



EEPSEA
2014-SRG3



An Analysis of the Recreational Use Value of Apo Island, Philippines

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WorldFish

Published by WorldFish (ICLARM) – Economy and Environment Program for Southeast Asia (EEPSEA)
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ISBN: 978-971-9994-62-6

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September, 2014

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ACKNOWLEDGMENTS

This project was generously funded by the Economy and Environment Program for Southeast Asia (EEPSEA) through the UPLB Foundation, Inc. and the Department of Economics, University of the Philippines Los Baños (UPLB).

My deep appreciation and thanks to Dr. Herminia A. Francisco, EEPSEA Program Director, for the research opportunity and guidance provided.

I am also very grateful to my UPLB mentors, Prof. Maria Angeles O. Catelo and Dr. Asa Jose U. Sajise, for the guidance and the invaluable assistance extended; to our University President, Dr. Ben S. Malayang III, for the support provided; and to former Department of Environment and Natural Resources (DENR) Secretary, Dr. Angel C. Alcala, for the encouragement he gave me during the conduct of this resource valuation study.

I also wish to express my sincere gratitude to the following people for their assistance, which made this paper possible:

Dauin Mayor Rodrigo Alanano, Barangay Captain Liberty Rhodes, Protected Area Supervisor of Apo Island Protected Landscape and Seascape (AIPLS) Engr. Biernov Grefalde, and the rest of the members of Protected Area Management Bureau (PAMB) - AIPLS, for allowing me to conduct this study at Apo Island;

To Severino Partosa, for the kind assistance he extended to me during field work;

My field researchers and office assistants, Inocencio Alam-Alam, Jr., Ronald Villabeto, Edgar Tejero, Rene Juntereal, Manilyn Teves, and Ivy Alabastro;

Geliah Gloria, for helping me gather important data pertinent to this study;

Glynnis Casiño, for the production of the survey instruments and for other logistical assistance provided; and

Judy T. Gulane, for the editorial work.

I am deeply indebted to Julianne V. Bariuan and the rest of the EEPSEA staff for the support and assistance in getting this report in its current form.

Lastly, I extend my deep appreciation to my local and foreign respondents for the valuable information they provided for this study.

To God be the glory!

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AN ANALYSIS OF THE RECREATIONAL USE VALUE OF APO ISLAND, PHILIPPINES

Wilma M. Tejero

EXECUTIVE SUMMARY

Natural resources, such as coral reefs, are often undervalued. Budget allocations for their preservation and protection are often not enough relative to the benefits they provide. Apo Island was one of the world's best known successful community-organized marine protected sanctuaries. However, increasing population and tourism-related activities in the island have resulted to environmental problems. The lack of funds to sustain the marine resource conservation projects, which included some sustainable livelihood program for the local residents, and the scarcity of water and electricity suggested that resource valuation was needed to determine whether it is worthwhile for the government to increase its budget allocation for Apo Island, and to estimate the visitors' willingness-to-pay for the protection and conservation of the marine resource.

The study aimed to estimate the recreational value of Apo Island. Using the travel cost method, the consumer surplus or the net economic benefit derived from visiting Apo Island for its recreational services was estimated. Using linear demand function to estimate the demand for the environmental services of Apo Island, the result of the regression revealed a strong relationship between travel cost (i.e., time cost, travel expenses, and on-site costs) of local visitors and their frequency of visit to Apo Island. Among the socioeconomic variables considered, only *household size* was significantly related to frequency of visits to the island. The regression further revealed that foreign visitors' *household size*, *gender*, and *age* were significantly related to the number of trips to Apo Island. The coefficient of travel cost provided the expected negative sign; however, the computed t-value suggested that travel cost and frequency of visits were not significantly related. Overall, the regression result provided significant F-values.

Using individual travel cost model, the net economic benefits (consumer surplus) from tourist visits were PHP 16.05 million (USD 356,693) and PHP 3.66 billion (USD 81.25 million) for local and foreign visitors, respectively. This provided a total estimated annual recreational value of Apo Island of about PHP 3.94 billion (USD 87.57 million). It is apparent from this analysis that the government, through the Apo Island Protected Landscape and Seascape-PAMB, can justify a higher budget for environmental conservation, livelihood and other social services program. The researcher suggested an increase in the entrance fee (100%) of foreign tourists who visit Apo Island for the island's environmental and recreational services.

1.0 INTRODUCTION

1.1 Research Background

Apo Island is a 74-hectare small volcanic island located about 25 km off the southeastern coast of Negros Island, 7 km east of Barangay Malatapay, Zamboangita, and west of Siquijor Island (Cabanban and White 1981; SUML 1997). It is under the political jurisdiction of the municipality of Dauin, Negros Oriental. Endowed with a wide fringing coral reef, the island serves not only as the breeding ground, nursery, and home to a variety of marine life but also as protection from strong currents and storm surges (DENR VII-AIPLS 2007).

However, the open access nature of the island has put its coral reefs under severe stress, endangering the marine species that depend on them. Aware of this environmental threat, the Silliman University Marine Laboratory (SUML) introduced the first environmental conservation program to the island's local residents in 1979. It gained support not only from the residents but also from the local

government of Dauin, Negros Oriental. In 1986, the 500-meter stretch of coral reefs located on the southeast portion of the island was declared a marine sanctuary through a municipal ordinance (DENR VII-AIPLS 2007). In 1994, Apo Island and its vicinity (1.5 km of sea) was declared a protected landscape and seascape, pursuant to Republic Act No. 7586, otherwise known as the National Integrated Protected Areas System (NIPAS) Act of 1992, and Presidential Proclamation No. 438 dated August 9, 1994 in order to ensure the preservation, conservation, and development of its natural resources and environment (Bernardo 2001).

In accordance with the NIPAS Act of 1992, which mandated that all protected areas should be under the control and administration of the Department of Environment and Natural Resources (DENR), Apo Island Protected Landscape and Seascape (AIPLS) is presently being administered by the Protected Area Management Board (PAMB). The Board is chaired by the DENR Regional Executive Director (RED), who designated the Provincial Environment and Natural Resources Officer (PENRO) as presiding officer during PAMB meetings. The Board is composed of the Provincial Planning & Development Officer (PPDO), the Mayor of Dauin, Negros Oriental, the Barangay Captain of Apo Island, a representative from Silliman University, and the DENR RED as the chair (Partosa 2009, personal interview). As a policymaking body, PAMB has the responsibility of setting the direction toward the sustainable development of AIPLS (DENR 1992).

Furthermore, a Protected Area Superintendent (PASu) was appointed as the chief operating DENR officer in order to administer the day-to-day activities at the site. The duties and responsibilities of PASu are categorized into regulatory, administrative, and financial matters (DENR 1992).

1.2 Issues and Concerns

Apo Island is one of the world's best known community-organized marine sanctuaries (Raymundo and Maypa 2001; Maypa *et al.* 2002; Alcalá 1997). In fact, it won the Best Managed Reef Award in a competition conducted by the Philippine Coral Reef Information Network (PhilReefs) in 1998. Because of this recognition, many scientific and socioeconomic studies and monitoring projects have been conducted on the island. This has also made the island a popular tourist destination, especially for snorkelling and scuba diving activities.

However, the increasing population as well as tourism-related activities in the island have resulted in some environment-related problems. One study reported that the volume of solid waste in the island had significantly increased. Coral breakage due to fin and anchor damage also noticeably increased despite the presence of mooring buoys and the existence of regulations limiting the number of scuba divers on each reef at a time (Reboton and Calumpong 2000). Tensions were also reported to have developed between tourist divers and some local fishermen as the latter claimed that a large number of scuba divers drove away schools of fish from prime fishing grounds. Fish traps were also reported to have been destroyed by these tourists (Raymundo and Maypa 2001).

In its 2007 Report, the DENR Region VII recognized some emerging problems and concerns in Apo Island despite strong conservation efforts and strict implementation of PAMB management policies, namely: 1) the degradation of the marine environment and its biodiversity due to unregulated anchorage, illegal fishing, unregulated scuba diving, and wanton throwing of solid waste into the sea; 2) denudation of the island's vegetative cover because of the conversion of forest lands into marginal agriculture, the cutting of trees to meet the increasing need for firewood and timber demands, and the conversion of forest lands into residential areas; and 3) infrastructure development due to tourism-related needs (DENR VII-AIPLS 2007).

The situation has been aggravated by inadequate logistical support such as the lack of trained staff on the part of the implementing agency, poorly equipped sea patrols locally referred to as *Bantay-Dagat*, inadequate motor-driven boats, and poor monitoring equipment. The lack of financial resources to enable PAMB to effectively carry out the demands of the day-to-day management of the marine protected area (MPA) is one of the main concerns at Apo Island today (DENR VII-AIPLS 2007).

1.3 Financial Resources for the Apo Island Conservation Program

The NIPAS Act of 1992 provided for the establishment of the Integrated Protected Areas Fund (IPAF), which is, as defined by the DENR Administrative Order (DAO) no. 96-22 (Guidelines on the

Establishment and Management of the IPAF), a trust fund created or established for the “purpose of promoting the sustained financing of the System”. It consists of taxes, donations, endowments, grants, fees, fines, and all revenues generated from the operation of the System as defined in Section 16 of the NIPAS Act of 1992 and Section 58 of DAO no. 92-25 (NIPAS Implementing Rules and Regulations). Of the total amount in the IPAF, 25% forms part of the Central IPAF, which is a trust fund directly administered by the IPAF Governing Board (GB). The remaining 75% comprises the Protected Area Sub-fund, which has been retained by AIPLS and is managed by its PAMB for the development and maintenance of Apo Island in accordance with the IPAF-GB guidelines. Hence, the NIPAS Act of 1992 and the DAO no. 96-22 provide protected areas with the legal authority to collect fees and charges that form part of the IPAF. Through these policy instruments, AIPLS-PAMB was able to generate a substantial amount of funds for the operation and maintenance of AIPLS (DENR 1992).

In December 1999, through a Board Resolution, PAMB collected PhP 20.00 as an entrance fee from each tourist who visited Apo Island. This amount was increased to PhP 100.00/visitor per visit in 2002 (Partosa 2009, personal interview). Other user fees were also imposed on tourists, such as snorkelling and scuba diving fees. As a result, the management was able to generate revenues of PhP 5.3 million in 2009, compared to about PhP 1.4 million in 2000.

Despite the substantial increase in revenue, funds available were not enough to meet the increasing logistical needs, administrative, and operating expenses needed to maintain the operation of AIPLS-PAMB. In 2009 for instance, only about PhP 66,000.00 (1.7%) could be allocated for the development of livelihood options for the local residents; PhP 125,000.00 (3.26%) for information, education and communication (IEC); PhP 30,000.00 (0.78%) for waste management; and PhP 30,000.00 (0.78%) for health and social services improvement. This was because a substantial amount was needed for resource protection and maintenance activities in the island (23%); restoration of degraded habitats (1.5%); capacity building of the staff (7.93%); maintenance of AIPLS facilities, equipment and structures (10.4%); and protected area (PA) operations expense (35.5%) which includes, among others, the payment of salaries and wages of PA office staff, *Bantay-Dagat* or sea warden, and pump boat operators (AIPLS-PAMB 2009).

Based on the personal communication with the Barangay Captain of Apo Island together with some local residents of the island, the following remain unaddressed: the improvement of the potable water supply facility, power supply facility and health services; and the establishment of a livelihood program for the local residents (Rhodes 2009, personal interview).

1.4 Research Objectives

This paper attempted to determine the recreational value of Apo Island by estimating the consumer surplus (or willingness-to-pay) of its local and foreign visitors for its recreational services. Results will serve as basis in making recommendations to PAMB regarding the viability of increasing the user fees collected from each visitor to increase AIPLS financial resources, which is needed to sustain the island’s conservation program. The additional fund that can be generated is primarily aimed at addressing the need for livelihood programs and other social services for local island residents. This will be especially useful since the Apo Island Barangay Council and the Dauin, Negros Oriental local government lost their authority to raise revenue from tourism and other income-generating activities at the island pursuant to the NIPAS Act and DAO no. 96-22 (Alanano 2009, personal interview).

Specifically, the study aimed to:

1. Estimate the annual recreational value of Apo Island using the travel cost method;
2. Estimate the consumer surplus or net benefit derived from the island by local and foreign visitors for its recreational services; and
3. Provide recommendations to PAMB on how to address the need for additional funds to support its livelihood and other social services program as part of the Conservation Program for Apo Island.

The paper also evaluated the socioeconomic and demographic factors that affect tourists’ decision to visit Apo Island; assessed the attitude of local and foreign visitors towards the conservation and management of a marine resource; determined specific recreational services mainly availed of by the visitors; and determined their assessment of the island’s environmental and social attributes as a marine resource.

2.0 REVIEW OF RELATED LITERATURE

2.1 Economic Resource Valuation

Marine resources are scarce commodities. Users' commercial, recreational, and cultural motivations (Wiley 2003) increase the pressures on these resources. Resource managers need information about the economic value of these resources so they can balance the use, protection, and conservation of these resources. The data may include information regarding the different users (e.g., sports divers, commercial fishermen) and their motives, the extent of their use (e.g., for recreational activities, source of livelihood), and the amount they spend or earn (Wiley 2003).

Resource valuation is the process of determining and assigning the total measurable value of a particular resource (e.g., coral reefs, beach resorts). This process is an essential component of sustainable development management as it provides complete information to decision makers and stakeholders regarding the potential impact of their actions and decisions. It uses a number of monetary valuation methods to account for the use and non-use of the resource.

The total value of a resource is the sum of its market and non-market values. *Market value* is derived from the direct and indirect impact of a particular resource in the community, resulting in social and economic benefits and costs. The *non-market value*, on the other hand, is the sum of the use and non-use values of the resource.

2.1.1 Market value

Market value is derived from two fundamental concepts: demand and economic impact. *Demand* consists of the number of trips or persons visiting the resource while *economic impact* is measured through the social and economic benefits resulting from activities.

When there is inflow of money (spending) to the locality (direct effect), local residents benefit from the businesses that serve the resource users. Amount of labor and materials must be increased in order to produce additional goods and services (indirect effect). Increased spending of the businesses will have a "ripple effect" on other businesses that supply them (Wiley 2003). Those businesses, in turn, affect other key players (investors, suppliers, employees) of the rest of the supply chain.

Wiley (2003) noted that how people perceive a marine resource and how the perception is translated into values is a very complicated transformation. It depends on many factors. The socioeconomic characteristic of the users, whose values are being estimated, are among the most considered factors. For instance, he said that a user who is knowledgeable about coral reefs and has been visiting the areas where these ecosystems exist will have a different perception from one who visits a coral reef for the first time (Leeworthy and Bowker 1997 as cited by Wiley 2003).

2.1.2 Non-market value

The total economic value (TEV) consists of use and non-use values. *Use value* measures the consumptive value (direct use or consumption) of a tangible resource such as fish or water, and its non-consumptive value (indirect use) such as using the resource for scuba diving, snorkelling, fishing, or swimming. The *non-use value*, on the other hand, measures the innate value of the resource and can be derived even if individuals do not use the resource (White and Cruz-Trinidad 1998; Wiley 2003). It consists of existence and bequest values.

Existence or preservation value refers to the value a person puts on the resource, knowing it is a protected resource, even if he never intends to use it today or in the future. *Bequest value* refers to the endowing value of a conserved and protected natural resource for future generations (White and Cruz-Trinidad 1998; Wiley 2003).

There are two categories of values that fall between use and non-use values — option and quasi-option values. According to Wiley (2003), *option value* pertains to the availability for future use of a certain resource, which is dependent on future demand and supply. It also refers to the willingness and option to use and pay for such resource in the future. The *quasi-option value*, on the other hand, is used to describe the welfare gain associated with delaying a decision when there is uncertainty about the payoffs of alternative choices, and when at least one of the choices involves an irreversible commitment of resources (Freeman 1993 as cited by Flanders Marine Institute 2008). Figure 1 shows the components of the total value of a marine resource.

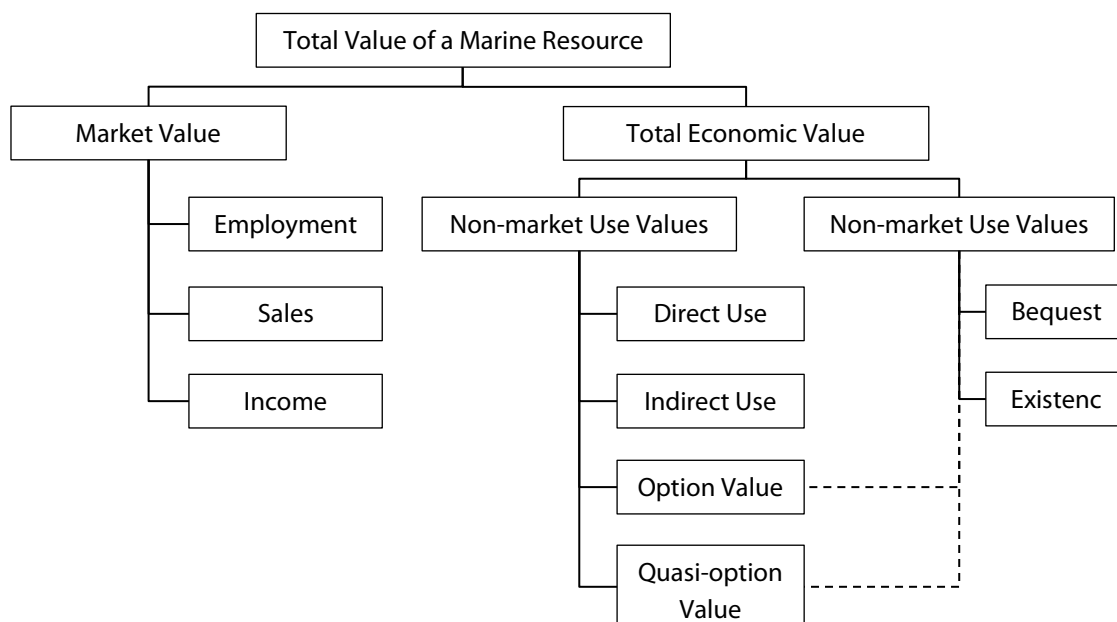


Figure 1. Total value of a marine resource

Figure 2, on the other hand, illustrates the link between natural resources and their values. As shown, the current condition of amenities, environmental quality, and attributes of the marine resources give rise to the perception of these conditions. These perceptions result in a level of demand for the resource, allowing valuation estimates to be calculated (Wiley 2003). Among users, demand for the marine resource will take the form of frequency of visits. Among non-users, the demand will be in the form with which they obtain information, that is, via television, internet, newspapers, and other media.

There are a number of valuation methods to estimate the use and non-use values of a recreational resource. Among these are the travel cost, contingent valuation, and hedonic price methods. This study used travel cost method (TCM) in estimating the recreational value of Apo Island.

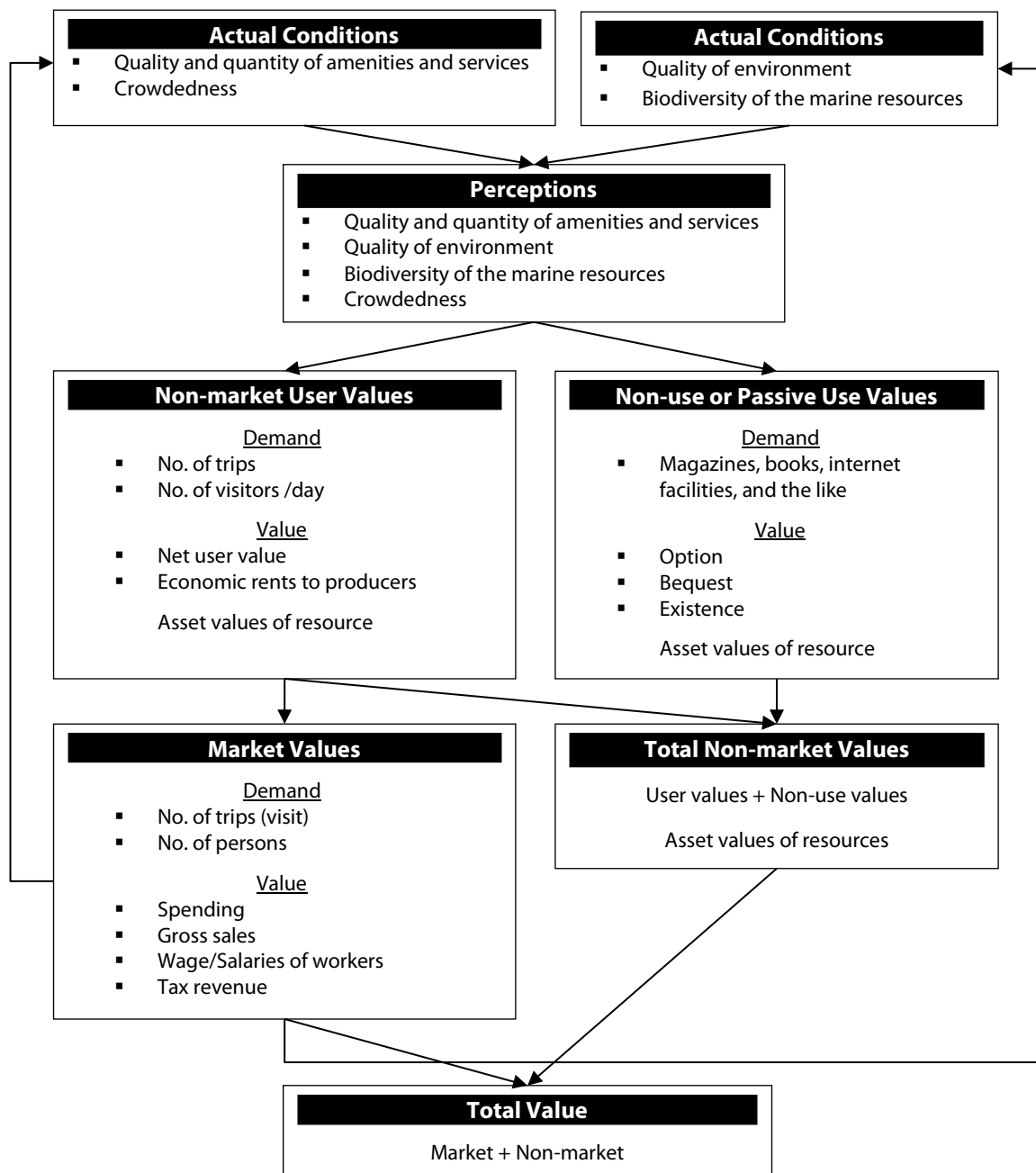


Figure 2. Link between economy and environment
Source: Leeworthy and Bowker 1997

2.2 Travel Cost Method

TCM allows researchers to examine goods or services not traded in any market and estimate its value based on the behavior of individuals (Wiley 2003). This method, however, can be applied only when the estimation of value is associated with recreational use. It employs a series of variables that help estimate demand, which is measured in terms of trips or visits to the resource. With the “demand curve,” the per-person-per-day value is derived (Wiley 2003). This can then be aggregated to the population of users.

Data for TCM is collected through a survey conducted among users when they are about to leave the site. Data include detailed information about their length of stay, means of transportation, purpose of the trip, and total expenses (i.e., transportation, hotel food and accommodation, entrance fee, and other on-site costs). Demographic data, which include gender, civil status, education, employment, personal and household income, and size of household, are also gathered.

2.3 Resource Valuation Studies Using the Travel Cost Method

TCM was used in determining the recreational use value of Apo Island. There are at least three most commonly used models under this approach, namely, zonal travel cost (ZTCM), individual travel cost (ITCM), and the random utility models (RUM). For this study, the researcher utilized ITCM.

A number of valuation studies have been conducted using TCM. Seenprachawong (2001) utilized both TCM and CVM in analyzing the economic value of the coral reefs of Thailand's Andaman Sea. The estimated consumer surplus using TCM was THB 8,216.4 million (USD 205.41 million). He recommended that an entrance fee of THB 40 (as well as supplementary user charges for additional recreational services) be collected from each tourist visiting Phi Phi Island. In estimating travel cost as one of the variables in his model, he considered three component costs: transport, time, and food and lodging. In estimating the time cost, both full wage and one-third wage were considered. In applying TCM, only the ITCM was explored.

Pham and Tran (2001) attempted to evaluate the recreational value of Hon Mun Islands in Vietnam. The researchers utilized both ZTCM and ITCM. Using ZTCM, the annual recreational value of the resource was estimated at USD 17.9 million while the use of ITCM model provided the researchers with a much lower estimate of USD 8.7 million. Similar to the case cited by Seenprachawong (2001), the travel cost of visiting Hon Mun Islands was computed by adding transportation, time, and other costs.

Some issues were encountered during the conduct of the study with regards to transportation cost and time cost. Transportation cost is the cost incurred by the visitors in going to a particular resource like Apo Island. It is the cost of distance traveled, so the price per mile must be calculated using petroleum cost as an estimate of the marginal cost or full cost, which includes an allowance for depreciation, insurance, etc. (Hanley and Spash 1993 in Pham and Tran 2001). However, DeShazo (1997 in Pham and Tran 2001) argued that the transportation cost consists of cost of airplane, train or bus tickets or the cost of gasoline and vehicle maintenance. Therefore, transportation cost depends not only on the distance but also on the means of transportation used by the visitors.

Table 1 lists some of the issues and discussions related to transportation cost that were encountered by researchers who attempted to estimate some recreational values of a natural resource.

Table 1. Basis used in estimating visitors' travel costs in visiting recreational resources

Author	Issues
1. Hai and Thanh (1998, in Francisco and Glover 1999)	In analyzing the recreational value of Cuc Phuong Park, used the adjusted price of VND 150/km per person on the assumption that the means of transportation was a hired car
2. Du (1998)	Used local statistics on passenger turnover to derive the weighted averages of the various means of transportation used and calculated the transportation cost using these
3. DeShazo (1997, in Pham and Tran 2001)	Calculated the transportation cost for each individual by multiplying the distance and unit cost based on individual respondents' information on means of transportation and place of origin
4. Kramer <i>et al.</i> (1995, in Pham and Tran 2001)	Used the round trip airfare cost from the capital city of the respondents' country of residence to the destination site
5. Tobias and Mendelsohn (1991, in Pham and Tran 2001)	Used the average cost per kilometer and distance between the zone of origin and the site to calculate transportation cost
6. Leeworthy and Wiley (1991, in Pham and Tran 2001)	Calculated transportation cost as round trip mileage multiplied by the cost per mile, which was derived from a survey on the cost of owning and operating automobiles and vans

Travel time needed to visit a resource has a corresponding value. It is considered an opportunity cost that could be spent on another activity. Since wage rate reflects the opportunity cost of time, it could be used as an approximate or shadow price of time (Dharmaratne and Strand 1999; Pham and Tran 2001). Meanwhile, Deaton and Muellbauer (1980, in Hanley and Spash 1993, in Pham and Tran 2001) stressed that while wage is the correct opportunity cost (as individuals give up working in order to visit a site), most

recreation time is spent at the expense of an alternative recreational activity. This means the opportunity cost should be measured with reference to the value of other recreational activities foregone. A separate value should, therefore, be calculated per individual.

Another important opinion worth noting was that of Cesario (1976, in OECD 1994, in Pham and Tran 2001) who said that because visitors derive utility or dis-utility from the time spent travelling to the site, it was suggested that the shadow price of time may lie somewhere between one-fourth and one-half of the wage rate. Hence, the value of one-third of the wage rate may be appropriate. On the other hand, McConnel and Strand (1981, in Hanley and Spash 1993, in Pham and Tran 2001) suggested a simulation process to estimate the value of time. After the simulation process, the value that maximizes the R-squared value would be chosen.

The Department of Transport in the United Kingdom calculated values for leisure time obtained from revealed and stated preference approaches. These approaches elicited information from individuals, as to whether or not they could substitute work for leisure and model the two groups differently (Bockstael 1995 as cited by Pham and Tran 2001). Hanley and Spash (1993, in Pham and Tran 2001) cited an empirical example that “used an *average figure* of £0.00/hour for those respondents stating that they... *enjoyed the drive to the forest...* and a value of £2.68/hour for those who indicated they disliked the drive”.

3.0 RESEARCH METHODOLOGY

This section discusses the methods used in estimating the recreational value of Apo Island. It includes the procedures and techniques in administering the survey instruments, the determination of sample size and the valuation methods used.

3.1 Research Questions

The paper aimed to address the following research questions:

1. How much was the consumer surplus that local and foreign visitors derived from visiting Apo Island for its recreational services?
2. How much was the total recreational value of Apo Island?
3. What was the local and foreign tourists' attitude toward issues concerning Apo Island's conservation and marine resource management?
4. What socioeconomic and demographic characteristics of the Apo Island visitors significantly affect the demand for the island's recreational services?
5. What were the island's recreational activities mostly availed of by the local and foreign tourists?
6. What were the social and environmental attributes of Apo Island as a marine resource?
7. What recommendations can be made to augment the revenue derived from collecting user fees in order to support programs on livelihood and other social services sought by the island's local residents as part of the Protected Area Conservation Program at Apo Island?

3.2 Valuation Methods

The study employed the ITCM to generate estimates of the recreational use value of Apo Island.

3.2.1 Travel cost method

The travel cost method measures the demand function of visits to a site. A demand function is an empirical relationship between the price of a good or item and the quantity purchased. For this study, the

travel cost incurred by the visitor was the price of Apo Island's recreational services. The demand function is expressed as:

$$Q = f(P, S) \quad (1)$$

where Q is the quantity purchased, P is the price, and S represents a number of socioeconomic variables, which might affect the demand for the good such as the income and household size of the buyer.

The law of demand suggests that the demand curve slopes downward. This means that as the price rises, holding other things constant, consumers purchase less and vice versa. The travel cost demand function then is a specific application of this general tool to recreational trips (Seenprachawong 2001); the number of times visitors financed trips to Apo Island was dependent on the price of each trip. The theory says that the higher the price of a trip, the less often visitors will visit, and the travel cost demand function should be downward-sloping.

3.2.2 Individual travel cost model

The ITCM function that relates an individual's annual visits to his/her travel cost is as follows:

$$V_i = f(TC_i, S_i) \quad (\text{Equation 1})$$

where V_i is number of visits made by individual i in a year; TC_i is travel cost of individual i ; and S_i represents other factors determining the individual's demand for visits to Apo Island such as age, gender, marital status, years of schooling, income bracket, household size, group size, quality of marine resources, and purpose.

The most popular functional forms are linear, quadratic, semi-log, and log-log. There is no consensus in the literature reviewed on the preferred choice. For this study, the researcher used linear function. The linear function for the ITCM is:

$$V_i = a + bTC_i + cS_i + \varepsilon_i \quad (\text{Equation 2})$$

where S_i is the socioeconomic variable representing i such as age, gender, marital status, years of schooling, income bracket, household size, group size, and purpose.

Consumer surplus

Consumer surplus (CS) is the difference between the fee a consumer would be unwilling to pay (choke price) for an additional unit of a good or service and the price that he actually paid for the same (Pindyck and Rubinfeld 1995). This is called the net benefit to the consumer from purchasing Q_1 amount of goods or services and paying the same at P^* . Therefore, it can also be said that consumer surplus is the amount of money a person has pay to get any amount Q^* but now has to spend on other items (Dharmaratne and Strand 1999).

CS for each individual is estimated by the integral calculus of the demand function with respect to the travel cost between the price paid and the choke price. It is computed by getting the area below the demand curve and above the price paid line (the triangular area found in a demand graph).

$$CS_i = \frac{1}{2} (b \times h) \quad (\text{Equation 3})$$

The CS per visit is calculated as follows:

$$CS_i \text{ per visit} = CS_i \text{ per visitor} / \text{average visits of a visitor per year} \quad (\text{Equation 4})$$

To determine the total recreational benefit per visitor per year, it is necessary to get the sum of the total CS per visit plus the average travel cost per visit per person. The total recreational benefits per visitor per visit, multiplied by the average number of visits in a year provide the total annual recreational value of

Apo Island (Pham and Tran 2001). Table 2 shows details of the variables expected to affect demand for visits to Apo Island.

Table 2. Description of variables

Variables		Description
VISIT	Frequency of visits in a year to island	Number of visits in a year
Sum Trav	Total travel cost	Sum of travel cost (PhP)
AGE	Age	Age in years
GENDER	Gender of visitor	Male = 1, female = 0
STATUS	Marital status of visitor	Married = 1, single = 0
EDUC	Level of education	Number of years in school
INCOME	Personal income	Personal income (by bracket)
HH	Household Size	Number of household members
GRP	Group size	Visitor's group size
QUALITY	Marine quality	Marine quality per visitor's assessment
PURPOSE	Purpose	island visit was sole purpose = 1, multiple purposes = 2
AGAIN	Visit again	Visit again within 12 months

3.3 Data Collection Techniques

3.3.1 Pretesting

Pretesting was undertaken before the survey instrument was finalized. The first pretest was conducted in the last week of July 2009. This preliminary survey was done in Malatapay, Zamboanguita, the jump-off point to Apo Island. Ten local and foreign visitors were requested to participate in the pretest survey. A second round of pretesting was conducted in the second week of August 2009. This was also the time when the field survey assistants were trained and observed by the project leader. A total of 12 local and foreign visitors participated in the said pretest.

After pretesting the questionnaire, the researcher decided to employ a self-administered survey technique. This was because majority of the local visitors did not stay overnight in Apo Island. Instead, visitors hired motorized boats to service them to and from the island for the day. Visitors spent few hours in the island; hence, they refused to participate in the personal interview survey. The field assistant requested from the local respondents (who refused to be interviewed and opted to bring the questionnaire) their contact numbers and addresses in the city. On the other hand, majority of the foreign visitors stayed at Apo for at least two nights. Most of them, however, also refused to be interviewed personally and preferred to bring the survey instrument with them to the island. Field assistants were stationed at the Malatapay waiting area and at the study site in order to collect the questionnaires before respondents left Apo Island.

3.3.2 Administration of survey

Field survey assistants approached the visitors and requested them to participate in the study. Researchers explained the objective of the study and asked the respondents to answer items in the questionnaire. In particular, these were: home country, city, municipality of the respondents; travel time; purpose of going to Apo Island; length of stay in the Philippines; and travel cost and means of transportation. The aforementioned items were answerable even if the respondents had not visited the marine resource yet. Finally, the respondents were allowed to bring the questionnaires with them to answer the rest of the items and were asked to return it to the survey assistants who were stationed at the Apo Island Protected Area-PAMB office and at the waiting area in Malatapay.

3.3.3 Survey instrument

The survey instrument was a four-page questionnaire with the following items: attitudinal statements about marine resources; place of origin; travel time; number of travel companions; means of

transportation and corresponding travel cost; length of stay in the Philippines (if foreign tourist); number of times they stayed in Negros Oriental (if Filipino but residing outside Negros Oriental); length of stay in Apo Island; recreational activities while in Apo Island and corresponding expenses (on-site cost); frequency of visits to Apo Island; marine attributes of Apo Island as a recreational site; perceived recreational quality of Apo Island; future visit to Apo Island; and personal background of the respondents.

The questionnaire was placed in a plastic envelope to protect it from getting wet while the respondent travelled to the island using a motorized *banca* (boat). A pen was put inside the envelope for the respondent's use. The pen (with matte sticker labelled *Apo Island, Philippines 2009*) was offered as a token of appreciation to the respondents after they have returned the answered questionnaire.

3.3.4 Sample size

This study used a sample size of 700, consisting of 300 local and 400 foreign visitors. The field survey was conducted over a six months from September 2009 to February 2010.

Of the 700 questionnaires administered, only 630 (90%) were answered completely and used as the primary source of data. A total of 70 (10%) questionnaires were partially answered (Table 3).

Table 3. Distribution of respondents according to nationality

	Local Tourists	Foreign Tourists	Total
Completed	281	349	630
Incomplete	29	41	70
Total	310	390	700

4.0 STUDY SITE

Apo Island is situated in Sulu Sea, about 7.5 km off the southeastern coast of Negros Oriental. It is under the jurisdiction of the municipality of Dauin. On August 9, 1994, then Pres. Fidel V. Ramos, by virtue of Presidential Decree No. 438, proclaimed the island and its immediate marine environment as the Apo Island Protected Landscape and Seascape (AIPLS). The proclamation mandated DENR to protect and conserve the ecological, scientific, educational, economic, and recreational values of the island. The law also mandated the agency to pursue the sustainable development of the area and to address the social and economic needs of the local community, without causing adverse impacts on the environment (DENR VII-AIPLS 2007). The PAMB started to function in 1998, and the systematic collection of PA user fees began in December 1999 (DENR VII-AIPLS 2007).

4.1 Physical Conditions

4.1.1 Topography

The island's volcanic origin provides two major topographic features: the hilly promontories that comprise the southern relief and the series of moderately flat lowlands in the middle that make up the northern relief. The southern relief is composed of fragmented volcanic rocks that form steep sea cliffs, while the northern relief is characterized by a moderately subdued plateau dissected by rugged ridges and steep and sharp sea cliffs (SUML 1997; DENR VII-AIPLS 2007).

The island's coastline consists of steep, rocky cliffs, and seven beaches, four of which are classified as major and three as minor beaches. One of the four major beaches is located in the barangay, the second fronts the marine sanctuary, the third is at Sitio Cogon, while the last is at the so-called "turtle sanctuary" located in the eastern-central section of the island (SUML 1997; DENR VII-AIPLS 2007).

4.1.2 Hydrology

Fresh water is scarce in the island. The limited size, geology, and topography of the island provide an environment where water directly runs off into the sea. Water from artesian and deep wells is not potable. The provincial government drilled deep into the water table and found that water below 20 m was limited, and its salinity was high (DENR VII-AIPLS 2007). At present, local residents fetch water daily from the mainland, which is a 45-minute ride away using motor boats.

4.1.3 Land use distribution

Around 59.2% of the island is composed of agricultural areas (19%), coconut plantations (9.5%), grassland (1%), mangroves (4%), and secondary forest (25.7%). Around 10.5 ha or 14.5% of the total land area is residential while 1.9 ha (18%) is rocky and barren.

Table 4. Land use distribution of Apo Island

Land use category	Area (hectare)	Percent
Secondary forest	18.6	25.7
Agricultural area	13.5	19.0
Barren area/rocks	13.1	18.0
Residential (community)	10.5	14.5
Coconut plantation	6.9	9.5
White sand	4.2	5.8
Mangrove	3.0	4.0
Lagoon	1.9	2.5
Grassland	0.9	1.0
Total	72.5	100.0

Source: DENR VII-AIPLS 2007

4.2 Tourism

Figure 3 shows that visits to Apo Island (by both local and foreign tourists) have been increasing since 2008. More foreign tourists visit the island than local ones. In fact, in 2008, the total number of foreign visitors was twice that of local visitors.

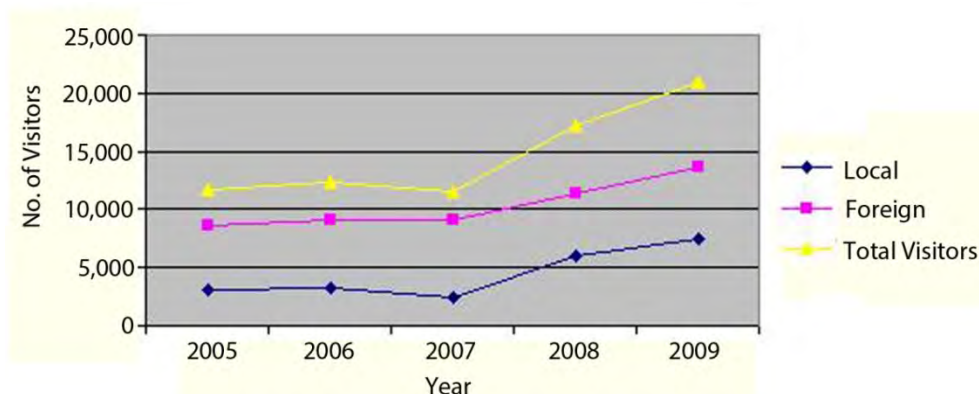


Figure 3. Tourist visits to Apo Island, Philippines, 2005-2009

According to the AIPLS PA Office, December, January, February, March, April, and May were the peak months for tourists. Foreign visitors started to come in December. Some foreign tourists were regular visitors of the island and even stayed for months. On the other hand, a big number of local visitors usually arrived during summer. As shown in Table 5, about 65% of the island's visitors were foreign while only 35% were local.

Table 5. Tourist visits to Apo Island, Philippines, 2008 -2009

Month	2008			2009		
	Domestic	Foreign	Total	Domestic	Foreign	Total
January	242	1,028	1,270	234	1,022	1,256
February	351	1,150	1,501	372	1,439	1,811
March	530	1,383	1,913	905	2,284	3,189
April	966	1,035	2,001	1,388	1,115	2,503
May	592	658	1,250	1,179	1,087	2,266
June	505	654	1,159	600	440	1,040
July	397	788	1,185	266	556	822
August	675	946	1,621	439	841	1,280
September	325	542	867	372	321	693
October	536	581	1,117	243	821	1,064
November	273	1,289	1,562	470	1,265	1,735
December	540	1,279	1,819	970	2,367	3,337
Total	5,932	11,333	17,265	7,438	13,558	20,996

Source: DENR VII-AIPLS 2007

4.2.1 Revenue derived from tourism

From 1999 to date, the AIPLS, through the PASu, has been systematically collecting fees and charges from the island's visitors. Table 6 shows the schedule of fees. It must be noted that Filipino and foreign visitors, except those who are residing in Negros Oriental, pay the same fees and other user charges (Table 6). Aside from snorkelling and scuba diving fees, the management also collects camera and mooring/docking fees.

Table 6. Environmental user fees at Apo Island (Php)

Fee	Filipino	Foreign	Neg. Or. Residents	Dauin Residents
Entrance	100.00	100.00	25.00	10.00
Snorkelling	200.00	200.00	100.00	50.00
Scuba diving (within sanctuary)	300.00	300.00	200.00	100.00
Scuba diving (outside the sanctuary)	200.00	200.00	100.00	50.00

Source: DENR VII-AIPLS 2007

Table 7 shows the revenue derived from tourists. From December 1999 to December 2008, a total of Php 22,677,569.00 was collected as payment for various recreational services made available to local and foreign tourists.

Table 7. Annual revenue, 1999-2008

Year	Gross Revenue (Php)	Year	Gross Revenue (Php)
1999*	39,000	2004	3,224,526
2000	1,408,155	2005	3,824,381
2001	1,668,418	2006	2,690,689
2002	992,000	2007	2,333,920
2003	1,145,460	2008**	5,351,020

Source: DENR VII-AIPLS 2007

Note: * started in December 1999 only ** unofficial/unpublished

4.2.2 Facilities

Supply. There is hardly any electricity in the island. Power is provided by the community-run diesel-powered generator set that energizes more than 150 households in the island. However, due to its limited capacity, the power generator only operates from 6:00 to 9:00 in the evening. The power provider collects a minimal amount from household users each month for the maintenance of the generator set (Partosa 2009, personal interview).

Accommodation. There are two hotels in the island: Liberty Community Lodge and Apo Beach Resort. They are situated in the western section of the island and cater to both local and foreign visitors.

Water supply. Water is another scarce commodity in the island. Shallow artesian wells that are found in the island provide brackish and non-potable water. Island residents are forced to cross the island everyday using motor boats to fetch drinking water from Malatapay, Zamboangita, the town nearest to Apo Island.

Transportation. Motorized boats are the only means of transportation to and from the island. Local residents use boats to transport their fish and other products to Dumaguete City. The boat trip schedule is irregular so visitors have to rent the boats to ferry them to and from the island. The rent depends on the size of the boat. Boats with a three to four-passenger capacity cost PhP 1,700.00 to rent while larger boats (seven to eight-passenger capacity) cost PhP 2,700.00 to rent.

Communication facilities. Island residents relied on the municipal telephone system installed by the Bureau of Telecommunication. Wireless payphone services included local and long-distance calls at a minimal government rate. Since most of the residents own mobile phones, the payphone facility was stopped and is no longer available at this time.

4.2.3 Recreational services of Apo Island

The following are the recreational activities and services that a visitor may avail of while in the island: snorkelling, scuba diving, swimming, sunbathing, trekking, visiting local villages, or simply enjoying the beautiful island scenery.

5.0 RESULTS AND DISCUSSION

This section presents five major findings, namely: socio-demographic characteristics of the Apo Island tourists who visited for its recreational services; visitors' attitudinal and information perception about environment protection and conservation; recreational services mostly availed of; visitors' assessment of the island's environmental and social attributes; and estimates of consumer surplus and total recreational value of Apo Island.

5.1 Socio-demographic Characteristics of Visitors in Apo Island

Table 8 shows that, of Apo Island's local visitors, 60.9% were female and that majority (65.8%) were unmarried. About 80% were college graduates with 16% of them holding post-graduate degrees. Almost half (48%) of the visitors were private sector employees while 19% worked with the government. Thirty-seven (13.2%) respondents said they ran their own businesses.

The foreign tourists, on the other hand, were mostly male (59.9%) and unmarried (62.2%). About 86% of them finished college, more than half of which held post-graduate degrees. Majority of the foreign visitors worked with private and public institutions. Personal income data of the respondents are also shown in Table 8.

Table 9 shows that the youngest Filipino visitor was 16 years old and the oldest is 68. Apo Island's oldest foreign visitor was 78 years old. The average age of local visitors was 30 years old while foreign visitors' age averaged at 36.4 years old. Household size of local visitors was bigger than that of the foreign visitors. Like Filipinos, foreign visitors usually visited Apo Island in groups (Table 9).

Table 8. Socio-demographic characteristics of Apo Island's local and foreign visitors

Characteristics		LOCAL (n = 281)		FOREIGN (n = 349)	
		Freq.	%	Freq.	%
Gender	1 Male	110	39.10	209	59.9
	0 Female	171	60.90	140	40.1
Marital Status	1 Married	96	34.20	132	37.8
	0 Single	185	65.80	217	62.2
Level of Education	1 Primary	-	-	2	0.6
	2 Elementary Graduate	-	-	3	0.9
	3 High School Level	2	0.71	3	0.9
	4 High School Graduate	3	1.07	22	6.3
	5 College Level	50	17.79	17	4.9
	6 College Graduate	182	64.77	135	38.7
	7 Master	34	12.10	139	39.8
	8 Doctoral	10	3.56	28	8.0
Income (local/ foreign) in PhP	1 less than PhP10,000/ less than PhP50,000	60	21.40	46	13.2
	2 PhP10,000 – 29,999/ PhP50,000 - 99,999	59	21.00	47	13.5
	3 PhP20,000 – 29,999/ PhP100,000 - 150,000	52	18.50	68	19.5
	4 PhP30,000 – 39,999/ PhP150,000 - 199,000	26	9.30	36	10.3
	5 PhP40,000 – 49,999/ PhP200,000 - 249,999	31	11.00	21	6.0
	6 PhP50,000 – 59,999/ PhP250,000 - 299,999	22	7.80	30	8.6
	7 PhP60,000 and up/ PhP300,000 and up	31	11.00	101	28.9
Occupation	Government employee	56	19.90	58	16.6
	Private employee	137	48.80	134	38.4
	Businessman/Self-employed	37	13.20	62	17.8
	Consultant	10	3.60	15	4.3
	Retired	2	0.70	23	6.6
	Casual/Laborer	2	0.70	10	2.9
	Looking for job/student	37	13.20	47	13.5

Table 9. Descriptive statistics

Variables	Local Visitors (n=281)				Foreign Visitors (n=349)			
	Min	Max	Mean	Std Dev.	Min	Max	Mean	Std. Dev.
AGE	16	68	29.9573	8.24	17	78	36.40	11.580
GENDER	0	1	0.3915	0.488	0	1	0.5989	0.4908
STATUS	0	1	0.3060	0.46167	0	1	0.3782	0.4856
EDUC	3	8	5.9715	0.74107	1	8	6.5731	1.3384
INCOME	1	7	3.3523	1.989	1	7	4.1	2.1969
HH	1	7	3.8043	2.407	1	7	2.0974	1.2738
GROUP	1	31	6.4804	6.145	1	15	3.1232	2.5004
VISIT	1	4	1.1423	0.448	1	6	1.0602	0.3781
QUALITY	1	5	4.11	0.80085	1	5	4.3496	0.7179
PURPOSE	0	1	0.4036	0.49149	0	1	0.573	0.2328
Sum Transpo	333.00	8,750	2,157.7	1,443.76	1,610	78,029	9,352	10,136
On-Site Cost	10.00	16,000	11,915	1,652.06	100	57,520	7,131	8,9480
TravCost1 (PhP)	419.00	18,517	2,573.0	2,000.20	2,278	96,779	16,066	14,680
TravCost2 (PhP)	428.00	25,747	3,787.6	2,973.96	4,497	14,500	3,912	27,313
TravCost3 (PhP)	428.00	20,927	2,978.1	2,244.16	3,431	10,800	2,375	17,206

Note: See Table 2 for variable definition.

5.2 Visitors' Attitudinal and Information Perception towards Environmental Protection and Conservation

The respondents were asked for their opinions regarding the importance of preserving and conserving marine resources vis-a-vis the economic development of an area. Unarguably, attitudes towards environmental protection have an impact on a person's decision to visit and avail of the recreational services of a particular resource.

Figure 4 shows that majority of both foreign and local respondents agreed that it is everyone's duty to protect the environment from any development regardless of the cost. Only 8% of the local visitors and 5% of the foreign visitors disagreed with this statement.

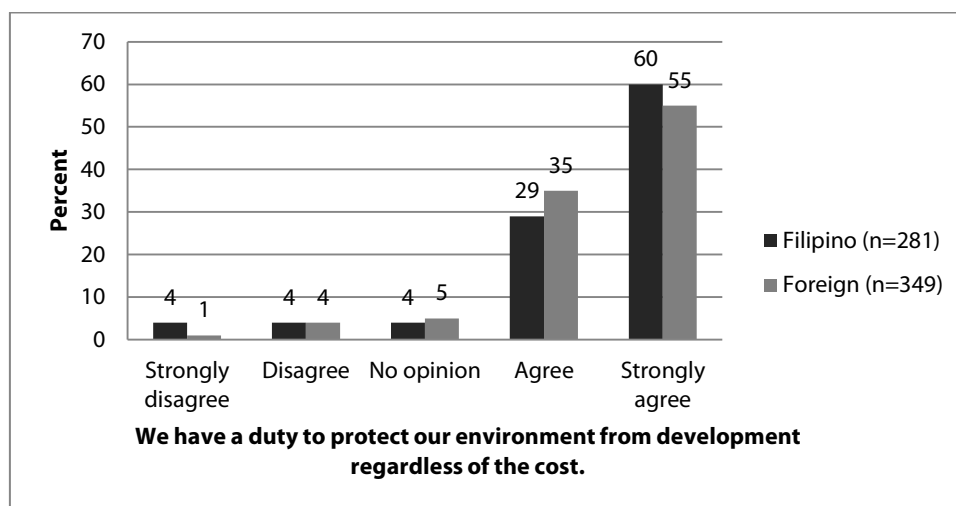


Figure 4. Visitors' attitude towards importance of environmental protection

A very high proportion of respondents strongly agreed that it is our duty to minimize the environmental damage so the next generation may still enjoy it (Figure 5). This suggests that Apo Island's visitors hope this marine resource will continue to exist so their grandchildren will get a chance to visit it in the future.

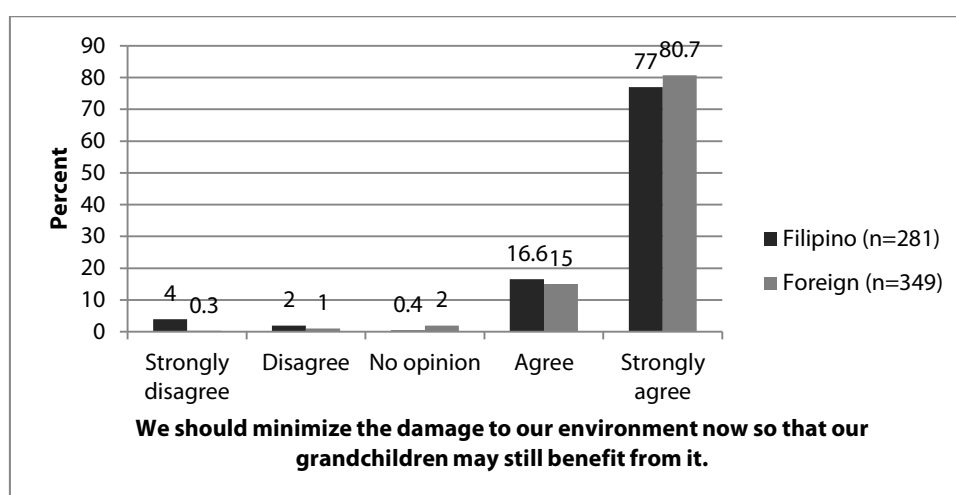


Figure 5. Visitors' attitude towards preserving the environment for future generations

When personal and other economic issues were raised other than environmental degradation and protection, the respondents' answers became more varied. About 12% of respondents (both local and

foreign) strongly agreed there were more important concerns to think about other than environmental protection. About the same number of respondents (9% local and 11% foreign) did not have an opinion on the matter. However, more than half of the respondents disagreed (58% of foreign visitors and 57% of local visitors) that environmental issues were not important (Figure 6). This supports the earlier statement that tourists who visit marine resources consider environmental protection as an important concern of the present generation.

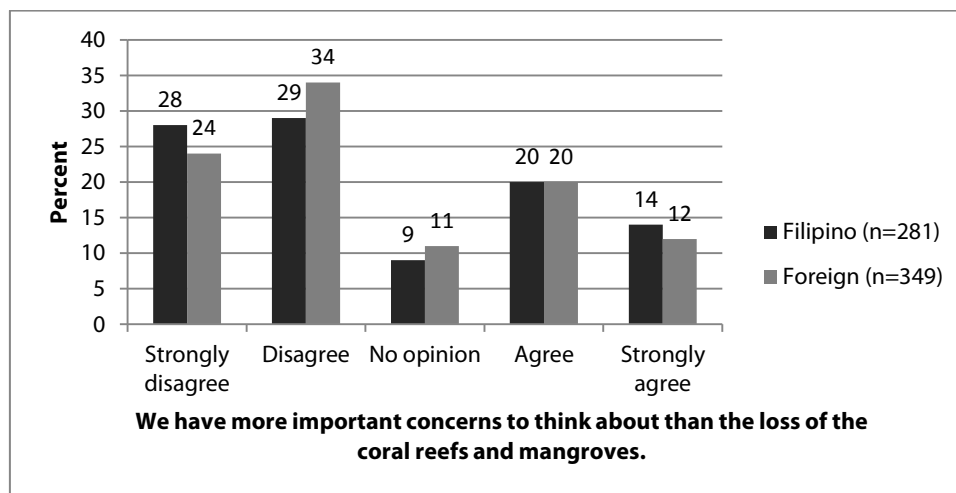


Figure 6. Visitors' attitude towards the importance of environmental concerns

Majority of the visitors believed that environmental concerns should be considered when developing the country's natural resources and that generating of jobs as well as additional source of income for the people should not be the only goal. Specifically, 59% of local and 70% of foreign visitors interviewed disagreed with the idea that the country must develop its resources regardless of any possible environmental damage or destruction (Figure 7). This indicates that many visitors did not favor economic development if it would only result in environmental destruction and degradation. Furthermore, majority of the visitors strongly agreed that coral reefs and mangroves should be protected because marine life depends on them (Figure 8).

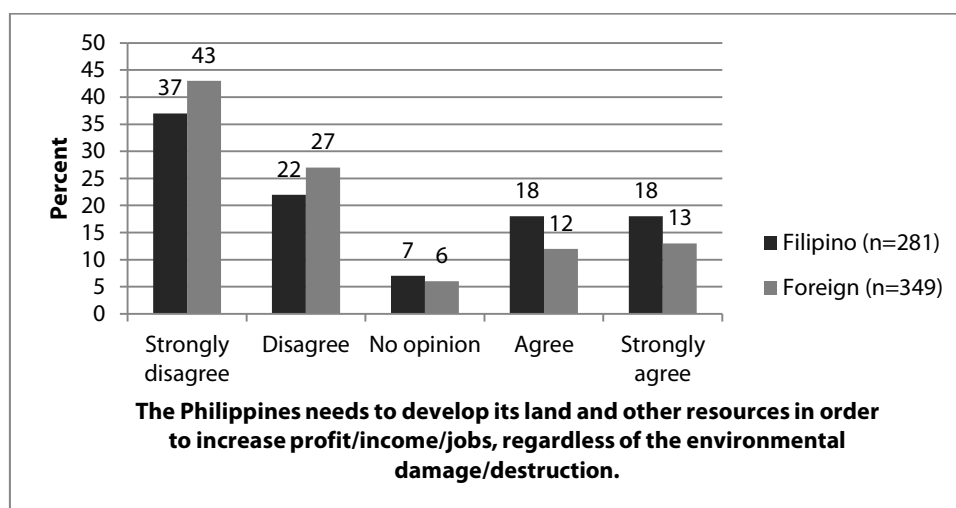


Figure 7. Visitors' attitude towards the role of the environment in economic development

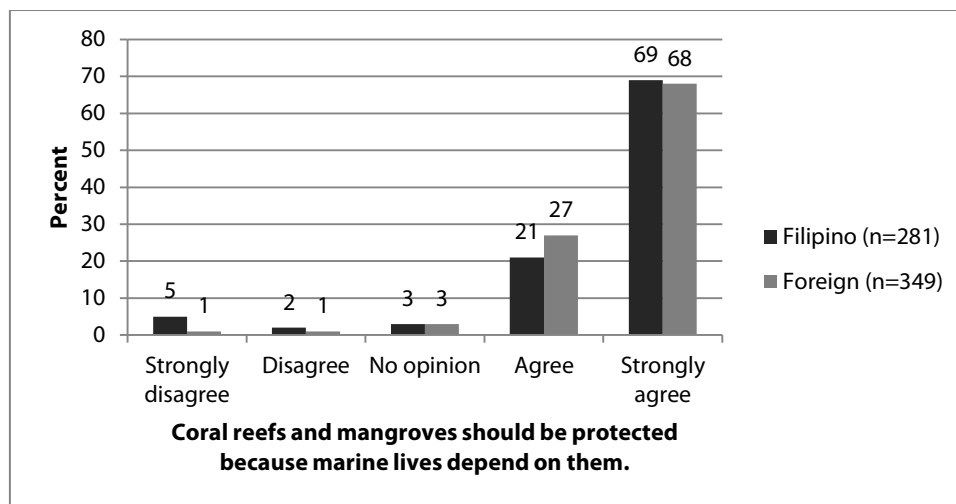


Figure 8. Visitors' attitude towards the protection of coral reefs and mangroves

A very high percentage of local (87%) and foreign (87%) respondents opined it was worth spending money today to protect marine resources because they help improve agricultural productivity (Figure 9). The protection that marine resources provide to other marine habitats is considered as the indirect use value of the said resource (Wiley 2003).

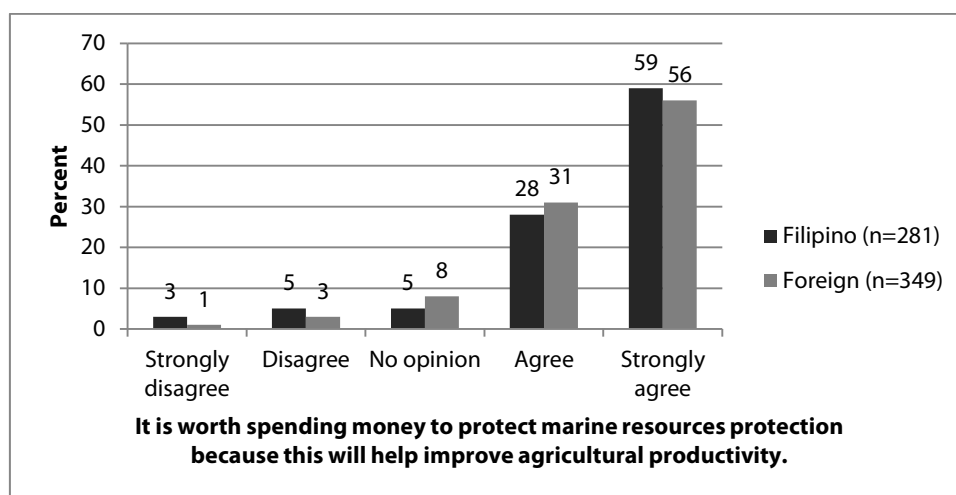


Figure 9. Visitors' perception of the indirect use value of marine resources

Another non-use value of a natural resource is its option value. This means that, today, a person is willing to contribute or pay to support environmental protection because he considers that particular resource useful to him in the future. In this study, the researcher asked the visitors' opinion regarding their willingness-to-pay (WTP) for marine conservation for future use. Figure 10 shows that 75% of local and 77% of foreign visitors were willing to pay for the protection of coral reefs for their possible future use of this resource. Only about 12% of the local and 6% of the foreign visitors thought otherwise.

Finally, 67% of local respondents and 66% of foreign respondents said they would pay to protect marine resources even if they do not intend to visit the said resource (Figure 11). This represents the non-use value that visitors attach to marine resources.

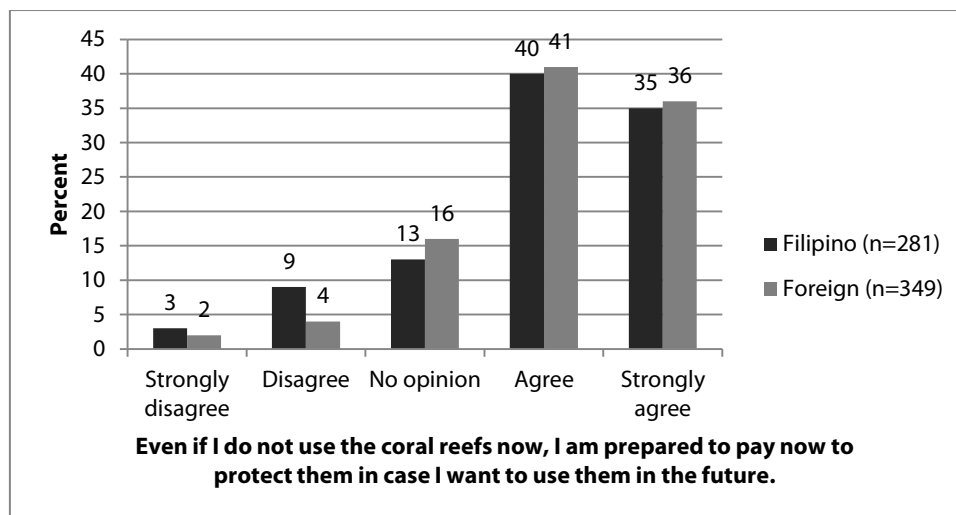


Figure 10. Visitors' perception of the option use value of marine resources

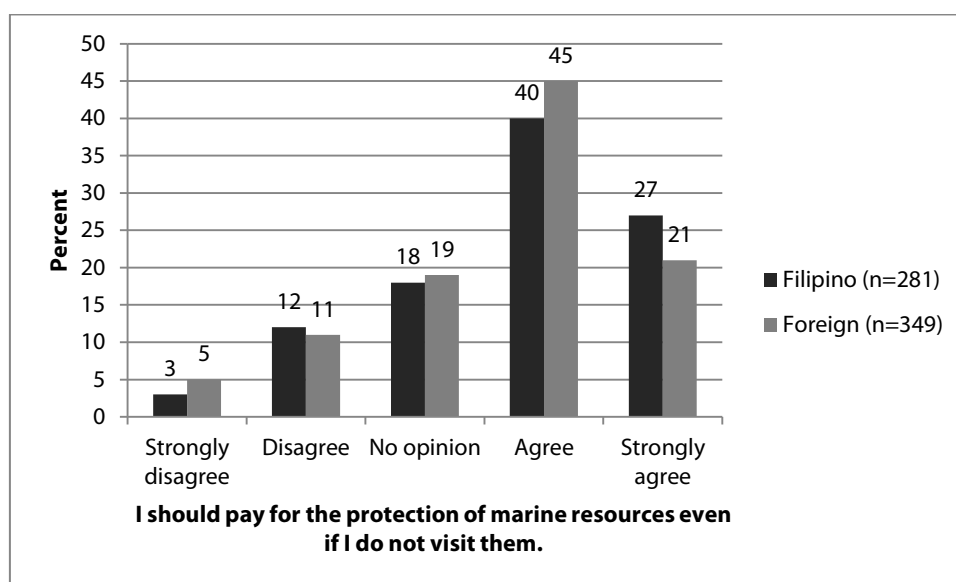


Figure 11. Visitors' perception of the non-use value of marine resources

The overall result showed the visitors' positive attitude towards environmental conservation. Both local and foreign tourists expressed their WTP for environmental protection. It revealed that respondents would not be willing to compromise a healthy environment for economic development. It also suggests that the visitors who came to Apo Island were not only individuals who wanted to unwind from their busy city lives but are also environment enthusiasts who believed that Mother Earth should be protected and preserved and that everyone must be a responsible steward of his or her environment.

5.3 Recreational Services Mostly Availd of and Enjoyed by Visitors

Table 10 shows that both local and foreign tourists' top two recreational activities while in Apo Island were snorkelling and sight-seeing. However, while 53.9% of foreign visitors enjoyed scuba diving, only 10.3% of the local visitors came to Apo Island for this recreational activity. The survey result also reveals that about 36% of foreign tourists enjoyed visiting and talking to local residents, but only 23% of the local visitors did the same.

Table 10. Recreational activities engaged in by visitors while in Apo Island

Activity	Filipinos (n= 281)		Foreign (n=349)	
	Frequency	%	Frequency	%
Enjoying Scenery/taking photos	239	85.1	263	75.4
Snorkelling	219	77.9	250	71.6
Swimming	206	73.3	197	56.4
Visiting fishing villages	64	22.8	127	36.4
Scuba diving	29	10.3	188	53.9
Sunbathing	50	17.8	147	42.1

Note: Multiple response table. Percentages based on n=281 for local visitors and n=349 for foreign visitors.

5.4 Unique Environmental and Social Attributes of Apo Island

A considerable number of visitors, 78% and 87% of local and foreign visitors, respectively, found the marine life in Apo Island to be rich (Table 11). They liked Apo Island because of the privacy and serenity it provides. They said there were no big structures in the island and that there were less commercial activities conducted compared to other recreational sites in the country. It must be noted, however that only 49% and 61% of local and foreign tourists, respectively, said that the island's marine resources have been well-preserved (Table 11). This indicates that a significant number of visitors have noticed some conservation issues in the island.

Table 11. Unique attributes of Apo Island according to visitors

Attributes	Filipino (n=281)		Foreign (n=349)	
	Frequency	%	Frequency	%
Rich marine life	220	78.3	302	86.5
Serenity/privacy	149	53.0	199	57.0
Nature of the island is preserved	137	48.8	214	61.3
Culture of local residents	115	40.1	191	54.7
Rock formation	112	39.9	120	34.4

Note: Multiple response table. Percentages based on n=281 for local visitors and n=349 for foreign visitors.

5.5 Analysis of the Recreational Value of Apo Island

5.5.1 Local tourists

Table 12 shows that the average total travel cost per visit to Apo Island of a local visitor amounted to Php 539.40 while that of a foreign visitor amounted to Php 19,488.80. This included transportation, time, and on-site costs.

Table 12. Detailed travel expenditures of tourists to Apo Island (Php)

Costs	Domestic tourists		Foreign tourists	
	All	per head	All	per head*
Transportation costs	69,393	247.00	1,900,047	5,864.30
Time costs	22,161	78.90	2,521,348	7,329.50
On-site costs (includes hotel costs)	60,004	213.50	2,145,523	6,255.00
Total (sum) travel costs	151,558	539.40	6,566,918	19,488.80

Source: Calculated from the survey data

Note: *share of travel expenses since most of foreign visitors come to Philippines with multiple purposes or trips

The average on-site costs, which were the costs incurred by local and foreign visitors while they were at Apo Island (i.e., entrance fees, snorkelling and scuba diving fees, souvenir item purchases, and board and lodging), amounted to Php 213.50 and Php 6,255.00 per visitor, respectively. The length of stay at Apo

Island and the kind of recreational activities they engaged in were the primary reasons why foreign visitors paid more while on-site.

Furthermore, while transportation expenses amounted to PhP 247.00/local visitor per visit, a foreign tourist spent about PhP 5,864.30/visit. This includes payment of motorized boat in crossing to the island, inland transportation, and air fare. It must be noted that in computing the travel cost, the length of time a visitor spent in Apo was considered in relation to the total number of days he or she spent in the Philippines. This is because most of the foreign tourists who came to Apo Island also visited several other tourists spots in the country, hence only a portion of the total travel costs incurred in visiting the country was accounted for in the study's travel cost estimation.

Table 13 shows that most of the coefficients have the expected sign. The coefficient on travel costs was negative and significant. This means that travel cost was significantly related to frequency of travel to Apo Island. Specifically, high travel costs discouraged tourists to visit Apo Island more often. Furthermore, Table 13 shows that the income of the visitors to the island has a negative effect on the frequency of visits to the island. This indicates that as the income of the local visitors increases, the number visits to Apo Island decreases. One reason for this behavior is the availability of alternative places of interests to visit within and even outside of the country.

Table 13. The travel cost regression function (local visitors)

Dependent variable	MODEL 1 VISIT n=281	MODEL 2 VISIT n=281	MODEL 3 VISIT n=281	MODEL 4 VISIT n=281
Constant	1.066* (3.836)	1.004* (3.525)	0.981* (3.463)	.995* (3.504)
Sum Transpo	-7.129E-5* (3.591)			
TravCost1		-1.044E-5 (-0.755)		
TravCost2			-6.527E-6 (-0.632)	
TravCost3				-9.305E-6 (-0.727)
AGE	0.001 (0.156)	-.001 (-.306)	-0.001 (-0.274)	-0.001 (-0.289)
GENDER	0.062 (1.179)	.060 (1.105)	0.059 (1.085)	0.059 (1.098)
STATUS	-0.033 (-0.516)	-.019 (-0.283)	-0.018 (-0.275)	-0.019 (-0.283)
EDUC	0.055 (1.435)	.044 (1.115)	0.045 (1.139)	0.044 (1.128)
INCOME	-0.012 (-0.779)	-.015 (-0.917)	-0.013 (-0.727)	-0.013 (-0.819)
HH	-0.022* (-2.028)	-.026* (-2.318)	-0.026* (-2.298)	-0.026* (-2.311)
GROUP	-0.003 (-0.666)	-0.002 (-0.389)	-0.001 (-0.304)	-0.002 (-0.358)
PURPOSE	0.050 (0.887)	.117* (2.152)	.118* (2.156)	0.118* (2.157)
R	32.5 %	25.3 %	25.2%	25.3%
R square	10.5 %	6.4 %	6.4 %	6.4 %
F-stat	2.620* (0.003)	1.525 (0.115)	1.509 (0.12)	1.521 (0.116)

Note: Numbers in parentheses are computed t-values

*statistically significant at 1% **statistically significant at 5% *** statistically significant at 10%

Using Model 1, the linear function derived is used to estimate the consumer surplus of the visitor per visit. The R-squared value is 10.5% while the F-stat is significant at 1%.

With a choke price of PhP 4,800.00, the estimated consumer surplus per local visitor amounts to PhP 3,072.00 while the estimated consumer surplus per visit amounts to PhP 2,158.00. Hence, for the local visitor, the estimated recreational benefit from visiting Apo Island amounts to PhP 2,697.40. This was determined by adding the average consumer surplus per visit and the average travel cost per trip.

Based on the total number of visits (7,438) in 2009, the total recreational benefit derived by local visitors from visiting Apo Island was estimated to reach PhP 20.07 million. (Please see equations 1-4 in Section 3.2.2 for the relevant functions.)

$$(1) \text{ Visit} = 1.066 - 7.129E-5 (\text{Travel Cost}) + 0.001 (\text{Age}) + 0.062 (\text{Gender}) - 0.033 (\text{Status}) + 0.055 (\text{Educ}) \\ - 0.012 (\text{Income}) - 0.022 (\text{Household size}) - 0.003 (\text{Group}) + 0.050 (\text{Purpose}) \\ R = 32.5\% \quad R\text{-squared} = 10.5\% \quad F\text{-stat} = 2.62$$

$$(2) \text{ Estimated Consumer Surplus per Visitor} = \frac{1}{2} (b \times h) = \text{PhP } 3,072.00$$

$$(3) \text{ Estimated Consumer Surplus per Visit} = P3,072/1.423 = \text{PhP } 2,158.00$$

$$(4) \text{ Total Recreational Benefit per Visitor} = C/S \text{ per visit} + \text{ave. travel cost per visit} \\ = \text{PhP } 2,158.00 + \text{PhP } 539.40 \text{ (see Table 16)} \\ = \text{PhP } 2,697.40$$

$$(5) \text{ Annual recreational value of Apo Island to the local tourists} = \text{PhP } 20,063,261.20 \text{ (USD } 445,850.24)$$

5.5.2 Foreign tourists

In these models (Table 14), most of the coefficients have the expected sign except for education. The high travel costs incurred by foreign individuals also have a negative impact on visits to Apo Island. The more foreign respondents have to pay to get to the island, the lesser the number of times they visit the island for its recreational services.

Using Model 3, the linear function derived was used to estimate the consumer surplus of the foreign visitors per visit. The R-squared value is 12% and is higher than that of Models 1, 2 and 4. F-stat is significant at 5%.

With a computed choke price of PhP 490,000.00, the annual consumer surplus per foreign visitor was estimated to reach PhP 285,915.00 (USD 6,353.00). The consumer surplus per visit was PhP 269,680.00 (USD 5,992.26). The recreational benefit per visit, which is calculated by summing up the consumer surplus per visit and the average travel cost per visit, was estimated at PhP 289,168.90 (USD 6,425.30). Based on the total number of visits (13,558) to the island in year 2009, the total recreational benefit was estimated at PhP 3.92 billion (USD 87.123 million). (Please see equations 1-4 in Section 3.2.2 for the relevant functions.)

In sum, the annual estimated consumer surplus or benefit derived by the local and foreign visitors from visiting Apo Island amounted to PhP 16,054,179.20 and PhP 3,656,321,440.00, respectively; and the total annual recreational value of Apo Island was estimated at PhP 3.94 billion (USD 87.57 million) (Table 15).

Table 14. The travel cost regression function (foreign visitors)

Dependent variable	MODEL 1 VISITS	MODEL 2 VISITS	MODEL 3 VISITS	MODEL 4 VISITS
Constant	1.076* (5.086)	1.066** (1.822)	1.056* (5.061)	1.063 * (5.103)
SumTravel	-8.138E-7 (-.380)			
TravCost1		-4.318E-7 (-.304)		
TravCost2			-4.505E-7 (-.429)	
TravCost3				-5.148E-7 (-.379)
AGE	.004** (1.830)	.004** (1.834)	.004** (1.845)	.004** (1.833)
GENDER	.039 (.904)	.038 (.890)	.036 (.845)	.037 (.873)
STATUS	.085*** (1.658)	.086*** (1.660)\	.086*** (1.665)	.086*** (1.662)
EDUC	-.016 (-1.010)	-.016 (-1.007)	-.016 (-1.006)	-.016 (-1.007)
HH	-.040* (-2.070)	-.041* (-2.081)	-.040* (-2.013)	-.040* (-2.049)
GROUP	-.009 (-1.011)	-.010 (-1.018)	-.010 (-1.022)	-.010 (-1.025)
INCOME	-.018** (-1.829)	-.018* (-1.769)	-.014 (-1.070)	-.016 (-1.494)
Marine Quality	.014 (.466)	.016 (.527)	.017 (.579)	.016 (.551)
AGAIN	0.110*** (1.822)	0.109*** (1.784)	0.109*** (1.788)	0.108*** (1.78)
R	34.6 %	34.5 %	34.6 %	34.6 %
R-squared	11.9 %	11.9 %	12.0	11.9 %
F-stat	2.033** (0.024)	2.028** (0.024)	2.037** (0.023)	2.033** (0.024)

Note: Numbers in parentheses are computed t-values

* statistically significant at 1% ** statistically significant at 5% *** statistically significant at 10%

Table 15. Total recreational value of Apo Island

	Local	Foreign	Total
Total no. of visits	7,438	13,558	20,996
Consumer surplus per visitor	PhP 3,072.00	PhP 285,915.00	-
Consumer surplus per Visit	PhP2,158.40	PhP 269,680.00	-
Annual consumer surplus (net benefit)	PhP 16,054,179.20 (USD 356,759.54)	PhP 3,656,321,440.00 (USD 81.25 M)	PhP 3,672,375,619.20 (USD 81.6M)
Annual recreational value	PhP 20,063,261.20 (USD 445,850.25)	PhP 3,920,550,590.40 (USD 87.12M)	PhP 3,940,613,851.60 (USD 87.57M)

Note: 45 PhP = 1 USD

6.0 CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Conclusions

Apo Island's total value must be determined in order to guide the island's management in its decision-making. This will also help the local community and its local executives better appreciate the importance of the MPA.

It must be stressed that in this study, only the non-market use value was estimated. This was done by determining the consumer surplus derived by both local and foreign visitors from visiting Apo Island for its recreational services. The result suggests that foreign visitors receive greater economic benefit from visiting Apo Island than local visitors. This means that the WTP of a foreign visitor was higher than the WTP of a Filipino tourist.

Specifically, the study came up with the following findings:

1. The total consumer surplus or net economic benefit derived by foreign visitors in availing of Apo Island's recreational and environmental services was 200 times the consumer surplus of local visitors.
2. Total annual recreational value of Apo Island was estimated at PhP 3.94 billion (USD 87.57 million).
3. The regression analysis revealed a strong relationship between travel cost (money and time cost) of local visitors and their frequency of visits to Apo Island. The coefficient of travel cost has the expected sign (negative). Among the socioeconomic and demographic variables considered, only household size was significantly related to the number of trips to the island in a year.
4. The regression analysis further revealed that foreign visitors' household size, gender and age were significantly related to the number of trips to Apo Island. The coefficient sign of travel cost provided the expected negative sign; however, its computed t-value suggested that travel cost is not significantly related to the number of visits to Apo Island. Overall, the regression result provided significant F-values.
5. Aside from sightseeing or enjoying the island's beautiful scenery, snorkeling was the most availed of recreational service by both local and foreign visitors. It was also discovered that 40% of the foreign visitors came to Apo Island for scuba diving while only 10% of Filipino visitors came to do the same.
6. Almost all visitors believed that Apo Island is rich in marine life. However, only 49% of the local and 61% of the foreign visitors believed the island's marine resources are well-managed and preserved.

It can be concluded from the foregoing discussions that the WTP of the visitors (both local and foreign) was higher than the actual amount they paid in going to Apo Island.

6.2 Policy Implications

There were three basic findings that must be stressed before setting some policy directions.

First, the attitude toward marine conservation of Apo Island local and foreign visitors was very positive. This meant these visitors were willing to pay — and to pay more — to support environmental conservation programs in the island. This particular finding was supported by the positive net recreational benefits revealed by the local and foreign visitors for enjoying the island's recreational services.

Second, the increasing population and eco-tourism activities in the island have started to impact negatively on the marine resource. Impacts include (1) the degradation of the marine environment and its biodiversity through unregulated anchorage as a result of the rising number of visitors, illegal fishing, and unregulated scuba diving; and (2) denudation of Apo Island's vegetative cover through the conversion of forests/agricultural land into residential areas and tourism-related facilities. This report is supported by one of the findings of this study: while the visitors were aware of the rich marine life around the island, they also believed that these resources were under severe pressure. Specifically, only 49% of local and 61% of foreign visitors believed that Apo Island's marine environment is well-preserved.

Third, despite the aforementioned environmental threats, the visitors put a high value on Apo Island. For the non-market use aspect of Apo Island alone, the visitors revealed a net economic benefit of over PhP 3.67 billion (USD 81.6 million).

It is apparent from this analysis that the government through the AIPLS-PAMB can justify higher budget allocations for the environmental conservation and livelihood programs in Apo Island. The researcher recommends that an additional PhP 100.00 be collected from foreign visitors as entrance fee. At present, both local and foreign visitor pay the same entrance fee, that is, PhP 100.00 per visitor, except for those residing within Negros Oriental. Setting different entrance fees will better reflect the fact that foreign visitors derive higher additional economic benefits than local visitors. Below is the suggested entrance fee:

Local Visitor: P 100.00 (no increase)
Foreign Visitor: P 200.00 (additional P100)

If this will be implemented, the additional revenue would go a long way in funding resource conservation and livelihood programs for the residents.

The following are the strategies and programs that must be given serious consideration by the local as well as the national government:

1. ***Seek the usual cooperation from residents and other stakeholders by encouraging shared ownership of Apo Island's MPA management program.*** To do this, the objective of the conservation program must be fully explained, understood and appreciated by each member of the community. If possible, the full cost or value of Apo Island as a marine resource must be stressed. If residents are not made part of the program, they will become less cooperative and interested in preserving Apo Island's resources. If the residents gain a sense of ownership over the management of the MPA, support from them should come easily and naturally.
2. ***Provide livelihood programs where everyone is given equal opportunity to earn.*** Salt production was among the livelihood projects identified during interviews with the island's local officials and residents. A project feasibility study must be conducted before venturing into this project and, if found viable, PAMB should fully support local officials and residents in setting up the livelihood project.
3. ***Extend livelihood skills training.*** As per discussion with some local residents, the lack of a training and livelihood program was one of the reasons why local residents could not fully appreciate and enjoy the opportunities that eco-tourism activities can offer.
4. ***Increase allocation for: livelihood programs for the local residents, and power and water facilities.*** This will make the residents more cooperative and responsive to the conservation effort of DENR.
5. ***Encourage more research.*** A full valuation of the marine resource must be conducted. Apart from the government, through DENR and its management, every stakeholder must know the full value of Apo Island.

The DENR-PAMB must seriously look into these suggestions. If the funds for Apo Island's environmental conservation program, which include provision of social services and livelihood options, is not enough, then additional sources of revenue must be tapped.

7.0 LIMITATIONS OF THE STUDY AND AREAS FOR FUTURE RESEARCH

First, it must be emphasized that the study only explored the non-market use value of Apo Island for its recreational services. The market value (direct and indirect) and the non-use value (valuing the option, quasi-option, and bequest values) have not been included in the estimation. Section 5.2 provides initial findings that both local and foreign visitors have high WTP for the non-market non-use value (option, quasi-option, and bequest values) of the island. It is suggested that a complete valuation be conducted — both market and non-market — to come up with the full value of Apo Island.

Second, the ZTCM was not utilized after several attempts of dividing the places of origin of visitors into smaller zones. The small number of observations (number of zones) provided poor regression result. On the other hand, the ITCM was explored to estimate the consumer surplus of Apo Island visitors. The result of the regression showed 10-12 % R-squared. F-values were significant at 0.05. The travel cost regression function for foreigners provided a very high choke price suggesting that this group of tourists has a very high consumer surplus and WTP for the environmental services of Apo Island.

Third, the substitute cost must be estimated and included as one of the independent variables in the model. The omission of this variable may have resulted in an over-estimation of consumer surplus, as the demand function may exhibit a steeper curve. Pham and Tran (2001), however, found the coefficient of substitute cost statistically insignificant. The researcher failed to include substitution cost as one of the possible variables that might have explained the variation of demand for Apo Island.

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