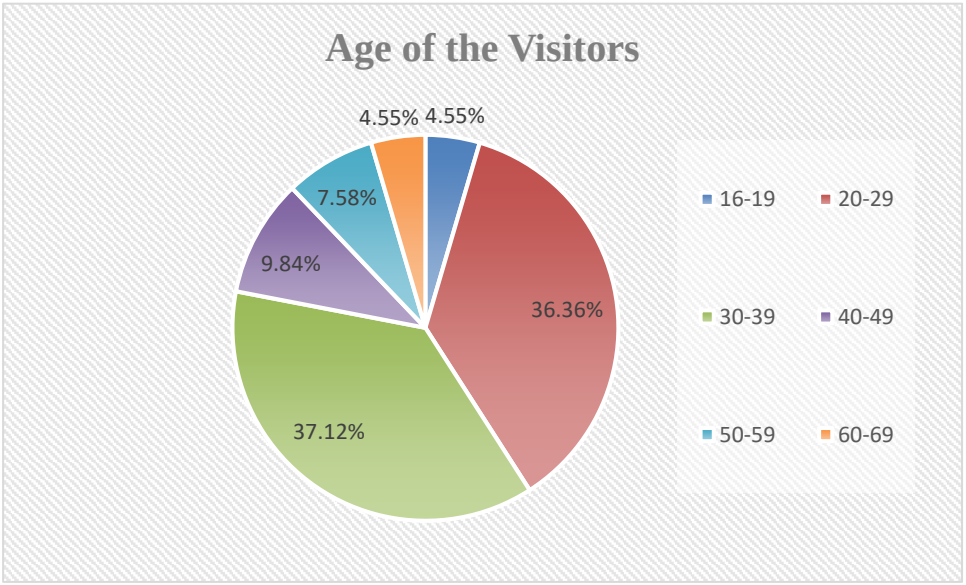


Figure 4 shows the ratio of each age group

5.2 Sources of Information

On the sources of information utilized by the participants during their visit at RSPL, this part of the survey can have more than one answer. On this score, the

most abundant answer was guided tours. This means that information is obtained from the tour company while park brochure and visitor centers composed of only small proportion of the source of information utilized by the respondents (Figure 5)

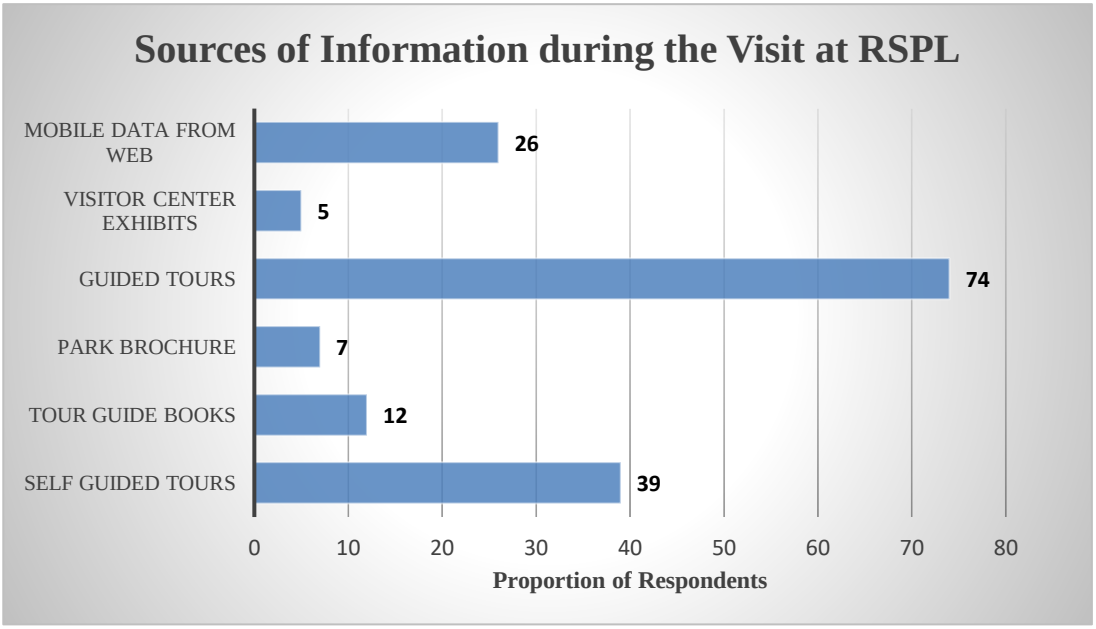


Figure 5 shows the different sources of information used by the respondents.

Majority of the respondents reach RSPL using a tour vehicle. This means that tour companies contribute greatly to the number of visitors visiting RSPL.

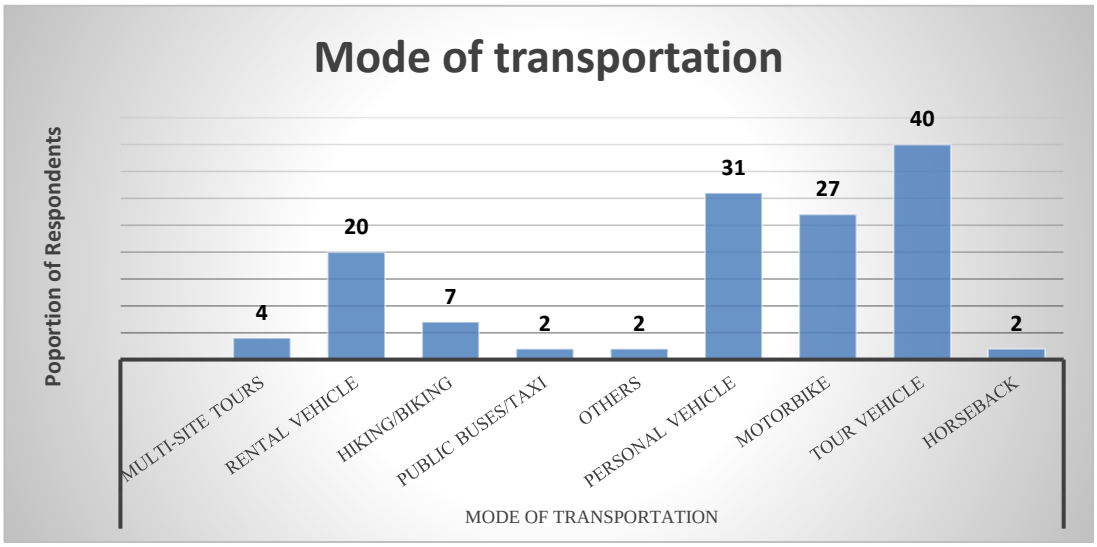


Figure 6 shows the different types of transportation used by respondents to reach RSPL

As the participants rank how safe they felt while staying in RSPL, 62.02% says they felt really safe during their stay, 29.46% of respondents safe in staying in the RSPL while 0.76% felt fairly safe and 7.75% felt safe in average. Mean is 32.25 and mode is 5.

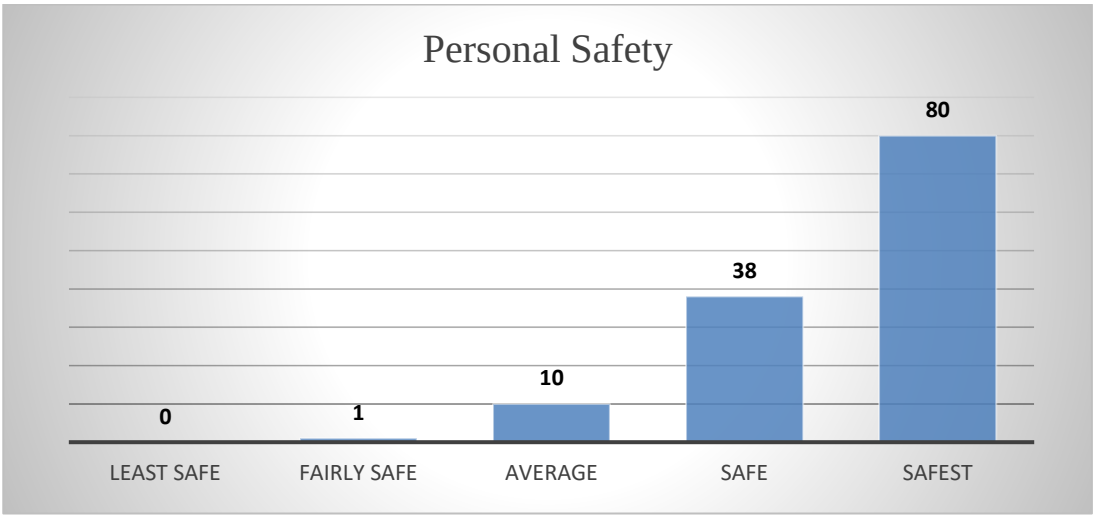


Figure 7 shows the level of safety as perceived by the visitors.

According to most visitors, a superior portion of respondents noted that the nature (forest ecosystem), wildlife (monkeys, lemurs and other endemic species residing in RSPL) are just some of the appealing feautres of RSPL. Furthermore, they also stated that place is very relaxing and conducive as a stress reliever and peaceful while 28.57% chose to refuse to answer this part of the survey.

While 40.16% of the respondents are likely to return back to RSPL and only 1.57% of the respondents are least interested to come back. Mean is 25.4 and 5 as the mode.

5.2 Test of Independence

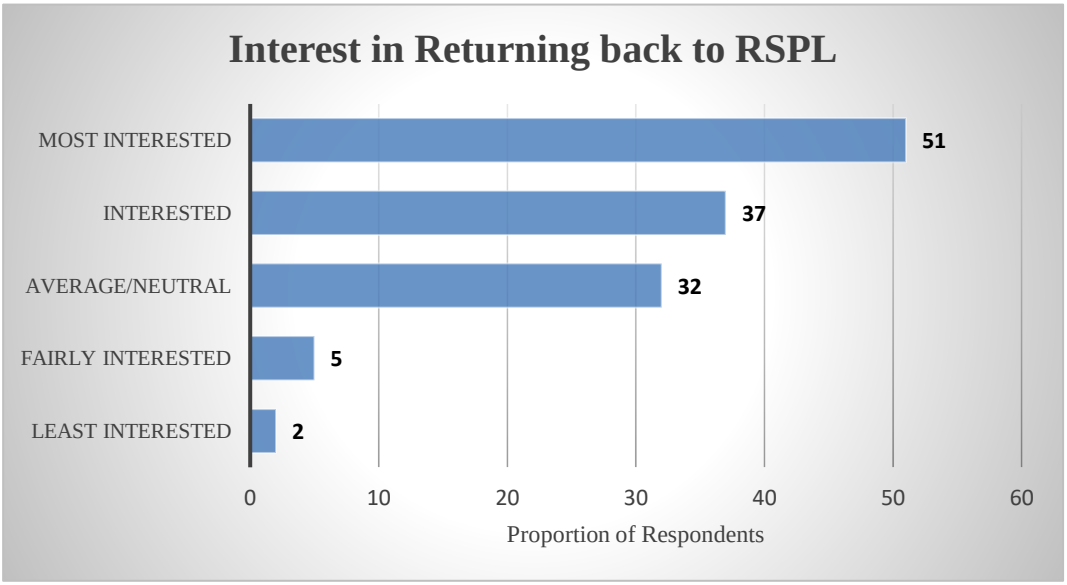
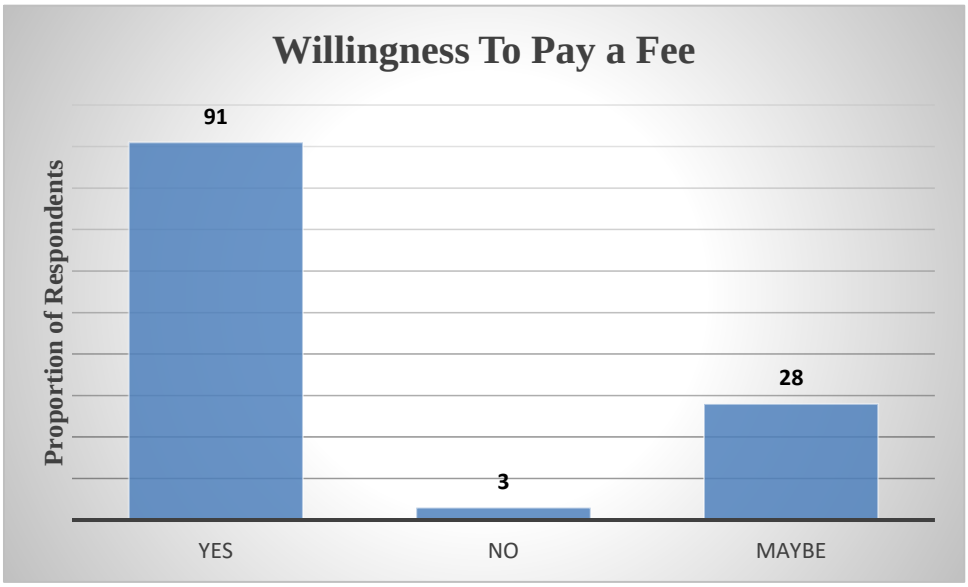


Figure 8 shows the interest of the respondents I returning to RSPL.

Willingness to pay a fee has a response rate of 91.73%. Fortunately, 74.59% of the respondents are willing to pay a fee (entrance, activities, accommodation, food) in order to further develop and improve of the protected landscape. Only 2.46% of the respondents refuses to pay a fee, and 22.95% are uncertain. Willingness to pay a fee was associated with level of education. P value is 0.02, which is lower than the value of alpha of 0.05, thus rejecting the null hypothesis of independence. This would indicate that visitors with higher educational attainment understands why it is necessary to pay a fee that would be used for further improvement of the facilities and other services offered by the protected landscape.

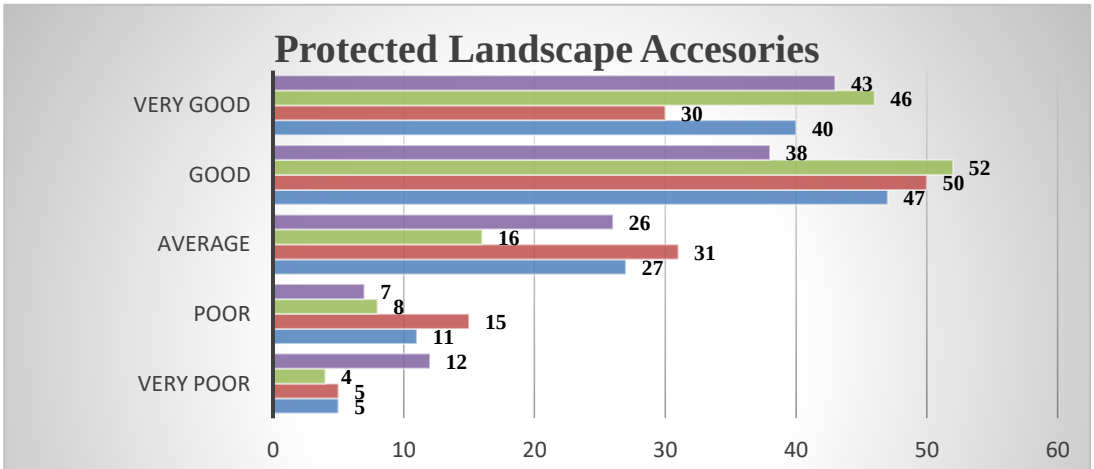



```
        Pearson's Chi-squared test

data:  WTPxEduc$`Are you willing to pay a fee?` and WTPxEduc$`Highest Level of education`
X-squared = 22.837, df = 12, p-value = 0.02914
```

Figure 9 show the relation of level of education to willingness to pay.

The figure below (Figure 10) shows that the visitors' perceived the condition of the roads leading to the RSPL, trails and pathways, parking areas, and roads and information signs as above average. Many of the respondents commented that the roads going to RSPL or the Magsaysay Park are "slippery".



	Very Poor	Poor	Average	Good	Very Good
Roads and Info Signs	12	7	26	38	43
Parking Areas	4	8	16	52	46
Roads Leading to RSPL	5	15	31	50	30
Trails and Pathways	5	11	27	47	40

Figure 10 shows how visitors perceived the Protected Landscape Accessories.

Figure 11 shows the availability of the following facilities inside of RSPL. Most of the respondents answered that facilities like toilets, bins, trail markers, Interpretative signs, directional signs and interpretative literature.

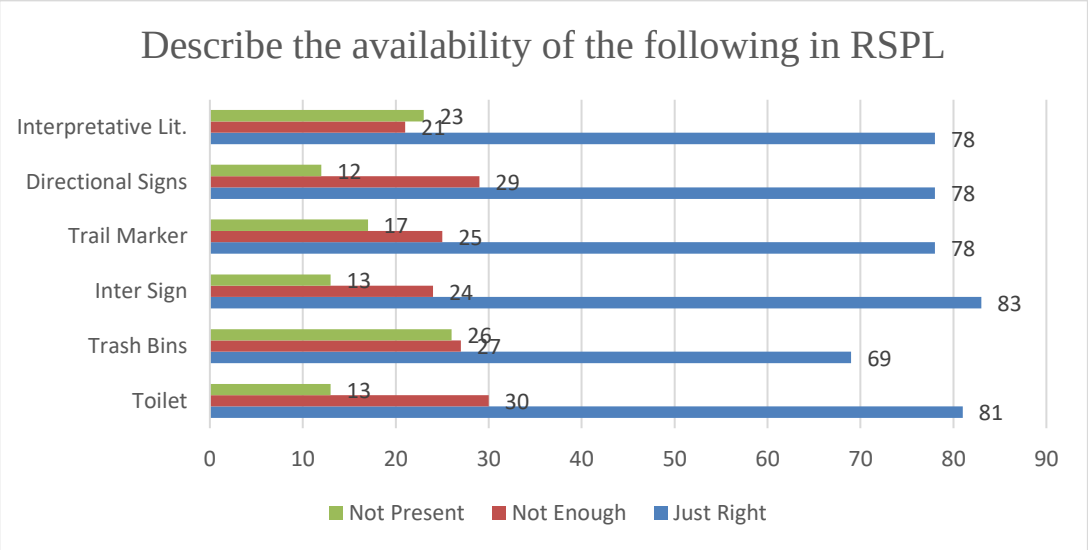


Figure 11 shows the availability of the following facilities.

The following graph shows the most visited sight in RSPL. However, most of the respondents did not know that they are inside a protected area or in RSPL itself or what they went for.

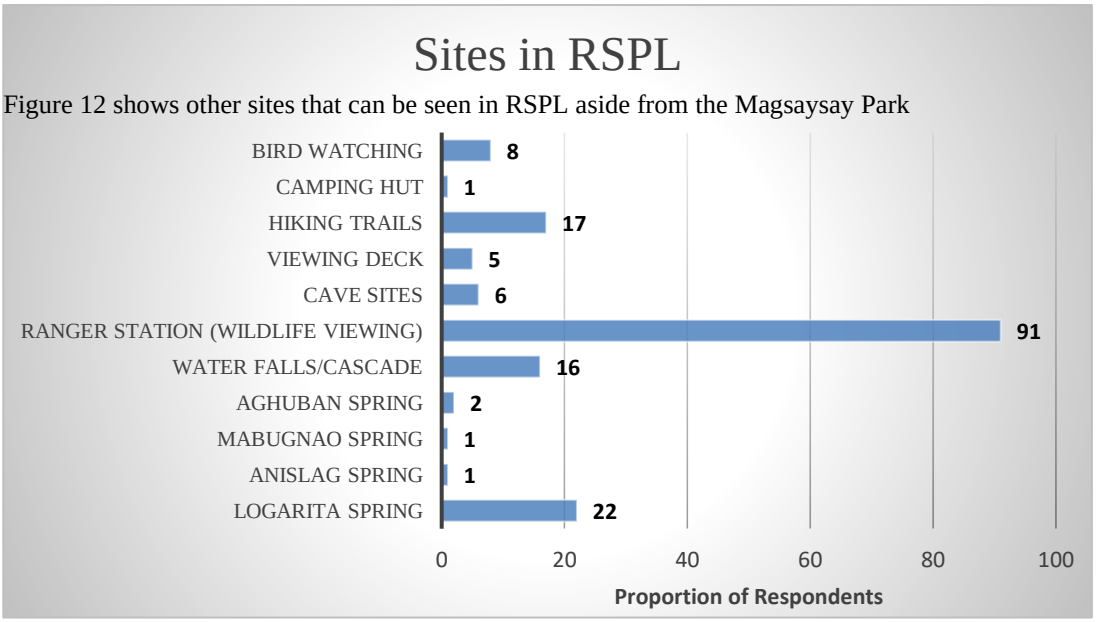


Figure 12 shows the other sites that can be visited inside RSPL.

At the end of the survey, the visitors were asked if they would recommend RSPL to their family, friends, and colleagues. 94.49% of the participants says that they will recommend RSPL, while only 2.36% says that they will not recommend it and the remaining 3.15% are not certain as to whether recommend RSPL.

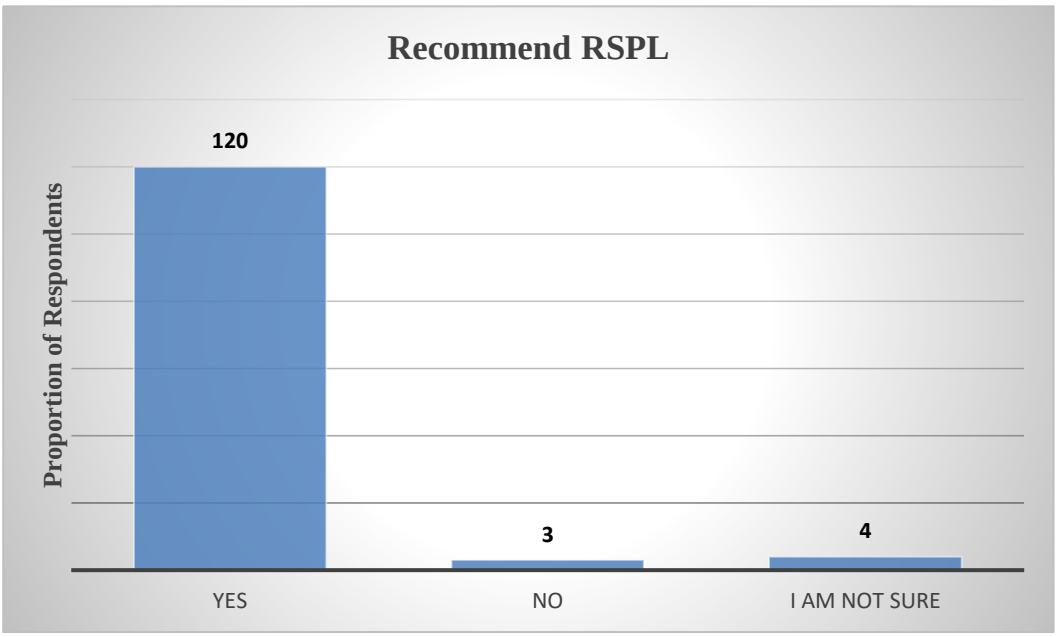


Figure 13 shows the number of visitors who would recommend RSPL.

Pearson‘s Chi-squared test between the level of satisfaction during the visit in RSPL and the overall care and maintenance of RSPL. The result shows that p-value is 3.644e-06. Since our P-value is lower than the value of alpha 0.05 therefore we can reject our null hypothesis.

```
        Pearson's Chi-squared test

data:  table(satis$`Level of Satisfaction`, satis$`Overall care and maintenance of RSPL`)
X-squared = 54.935, df = 16, p-value = 3.644e-06
```

An association between personal safety and level of satisfaction is proved to be significant with a p-value of 0.006 thus, rejecting the null hypothesis.

```
        Pearson's Chi-squared test

data:  satisfactionxreturningxoverall$`Rank Personal Safety` and satisfactionxreturningxoverall$`Level of Satisfaction in visiting RSPL`
X-squared = 33.329, df = 16, p-value = 0.006682
```

Another association tested between the visitors interest in returning to RSPL is dependent on the level of satisfaction of the respodents during their visit. It is shown by p-value of 2.23-16 which is much lower than the alpha value, rejecting the null hypothesis.

```
        Pearson's Chi-squared test

data:  satisfactionxreturningxoverall$`Interest in Returning to RSPL` and satisfactionxreturningxoverall$`Level of Satisfaction in visiting RSPL`
X-squared = 219.37, df = 20, p-value < 2.2e-16
```

An independence test between the condition of trails and pathways and visitor wanting to come back in RSPL is not significant, thus null hypothesis is true.

```
        Pearson's Chi-squared test

data:  table(Results$`Trails & Pathways`, Results$`Coming back in RSPL`)
X-squared = 32.465, df = 24, p-value = 0.1159
```

An independence test between the condition of the roads leading to RSPL and visitors wanting to come back in RSPL is not statistically significant. Thus the null hypothesis remains to be true. With a p-value higher than the value of alpha 0.05.

```
        Pearson's Chi-squared test

data:  table(Results$`Roads leading to RSPL`, Results$`Coming back in RSPL`)
X-squared = 32.369, df = 24, p-value = 0.1181
```

On the other hand, an association between the condition of RSPL‘s onsite parking areas are statistically significant with the visitors wanting to come back in

RSPL. Calculated p-value is 0.0003076 which is lower than alpha value of 0.05. Thus, the null hypothesis is rejected.

```
        Pearson's Chi-squared test

data:  table(Results$`Parking Areas`, Results$`Coming back in RSPL`)
X-squared = 55.056, df = 24, p-value = 0.0003076
```

6 Discussion

The general goal of this study is to adapt the Czech Trail Marking System and apply it in Rajah Sikatuna Protected landscape since marking systems are non-existent.

6.1 Tourism and Strategies in Managing Trails

The data gathered in this study can be used for further in-depth analysis in adapting the Czech Trail Marking System and implementing it in RSPL. Utilizing the data gathered in this study can be a factor on how to improve the facilities and other services offered by the protected landscape.

When a program for managing tourism impacts, needs, and strategies is well-developed, the interrelationship between tourism, conservation of biodiversity, and livelihood is prosperous, often resulting in more opportunities and benefits to the local community (Nyaupane and Poudel 2011). While 70% of the respondents indicated that they are more likely to come back to RSPL, this has a great positive impact on its tourism. They can visit the area without the tour company and can try other activities. However, it is critical that RSPL management respond to the needs and identified deficiences at the site as noted in the visitor survey.

A trail marker, like any directional sign that we observe while driving an auto, riding a bicycle, or hiking in a park provides information regarding the trail (distance, conditions, descriptions of places, etc.). The Czech trail marking system described in this thesis is a unique, organized system of arrow signs and excellent maps. It has been adapted in other countries such as Romania, Ukraine, and Negros Island in the Philippines, however a sublicense is necessary to obtain to mark the trails the same way (Aja Kejdušová, 2019). Trails provide important opportunities for people to become physically active (Rosenberger et al., 2009) through exploration of new landscapes, while having an increased understanding and sense of safety of such places.

It is said that one of the key elements to manage trails is through communication, both verbal and posted. By communicating with the visitor through educational boards, and posters managers can diminish off-trail users. These are some of the most useful and effective ways of educating the public (Marynowski and

Jacobson, 1999). With the use of social media, one can escalate awareness and education to visitors and local people. Communication and codes of practice are also another way, while mobile digital technologies can be used to send text alerts about wildlife (Leveque, 2015).

6.2 Benefits of Recreational Activities

Physical inactivity, overweight, and obesity is highly associated with chronic diseases, diabetes, heart disease, and cancers (e.g., endometrial, breast, and colon cancers) (Rosenberger et al. 2009), while an active lifestyle can help in combating these diseases (Mokdad et al., 2003; Rosenberger et al., 2009). Other benefits of physical activity, according to Landers (1997) and Fontaine (2000) is decreasing depression, anxiety, and panic disorder, along with increasing energy and vigor, self-esteem, positive affect such as enjoyment and happiness. Visiting parks has benefits to a person's physical health, psychological, emotional, mental health, social benefits, economic benefits, and environmental benefits (Bedimo-Rung et al.,2005). This is in line with the results as to why visitors will recommend RSPL to their colleagues, family, and friends: mainly because of nature, attractions surrounding the RSPL; it is relaxing and a good stress reliever. Rosenberger et al., 2009 results showed that park managers and recreation providers could affect the health and well-being of Oregon's residents by providing recreation infrastructure such as hiking trails and access to sports facilities.

6.3 Protected Areas

Conservation and preservation of the environment and biodiversity are the fundamental reasons for the establishment of marine and terrestrial protected areas (Dharmaratne et al. 2000). The findings of the study show that the wildlife and nature were the most appealing feature of the protected landscape.

Protected areas can self finance their operations by using use and non-value. Use value is the most common expressed by the willingness to pay to access the protected area to enjoy its attributes for recreational purposes. This will cover the operating and maintenance expenses. The increasing interest in nature based or ecotourism globally is a means to self-financing protected areas (Dharmaratne et al. 2009). Individual willingness to pay for the preservation of unique species and

habitats in the world has been estimated to provide a huge new flow of finance (Pearce 1994; Pearce and Moran 1994). Another way to get financial support for PA is a voluntary contribution and solicitation to the public.

Inversely, Leberger et al. (2020) found out that there is more loss within PA's boundary compared to the unprotected forest in Eastern Europe, the Caribbean, Mesoamerica, and North Africa subregions, while higher protected forest (categories I-III) are not so effective in reducing forest loss than categories IV-VI in Caribbean, North-East Asia, and West Africa. This is because of little protection (known in Asia), ineffective implementation, an increase of yam farming, roads network extension, and population density.

Protected areas socio-ecological success lies to the involvement, awareness and support of the public (Crandall et al., 2018; Lundquist and Granek, 2005; Pollnac et al., 2001). For a successful and functional reserve, the key element is to keep the public aware of what they are seeing and why it is important or valuable within the greater context of natural systems. Moristch et al. (2019) conducted a survey to assess the public awareness on the State Marine Reserves on the Central Coast of California. Their results showed that 90% of the visitors stated that marine protection is important to them, willing to follow the rules if they knew they are in a reserve but guidance to do it. According to Boerschig et al. (1993) Education is one way of changing one's behavior. An in-depth understanding and appreciation of the problem is important for knowledge to effectively change behavior. For conservation efforts to be successful, its nature and goals must be widely known, understood, and accepted. So is public support being indispensable. To engaged public to support these conservation efforts, protected areas are important their contribution and nature conservation beget to people. In order to promote proper understanding of conservation while diminishing behavior that damages the environment, developing environmental information and better connection about the value of protected areas is imperative (Booth et al., 2009).

To effectively engaged local people to cooperate with sustainable use and conservation of natural resources, an in-kind incentive is necessary because it helps local people to combat obstacles like training and transparency in the allocation of financial incentives (Travers et al., 2019; (Irvine et al., 2016). On the other hand, if local people will bear the costs of those activities, without receiving any benefit, they

may be unsupportive (Kline, 2001; Lackey, 2006). Thus, there is a recognized willingness to pay for services, however they benefit must be recognizable.

6.4 Survey/Interviews

The results of the visitor survey found that guided tours are the most common source of information of the respondents during their visit in RSPL. While during the interview, some of the respondents said that "there are not enough signs on how to get to the park" another one stated that “little information is available about the park and other activities". The protected landscape offers, aside from viewing and feeding the Macaque, bird watching, forest hiking, and night safari. Feeding the monkeys or visiting the Magsaysay Park is the most visited activity inside of the RSPL. This activity is just one of the many activities offered by the tour companies. Unfortunately, all other activities not introduced to visitors. Alongside with interviews and surveys administered to the visitors, the researcher also decided to inquire to the local guides and eco-tourism officer for further details about the RSPL. Tour companies have allotted specific lengths of stay in each of their itineraries. Receiving some commissions in each establishment is tantamount. Thus, a small amount of commission is gain in RSPL compared to other private establishments, which is why visitors are only staying for at least 30 minutes. Some respondents even suggested that "RSPL should coordinate to tour companies" because they will be very much interested in doing other activities offered by RSPL.

They also do not know what is RSPL, what it stands for and that it is a protected landscape. Rosenberger et al., 2009 Oregon Parks and Recreation Department (OPRD) developed a trail website that contains information on the location, accessibility, and attributes of trails in Oregon. This approach will lead to the rising awareness level of people of trails and other recreation resources. A partnership with health-related organizations, schools, and tourist agencies can help in disseminating information concerning physically active lifestyles.

Based on the results presented, education is associated with respondents WTP in line with Bigerna et al. (2019) results that educational levels were imperative predictors of the visitor’s WTP suggesting that structured education programs can

yield to changes of behavior. The results show that the level of education can greatly affect the visitor's willingness to pay. (Lindberg & Huber 1993; Laarman & Gregersen 1996) stated that WTP afflicts visitation, management purposes, and benefit of the visited area. The fund collected from this can efficiently promote and manage tourism.

Most of the respondents are not aware what RSPL stands for, what is RSPL, and that it is protected. To engage the public to attain the goals of protected areas, an awareness of the conservation activities taking place, of why protected areas are important and of the contribution that they and nature conservation make to wider society (Booth et al. 2009). Tangible benefit is one factor for local people in cooperating to achieve conservation goals at the same time, empowering them in the decision-making process, showing transparency. Providing education will diminish the level of threat for conservation, and they will be more aware of the importance of conservation (Mbanze et al., 2019). Lawson et al., 2016 proved that an awareness of the visitors and the public is indispensable. According to their results, respondents will comply with the rules and regulations if they only knew that their actions cause damage to the environment. Consistent dissemination of information, signage, and management intervention throughout the trail system is fundamental to guide guests of dos and don'ts. Furthermore, their study provides evidence that educational messages combined with a physical barrier can effectively influence behavior and significantly reduce UT usage from baseline control conditions.

Furthermore, educational messages with an awareness of consequences is one example wherein visitors are informed about the impacts of off-trail hiking. Aside from this, an "ascription of responsibility" is another way to connect with visitors by instilling the sense of responsibility to each visitor on their environment (Schwartz, 1975; Van Liere and Dunlap, 1978). On the other hand, Winter (2006) claimed that "injunctive-proscriptive" wording (e.g. "Please don't go off the established paths and trails, to protect the sequoias and natural vegetation in this park") was also effective in keeping visitors on the trail than prescriptive (encouraging positive behaviors) or descriptive (telling visitors what other visitors do) messages. While an attribution-based educational message (e.g. "Your feet have trampled the vegetation on this island. Please stay on the main woodchipped trail") was effective in keeping visitors on formal trails than a non-attribution plea message according to Bradford and

McIntyre (2007). Hockett et. al (2017) suggests that Personal Contact treatment was the most successful in reducing off-trail travel mixed with other techniques. Other studies (Fazio, 1979; Oliver et al., 1985) supported the same conclusion that personal communication ensures and leave greater impact to visitors. This gives the visitors to ask and clarify issues that are not well understood. Bradford and McIntyre (2007) suggest that the location where educational messages were placed highly affects and reduces the number of off-trail users. There is a reduction of approximately 65% of off-trail users when the signs placed at the intersection of formal and informal trails compare to when signs placed at an information booth.

The researcher had the opportunity to explore the place, try out activities, and monitor the vicinity. If visitors chose to hike and do bird watching, it is a must that local guides will accompany them for the fundamental reason that the probability of the visitors getting lost inside the forest is high. First, trail markings are not existent. Second, signboards are scarce. There is no information on where the path is leading most of the pathways are not clean (high grasses). In turn, the local community can earn from this since they receive, even a small amount, from the fees and tips from the visitors. Respondents reported that there are not enough wasted bins in the area due to the fact that the protected landscape has a “pocket in, pocket out” rule.

Bradford and McIntyre (2007) suggest that the location of signs where educational messages placed can strongly affect and reduce the number of off-trail users and better to put them where decisions made off-trail.

According to the open-ended question on what they can suggest on how to improve the place one respondent stated that “Informing of all places to see besides the monkeys”. Improve roads and parking areas roads are very slippery especially when its raining. Not many signs in the park. “Direction to the nature reserved could be improved, more visible.” “better description for the right direction and the roads” roofing of the parking lot” “It would be good to have the phone number on the internet and in the brochure as we tried to call to ask for more information, particularly about the night safari.” “We were not sure if we took the right road because there were no signs.”

There is a high-quality demand for recreational opportunities and services. Another factor that affects visitor WTP is a quality service because they see that their

money is well-spent. Technology and the internet give almost everyone the convenience to attain information about protected areas and travel options. *"However, many protected area agencies, especially those in the developing world, are not yet able to maintain sophisticated Internet web sites"* instead, private sectors are the leading providers of information. When private sectors are the leading information providers, the protected area will have less power over the accuracy of the information and unable to support park management goals and objectives.

Personal security and safety is an imperative factor that could affect tourism. It is important to build a positive reputation for tourists resulting in building their confidence in the area. Once a country has a negative reputation, it will affect the appeal of protected areas to tourists. Primarily, protected areas established to preserve some types of biophysical processor conditions such as a wildlife population, habitat, natural landscape, or cultural heritage, such as a community's cultural tradition. Tourists visit these areas to learn and acknowledge the values for which the area was established and to gain personal benefits. Tourism in protected areas produces benefits and costs (Eagles et al., 2002).

Some respondents are kind enough to leave some suggestions on how to provide visitors a quality service. The top concern is the slippery road. There are two ways on how to reach the Magsaysay Park first is by car, the second is by foot. But most of the respondents, estimated ¾ chose to go by car. This is affected by several factors like not enough time to stay, part of the package tour, and maybe they are too lazy to walk. Although the path or the road going to the park has a steep slope and slippery. Furthermore, it is a one-way road, local guides, and the park itself does not possess any equipment or warning signals to recognize if a car is on the other end. The cellular signal inside the park is also too weak.

Potential Benefits of Tourism in Protected Areas	
	Benefits
Enhancing Economic Opportunity	Increases jobs for local residents
	Increases income
	Stimulates new tourism enterprises, and stimulates and diversifies the local economy
	Encourages local manufacture of goods
	Obtains new markets and foreign exchange

	Improves living standards
	Generates local tax revenues
	Enables employees to learn new skills
	Increases funding for protected areas and local communities
Protecting Natural and Cultural Heritage	Protects ecological processes and watersheds
	Conserves biodiversity (including genes, species and ecosystems)
	Protects, conserves and values cultural and built heritage resources
	Creates economic value and protects resources which otherwise have no perceived value to residents, or represent a cost rather than a benefit
	Transmits conservation values, through education and interpretation
	Helps to communicate and interpret the values of natural and built heritage and of cultural inheritance to visitors and residents of visited areas, thus building a new generation of responsible consumers
	Supports research and development of good environmental practices and management systems to influence the operation of travel and tourism businesses, as well as visitor behaviour at destinations
	Improves local facilities, transportation and communications
	Helps develop self-financing mechanisms for protected area operations
Enhancing Quality of life	Promotes aesthetic, spiritual, and other values related to well-being
	Supports environmental education for visitors and locals
	Establishes attractive environments for destinations, for residents as much as visitors, which may support other compatible new activities, from fishing to service or product-based industries
	Improves intercultural understanding
	Encourages the development of culture, crafts and the arts
	Increases the education level of local people
	Encourages people to learn the languages and cultures of foreign tourists
	Encourages local people to value their local culture and environments

Table adapted from Eagles et al. World Commission on Protected Areas (WCPA) Best Practice Protected Area Guidelines Series No. 8 IUCN – The World Conservation Union 2002

7 Conclusions and Recommendations

A trail marker provides information regarding the trail (distance, conditions, descriptions of places, etc.) Czech trail marking is a unique, organized system of arrow signs and excellent maps. It is adopted to other countries like in Romania, Ukraine, and Negros Island in the Philippines. Although a sublicense is necessary to obtain to mark the trails the same way (Aja Kejdušová, 2019). Trails provide important opportunities for people to be physically active (Rosenberger et al., 2009).

There are many different factors you need to take into consideration before its implementation, such as the cost or expenses, and you need to have the whole area managed, maintained, and monitored. To ensure that the trails and pathways are not degrading. Multiple approaches work well in guiding the visitor around the places. Otherwise, the undesignated trails will be prolific in the area, destroying vegetation and disturbing the wildlife. Cooperation from the local people can help in achieving the goals and objectives of the protected landscape, but education is crucial for them to understand its purpose. For instance, the local guides in RSPL are previous poachers. They poached Monkeys, lemurs, and other wildlife in the PL for survival. The state educates them about the possible threats of poaching to wildlife through organization and encouraged them to train as a local guide and underwent a series of seminars.

Protected area managers can make a blueprint of the entire place and identify the points or places where they can put up the trail markings. But planning is indispensable as monitoring, maintenance, and management. Identify the pathways and where to put the trail markings without disturbing and harming any wildlife and vegetation because this will conflict with the primary objective of the protected landscape. Survey the place for possible birds and other wildlife that are ground dwellers and create a trail free habitat for this species to keep them undisturbed. Most of the birds residing in this PL are endemic and poses some threats to their existing population. The composition of the vegetation must be surveyed, and part of the planning phase in creating or building the trail marking system.

Needless to say, that protected landscape source of funding is from the tourist, so a quality service should be achieved for the visitors' to feel that money is well-spent. While 62.02% of the visitors felt safe while in RSPL, enhancing the condition of the roads and investing in signal or warning signs for the drivers going in and out of the Magsaysay Park will improve the visitors' experience. A significant number of respondents stated that there are enough facilities offered by RSPL, but most of them did not have the time to check the place, and most visitors did not stay for more than one hour.

Tour companies and the protected landscape should develop mutualism and reach an agreement that will be financially beneficial for both parties and end "political play". This act will help in creating more funds and job opportunities for the local people instead of receiving 45% of 100 Php. The protected landscape can utilize this fund in enhancing its facilities and the creation of the trail marking system. With an estimated area of 10, 452 hectares, a lot of work, effort, and energy is necessary to make it work. This development will increase the visitation in the protected landscape. Tourists can freely navigate inside the RSPL and explore the deepest part of the forest. Instead of guiding the visitors, local guides can exploit their energy in regulating depreciative behaviors like hikers using off-trails. A series of seminars and training can provide to local guides in supervising trail users not to use undesignated trails. A lot of educational messages and signs boards should place in the area to avoid the proliferation of UT. They can also monitor the area for the prospect formation of UT.

RSPL managers and coordinators should develop some strategies and techniques on how to make a well-advertised place. Also, to promote other adventurous activities that may interest tourists such as bird watching, night safari, and visiting the viewing deck. But first, the park should work on the pathways and do some clearing of grown grasses on their trails. Some educational activities to promote the conservation of the environment can help too. Besides, some educational boards about the presence of flora and fauna are a good additional aesthetics inside the PL. This way, visitors will be well aware of the species present in the area for professional bird watchers, and some are botanists and biologists trying to do some observation in the area.

A mandatory briefing upon entering the PL must undertake to keep the visitors aware where they are, why it is a protected landscape, and the prohibited things during the visit. A simple video will suffice, as local guides will be on their "spot" to provide more information to the visitors. Some studies conducted in RSPL regarding the composition of flora and fauna and the DENR can use this information in making the educational signs.

Due to the increasing population of obesity in the Philippines, park managers and coordinators can utilize this cause to promote health-related benefits from outdoor activities like hiking. Aside from physical health benefits, other benefits are psychological, social, economic, and environmental benefits.

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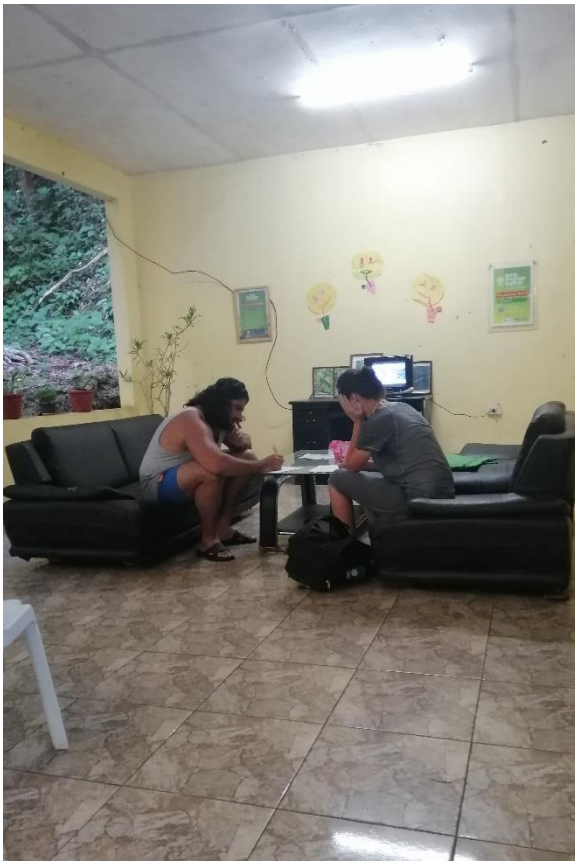
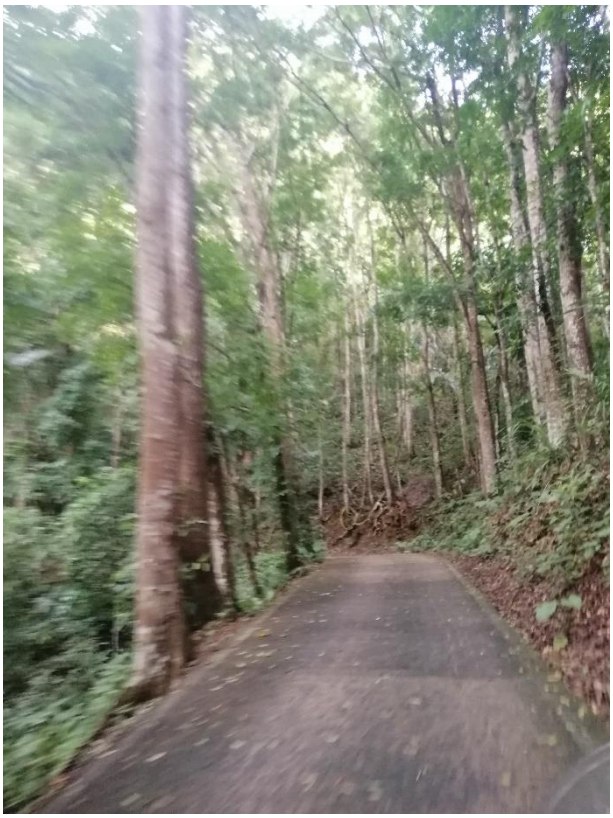
9 Appendix 1

Appendix 1-1: Images of Respondents answering the Visitor-Survey Form



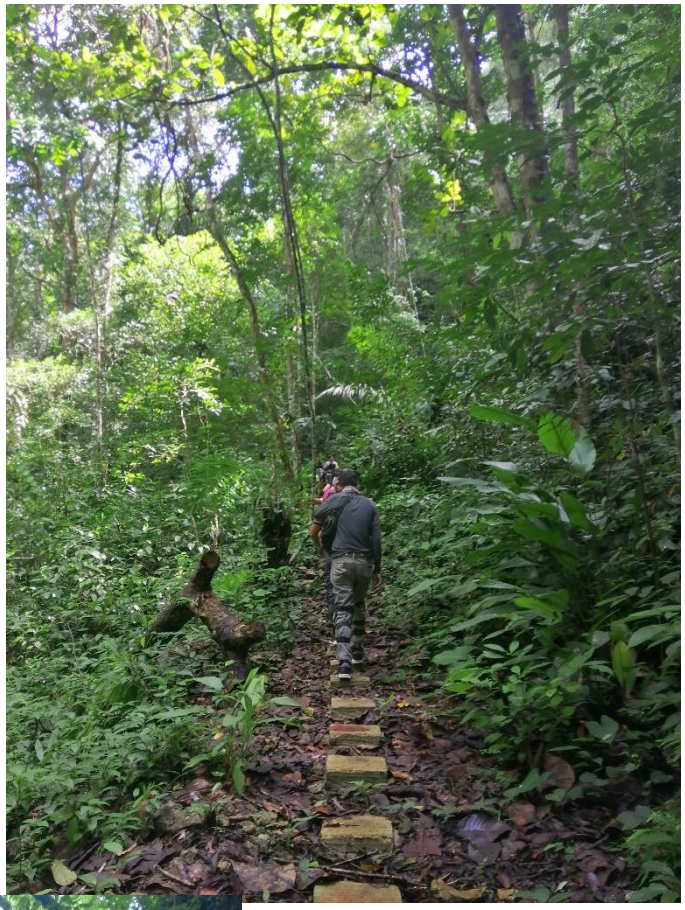
Appendix 1-2: Images of RSPL and Staff

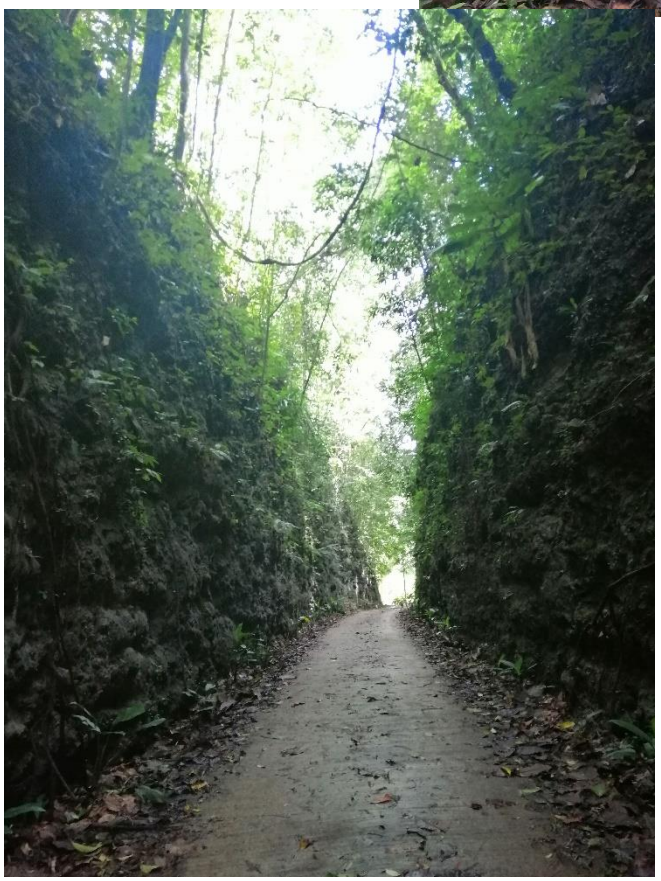



Republic of the Philippines
Department of Environment and Natural Resources
RAJAH SIKATUNA PROTECTED LANDSCAPE
Riverside, Bilar, Bohol
TOURIST INFORMATION CENTER


PEOPLES ORGANIZATION ACTIVITY TICKET
Magsaysay Park Tour/ View Deck = P100.00
Forest Hiking = P300.00
Night Safari = P 500.00
Bird Watching = P 500.00
All activities is good for 5 persons

Appendix 1-3: images of RSPL Activity Site






TO BIRDING SITE

Appendix 1-4: Images of the Pilot Study Site (Creation of Trail Markings)


River
Apiary
Peace

Appendix 2

Summary of Data from the Visitor Survey Form

Continents	Name	Codes	Number of Visitors
AF	Africa	1	0
NA	North America	2	4
AUS	Australia	3	0
AN	Antarctica	4	0
AS	Asia	5	57
EU	Europe	6	69
SA	South America	7	0

Mode of Transportation									
	Multi-site tours	**Rental vehicle**	**Hiking/biking**	**Public buses/Taxi**	**Others**	**Personal Vehicle**	**Motorbike**	**Tour Vehicle**	**Horseback**
	4	**20**	**7**	**2**	**2**	**31**	**27**	**40**	**2**

Scale	Trails and Pathways	Roads leading to RSPL	Parking Areas	Road & Info Signs
1	5	5	4	12
2	11	15	8	7
3	27	31	16	26
4	47	50	52	38
5	40	30	46	43

Willingness to Pay		
Yes	No	Maybe
89	4	28

Recommending RSPL		
Yes	No	Not Sure
120	3	4

J	K	L	M
Level of Education			
1	17		
2	27		
3	62		
4	24		
Legends:			
1- High school or Less			
2- Undergraduate Degree			
3- Graduate degree			
4- PhD, M.D. J.D or equivalent			

	Toilet	Trash Bins	Inter Sign	Trail Marker	Directional Signs	Interpretative Lit.
Just Right	81	69	83	78	78	78
Not Enough	30	27	24	25	29	21
Not Present	13	26	13	17	12	23
Grand Total	124	122	120	120	119	122

Age		
1	4.55	6
2	36.36	48
3	37.12	49
4	9.84	13
5	7.58	10
6	4.55	6