International Journal of Advanced Multidisciplinary Research
ISSN: 2393-8870
www.ijarm.com
(A Peer Reviewed, Referred, Indexed and Open Access Journal)
DOI: 10.22192/ijamr Volume 9, Issue 1 -2022

Research Article

DOI: http://dx.doi.org/10.22192/ijamr.2022.09.01.007

Mangrove forest in Ilocos Sur: Perceived impact and prospect for tourism development

Remely A. Sanidad, Jose Q. Cabatu, Katrina S. Sarazawa, Victor G .Sanidad, Perlita F. Tomas, Milagros O. Liberato, Julie Ann Mina, Zosimo A. Liberato, Annie Dorada

Ilocos Sur Polytechnic State College, Sta. Maria, Ilocos Sur, Philippines.

Keywords

tourism,
economic,
ecological,
eco-park

Abstract

Mangrove forests when fully maintained and safeguarded provide a significant value to become a natural tourist destination. This research aimed to determine the impact and prospect of Biao and Pantar mangrove forest as a tourism attraction/site. It covers six hectares patch of mangroves along the riverine areas inhabited by the presence of different species of fauna organisms like fishes, crabs, shellfishes, and shrimps which serve now as income-generating activities of the people in the community. Purposive sampling is a method used in identifying the respondents and the questionnaire was floated through google flat form.

The ecological and economic importance of the mangrove forest is unique habitats that directly and indirectly benefitted both flora and fauna and ultimately help the community to grow and develop the area to become an eco-tourism park. This will further strengthen the people's involvement participation, collaboration with other agencies in ecotourism development and management which provide an opportunity to have direct contact with the natural environments.

Introduction

Mangroves are extraordinary ecosystems located at the interface o land and sea that offer a considerable array of ecosystem goods and services. They are vital for the food security and protection of coastal communities; they provide a wide diversity of forest products, they serve as nurseries for aquatic species, fishing grounds, carbon sequestration, and crucial natural coastal defenses that mitigate the impact of erosion and stormaction. Global climate change and the associated risks of sea-level rise and extreme weather events have increased their importance. Calls for conservation have also increased in recent years with growing evidence that mangroves may have an important role as natural buffers in protecting coastlines from the impacts of storms and extreme wave action.

Despite their value, nearly all mangrove nations have experienced net losses in the recent decades and remaining mangrove habitats are seldom untouched. About one-fifth is thought to have been lost globally since 1980 due to a suite of anthropogenic threats including over-extraction and deforestation; infilling, drainage, and conversion for aquaculture; agricultural, urban, and industrial runoff; oil spills; and poorly managed dredging and coastal development. These practices continue to take their toll and if left unchecked will cause significant economic and ecological decline. Set against this is a growing realization of the social and economic value of mangroves and a remarkable array of restoration efforts in many countries around the world. These are not sufficient to reduce the overall rates of loss, but provide a pointer to the changing attitudes in people in some places, and the viability of restoration as a tool for reversing the losses associated with mangrove decline. (Hanneke Van, nd).

In particular, there is a need to improve public outreach and education at all levels to raise awareness on the economic and social importance of mangroves, and the potential consequences of their loss. (Mangrove Nursery, India. Shigeyuki Baba)

Natural tourist areas that are established as conservation areas can provide more value, not only to maintain the sustainability of the biological resources when directed towards a sustainable tourism object but will also ensure the lives of the local people to the next generations. Nature tourism is one type of tourism that is directly related to nature that provides a relaxing experience and tranquility after the body and mind are occupied by the work routine consuming the majority of time for work. (Danapamarita, nd.)

Mangroves contribute towards a broad range of other important socio-economic benefits to coastal communities. In several areas, traditional communities living near or even within mangrove habitats have maintained a symbiotic relationship that is often sustainable and even integral to the ecology and functioning of both the mangrove ecosystem and the community. In most places, however, commercial and high-intensity uses have changed the nature of this relationship. Unfortunately, many of these societies, once dependent on mangroves for valuable services, have chosen to overlook the long-term benefits that mangroves provide, allowing rapid degradation or entire loss of mangroves.

The Mangrove Action Project was originally founded with the mission of raising awareness of the issues of mangrove forest destruction and conducting advocacy campaigns has always remained a strong part of this project by running targeted campaigns that aim to address specific issues facing mangroves today. Mangroveactionproject.org.

The holistic approach to mangrove restoration empowers local stakeholders to mitigate mangrove stressors and teaches them how to use mangrove ecology and biology to facilitate natural regeneration. dominic@mangroveaction project.org

For many of those that live within or near mangroves, these forests provide critical ecosystem goods and services: provision of timber and non-timber resources, support to fisheries, and protection of coastlines from storms and erosion. Mangroves support many coastal and offshore fisheries. (Hanneke Van Lavieren Mark Spalding)

The mangrove forests form one of the world's most extraordinary ecosystems that is most productive and biodiverse but is under threat. Ecological and economic benefits can be obtained in mangrove forests. (Acanto, 2016)

Ensuring mangrove conservation through education aims to increase awareness of the importance of mangrove forests through a hands-on curriculum that gets students and community members actively involved with their local mangrove forests, ensuring mangroves will be valued both now and in the future. (Dr.Yando, nd) Research Fellow at the NUS Department of Geography)

There have been changes in the attitude and perception of people toward eco-tourism due to the changing lifestyles. This was attributed to the increased environmental awareness both from the rural and urban people and now looking for new getaway locations where they could gain active outdoor recreation. Thus, national parks and sanctuaries have now emerged as the favorite destinations. Way back in 2012, the government-funded mangrove rehabilitation program in three municipalities of Ilocos Sur was implemented by ISPSC and other concerned agencies to restore the mangrove losses as experienced previously. The efforts made during the implementation of mangrove establishment become successful and now mangrove has already attained their normal growth and gives the natural aesthetic beauty of the locality aside fromregaining its environmental losses previously seen in the past. In consonance, the Municipality of Sta. Maria and Santa Cruz, Ilocos Sur developed the place as the home of mangrove as nature's sanctuary located at Barangay Biao, Sta. Maria and Barangay Pantar, Sta. Cruz, Ilocos Sur.

To conserve and manage the existing mangrove particularly in coastal municipalities of Sta. Maria and Sta. Cruz, Ilocos Sur, a research study was proposed to assess the mangrove forest and to determine the impact and prospect for tourism development. It is also for this reason that the researchers sought to establish baseline data in terms of visitors' willingness to pay to various eco-tourism parks' services, problems encountered and suggestions as to bases for the improvement of the mangrove eco-park.

Objectives

This study intended to determine the impact and prospect of Biao and Pantar mangrove forests as tourism attractions/sites.

Specifically, it tried to determine the following:

1. The socio-economic characteristics of the respondents in terms of:
2. Gender, Age, Educational attainment, Civil status, Occupation, Monthly income Nationality, and Religion.
3. The respondent's awareness in terms of the ecological and economic importance of mangrove eco-park
4. The ecological importance of eco-park
5. The economic importance of eco-park
6. The respondent's willingness to pay for the entrance fee and conservation to the eco-park
7. The average amount the respondent's willingness to pay for the entrance and conservation fee of the eco-park
8. The problems encountered by the respondents
9. The suggestions needed as bases in the establishment of the mangrove eco-park

Methodology

Research Design

This research made use of a descriptive-evaluative design in assessing the impact and prospect of the two mangrove sites as natural eco-tourism parks.

Choice Experimental Method (CEMs) was used as a method for valuation to include marginal values of goods and services like the respondent's willingness to pay for the entrance and conservation fee. It is more informative as it offers individuals multiple choices, and it reduces response problems and some biases associated with CVM such as strategic bias, yea-saying, and embedded effects (Louviere et al., 2000; Bateman et al., 2003; Birol et al., 2006). CEM has advantages similar to CVM as it can be used for any environmental resource and to estimate non-use values with the additional benefit of being able to estimate specific attributes of a resource rather than just the resource as a whole.

Area of the study

The Mangrove Eco-Park is situated at Biao Sta. Maria, and Pantar, Sta. Cruz, Ilocos Sur. It covers six hectares patch of mangroves inhabited by the presence of different species of faunal organisms like fishes, crabs, shellfishes, and shrimps which serve now as income-generating activities of the people in the community. In addition to the natural components of the park, a friendship bridge along the channel, a fish pond, and a rice field are situated outside the mangrove areas. Likewise, mangrove areas in Pantar, Cruz was planted along the riverbank with the same sizes as that of mangrove in Biao, Sta. Maria, Ilocos Sur.

Respondents of the Study

Purposive sampling is a method used in identifying the respondents. Those who have visited the areas are considered as the respondents and able to answer the questions raised.

Data Gathering Procedure

Prior meeting with the researchers was done on how the questionnaire was floated and decided to use the google form. The questionnaires then were transmitted online to students, faculty, local/foreign visitors who had already gone to the mangrove sites. The name of the persons who visited the two places was solicited from the different known facebook users and transmitted the questionnaires through their assistance. Answered questionnaires were recorded to one of the researchers who created the form.

Data Gathering Instrument

The questionnaire was adapted from the work of Acanto, 2016, and used to elicit the information needed in the study. Additional items were included to provide information raised in the objectives.

The questionnaire was floated through the google flatform. This method is the easiest and safe way to reach out to the respondents since Covid -19 pandemic is still rampant in the locality. A combination of open-ended and dichotomy types of questions was utilized and the criterion for the descriptive part was evaluated using the Five Point Likert Scale.

Statistical Analysis

The frequency count was used to find out the number of responses to each item in the questionnaire and also the number of respondents in each category in the study. Percentage concerning the majority criterion was used to describe the socio-demographic, ecological, and economic value of Biao and Pantar Mangrove eco-park. The majority criterion refers to any number with the highest frequency.

For the problems encountered and suggestions for improvement, frequency and rank were also utilizedto identify the most prevalent problem and most possible suggestion recognized by the respondents.

Results and Discussion

Socio-Demographic/Economic Characteristics of the Respondents

The table below discusses the demographic characteristics of the respondents who visited either the mangrove found in Biao, Sta. Mariaand Pantar, Sta. Cruz, Ilocos Sur.

Based on gender, the female-dominated the male in visiting the mangrove eco-park. In terms of age, the respondents mostly belong to the aged bracket of 21-30 years of age and an indication that women with younger age tend to have a driving force to go to places particularly in sheltered/protected and comfortable areas.

As to the educational attainment, most of the respondents are college students followed by postgraduate individuals. It was found out that college students derived substantial psychological benefits, including "feelings of open space," "change of scenery," and "place to escape campus," from their experiences in or nearness to the park. These psychological benefits ranked higher in importance than the recreational and social aspects associated with parks (Ulrich, 1981).

As regards civil status, the majority of the respondents are single as compared to married individuals. This explains that when is not legally bound to another person, one is the freedom to learn, grow, and explore, without any of the guilt associated with taking time for self-care. One of the major benefits of being single is having the space in one's life to spend quality time with friends, and being single increases social connections (Mateo, 2019).

Table 1. Socio-Demographic/Economic Characteristics of the Respondents

Socio-Demographic Characteristics	Frequency	Percentage
Gender		
Male	63	41.4
Female	89	58.6
Total	152	100
Age		
71-above	1	0.66
61-70	-	-
51-60	3	1.97
41-50	-	-
31-40	7	4.61
21-30	80	52.63
10-20	61	40.13
Total	152	100
Educational Attainment		
Post Graduate	10	6.58
College	130	85.53
Secondary	9	5.92
Elementary	3	1.97
Total	152	100
Civil Status		
Single	142	93.4
Married	10	6.6
Total	152	100
Occupation/Category		
Teaching	16	10.53
Student	57	37.50
None	47	30.92

Admin. Aide	7	4.61
Online Seller	8	5.26
Housekeeper/Housewife	17	11.18
Total	152	100
Monthly Income		
71,000- 80,000	7	4.61
61,000-70,000	6	3.95
51,000- 60,000	4	2.63
41,000 – 50,000	6	3.95
31,000 – 40,000	8	5.26
21,000- 30,000	9	5.92
10,000 – 20,000	12	7.89
1,000 -10,000	100	65.79
Total	152	100
Nationality		
Local	152	100.00
Religion		
Roman Catholic	101	66.45
Iglesiani Cristo	16	10.53
Protestant	3	1.97
Jehovah Witnesses	7	4.61
Methodist	9	5.92
Born Again Christian	5	3.29
Seventh-Day Adventist	3	1.97
Baptist	8	5.26
Total	152	100

As to occupation/category, the majority of the respondents are students with a percentage of 37.50% followed by those who have no occupation. This shows that students are adventurous and want to explore areas that are not yet familiar to them. Rung (2004) states that the presence of mangrove parks in nearby areas offers various opportunities to fulfill individual, social, economic, and environmental benefits.

In terms of monthly income, most of the respondents have the lowest income received monthly of around 1,000 – 10,000 and they are considered as a local tourists. As to their religion, the majority of the respondents visiting the mangrove eco-park are Roman Catholic. This could mean that they are more adventurous than the other respondent's religious affiliations.

Awareness of the ecological and economic importance of Biao and Pantar Eco-Park

Table 2. Distribution of the responses on awareness of ecological and economic importance

Awareness of the ecological and economic importance of mangrove park	Frequency	Percentage
Yes	115	75.66
No	9	5.92
Maybe	28	18.42
Total	152	100

Shown in the table are the responses of the respondents on the ecological and economic importance of mangrove eco-park.

When respondents were asked regarding the importance of the Mangrove eco-park, they claimed that they are aware of the important benefits derived from seeing the area. To them, traveling is not only for recreation and relaxation but to breathe fresh air brought about by the presence of natural scenery in echo-friendly places. In support of this, ecotourism destinations do not only allow travelers to see some of the most extreme and beautiful natural wonders but the chance to get closer to nature. https://authentic-indonesia.com/eco-friendly-destinations.

Mangroves are now given importance by the local communities and the LGU's for their ecological and economic values to humans.

Table 3. Distribution of the responses on the ecological value of Biao and Pantar eco-park

Ecological Value	Frequency	Rank
1. Helps in community development	117	1
2. Bring ecological expenses to travelers	96	3
3. Conserve the ecological environment	87	4
4. Foraging and living places of wildlife	79	5
5. Venue for spiritual activities	30	8
6. Recreational undertakings	36	6.5
7. Interactive classroom for Outdoor teaching	36	6.5

In terms of the ecological significance of the place, the respondents stated that the presence of mangrove forests as eco-park helps in community development and rank as No. 1, followed by maintaining the ecological balance of nature and the lowest as indicated is for spiritual undertakings. Since most of the respondents are from the nearby provinces and municipalities, they are aware of the ecological values of the site. According to them, the presence of mangrove eco-park in Biao and Pantar, the barangays will be known not only in the municipality but in the entire province or region. The beautiful scenery as seen was featured even on Facebook to entice others to visit the place, thus helping the community grow. Added to this, it is a cool place to fill even a short trip with friends, to unwind with loved ones to a new place, and to revive the spirit of the time to return to school or work and ultimately add to the experience and memories of a lifetime.

Mangroves protect the water quality and filter unwanted material. They dissolve nutrients from the soil and the water thereby making their value to bird life very imperative and ultimately acts as a buffer between the land and the sea. (https://youthlegacyghanna.org).

Table 4. Distribution of responses on the economic importance of Biao eco-park

Economic Value	Frequency	Rank
1. Source of food resources	73	5
2. Source of raw materials	60	6
3. Source of livelihood	90	2
4. Sightseeing route of eco-tour	93	1
5. Bring financial incentives to the community	77	4
6. Bring entrepreneurial opportunities	79	3

Shown in the table is the economic importance of the Biao and Pantar Mangrove Parkas assessed by the respondents. It revealed that the area is considered as a sightseeing route of eco-tour and this is rank no.1, followed by a good source of livelihood as rank no. 2, bring entrepreneurial activities as rank no. 3 and the least as a source of raw materials.

The rural communities where mangroves are located are fishers and farmers who depend on their natural environment to provide for their families. Healthy mangrove ecosystems mean healthy fisheries from which to fish and healthy land on which to farm. (https://ecoviva.org)

The Mangrove eco-park in Biao already brings financial incentives to the community. For three consecutive years, the mangrove sites were awarded by the Provincial Government in terms of financial incentives. Biao communities are slowly reaping the benefits derived from mangroves and it is now becoming an alternative tourist destination in the province of Ilocos Sur.

Local communities benefitted economically from the presence of mangroves obtained from fishing inside the mangrove area. The value of mangrove ecosystems in support of the local economy is substantial and can contribute to achieving better development outcomes for the coastal communities while maintaining its global values.

Table 5.Responses on the willingness to pay for the entrance fee and conservation fee

Willingness to pay for the entrance and conservation fee	Frequency	Percentage
Yes	97	63.82
No	55	36.18
Total	152	100

When asked regarding the respondents' willingness to pay for the entrance and conservation fee, most of them (97 or 63.82%) agree while 55 or 36.18% disagree to pay a certain amount. Their willingness to pay shows their concern for the maintenance and preservation of the mangrove park, especially the area still at the initial stage of development.

Table 6. The average amount the respondent willingness to pay for the entrance and conservation fee

a. Entrance fee

Entrance fee	Frequency	Percentage
Voluntary	91	59.87
100.00	2	1.31
75.00	2	1.31
50.00	30	19.74
25.00	10	6.58
20.00	15	9.87
10.00	2	1.31
Total	152	100

With regards to the entrance fee, most of the respondents agree on a voluntary payment with a percentage of 59.87%, followed by 50.00 (18.74%). Their willingness to pay even voluntarily will help the community in maintaining the area. Visiting the mangrove park is one better way to stimulate the conservation effort and contribute cooperation and coordination between local communities and the municipality as well. (Marin, 2011).

b. Conservation Fee

Conservation fee	Frequency	Percentage
Voluntary	106	75.0
100.00	6	1.47
75.00	9	3.68
50.00	31	19.85
Total	152	100

Same responses were solicited to the respondents voluntarily for the conservation fee. An indication that respondents are very much willing to help the community with the preservation and conservation of the mangrove eco-park.

Table 7. Problems encountered when visiting the mangrove park

Problems Encountered	Frequency	Rank
1. No emergency services (health and medical)	92	1
2. No parking area	52	6
3. No canteen/sari-sari store	61	4
4. No washroom or toilet facilities	75	2
5. No assigned person to look into the park	53	6
6. No tourist guide/no tourist services available	43	7
7. Limited trash bin/waste disposal system	63	3
8. No signboard	59	5

Problems encountered were asked and this will serve as bases in the improvement of the mangrove areas/eco-park. As a result, it was found out that no emergency services are provided like health and medical as manifested by the occurrence of the Covid-19 pandemic. Though people are aware of the situation, they still need also these services as health prevention protocol.

No washroom or facilities are installed in the area is seen as a problem and rank no. 2, followed by limited trash bin/waste disposal system and the least has no tourist guide/no tourist services available.

Table 8. Suggestion to improve the development of Biao/Pantar Mangrove Eco-Tourism Park

Suggestion	Frequency	Rank
1. Availability of public transportation to reach the area	68	4.5
2. Signage of the Mangrove area be installed in the nation for public information	68	4.5
3. Safety protocols to be practiced and to be led by the LGU	104	1
4. Provide an opportunity for the disabled person could not reach the area	73	3
5. Commercial facility should be established	58	6
6. Other tourism activities be introduced in the area	75	2

Suggestions to improve the development of Mangrove Eco-Tourism Park were also identified. Based on the result, safety protocols are to be practiced and to be led by the LGU as rank no. 1, other tourism activities to be introduced in the area as rank no. 2 and the least is the establishment of a commercial facility.

This implies that to develop further the mangrove eco-park, facilities and other basic amenities should be established. To be economically feasible, it is believed that the development of the site starts at a smaller scale with a lower level of investment. It is important to maintain a range of ecotourism opportunities that will fulfilla wide array of visitors and conservation goals. The environmental impact of ecotourism does not only focus on ecotourism activities but also infrastructure and service facilities. The facilities should be non-intrusive, have low impact waste disposal, be of low density but high quality, be eco-friendly, provide energy and be self-contained.
http://www.fao.org/3/ae213e/ae213e06.htm

Conclusion

Based on the result of the study, the following are concluded:

1. The socio-demographic profile of the people visiting the mangrove eco-park is mostly female, single, ranging from 21-30 years of age, college graduate, with low-income earners, and mostly Roman Catholic.
2. Mostly, the respondents are aware of the ecological and economic importance of Mangrove Eco-park and the benefits derived from the area.
3. The ecological importance of the mangrove eco-park is a unique habitat that provides direct or indirectly benefitted both flora and fauna and ultimately helps the community grow and develop.
4. The economic importance of mangrove eco-park as a sightseeing route for local tourists thus providing support to the local economy in achieving better development for the coastal communities.

5. Majority of the respondents are willing to pay for the entrance and conservation fee of the mangrove eco-park.
6. The respondents' willingness to pay voluntarily for the entrance and conservation fee helps the community in maintaining the area.
7. No emergency services like health prevention protocol as manifested by the occurrence of the Covid-19 pandemic to be done by the LGU's was seen as a problem encountered in the mangrove eco-park.
8. Safety protocol to be practiced and to be led by LGU's is found and suggested to improve for the development of Mangrove Eco-Park.

Recommendations

Based on the conclusions, the following are recommended:

1. People's involvement and participation in ecotourism development and management provide them the opportunity to have direct contact with their natural environments is hereby recommended.
2. Collaborative efforts between the LGU's and PO's for the management of the mangrove forest are highly suggested.
3. Financial support is deemed necessary to improve the mangrove site thereby promoting better access to the area.
4. Heighten public awareness campaign on the importance of the mangrove ecosystem is hereby recommended.

References

Acanto, Ricky B. 2016. Ecological and Economic Importance of Ibajay Eco-Tourism Park. School of Arts and Sciences, Carlos Hilado Memorial State College, Talisay City, Negros Occidental, Philippines acantoricky@gmail.com/ricky_acanto@yahoo.comhttps://ijret.org/volumes/2016v05/i05/IJRET20160505044.pdf

Bedino-Rung, Arainne, Andrew Mowen and Deborah Cohen. 2004. The significance of parks to physical activity and public health. A Conceptual Model. DOI: https:doi.org/10.1016j.amrpre2004.10.024

Betamn, Ian J., Turner R. Kerry, 2003. The Exxon Valdes contingent: A Valuation Study. Environmental and Resource Economics, Volume. 25 No. 31255256. https//books.google.compub>books

Birol, E., Karousakis, K. and Koundouri, P. (2006) Using a Choice Experiment to Account for Preference Heterogeneity in Wetland Attributes: The Case of Cheimaditida Wetland in Greece. Ecological Economics, 60, 145-156.http://dx.doi.org/10.1016/j.ecolecon.2006.06.002

Danaparamita, E.D. and Desy Safitri. 2016. The Role of Mangrove Conservation in Sustainable Tourism. DOI: 10.18502/kss.v4i14.7891 https://knepublishing.com/index.php/KnESocial/article/view/7891/13664

Ecoviva, 2016. Community-Led Initiatives for Sustainable Future. Retrieved on June 2021 from https:wcoviva.org/7-resons-mangroves-matter

Hanneke Van Lavieren, Mark Spalding, Daniel M. Alongi, Mami Kainuma, Miguel Clüsener-Godt, Zafar Adeel. Securing the Future of Mangroves. United Nations Educational, Scientific and Cultural Organization Man and the Biosphere Programme.

Louviere, J. 2000. State Choice Models: Analysis and Application. DOI: 10.1017/CB0978051175383. Published by: Cambridge University Press. ISBN: 978052178804. Retrieved from researchgate.net/publication/230663969-stated-choices-model-analysis-and-application

Mateo, Ashey, 2019. The Surprising Benefits of Being Single. Retrieved on June 2021 from https://www.oprahdaily.com/life/relationships/a27790346/benefits-of-being-single/.

Marin, B.G. 2011. Tambaliza eco-park and resort. Retrieved January 17, 2013, from http://pasapinoy.com/tag/bombette-g-marin/html

Mensah, Adu 2020. Ecological importance of mangroves. https://youthlegacyghana.org/2020/08/02/ecological-importance-of-mangroves/

Ulrich R.S. 1981.Psychological and recreational benefits of a residential park.*J Leisure Res.* 1981; 13: 43-65

Yando, nd) Research Fellow at the NUS Department of Geography

dominic@mangroveactionproj.org

https://unesdoc.unesco.org/in/documentViewer.xhtml?v=2.1.196&id=p::usmarcdef_0000219248&file=/in/rest/annotationSVC/DownloadWatermarkedAttachment/attach_import_9db71539-61fd-4b89-9e0a-acc40

https://authentic-indonesia.com/eco-friendly-destinations.

http://www.fao.org/3/ae213e/ae213e06.htm

mangroveactionproj.org

Mangrove Nursery, India

shigeyuki Baba haneki Van Lavieren Mark Spalding.

Access this Article in Online

Website: www.ijarm.com

Subject: Ecology

Quick Response Code

DOI:10.22192/ijamr.2022.09.01.007

How to cite this article:

Remely A. Sanidad, Jose Q. Cabatu, Katrina S. Sarazawa, Victor G .Sanidad, Perlita F. Tomas, Milagros O. Liberato, Julie Ann Mina, Zosimo A. Liberato, Annie Dorada. (2022). Mangrove forest in Ilocos Sur: Perceived impact and prospect for tourism development. Int. J. Adv. Multidiscip. Res. 9(1): 86-97.

DOI: http://dx.doi.org/10.22192/ijamr.2022.09.01.007