Kuroshio Science 13-1, 41-48, 2019

Symposium Proceedings

Estimating the recreational value of the Philippines' Malabungot Protected Landscape and Seascape using tourists' individual travel cost: a revealed preference valuation approach

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Abstract

Poverty and the lack of sustainable financing mechanism are key challenges that confront biodiversity conservation and sustainable resource governance in marine and coastal protected areas. Ecotourism is a promising option to address these challenges. However, decisions are difficult to make due to lack of information on the economic value of resources and the benefits they provide. This paper responded to this lack of information by estimating the recreational value of Malabungot Protected Landscape and Seascape (MPLS) in Garchitorena, Camarines Sur using the travel cost method. A survey was implemented in existing tourism destinations in Partido and Naga City using their tourists as proxy ecotourist respondents for MPLS. The data were analyzed using the Individual Travel Cost Method employing the count data regression routine of NLOGIT econometric software. Results showed an overall annual recreational value of MPLS is estimated at PhP 30.8 million. The individual consumer surplus was computed at PhP 12,413 per visit. The estimated total recreational value was based from the computed consumer surplus and trip-related characteristics of the individual potential ecotourist with a mean number of intended visit estimated at 2.75 days per year; a mean monthly income of PhP 5,324.30; mean user fee of PhP 59.00 per visit and mean opportunity cost of labor of PhP 1,644.00. The estimated economic benefits from MPLS recreational services need to be recovered financially to compensate fishers for providing this positive externality. This would encourage them to better maintain biodiversity and practice sustainable fishing. To be able to capture these estimated recreational benefits, there is a need to fast track the development of sustainable ecotourism in MPLS and the establishment of user fee system as a key environmental rent capture mechanism that will help promote sustainable financing of MPLS biodiversity conservation and sustainable coastal resource governance.

Key words: recreational value, travel cost method

INTRODUCTION

The MPLS is established primarily to protect its biodiversity and ecosystems and achieve sustainable utilization of coastal and marine resources in the area. Ecosystems provide environmental services (ES). Ecosystems may collapse if species become extinct. Therefore, ES may collapse if species become extinct. The argument that the maintenance of biological diversity is essential for the sustainable provision of ecosystem services (ES) is perhaps the most powerful justification for the conservation of biodiversity (Ridder 2008).

The pervasive poverty situation brought by lack of opportunities for enhancing income from fishing threatens biodiversity and coastal ecosystem from excessive pressures of exploitation by resource-dependent households. Also, the lack of sustainable financing mechanism in protected seascapes and landscapes constrains the sustainable implementation of law enforcement, patrolling and monitoring activities which require accessible funds for operations and incentives.

The development of social enterprise, such as ecotourism,

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is one of the most promising investment options that can be done for MPLS. However, decision makers and regulatory authorities tasked to manage and protect biodiversity and natural ecosystems are often confronted with difficult public investment decisions involving trade-offs in allocating scarce financial resources. These decisions are more often than not economic decisions and they are either implicitly or explicitly based on societal values. This is because people commonly do not directly attach monetary values to natural resources including biodiversity making their valuation both controversial and difficult. Appropriate economic valuation of recreational sites in protected seascapes and landscapes is therefore important to convince decision makers and regulatory authorities of the need to allocate, keep and conserve recreation sites. One method of carrying out such valuation is travel cost method which has various models or variations such as individual travel cost model, zonal travel cost model and random utility models.

Ecosystems and biodiversity can be valued by observing the behaviors on their usage (Herriges and Kling, 1999).The data obtained in such valuation is referred to as revealed preference data. The models employing the data are termed as Revealed Preference Methods and include Travel Cost Method, Hedonic Method, and Random Utility Models of Recreational Use. The revealed preference approach for describing consumer behavior relies on the idea that an individual' s choice of a consumption bundle of marketed goods (given their prices) conveys information. The bundle that a consumer with a given income purchases must (because of its selection) be preferred to all others at that particular set of prices.

The logic behind travel cost approach was first suggested by Harold Hotelling and subsequently developed by Clawson to estimate benefits from recreation at natural. The method is premised on the assumption that the travel cost that people incur to visit a site represent the price of access to the site. Thus, individuals' WTP for a visit to a site can be estimated based on the number of trips they make at different travel costs (Twerefou and Ababio 2012). The method relies on observing quantities and imputing prices. Travel cost method is employed to estimate the demand or marginal valuation curve for recreation sites (Garrod et al. 1993).

These underscore the need for deeper understanding of the role that biodiversity plays in the working of ecosystems by resource users and stakeholders and their potential for sustaining livelihood as recreational assets and their economic values. Gaps in our present knowledge of these connections and their monetary values now limit our assessments of the economic losses that will be incurred when biodiversity declines, and preclude more decisive actions to invest public funds to harness their potential for livelihood and sustainable financial generating mechanisms to pursue the goals of biodiversity conservation and rational utilization of coastal resources. This paper estimated the recreational value of MPLS physical attractions in order to justify investment of public fund for their development. Specifically, it estimated the number of intended visits of proxy tourists to the sites, the projected travel cost, and the individual consumer surplus obtainable from visiting recreational sites of MPLS in the future.

METHODOLOGY

Theoretical Framework

The Individual Travel Cost Method (ITCM) was employed in this study which defines the dependent variable as the number of site visits made by each proxy visitor over a specific period, for instance, in a year (Seenprachawong, 2001). Mathematically:

$V_i = f(P_i, X_i)$ (1)

where,

Vi = hypothetical number of visits made per year by individual i

P_i= hypothetical visit cost faced by individual I

X_i= all other factors determining individual i's hypothetical visits (income, age and other demographic characteristics).

The total cost is the sum of hypothetical expenditures made on fuel, opportunity cost of time for travelling and for visits on-site by all individuals.

The functional form relating the dependent variable (visits per year) and independent variables (travel cost and socio-economic variables) is either linear or a double log. To obtain a more accurate demand curve, this study uses the double-log demand function:

$$V_i = e^{a_0+\sum_{c=1}^{1} a_c D_a+\varepsilon_i} \cdot \prod_{j=1}^{k} X_{ji}^{B_j} \cdot P_i^{B_p} \quad (2)$$

where,

V_i= hypothetical number of visits of individual i

D_{ci} = dummy variables referring to individual i

X_{ji} =socio-economic features of individual i and other variables referring to i

P_i= hypothetical travel cost incurred by individual i; P_I is integration variable

$i = 1,. . .,$n index of observations

$c = 1,. . .,1$ index of additive dummy variables

$j = 1,. . .,$k index of socio-economic variables

a_0 = constant

a_c = coefficients of the additive dummy variables

B_j= coefficients of socio-economic variables

B_p= coefficients of the price variable

e_i= error term

Once estimated, the model is expressed in the following form:

$$V = e^{a_0+\sum_{c-1}^{1} a_c D_c} . \prod_{j=1}^{k} X_j^{B_j} . P^b \quad (3)$$

For each single individual, the consumer surplus (CS) is the integral of the demand function V with respect to the hypothetical cost of visit p, between the lower bound P_{li} and the choke cost of visit, or the upper bound P_{ui}. The choke cost of visit is the cost that leads to a demand equal to zero. The indefinite integral of the demand function is:

$$\int vdp = e^{a_0+\sum_{c=1}^{1} a_c D_c} . \prod_{j=1}^{k} X_j^{B_j} . \frac{P^{b+1}}{b+1} \quad (4)$$

The integral between P_l and P_u is:

$$CS = \frac{e^{a_0+\sum_{c=1}^{1} a_c D_c}}{b+1} . \prod_{j=1}^{k} X_j^{B_j} . \left(P_u^{b+1} - P_l^{b+1}\right) \quad (5)$$

For each individual, consumer surplus is computed by plugging the values for each individual dummy variable D_{ci} (the hypothetical travel cost, P_{li} the choke travel cost P_{ui} and the value of the explanatory variables X_{ji} into the general formula in Eq. 5:

$$CS_i = \frac{e^{a_0+\sum_{c=1}^{1} a_c D_c}}{b+1} . \prod_{j=1}^{k} X_j^{B_j} . \left(P_{ui}^{b+1} - P_{li}^{b+1}\right) \quad (6)$$

The annual consumer surplus per individual can be computed by summing up the consumer surplus estimates from all observed consumers (*N*) and dividing by *N*:

$$CS \text{ per individual} = \frac{1}{N}\sum_{i=1}^{I} CSi \quad (7)$$

The annual consumer surplus per visit is calculated by dividing the annual consumer surplus per individual by the annual sample average number of visits:

$$CS \text{ per visit} = \frac{CS \text{ per individual}}{\text{Sample average visits per year}} \text{ or} \quad (8)$$

The CS per visit is then multiplied by the total number of projected visitors to MPLS in a year to obtain the annual total recreational benefit of MPLS:

Total benefits (*TB*) = CS per visit × Total visitors (9)

Econometric Model Specification

Following the work of Creel and Loomis (1990), the linear specification was adopted in this study on the basis of its desirable theoretical properties. From *Equation* 1 the specific econometric models used to describe the relationship between individual visits per year and the projected travel cost as well as other explanatory variables. The demand function of MPLS recreational value was formed as follows:

$$V_{ij} = \beta_0 + \beta TC_{ij} + \beta A_i + \beta MI_i + \beta S_i + \beta E_i + \varepsilon_i \quad (10)$$

where,

V_{ij} = Projected respondents' number of visits to MPLS
B_0 = *constant*
BTC_{ij}= *partial regression coefficient of projected total travel cost associated with a round trip To and from MPLS*
BA_i= *partial regression coefficient of respondent's age*
BS_i = *partial regression coefficient of respondents' sex*
BE_i = *partial regression coefficient of respondents' educational attainment*
Ei = error term of the regression

A count data regression analysis was applied to the model following the routine of NLOGIT econometric software.

Study Sites and Data Generating Tool

STUDY SITES

Caramoan is an emerging tourist destination in Partido area in the southern part of Luzon. The area's unique features − islands, caves, long stretches of white sand beaches, waterfalls, lagoons and other water bodies, rich marine life, and many others interest tourists from all over the world.

The study has considered Caramoan as having similar features with that of Malabungot and nearby islands. It is essential for the study to choose respondents from areas with such features to provide them with appropriate background of the subject being studied to ensure that the information generated is based on proper context.

The Malabungot Protected Landscape and Seascape islands' distance from the point of origin which is Manila where most of the travelers, local and foreign, takes off, is almost similar with that of Caramoan. The distance and the similarity of tourism features of Caramoan with MPLS sites make it a fitting counter-factual for the ex-ante recreational economic valuation study. Respondents from this area also have a better appreciation of the island and its features being a visitor in an area with similar features. The tourists visiting Caramoan comprised the national tourists segment of the respondents.

SELECTED TOURISM SITES IN CAM SUR

Other study sites included Sabang Beach in San Jose, Camarines Sur. Sabang has a long stretch of black sand and is frequently visited by local tourists for swimming and camping during summer season. Its accessibility is its primary advantage over other beach lines in Partido District. Sabang is about two hours away from Caramoan, by boat, and about 3

hours by land travel. It is about three hours away from Garchitorena.

Nato Beach in Sagnay, Camarines Sur is connected to Sabang beach. Similar group of tourists visit Nato and Sabang for recreational purposes. Visitors in Nato Beach, however, have the option to visit Atulayan Island − a small island with stretches of white sand beaches − about 30 minutes boat ride from the beach. The rest of the respondents are those visiting recreational facilities in Naga City. Respondents from these areas comprised the local tourists.

Data Generating Tool

The questionnaires were designed to elicit information from would-be ecotourists to MPLS recreational sites. The questionnaire was divided in three parts.

The first part of the questionnaire included personal information, educational attainment, income and occupation, and the residence of the respondents.

The second part of the questionnaire included information on tourists' travel attitude. It covered information about the respondents' willingness to travel to the place and the reasons for the decision to travel, the most likely months in a year that they would like to travel, the frequency of travel, the expenses they would most likely spend, whether travelling alone, with companion, or family, the number of days they would like to stay, and reasons for their answers.

The third part of the questionnaire included the information on tourists' preference on tourism destinations, type of attractions, recreational facilities, activities and accommodations. These included data on the preferred qualities of tourism destinations, experience and accommodation. The destinations covered enumeration and selection options of various MPLS attractions including natural habitats such as coral reefs, seagrass, mangroves; experiences such as boating, snorkeling, sand strolling, beach sports, recreational fishing, swimming, beach picnics, vacations, adventures; cultural attractions such as community visits, barangay museums, local festivals, churches, life in the rural coastal communities , livelihood, agritour, and cuisines.

Respondents of the Study

The survey involved a total of 300 respondents. These included 90 national tourists visiting Caramoan, Camarines Sur. The remaining 210 respondents were distributed to respondents from selected towns of Camarines Sur, namely Sabang, San Jose (70), Naga (70), and Nato, Sagñay (70). These tourists were used as proxy ecotourism respondents for MPLS recreational sites owing to its incipient stage. The survey was implemented on weekdays as well as on weekends between June 2018 and July 2018.

Training of Enumerators

To ensure the reliability and accuracy of data generated through the survey, the enumerators were trained on how to accomplish the survey forms, how to identify respondents, and how to fill out the summary sheets. The training was conducted in August of 2017.

RESULTS

Trip-related Characteristics of the Potential Ecotourists

Number of Visits

The number of intended visits by individual ecotourists in a year was used as a dependent variable in the Individual Travel Cost Method. More than half, (51%) intended to visit MPLS (Table 1). Half (50%) of the respondents posted zero visit number of intended visit next year. But 31% expressed intention to visit once a year; while 16% would like to visit MPLS thrice in a year. The average number of visits a year was estimated at 0.74 times a year or almost once a year.

Table 1. Percent of Respondents willing to travel to MPLS and projected number of intended visits annually

Willingness to travel to MPLS, next 12 months for recreation	n	%
Yes	142	51
No	135	49
Number of intended visit per year	n	%
Zero	131	50
Once	82	31
Twice	42	16
Three times	8	3
Five times	1	0.4
	264	100
Average Visit per year	0.74	

Projected Cost of Travel to MPLS

On average, potential tourists to MPLS were willing to spend as much as PhP 5,060.00 per travel. This is about 25% lower than the amount they spent on their recreational trip for the past 12 months.

The aforementioned amount willing to be spent in visiting MPLS are broken down into: food (24%), accommodation (24%), transportation (22%), Souvenirs (16%), fuel for those bringing vehicles (13%), and other incidental expenses (2%). Food and accommodation still remain to be the main expenditure items with the highest allocation.

Among the reasons cited was that visitors are always looking forward to local cuisines and delicacies which are different from what they regularly eat. The amount they allocated for accommodations is attributed to their curiosity on how the locals receive guests, especially in the islands where

there is still little influence of the modern world. Tourists are not looking forward to high-end accommodations for destinations like this given the island' s distance from the major thoroughfare (Table 2).

Table 2. Average projected total travel cost per year and breakdown of costs

Opportunity Cost			20,976.26
Mean Monthly Income	PhP	27,564.1	
Mean Visit	Days	0. 74	
Mean Travel Cost			5,060.3
Transport	0.22	1,113.26	
Fuel	0.13	657.83	
Food	0.24	1,214.46	
Accommodation	0.24	1,214.46	
Souvenir	0.16	809.64	
Others	0.2	1,012.05	
Mean Entrance Fee			49.62
Total Travel Cost			**26,086.14**

Opportunity Cost of Travel of Potential Ecotourists

The estimated time cost of potential ecotourists is PhP 20,976.00. This is equivalent to the value of an average visit of 0.74 days per individual ecotourist multiplied by the estimated wage per day from their average monthly income.

Payment for User Fees of Potential Ecotourists

The individual mean willingness to pay user fee of potential local ecotourists was estimated at PhP 49.62. This was generated through a survey of proxy ecotourists from the same study sites of Caramoan, Sabang, San Jose, Nato, Sagñay, Camarines Sur and Naga City.

Sociodemographic Characteristics of the Potential Ecotourists

AGE

The mean age of the tourists surveyed was 31 years old indicating that tourists on average are young and potentially adventure-loving.

EDUCATION

Majority or 88% of the potential ecotourists to MPLS are college graduates, around 27 or a tenth have attended some college years; while only 1% or 2 of the respondents hold a graduate degree. This indicated that the tourists are educated and appreciates acquisition of knowledge from travel experience such as local culture, traditions and history.

MONTHLY INCOME

The average monthly income of the respondents was estimated at PhP27,564.00.

Parametric Regression Correlates of Potential Ecotourists' Intended Number of Visits to MPLS Annually

The result of the count data regression of intended number of visits to MPLS against sociodemographic, projected total travel costs, monthly income and awareness of MPLS variables is presented in Table 3.

Interestingly, the results in the model variables, which deviated a bit from the theoretical expectations in TCM applications where the travel cost variable must have a negative value (-), contradictorily posted a positive value (+). The fact that the projected travel cost has a positive value indicates that there is a positive correlation between the travel cost and the annual number of visits of ecotourists. This means that as the travel cost increases, the number of annual visits also increases. In TCM application, the expected negative value means that as travel cost increases, the number of visits decreases.

However, it is worthy to note that because the survey used the theoretical ecotourism sites of MPLS (which is soon to be established but still virtually non-existent to the knowledge of proxy tourists respondents) as existing destination in Partido, the data were gathered in a manner that mimics a CV scenario design in WTP survey. In a WTP survey typical in stated preference valuation approach called contingent valuation method (CVM), the respondents are asked how much they are willing to pay for a preferred scenario. The response, which is used as dependent variable

Table 3. Result of the count data regression of intended number of visits to MPLS against sociodemographic, projected total travel costs and monthly income variables

Variable	Coefficient	Standard Error	b/St.Er.	P[|Z|> z]
Constant	0.8139845	0.3065	2.656	0.0079
SEX	-0.0320276	0.009915	-3.500	0.0005**
AGE	.728334D-	0.00042	0.173	0.8625
EDUC	-0.0015169	0.010558	-0.144	0.8858
MINC	-.357942D	0.000373	-0.096	0.9235
CIVIST	.-22864918	0.064961	-3.520	0.0004**
AWARE	-0.0081867	0.190972	-0.043	0.9658
COST	0.0170665	0.003358	5.083	0.0000**
** significant at 0.05 level				

takes a binary yes or no. Commonly, in CVM approach, only the income variable has a mandatory theoretical expectation of negative value consistent with economic principles that the WTP for a preferred scenario is always met by income constraints. This means that as the bid price for a scenario option increases, the WTP decreases. Subsequently, in this recreational valuation survey, given its non-existent ecotourism activities, the respondents were asked whether they are willing to visit MPLS and how much would they spend if they ever intend to visit the place. This pioneering study challenged the existing paradigm of TCM method which dictates that respondents in TCM studies must be actual visitors of the ecotourism destination in question. Thus, the dependent variable used in the analysis in a form of a theoretical question whether willing to visit MPLS or not mimicking a CVM WTP approach merely put constraint on the income but not on the theoretical or projected travel costs of the respondents. The obtained negative but non-significant value of monthly income in this analysis and the significant and positive value of projected travel cost confirmed the statistical soundness of the pioneering analysis which estimated the economic value of recreational sites or destinations that have not been established yet or still non-existent such as the MPLS. The obtained results for income variable indicated that the willingness to visit MPLS will be negatively constrained by the monthly income of potential tourists. The CVM nature of the survey influenced by the question of whether to visit MPLS or not virtually assigned to the income variable the role of the cost of travel variable as the theoretically constraining variables to consumption of public goods consistent with economic principles.

Consistently, the theoretical nature of the survey did not exert undue constraints on the elicitation of projected travel costs of the respondents resulting to its positive value. This means that the respondents-elicited cost of travel increases as the willingness to travel also increases. This makes the cost of travel a regular independent variable in the regression model behaving consistently in econometric analysis of preference data with the income variable posting a negative value substitutes as the surrogate "travel cost" variable in the ITCM analysis.

All two other variables (civil status and gender) had a negative but significant relationship with the number of intended annual visits indicating that male and unmarried ecotourists are more likely to visit MPLS.

Values of Individual and Total Consumer Surplus

The value of the individual consumer surplus was estimated adopting the econometric equation specified in Equation (10).

CSi per individual = 1/ b

where,

CS: Consumer surplus,

b: Curve of the demand function (cost coefficient).

When the values were put into the formula, the individual consumer surplus was estimated to be

CS_i per individual visitor = 1 /0.01706653

= 58.5942192 PhP

The value of consumer surplus per visit was estimated adopting the econometric equation in Equation (11)

CS per visit = CS_i per individual visitor / average number of visit of a visitor per year

When the values were put into the formula, the consumer surplus per visit per year was estimated to be

CS per visit = 58.6 / 0.74

= 79.18 PhP

The value of the total consumer surplus was estimated by adopting the econometric equation in Equation (12)

TCS = CS per visitor per visit per year X total number of estimated visitors per year

= PhP 79.18 x 10,000 visitors per year

= PhP 791,814.00

It was assumed that the potential number of visitors to MPLS would be a conservative 1000 ecotourists monthly given Garchitorena proper's present road infrastructure condition that makes it accessible to all forms of land transportation. This assumption was based from the recorded number of visitors in Caramoan, Camarines Sur during its initial years of operation in 2009 when it was virtually regularly inaccessible by land transportation. Assuming the MPLS recreational activity will only be viable for 10 months in a year, this roughly translates to an estimated average number of 10,000 per year covering peak and lean months minus the months the typhoons and extremely rainy months of November and December. This value was multiplied by the estimated consumer surplus per year which provided an estimated total consumer surplus per year valued at PhP 791,800.00.

Total Estimated Recreational Value of MPLS for Domestic Ecotourism

The annual consumer surplus per visitor was computed to be PhP79.18. The consumer surplus per visit, therefore, is PhP1,359.56. The average entrance fee per visitor was PhP 49.63. The recreational benefit per visit, which is calculated by adding the consumer surplus per visit, the average travel cost per visit, and the average entrance fee per visit is PhP 1,488.36. Based on the projected total number of 10,000 visitors to the MPLS islands per year, the total recreational benefit is estimated to be PhP 14.9 million per year (Table 4).

Table 4. Total Recreational Value of MPLS per Year

	Economic value per visit	Total Number of Visitors per year (10 months)	Total Recreational Value
CS per visit	79.18	10,000	791,814
Average travel cost per visit	1,359.56	10,000	13,595,562
Average Entrance Fee per visit	49.62	10,000	496,200
	1,488.36		

DISCUSSION

The economic value of the recreational benefit that can be generated from MPLS recreational sites is estimated at PhP 1,488 per individual per visit. Using ITCM, our estimation of the total economic value of MPLS recreational services is roughly PhP 15,000.00 per year based from the estimated 0.74 average number of visit, an estimated individual consumer surplus of PhP58.59 or consumer surplus per visit of 79.18, average travel cost per visit of 1,359.56 and an entrance fee per visit of 49.62 for an assumed 10,000 total number of ecotourists, visiting MPLS per year. This value of the potential recreational benefits imputed by proxy visitors for MPLS attractions is explained by the incipient stage of the ecotourism industry in the area and the current low level of awareness of potential visitors to the destination. This indicated that ecotourism sites that are underdeveloped tend to have relatively lower estimated value as imputed by potential users of its recreational benefits at the initial stage. This information poses a challenge for the aggressive and holistic development of ecotourism in MPLS on a sustainable basis in order to stimulate a growing number of visitors over year that would further enhance its current recreational value.

The ITCM relies on the assumption that the value people place on an ecotourism site is represented by the amount they are willing to pay to travel to it. Thus, relating intended visitation rates with projected travel costs and other socio-economic variables enables its recreation value to be estimated. In this study, the individual travel cost method was used to measure the recreational value in terms of the economic welfare measure, the consumer surplus. This is a measure of visitors' willingness to pay for the recreation above the price currently charged. This is a minimum valuation of the site, as it does not include the non-use values or the extractive use values.

It is interesting to note that the estimated individual consumer surplus was PhP 58.59 which did not deviate much from the PhP 49.62 entrance fee each visitor is willing to pay to gain access to the recreational site to enjoy it. Given the low value of the imputed economic benefit for the recreational services of MPLS owing to its underdeveloped stage, non-familiarity of the site, and non-exposure of the proxy respondents' to the actual visit experience to the attractions of MPLS, the measure of the benefit gained by the tourist in coming to the site subjected for valuation equates with their willingness to pay for entrance fee that enable them to gain access to the experience offered by MPLS recreational assets. This has some methodological implication which suggest that proxy respondents who have never directly experienced having enjoyed the recreation in a site of study will likely impute a value on the benefit gained from the indirect experience more or less equal to the value of gaining access to the site to enjoy it. The absence of direct and actual recreational experience on the sites being valued led them to equate the value of the benefit gained merely to the value of accessing it.

The results of the count data regression analysis, despite deviation in the partial regression coefficient for travel cost variable, are consistent with both economic theory and with similar studies in the literature. The minor deviation lies in the partial coefficient for travel cost which is expected to be negative. In this study the travel cost posted a positive sign, This differed from several studies where travel cost data is generated from actual costs paid by ecotourists on-site that commonly yielded negative sign for the travel cost parameter. This is because the actual constraint of the cost of travel on income by the respondents on-site is felt in real time when the survey was conducted. However, when an ITCM survey is conducted on tourists visiting proxy ecotourism destinations to ask for their intentions to visit MPLS where ecotourism is soon to be established, the outcome will be different owing to the theoretical nature of the tourism destinations from which the data on the number of visits are extracted.

Because the recreational benefit to be valued (i.e. MPLS ecotourism) is, as of the moment, non-existent, and the valuation question asks merely for intended visit, the cost of travel is merely imagined and thus do not mentally pose constraint on respondents' response for intentions to travel. This explained the significant and positive value of the travel cost variable generated in this study.

However, the negative value of income variable in this study confirmed the economic theory governing many preference-based behavioral economics researches dealing with any activity that will have real or imagined expense for people as rational economic agents, will always have constraints on their income, and thus any projected or intended unit of increase on such activity, will be met with decreasing response, or negative preference by respondents. Thus, a negative correlation will always be manifested.

The negative and significant correlation of sex and civil status which indicates the higher likelihood of male and single tourists to visit MPLS depicted its overall attribute as an

adventure ecotourism destination that attracts agile and more mobile individuals. This provides insight on the need to diversify ecotourism product offerings in MPLS and use ecotourism adventure in a protected area context as its selling point for promotion.

CONCLUSION AND RECOMMENDATIONS

This study demonstrated that the recreational value or the tourism benefits of MPLS biodiversity can be estimated in order to infer the part of coastal ecosystem total value attributable to recreation. The results clearly showed how potential interactions between coastal resources management and biodiversity conservation and the tourism sectors could lead to sustainability. The MPLS beachscapes and biodiversity have significant recreational value which are not yet captured in market transactions. The estimated economic benefits from MPLS recreational services need to be recovered financially to compensate fishers for providing this positive externality. This in turn would encourage them to better maintain biodiversity and practice sustainable fishing to achieve biodiversity conservation and sustainable coastal resource governance.

Currently farmers' profit from fishing within MPLS is estimated at PhP 4,000 per year (Buetre and Bradecina 2019). In order to capture these estimated MPLS recreational benefits in monetary terms to enhance the current fishers' income from fishing, there is a need to fast track the development of sustainable ecotourism in MPLS and the establishment of user fee system as a key environmental rent capture mechanisms that will help promote sustainable financing of MPLS biodiversity conservation and coastal resource management. However, further investigation is required to be able to generalize the conclusions obtained and to better estimate user fees and consider the institutional arrangements and system where such fees could be implemented.

REFERENCES

Buetre R.L. and R.G. Bradecina. 2018. Capture Fisheries of the Coastal Waters Surrounding Malabungot Protected Landscape and Seascape, Unpublished data.

Garrod, G., Pickering, A. and K. Willis. 1993. The Economic Value of Botanic Gardens: A Recreational Perspective. *Geoforum* 24(2):215-224.

Herriges, J.A. and C.L. Kling, (eds.). Valuing Recreation and the Environment: Revealed Preference Methods in Theory and Practice. Edward Elgar: Aldershot U. K. 1999.

Hotelling H (1949) Letter. In: An Economic Study of the Monetary Evaluation of Recreation in the National Parks. National Park Service, Washington, DC

Ridder, B. 2008. Questioning the Ecosystem Services Argument for Biodiversity Conservation, *Biodiversity Conservation,* 17:781-790

Seenprachawong, U. 2001. An Economic Analysis of Coral Reefs in the Andaman Sea of Thailand, Research Report No. 2001-RR7, Economy and Environment Program for Southeast Asia (EEPSEA)

Twerefou, D. K., D. K. A. Ababio 2012. An Economic Valuation of the Kakum National Park: An Individual Travel Cost Approach, *African Journal of Environmental Science and Technology* 6(4): 199-207