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**ESTIMATING RECREATIONAL VALUES
OF THE SOHOTON NATURAL BRIDGE
NATIONAL PARK¹**



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ESTIMATING RECREATIONAL VALUES OF THE SOHOTON NATURAL BRIDGE NATIONAL PARK¹

by ..

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EXECUTIVE SUMMARY

The primary objective of the study is to estimate how much value tourists place on the benefits derived from recreating at the Sohoton Natural Bridge National Park (SNBNP). The results could also be used as basis for adjusting the current structure of park entrance fees and possibly introduce other user fees from current and potential facilities for recreationists in the Park. The study makes use of the total economic value (TEV) approach which is the sum total of all use values (UV) and non-use values (NUV) of the good being measured. Use values can further be classified into three types: direct use values (DUV), indirect use values (IUV) and option values (OV). On the other hand, NUV are made up of existence (XV) and bequest values (BV). The TEV aims to measure the economic value of the environment and natural resources.

Recreation values of tourist spots would fall into the category of direct use values. However, there is no direct market price for recreation per se. In this case, non-market techniques are used to determine the "price" that tourists are willing to pay (WTP) to "purchase" recreation. One technique available is the contingent valuation method (CVM) which involves a survey of tourists that visited SNBNP. Respondents are asked the maximum amount they are willing to pay to enter the Park. Two scenarios are presented: first, respondents are asked their maximum WTP at the current level of services; and second, the maximum amount they are willing to pay with an improved level of services. The survey made use of a structured questionnaire and was conducted between January to July 2000.

The CV model hypothesizes that WTP is influenced by knowledge of the respondent on SNBNP, attributes of the Park, degree of satisfaction with the Park's services, environmental attitude of the respondent, some socio-demographic variables and the ability to pay.

Results show that the average age of the typical SNBNP visitor is 37 years old. Females and males were more or less equally represented in the survey, as well as single and married persons. Respondents were mostly college graduates. Incomes were relatively high. Most respondents were employees, although a significant percentage was composed of students and licensed professionals. Only very few did not have jobs, while there were even fewer fisherfolk and farmers, implying that SNBNP caters more to those with higher incomes. Most visitors were members of at least one organization.

The typical group of local travellers is big, with an average size of 17 people per group. Foreigners travel in smaller groups, with an average size of 4 people per group. Almost all respondents are first time visitors, with locals planning to visit twice, on the average, in the next two years. Around 13% of visitors travelled on package tours, most of which are foreigners. Moreover, most foreigners did not come straight from their residence, nor will go back to their residence right away, indicating that the current visit to SNBNP is just a side-trip.

Most local respondents got their information regarding SNBNP from personal contacts, such as friends, relatives, co-office workers, or from organizations to which they belong. On the other hand, foreign visitors learned about the area either from print media or from travel agencies/ hotels where they were billeted.

Activities that were deemed important in deciding to visit SNBNP included nature-based activities such as caving, camping, swimming and exploration, sightseeing and photography. An overwhelming majority of the respondents indicated the uniqueness of the area as important in choosing SNBNP, along with the scenic boat ride going to the caves and natural bridge. Many respondents were impressed with the tour guide. Access to the Park and the experienced peace and tranquility were likewise rated very highly. Meanwhile, only half of the respondents were highly satisfied with the availability of litter bins and picnic facilities. Finally, less than half rated other park amenities and overall park management as either excellent or good. On the whole, most respondents were satisfied with their visit to SNBNP. As to the approval of the ongoing construction of elevated walkways, majority of both locals and foreigners approved of the activity.

Majority of local visitors were amenable to the provision of new facilities, and were willing to pay for the use of lodging facilities and comfort rooms. However, less than half were willing to pay for outdoor cooking areas and camp sites. For foreigners, only lodging facilities were preferred by more than half of the respondents. Average WTP amounts were high, but very few were willing to pay for most of the hypothetical new facilities.

Results of the regression analysis for local tourists showed that for knowledge of SNBNP, those that learned about the Park from TV had a higher WTP. For variables related to the Park attributes, those that indicated spelunking as an important reason for choosing SNBNP for that trip had a lower WTP. Educational attainment was highly significant, as well as status of house ownership. Males seemed to have a higher willingness to pay relative to females. Finally, household income influenced WTP positively. The estimated mean increase in entrance fees for local tourists is PhP 12.87 for all bidders, while positive bidders were willing to increase entrance fees by as much as PhP 14.96.

At improved level of services, only three variables are significant in determining visitors' willingness to pay for increased entrance fees. Schools as a source of information had a positive effect on WTP, as well as media advertisements. Environmental attitude likewise proved significant in influencing WTP for improved level of services. Overall, respondents are willing to pay an additional PhP 39.17 if Park services are improved.

To derive the total WTP for increased entrance fees at SNBNP, the mean willingness to pay is summed up across the relevant population, in this case the average number of visitors per year. The total willingness to pay is thus PhP 205,745.89 per year for all visitors to SNBNP. To get the NPV of Sohoton National Park, we assume that as long as the Park is maintained as a protected area, visitors will derive recreational benefits perpetually. Thus, using a 12% discount rate, the NPV for SNBNP is PhP 1,714,549. Given the area of SNBNP at 840 hectares, the NPV per hectare of SNBNP is equal to PhP 2,041.13.

From the results, it can be said that there is a significant willingness among visitors to pay for increased entrance fees at the current level of services. If plans to improve the Park are implemented, the potential increase in entrance fees is much higher. It is thus recommended that the PAMB implement the increase in the entrance fees according to the following schedule:

<u>Type of Visitor</u>	<u>Entrance Fee</u>
Local	PhP 20
Foreign	\$ 4

ESTIMATING RECREATIONAL VALUES OF THE SOHOTON NATURAL BRIDGE NATIONAL PARK

1. INTRODUCTION³

The Sohoton Natural Bridge National Park (SNBNP) was established as a national park on July 19, 1935 through Proclamation No. 831, primarily to preserve its geological features and natural wonders. The 840-hectare park is generally characterized by high and broken ridges of hilly to moderately rolling terrain with the elevation ranging from 0 to 107 meters above sea level. Three main geologically defined land types exist in the area: an upland plateau, an intermediate karst⁴ block and lowland alluvial areas. These different land types display different vegetative cover.

There are three navigable rivers that traverse the Park, namely: Basey, Sohoton and Bugasan Rivers. The climatic condition of the area is of the second climatic type: wet from July to February, and dry from March to June. The whole area is typical of karst formations, with an intriguing variety of deep shafts and sinkholes, caves, rock-shelters, underground rivers and bizarre weather-sculptured rock formations. All the caves are located in towering and rugged limestone cliffs which line the river.

Interesting features include the stone bridge, from which the Park got its name, which connects two mountain ridges. The Sohoton River flows underneath. The caves are made up of different types. There is the Panhulugan Cave I, which is the largest and most spectacular endogenic cave found in the Park. Its floor area is estimated at 546 sq. m. Panhulugan Cave II is a long scar, about 50 meters long and 3-5 meters high, that cuts into the face of Panhulugan Cliff. Sohoton Cave, is a high cathedral-like dome with an entrance of parabolic arch type about 15 meters high. Finally, there are the Bugasan and Capigtan caves, which are smaller but similar to Sohoton.

The Park is being managed by the Protected Area Management Board (PAMB). The PAMB-SNBNP was created on May 15, 1994 and is composed of 13 members from LGUs, NGOs, POs and NGAs, with the DENR Regional Executive Director as the Chairperson. The Protected Area Superintendent (PASu) serves as the Chief Operating DENR Officer on site. On May 23, 1997, the PAMB entered into a Memorandum of Agreement with Unimasters Conglomeration, Inc., operator of Leyte Park Resort in Tacloban City, for the management and development of the recreational zone covering an area of 99 hectares within SNBNP to enhance its ecotourism potential.

2. OBJECTIVES OF THE STUDY

The primary objective of the study is to estimate how much value tourists place on the benefits derived from recreating at SNBNP. The results will input into the comprehensive Benefit Cost Analysis (BCA) being undertaken by SAMBIO in determining the appropriate

³ DENR-EMPAS Region 8. Brochure on *Sohoton Natural Bridge National Park*. Sto. Niño Extension, Tacloban City, Leyte.

⁴ an area of limestone formation, characterized by sinks, ravines, and underground streams (Webster).

management option for the Samar Island Forest Reserve (SIFR). Furthermore, the results could be used as basis for adjusting the current structure of park entrance fees and possibly introduce other user fees from current and potential facilities for recreationists in the Park.

In addition, the study aims to provide information on the following:

1. socio-economic profile of SNBNP visitors;
2. travel profile of SNBNP visitors;
3. recreation behavior of SNBNP visitors; and
4. preferred types of development in the Park.

3. ECONOMIC FRAMEWORK

3.1 *Total Economic Value*⁵

The total economic value (TEV) approach is probably the most commonly used methodology in economics to measure the economic value of the environment and natural resources. It is defined as the sum total of all use values (UV) and non-use values (NUV) of the good being measured. Use values can further be classified into three types: direct use values (DUV), indirect use values (IUV) and option values (OV), although there are some sectors that contend that OV should be included as part of NUV rather than of UV. On the other hand, NUV are made up of existence (XV) and bequest values (BV). The total economic value may be expressed as:

$$\begin{aligned} \text{TEV} &= \text{UV} + \text{NUV} \\ &= (\text{DUV} + \text{IUV} + \text{OV}) + (\text{XV} + \text{BV}) \end{aligned}$$

Direct use values refer to values derived from actual use of the good either for direct consumption or production of other commodities. Market prices are used for goods that are traded but for goods or services with no market prices, i.e., not traded, their values are more difficult to estimate. In the case of SIFR, direct use values would include the value of timber and non-timber forest products being traded. Recreation values of tourist spots would likewise fall into this category. However, there is no direct market price for recreation per se. In this case, non-market techniques are used to determine the "price" that tourists are willing to pay to "purchase" recreation.

Indirect use values are benefits derived from ecosystem functions, such as the forest's function in protecting the watershed, and in preventing erosion and floods. These are values derived from resources and services that are not consumed, traded or reflected in national income accounts. They usually accrue to society as a whole, rather than to individuals or corporate entities.

Option values are those that approximate an individual's willingness to pay (WTP) in order to ensure that the good can be accessed at a later date. OVs are some sort of insurance values, in which people assign values to risk aversion in the face of uncertainty. Forests that

⁵ Lifted from Rosales, R. and J. Padilla. *Economic Valuation of Biodiversity: A Preliminary Survey of Current Thinking and Applications. People, Earth and Culture. Los Baños, Laguna: 1998.*

are protected provide an option for potential discoveries of plants and animals that may prove beneficial in the future. Given this, society as a whole may be willing to pay to retain the option of having future access to a certain species.

Existence values are defined as the WTP of people merely to ensure the continued existence of a certain species or ecosystem. It is the benefit accruing to an individual just by knowing that the resource exists. The ethical dimension is important in determining the existence value, which reflects sympathy, responsibility and concern that some people may feel toward certain species and ecosystems or biodiversity in general.

Finally, bequest values are measures of benefits people attach to resources so that future generations may avail of the same benefits that accrue to the present generation. These values provide a strong economic justification for preserving natural lands (Krutilla and Fisher, 1975) and they seem to dominate all other benefits of wilderness in the minds of some people. It also ensures inter-generational equity.

3.2 *Approach in Measuring Recreational Values*⁶

Save for some direct use values, estimating components of TEV is not straightforward, given that they are not being traded in the market, hence do not possess market prices. Economic techniques have been developed to approximate such values. In the case of measuring recreational values, one technique available is the contingent valuation method (CVM) which involves a survey of the relevant population, in this case, tourists that visited SNBNP. Respondents are asked the maximum amount they are willing to pay to enter the Park. Two scenarios are presented: first, respondents are asked their maximum WTP at the current level of services; and second, the maximum amount they are willing to pay with an improved level of services. In other words, the value imputed is contingent on the situation being presented to the sample, such that if it were actually being sold, at what price would they "buy" such a service. The survey makes use of a structured questionnaire, which contains the following:

- A description of the hypothetical situation
- A description of the method of payment
- A description of the constructed market
- Questions assessing the validity of the stated values

It is assumed that the respondent makes a rational series of allocations of time and money to maximize utility. This implies that the respondent's WTP to enter SNBNP maximizes utility, and is consistent with microeconomic theory of consumer behavior.

The CVM relies on what people say they would be willing to pay to access the site, contingent on hypothetical situations introduced in the survey. The usual criticism of the CV model is focused on the hypothetical character of the questions, which generates hypothetical answers. Furthermore, the respondent has to be given enough information about the environmental issue at hand in order to properly make a valuation. When

⁶ Lifted mostly from Padilla, J. R. Rosales, C. Predo, et al. *A Report on the Survey of Tourists and Resorts at Hundred Islands National Park, ENRAP IV-B Technical Paper*. October 1999.

conducting personal interviews, there is no guarantee that proper valuation is accomplished, if the environmental issue is presented in different ways.

However, the CV model is often preferred because it is flexible, it is theoretically simple, and it is easy to estimate and apply (Mitchell and Carson, 1989). It is also the only available method that can estimate non-use benefits of a site, including existence, option and bequest values. It can also avoid modeling and econometric problems associated with other techniques.

4. METHODOLOGY

4.1 Survey

A preliminary survey was conducted among visitors at Sohoton Natural Bridge National Park (SNBNP) for the period January to July 2000. March to May was considered as the peak season for local tourists, while June to July was the peak season for foreign visitors. January and February represented the lean season for SNBNP. Almost complete enumeration was conducted, whereby almost all tourists that visited during the period were interviewed. Mr. Francisco Corrales, official tour guide to SNBNP, served as the enumerator for the survey. Interviews were conducted at the end of each tour; hence visitors had a clear idea of what they were valuing.

The questionnaire was composed of eight pages (see *Appendix A*). The first part dealt with the recreation behavior of visitors, including their level of satisfaction for the Park's current services. Part 2 was the CV portion of the survey, while Part 3 contained questions relating to the travel profiles of the respondents. Finally, Part 4 pertained to their socio-economic profiles.

A total of 603 respondents were surveyed during the period. Out of these, only 294 locals were valid for the CV analysis of the study. A separate model for foreigners was attempted. However, the survey instrument did not cover for the peculiarities of this group, hence no acceptable results could be generated.

4.2 Tobit Model for Estimating WTP⁷

In conducting the regression analysis on maximum WTP of visitors to enter SNBNP, the Tobit model was used instead of the Ordinary Least Squares (OLS). Previous studies have shown that for data sets with a substantial number of zero bids, OLS estimates will be biased downward (Violette, 1985 from Halstead, Lindsay and Brown, 1990). They further state that "a theoretical and empirical case can be made for solely using Tobit analysis to analyze WTP data sets with open-ended bid formats" (Halstead, Lindsay and Brown, 1990).

Tobit regression analysis was conducted by using the maximum likelihood estimation technique using LIMDEP 7 for Windows 95 (Greene, 1998). The maximum likelihood

⁷ Lifted mostly from Padilla, J. R. Rosales, C. Predo, et al. *A Report on the Survey of Tourists and Resorts at Hundred Island National Park, ENRAP IV-B Technical Paper*. October 1999.

estimation of the Tobit model provides unbiased and consistent parameter estimates than OLS estimation when the dependent variable is censored (Tobin, 1958; Maddala, 1983). Thus, this approach is used to estimate the WTP function in general, and to test the factors that are hypothesized to affect WTP to preserve SIFR in particular.

The independent variables were tested for multicollinearity, by running the model in OLS using SPSS for Windows version 10.0 and looking at the variance inflation factors (Predo, 1999). Multicollinearity exists in some degree if the value of the inflation factor is greater than 1.0, meaning the variable in question is not orthogonal to the rest. According to Judge et al. (1988) an inflation factor of 5.0 or more is an indication of a severe multicollinearity problem (Predo 1999).

With respect to the goodness of fit, the likelihood ratio test was used. This is used to test the hypothesis that the variables in the model have no effect on the value of the dependent variable. The likelihood ratio test, whose statistic follows a chi-square distribution, is used to test the null hypothesis that all estimated coefficients, except the intercept, are zero. Thus, the hypotheses are set-up as follows:

$$H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$$
$$H_a: \text{at least one } \beta_i \neq 0; i = 1, 2, \dots, k$$

The test statistic would thus be:

$$-2 * (L_0 - L_1) = \chi^2$$

where L_0 = value of maximum likelihood function for the null hypothesis
 L_1 = value of maximum likelihood function for the full model

The test statistic follows a χ^2 distribution with k degrees of freedom, where k is the number of parameters in the equation excluding the constant (Pindyck and Rubinfeld, 1981). If the approximated χ^2 value exceeds the critical value for the chi-square distribution with the corresponding degrees of freedom, then H_0 is rejected.

4.3 *Specification of the Contingent Valuation Model*

The CV model for recreationists at SNBNP is hypothesized to be of the following form:

$$WTP_i = f (A_{ij}, B_{ik}, C_{it}, D_{im}, E_{io}, F_{ip}) + \varepsilon$$

Where WTP_i = willingness to pay of respondent i

A_{ij} = knowledge of respondent i on SNBNP

B_{ik} = attributes of the Park

C_{it} = degree of satisfaction of respondent i with the Park's services

D_{im} = environmental attitude of respondent i

E_{io} = socio-demographic variables pertaining to respondent i

F_{ip} = ability to pay of respondent i

ε = random error term

- $j = 1 \text{ to } 6$
- $k = 1 \text{ to } 6$
- $l = 1 \text{ to } 2$
- $m = 1 \text{ to } 2$
- $o = 1 \text{ to } 2$
- $p = 1 \text{ to } 3$
- $i = 1 \text{ to } n$

Knowledge of respondent on SNBNP is represented by the dummy variables on the sources of information regarding SNBNP, such as:

1. TV
2. Print media
3. Radio
4. Friends
5. School
6. Government / travel agency

Attributes of the Park are represented by the following variables:

1. Spelunking
2. Scenery
3. Recommended by friends or family
4. Media advertisements
5. Proximity to residence
6. Cultural attributes of the Park

The degree of satisfaction is represented by the following:

1. Index of rates for the Park's various services
2. Dummy variable on the approval of the construction of walkways towards the caves

The environmental attitude of the respondent is measured by:

1. Number of years of education of the respondent
2. Membership in an environmental organization

Socio-demographic variables include:

1. Gender
2. Age

Finally, ability to pay is represented by:

1. Household income
2. Number of household members
3. Ownership of house

Table 12 contains the hypothesized direction of the effect of the independent variables on willingness to pay.

4.4 *Hypothesized Effects of Independent Variables*

It is hypothesized that knowledge on Sohoton Bridge National Park influences the respondent's willingness to pay for a higher entrance fee, depending on the source of information (Table 15). Sources associated with higher income levels, such as TV, would tend to influence WTP positively. On the other hand, those sources associated with lower income levels, such as radio, would influence WTP in the opposite direction. Other sources could influence WTP in either direction, depending on the type of, say, print media being considered by the respondent.

For the variables that pertain to the attributes of the Park, they are likewise posited to influence WTP positively. However, for those living near the area, proximity may affect WTP either way. For one thing, these residents would probably bid higher, given their sense of ownership of the Park. Conversely, they may tend to bid lower because entrance fees may be construed as tax payments, and they may feel they are already being overburdened by such for their residence tax payments. For those that consider cultural reasons as important, they may bid higher given the "priceless" value of cultural and historical aspects of the Park. They may however bid lower because of the notion that attaching a price "commercializes" the cultural aspect of the Park.

For the degree of satisfaction with the Park's services, variables in this category would presumably increase WTP. Higher satisfaction would naturally lead to higher values associated with the Park.

For the environmental attitude, the level of education, represented by the number of years of education, is again a positive influence on WTP. Those who have a higher educational attainment usually have higher environmental awareness, consequently a higher value for the Park. Meanwhile, membership in an environmental education can go either way. The level of environmental awareness would be high, thus their value for preserving the recreational site would follow in the same direction. On the other hand, they may perceive their membership to constitute enough payment for preserving the environment, thus may not be willing to pay more for such programs.

Gender and age are dummy variables that may take either direction, depending on the characteristics of the site. Finally, for ability to pay variables, higher incomes would naturally lead to higher WTP, while number of household members would have the opposite effect. Status of home ownership could take either direction. Homeowners usually have a higher ability to pay than those paying rent do. However, some homeowners may still be bogged down by periodic payments for their homes, hence may not be willing to pay more than those that are paying rent.

5. STUDY RESULTS

5.1 *Socio-Economic Profile of Respondents*

The average age of the typical SNBNP visitor is 37 years old (**Table 1**). Females and males were more or less equally represented in the survey, as well as single and married persons. Respondents were mostly college graduates, with mean years of education at 15 years, and a fifth of local visitors and 37% of foreigners having post-graduate degrees. Incomes were relatively high: average individual incomes were PhP 30,604 per month, while average household incomes were PhP 40,663 per month.

Most respondents were employees, although a significant percentage were students (12.5%) and licensed professionals (9.1%) (**Table 2**). Only very few did not have jobs, while there were even fewer fisherfolk and farmers, implying that SNBNP caters more to the ABC crowd than to those belonging to DE income brackets.

Regarding organizational membership, most visitors were members of at least one organization, with only 9% not belonging to any category (**Table 3**). The highest frequency was in the government, particularly for locals, followed by members of sports-related organizations. About a fifth of both local and foreign respondents were in school organizations, and members of environmental groups represented 11.6% of the respondents.

5.2 *Travel Profile of Respondents*

Table 4 contains information on various characteristics directly related to the travel of the respondent. The typical group of local travellers is big, with an average size of 17 people per group. Foreigners travel in smaller groups, with an average size of 4 people per group. Almost all respondents are first time visitors, with locals planning to visit twice, on the average, in the next two years.

Around 13% of visitors travelled on package tours, most of which are foreigners. Moreover, most foreigners did not come straight from their residence, nor will go back to their residence right away, indicating that the current visit to SNBNP is just a side-trip. Most visitors travelled to SNBNP by bus and jeep. Average trip expenses were PhP 1,634 for locals and PHP 59,536 for foreigners, with transportation being the biggest expense. Entrance fees were merely 0.7% of total expenses for locals, and 0.15% for foreigners.

5.3 *Recreation Behavior of Respondents*

Most local respondents got their information regarding SNBNP from personal contacts, such as friends, relatives, co-office workers, or from organizations to which they belong (**Table 5**). On the other hand, foreign visitors learned about the area either from print media or from travel agencies/ hotels where they were billeted.

Activities that were deemed important in deciding to visit SNBNP included nature-based activities such as caving, camping, swimming and exploration, sightseeing and

photography (*Table 6*). A fifth of the respondents also indicated research and cultural appreciation as important factors in making their decision. This is probably due to the uniqueness of the natural bridge and the cave formation found within the protected area. On the other hand, picnicking did not seem to matter much to the respondents relative to the other factors mentioned.

This was further validated by the reasons given for choosing Sohoton for the current visit. An overwhelming majority of the respondents indicated the uniqueness of the area as important in choosing SNBNP, along with the scenic boat ride going to the caves and natural bridge (*Table 7*). Flora in the area, challenge of spelunking and cultural reasons were also ranked as important reasons. On the other hand, price and proximity to their residence did not seem to matter as much as the other reasons, which is consistent with the socio-economic profile of the respondents revealed by the survey.

Many respondents were impressed with the tour guide, whereby 91.9% of them gave the item a rating of either excellent or good (*Table 8*). Access to the Park and the experienced peace and tranquility were likewise rated very highly. Meanwhile, only half of the respondents were highly satisfied with the availability of litter bins and picnic facilities, although around a fifth of them did not use the latter. Finally, less than half rated other park amenities and overall park management as either excellent or good, but again around one fifth of the respondents did not use such services.

Majority of respondents would have either stayed home or recreated elsewhere, if they did not visit SNBNP at the time of the interview (*Table 9*). Only a small percentage said that they would have worked instead, indicating there were few that incurred opportunity costs in recreating at SNBNP. Moreover, only a small proportion of the sample indicated other places as substitute sites for SNBNP, implying the uniqueness of the Park as a recreation site (*Table 10*).

On the whole, most respondents were satisfied with their visit to SNBNP, as reflected in their responses as to whether their expectations were met or not (*Table 11*). More locals even had their expectations exceeded (37%). As to the approval of the ongoing construction of elevated walkways, majority of both locals and foreigners approved of the activity, although there was a smaller percentage of foreigners in this category relative to locals (*Table 12a*). Still, on the whole, majority approved of the PAMB activity of constructing elevated walkways. Reasons for approval include accessibility, aesthetic improvement and safety (*Table 12b*). On the other hand, those that did not approve cited preservation of nature, lack of necessity, riskiness, and loss of excitement in the area as reasons for non-approval.

5.4 Willingness to Pay for Higher Entrance Fees

On the average, local visitors were willing to pay an additional PhP 13 to enter SNBNP (*Table 13a*). Foreigners, on the other hand, were willing to pay an additional \$2.5. There was a high percentage of visitors willing to pay higher entrance fees: 95% of locals and 96% of foreigners. At improved level of services, the average amount for each type of improvement ranged from PhP 5 to 7 for locals. The highest average amount was for the improvement of road and trail conditions (PhP 6.68), followed by Park protection and

provision of tour-guided programs at PhP 6.57 each. On the other hand, the highest amount for foreigners was for provision of maps and more information about the Park, followed by improvement of road/trail conditions and collection of litter and cleanliness.

On the whole, local visitors were WTP an additional PhP 36.84 with the improvements, and foreigners were willing to pay almost \$1 more. Frequencies, though, were lower for this category: only 89.6% of locals and 83.3% of foreigners indicated positive amounts.

Many of those that were not willing to pay cited economic reasons for their zero bids (*Table 13b*). Some preferred a socialized type of payment scheme, whereby locals would not have to pay entrance fees. Still, a significant number did not cite any reason for their zero bids.

5.5 Willingness to Use New Facilities

Majority of local visitors were amenable to the provision of new facilities, particularly the provision of lodging facilities, comfort rooms, outdoor cooking areas and camp sites (*Table 14a*). Most of them were likewise willing to pay for the use of lodging facilities (PhP 61.88) and comfort rooms (PhP 8.57). However, less than half were willing to pay for outdoor cooking areas and camp sites. For foreigners, only lodging facilities were preferred by more than half of the respondents. Still, a significant number indicated they would use comfort rooms and camp sites (46.2% and 43.9%, respectively). Less than a third of foreign visitors preferred outdoor cooking areas. Average WTP amounts were high, but very few were willing to pay for most of the hypothetical new facilities.

For those that did not prefer any type of further development in the area, a lot of them were concerned with the impact such activities would have on the environment (*Table 14b*). Almost 17% said there were enough facilities in the area as it was. Finally, more than a fifth of respondents did not state any particular reason for not wanting any further development.

5.6 Regression Analysis of Respondents' Willingness to Pay at Current Level of Services

Results of the regression analysis using both Ordinary Least Squares (OLS) and the Tobit Model are presented in *Table 15*. As discussed in Section IV, the Tobit Model is preferred for CVM analysis due to the characteristics of the dependent variable, i.e. WTP. Nevertheless, the OLS results are still presented for comparative purposes.

Foreign tourists, totaling 132, were excluded from the analysis, due to their different profile relative to local tourists. Attempts were made to run a model for foreign tourists. However, there were no acceptable results. This is because foreign tourists that were surveyed were mostly in the area for business purposes, and their visit to SNBNP was not their primary purpose for travelling to the area. Hence, the questionnaire was not relevant in estimating foreigners' WTP.

Out of the total number of local tourists (471), 95.1% had positive bids. However, only 294 had complete information to be included in the regression runs. Among those that bid zero,

the number of protest bids were very minimal, hence were not excluded from the analysis so as not to lose any more information for the regression analysis.

There are ten independent variables that significantly affect WTP, at varying levels of significance. Five out of six types of independent variables had at least one significant variable. For knowledge of SNBNP, those that learned about the Park from TV had a higher WTP. As mentioned earlier, this is probably due to the fact that those that learned about SNBNP from television belonged to higher income classes, hence had presumably higher abilities to pay. On the other hand, those that derived their knowledge of the Park from government agencies had lower WTP, probably because these are people that come from lower income classes.

For variables related to the Park attributes, those that indicated spelunking as an important reason for choosing SNBNP for that trip had a lower WTP. A possible explanation for this is that this group is made up of people who are sports enthusiasts, and often access similar Parks for free. Moreover, higher entrance fees would translate to fewer visits for them; hence the strategic bias might have been the cause for their lower WTP bids. Proximity to the area as well as cultural reasons had negative effects on WTP.

Educational attainment was highly significant, as well as status of house ownership. Males seemed to have a higher willingness to pay relative to females. Finally, household income exhibited the expected sign, and was significant at the 85% level.

The other variables included in the regression analysis did not seem to significantly influence WTP. In particular, satisfaction with the Park's services did not seem to have any bearing with the respondents' willingness to pay higher entrance fees.

The likelihood ratio test shows that the model is highly significant, with the ratio being greater than its critical chi-square value.

The marginal effects of the independent variables are contained in *Table 17*. The first results of the Tobit Model cannot be interpreted directly. The coefficients have to be multiplied by a scale factor to get their total effect on WTP. Hence, a one-unit increase in, say, number of household members, decreases WTP by PhP .01239. The other continuous variables can be interpreted in the same manner. For dummy variables, the interpretation is a little different, whereby interpretation is in terms of the sample instead of for each individual respondent. This is because the mean of the dummy variable is the proportion of the sample for which it has a value of one. Hence, for instance, a 1% increase in the proportion of bidders that would source their knowledge on SNBNP from TV would increase overall WTP by PhP 2.31. If only positive bidders were considered, WTP would increase by PhP 2.07, while the probability of positive bids increases by 6.3%.

The estimated mean increase in entrance fees for local tourists is PhP 12.87 for all bidders, while positive bidders were willing to increase entrance fees by as much as PhP 14.96.

5.7 *Regression Analysis of Respondents' Willingness to Pay at Improved Level of Services*

At improved level of services, only three variables are significant in determining visitors' willingness to pay for increased entrance fees (**Table 18**). Schools as a source of information had a positive effect on WTP, as well as media advertisements. Environmental attitude likewise proved significant in influencing WTP for improved level of services. The marginal effects can be interpreted in the same manner as discussed earlier (**Table 19**). Overall, respondents are willing to pay an additional PhP 39.17 if Park services are improved.

5.8 *Social Willingness to Pay Entrance Fees at SNBNP*

To derive the total WTP for increased entrance fees at SNBNP, the mean willingness to pay is summed up across the relevant population, in this case the average number of visitors per year. **Table 20** contains the number of visitors from 1996 to 1999, yielding an average of 3,951 visitors to Sohoton per year. The average WTP is computed, using the regression estimates for local visitors at current level of services, i.e., PhP 12.87, adding the actual entrance fee being charged currently, i.e., PhP 8. For foreigners, the same procedure is applied, but since no regression analysis was conducted for foreigners, the computed simple average of WTP at current level of services was used, i.e., \$2.44. This is then added to the current entrance fee for foreigners, i.e., \$2. The resulting figure is then multiplied by 50, based on the current exchange rate of PhP 50 to \$1. The total willingness to pay is thus PhP 205,745.89 per year for all visitors to SNBNP.

To get the NPV of Sohoton National Park, we assume that as long as the Park is maintained as a protected area, visitors will derive recreational benefits perpetually. Thus, using a 12% discount rate, the NPV for SNBNP is PhP 1,714,549. Given the area of SNBNP at 840 hectares, the NPV per hectare of SNBNP is equal to PhP 2,041.13.

6. CONCLUSIONS AND RECOMMENDATIONS

From the results, it can be said that there is a significant willingness among visitors to pay for increased entrance fees at the current level of services. If plans to improve the Park are implemented, the potential increase in entrance fees is much higher. It is thus recommended that the PAMB implement the increase in the entrance fees according to the following schedule:

<u>Type of Visitor</u>	<u>Entrance Fee</u>
Local	PhP 20
Foreign	\$ 4

The PAMB can easily raise entrance fees given its legal mandate to do so. The NIPAS Act provides for the legal basis in charging user fees among users of resources in protected areas. Furthermore, the recently signed DAO 2000-51 provides the guidelines in determining fees for users of resources in National Parks, and WTP is the basic economic principle being espoused. In turn, increasing entrance fees would generate the much-

needed revenues for the PAMB to be able to implement its programs and projects for improved management of the Park.

Table 21 contains the comments and suggestions given by the respondents. Noticeable was the huge percentage of visitors that were highly satisfied with their visit. Around a fifth commented on the improvement of the Park services. It is likewise recommended that the PAMB implement such improvements, given that doing so would increase the Park's marketability later on.

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Table 1
Socio-Economic Profile of Sample Visitors to SNBNP
Samar, CY 2000

Indicator	Type of Visitor		
	Domestic	Foreign	All
Ave. age of visitors	36.18	40.04	37.03
Gender (Frequencies in %)			
Female	54.1	37.1	50.4
Male	43.9	59.1	47.3
No response	1.9	3.8	2.3
Civil Status (Frequencies in %)			
Single	43.5	53	45.6
Married	49.9	37.9	47.3
Widow	5.5	3	5
Separated/Divorced	0.6	4.5	1.5
Ave. no. of years of formal education	14.59	15.82	14.85
Educational Attainment (Frequencies in %)			
Elementary	3.6	0	2.8
High School	14.6	9.8	13.6
College	57.7	49.2	55.9
Post-Graduate	18.3	36.4	22.2
Vocational	3	1.5	2.7
Ave. no. of people living with respondent	5.65	1.95	4.99
Ave. no. of people < 18 living with respondent	1.94	0.29	1.66
Ave. no. of people earning incomes	2.35	1.32	2.18
Ave. own monthly income	23,760.47	57,112.61	30,603.51
Ave. household monthly income	32,794.97	70,108.91	40,662.84
Total Number of Respondents	471	132	603

Table 2
Occupational Profile of Sample Visitors to SNBNP
In % to Total Respondents, Samar, CY 2000

Occupation	Type of Visitor		
	Domestic	Foreign	All
None	2.1	2.3	2.2
Employee	60.9	45.5	57.5
Self-employed	7.0	4.5	6.5
Consultant	1.3	0	1.0
Licensed Professional	6.2	19.7	9.1
Farmer	0.4	0	0.3
Fisher	0.4	0	0.3
Housewife	1.1	0	0.8
Student	13.0	10.6	12.4
Retired	0.8	13.6	3.6
Volunteer	0.2	0	0.2
No Response	6.6	3.8	6.0
Total Respondents	471	132	603

Table 3
Organizational Membership of Sample Visitors to SNBNP
In % to Total Respondents, Samar, CY 2000

Organization	Type of Visitor		
	Domestic	Foreign	All
None	7.9	12.9	9.0
Government	42.0	9.1	34.8
NGO/PO	11.5	12.1	11.6
Religious	23.4	2.3	18.7
Sports	19.3	36.4	23.1
Environmental	10.8	14.4	11.6
School	20.4	18.9	20.1
Civic	9.1	1.5	7.5
Business	14.4	18.9	15.4
Professional	28.7	34.8	30.0
Total Respondents	471	132	603

Note: Frequencies do not add up to 100% due to multiple responses

Table 4
Travel Profile of Sample Visitors to SNBNP
Samar, CY 2000

Indicator	Type of Visitor		
	Domestic	Foreign	All
Ave.no. of people travelling with respondent	16.08	4.18	13.48
Ave. no. of visits in the past	1.45	1.02	1.36
Ave. no. of planned visits in the next 2 years	1.96	0.75	1.69
Ave. no. of hours spent to get to Sohoton	3.63	31.32	9.67
Average Package Tour for Visit to the Philippines, including SNBNP	5,940.00	144,606.20	141,524.73
Respondents w/ Package Tour for Visit to the Phils., including SNBNP	0.2%	7.3%	7.5%
Average Package Tour for Visit Exclusively for SNBNP	1,676.00	1,766.67	1,702.21
Respondents w/ Package Tour for Visit Exclusively for SNBNP	4.1%	1.5%	5.6%
Respondents coming straight from residence (% to Total Respondents)	70.10	31.10	61.50
Respondents going back straight to their residence (% to Total Respondents)	74.30	31.80	65.00
Transportation (% to Total Respondents)			
Airplane	19.30	100.00	37.00
Own Vehicle	27.60	3.80	22.40
Bus	24.20	58.30	31.70
Jeep	26.50	48.50	31.30
Boat	100.00	100.00	100.00
Tricycle	2.80	11.40	4.60
Hired Vehicle	5.50	7.60	6.00
Company/ School Vehicle	4.90	0	3.80
Average One-way Trip Expenses			
Gasoline	741.22	29,653.55	5,069.74
Plane fare	40.53	10.04	35.98
Plane fare	360.98	28,665.18	4,590.34
Bus fare	19.72	16.79	19.28
Jeepney/tricycle fare	7.29	11.42	7.90
Vehicle Rental	5.14	73.08	15.31
Boat Rental	185.98	363.71	212.59
Lodging	58.99	430.51	114.61
Food/drinks	116.36	67.69	109.07
Miscellaneous/Incidentals	1.84	19.48	4.45
Average Trip Expenses (2-way)	1,482.44	59,307.10	10,139.49
Average On-Site Expenses			
Entrance fee	151.39	228.94	162.95
Equipment rental	11.63	90.15	23.34
Tent rental	7.04	18.58	8.76
Tent rental	-	-	-
Tour guide	26.48	59.14	31.35
Food/drinks	84.46	40.04	77.84
Photo film	21.91	14.62	20.82
Miscellaneous/Incidentals	-	6.41	0.96
Average Total Trip Expenses	1,633.82	59,536.04	10,302.44
Total Number of Respondents	471	132	603

Table 5
Sources of Information on SNBNP by Sample Visitors
In % to Total Respondents, Samar, CY 2000

Indicator/Variable	Type of Visitor		
	Domestic	Foreign	All
TV	17.0	7.6	14.9
Print Media	21.4	52.3	28.2
Radio	8.3	0	6.5
Friends/Relatives/Officemate/Orgs	82.4	35.6	72.1
School	15.1	0.8	11.9
Travel Agency/ Hotel	18.0	47.7	24.5
Others			
Government Agency	0.4	0.8	0.5
Actual Visit/Personal Travel	0.8	0	0.7
Bank	0.2	0.0	0.2
Boat	0.2	0.8	0.3
Work	0.4	0.8	0.5
Total Number of Respondents	471	132	603

Note: Frequencies do not add up to 100% due to multiple responses

Table 6
Importance of Activities in Deciding to Visit SNBNP
By Sample SNBNP Visitors, In % to Total Respondents, Samar, CY 2000

Activity	Level of Importance				
	Extremely Important	Very Important	Important	Less Important	Does not matter
Spelunking/ Caving	42.6	32.8	15.3	1.8	7.5
Nature Trekking *	35.5	34.7	17.2	1.3	11.3
Sightseeing/ Wildlife Watching**	35.3	38.1	21.6	1.0	4.0
Photography/ Filming	34.2	30.2	17.9	4.3	13.4
Picnicking	14.1	30.7	20.1	8.0	27.2
Boating	36.2	31.2	14.6	7.1	10.9
Research/ Study/ Work Assignment***	19.2	21.4	12.4	5.3	41.6

Total Number of Respondents 603

*Includes camping, swimming, exploration, adventure, socialization, physical fitness & scuba diving.

**Includes fishing, mangrove formation, spiritual activities, relaxation & recreation.

***Includes culture learning & development monitoring.

Table 7
Reasons for Choosing Sohoton for Current Visit
By Sample SNBNP Visitors, In % to Total Respondents, Samar, CY 2000

Reason	Level of Importance				
	Extremely Important	Very Important	Important	Less Important	Does not matter
Challenge of Spelunking	30.2	36.7	16.6	3.6	12.9
Uniqueness of Scenery/ View*	52.1	30.7	8.0	0.5	8.8
Flora in the Area**	27.5	28.9	24.2	5.3	14.1
Fauna in the Area	16.3	35.2	28.7	5.3	14.6
Scenic Boat Ride	33.2	34.2	17.4	2.7	12.6
Recommendation of Friends/Family	23.7	33.8	19.7	4.3	18.4
Media Ads	10.6	21.7	24.2	7.8	35.7
Proximity to Residence/Meeting Venue	8.0	20.7	20.7	15.1	35.5
Price/ Affordability	16.9	31.2	19.4	6.5	26.0
Historical/ Cultural Reasons***	48.1	28.2	7.1	4.0	12.6

Total Number of Respondents 603

*Includes adventure & novelty of experience

**Includes nature appreciation.

***Includes spiritual mission, research activity & school requirement.

Table 8
Degree of Satisfaction with Park's Services and Conditions
By Sample SNBNP Visitors, In % to Total Respondents, Samar, CY 2000

Service	Satisfaction Level				
	Excellent	Good	Fair	Poor	Not used
Access to the Park	35.2	49.4	11.6	0.7	3.2
Road/ Trail	20.2	40.0	21.4	11.6	6.8
Boat ride	36.0	43.8	11.1	3.8	5.3
Availability of litter bins/ cleanliness	15.8	34.0	32.7	7.5	10.1
Comfort rooms	14.4	37.3	25.9	9.6	12.8
Water for swimming/ wading	25.2	26.9	21.9	9.1	16.9
Tour guide	52.4	39.5	3.0	0.3	4.8
Picnic Facilities/Life jacket	11.1	39.1	22.9	6.0	20.9
Park Amenities/Campsite/Management	10.9	29.4	32.7	7.3	19.7
Personal Safety	18.7	47.1	23.5	3.5	7.1
Peace and Quiet	44.4	37.8	12.3	0.2	5.3
Total Number of Respondents	603				

Table 9
Alternative Activity to Visiting SNBNP
In % to Total Respondents, Samar, CY 2000

Activity	Type of Visitor		
	Domestic	Foreign	All
Stayed at Home	51.8	19.7	44.8
Worked at the Office	27.0	28.0	27.2
Recreated Elsewhere	21.2	52.3	28.0
Total Number of Respondents	471	132	603

Table 10
Substitute Sites Identified by Sample Visitors to SNBNP
In % to Total Respondents, Samar, CY 2000

Substitute Site	Type of Visitor		
	Domestic	Foreign	All
None	71.7	78.8	73.3
Callao	3.4	2.3	3.2
St. Paul Subterranean	10.2	13.6	11.0
Sagada	5.7	7.6	6.1
Calbiga	6.0	0.8	4.8
Caves & Lakes in Region 8	2.3	0.0	1.9
Caves & Lakes in Luzon	6.6	0.8	5.2
Caves & Lakes in Visayas	1.8	2.3	2.0
Caves & Lakes in Mindanao	0.6	0.0	0.6
Others	5.5	1.5	4.7
Total Number of Respondents	471	132	603

Note: Frequencies do not add up to 100% due to multiple responses

Table 11
Meeting of Expectations in Visiting SNBNP
By Sample SNBNP Visitors, In % to Total Respondents, Samar, CY 2000

Expectations	Type of Visitor		
	Domestic	Foreign	All
Lower	2.3	1.5	2.2
Yes	59.2	82.6	64.3
Higher	36.9	13.6	31.8
No response	1.5	2.3	1.7
Total Number of Respondents	471	132	603

Table 12a
Approval of Elevated Walkways by Sample SNBNP Visitors
In % to Total Respondents, Samar, CY 2000

Approval	Type of Visitor		
	Domestic	Foreign	All
Yes	73.2	57.6	69.8
No	26.8	42.4	30.2
Total Number of Respondents	471	132	603

Table 12b
Reasons for Approval/Non-Approval of Elevated Walkways
In % to Total Respondents, Samar, CY 2000

Reason	Type of Visitor		
	Domestic	Foreign	All
Approval			
Accessibility ¹	38.0	17.2	33.5
Added Attraction/Improvement ²	11.7	4.7	10.2
Safety ³	15.2	9.4	13.9
Non-Approval			
Nature Preservation ⁴	18.9	32.1	21.8
Not Used/Not Necessary	1.1	1.6	1.2
Hazardous/Risky	0.8	0.0	0.7
Less Excitement	0.2	0.0	0.2
No response	23.0	39.8	26.7
Total Number of Respondents	471	132	603

Includes:

- ¹ convenience/comfort/better viewing/alternative road
- ² adds beauty/attracts tourists/exciting experience/unique
- ³ protection/prevents landslide
- ⁴ already enough/prefers natural look/nature

Table 13a
Willingness to Pay Additional Entrance Fees To Enter SNBNP
By Sample SNBNP Visitors, Samar, CY 2000

Level of Service	Type of Visitor/ Statistic					
	Domestic			Foreign		
	Mean	Mode	% WTP	Mean	Mode	% WTP
Current Level of Services	12.99	5	95.1	2.44	2	96.2
Improved Level of Services	36.84	30	89.6	0.92	0	83.3
Road/ trail conditions	6.68	5	77.3	0.16	0	62.1
Maps and information	5.20	5	71.8	0.17	5	65.2
Collection of litter and cleanliness	5.52	5	66.2	0.16	0	56.8
Park protection and personal safety	6.57	0	66.7	0.15	0	57.6
Provision of tour guided programs	6.57	0	67.1	0.14	0	57.6
Enforcement of environmental rules and regulations	6.31	0	64.5	0.15	0	56.1
Total Number of Respondents	471			132		

Table 13b
Reasons for Not Willing to Pay the Increase in Entrance Fee
In % to Total Respondents, Samar, CY 2000

Reason	Type of Visitor		
	Domestic	Foreign	All
Expensive/No Money	28.6	20.0	30.4
Increase in fees only with improvements	3.6	20.0	0
Should be free especially to local residents	17.9	0	21.7
Paying taxes	3.6	0	4.3
No increase for Filipinos	3.6	0	4.3
Will lure visitors	3.6	0	4.3
No response	39.3	60.0	34.8
Total Number of Respondents	471	132	603

Table 14a
Willingness to Use and Pay for New Facilities at SNBNP
by Sample Visitors, Samar, CY 2000

New Facility	Domestic				Foreign			
	Will Use	Mean (Php)	Mode	% WTP	Will Use	Mean (\$)	Mode	% WTP
Lodging facilities	63.3	61.88	0	54.5	56.8	2.38	0	52.7
More comfort rooms	72.0	8.57	0	55.8	46.2	1.59	0	38.8
Outdoor cooking areas	52.9	12.52	0	40.8	31.8	1.34	0	26.4
Camp sites	62.6	22.85	0	47.9	43.9	0.97	0	36.7
Total Number of Respondents	471				132			

Table 14b
Reasons for Choosing No Development Option
Samar, CY 2000

Reason	Type of Visitor		
	Domestic	Foreign	All
Already Enough	16.5	17.5	16.8
Will Lead to Abuse/Overuse/Pollution	16.5	10.0	14.3
Nature Preservation/Protection	46.8	37.5	43.7
Will Not be Used	3.8	0.0	2.5
No Response	16.5	35.0	22.7
Total Number of Respondents	471	132	603

Table 15
Hypothesized Direction of Effects of Explanatory Variables on the WTP Bid
of SNBNP Visitors, Local Bids, CY 2000

Independent Variable	Direction	Theoretical Basis
Knowledge of Respondent on SNBNP		
TV	+	$dWTP/dA_1 > 0$
Print Media	+/-	$dWTP/dA_2 < > 0$
Radio	+/-	$dWTP/dA_3 < > 0$
Friends	+/-	$dWTP/dA_4 < > 0$
School	+/-	$dWTP/dA_5 < > 0$
Government or Travel Agency	+/-	$dWTP/dA_6 < > 0$
Attributes of the Park		
Spelunking	+	$dWTP/dB_1 > 0$
Scenery	+	$dWTP/dB_2 > 0$
Recommended by Friends/ Relatives	+	$dWTP/dB_3 > 0$
Media Ads	+	$dWTP/dB_4 > 0$
Proximity to Residence	+/-	$dWTP/dB_5 < > 0$
Cultural Attributes	+/-	$dWTP/dB_6 < > 0$
Degree of Satisfaction with the Park's Services		
Index of Level of Satisfaction	+	$dWTP/dC_1 > 0$
Agreement with Construction of Walkways	+	$dWTP/dC_2 > 0$
Environmental Attitude		
No. of years of Education	+	$dWTP/dD_1 > 0$
Membership in an Environmental Organization	+/-	$dWTP/dD_2 < > 0$
Socio-Demographic Variables		
Gender	?	$dWTP/dCE_1 = ?$
Age	?	$dWTP/dCE_2 = ?$
Ability to Pay Variables		
Monthly Household Income	+	$dWTP/dF_1 > 0$
No. of Household Members	-	$dWTP/dF_2 > 0$
Status of Home Ownership	+/-	$dWTP/dF_3 < > 0$

Table 16
Regression Estimates of WTP to Enter SNBNP at
Current Level of Services, by Local SNBNP Visitors, CY 2000

Variable	OLS		TOBIT		
	Coefficient	T-ratio	Coefficient	T-ratio	Marginal Effects
Constant	2.62138	0.39	2.68114	0.398	2.30689
TV	2.99194	*1.577	3.16003	**1.679	2.71894
Print Media	-0.05195	-0.03	-0.03572	-0.02	-0.03074
Radio	-1.76317	-0.67	-1.99590	-0.768	-1.71731
Friends	2.55767	1.26	2.32438	1.154	1.99993
School	0.15149	0.07	0.10864	0.05	0.09347
Government or Travel Agency	-2.93634	*-1.555	-2.83971	*-1.511	-2.44334
Spelunking	-1.51449	***-2.471	-1.41988	***-2.32	-1.22168
Scenery	0.72271	0.85	0.68808	0.815	0.59204
Recommended by Friends/ Relatives	0.66588	0.92	0.57734	0.803	0.49675
Media Ads	-0.18799	-0.29	-2.66305	-0.412	-0.22913
Proximity to Residence	-1.13042	** -1.895	-1.17070	***-1.97	-1.00729
Cultural Attributes	-2.30291	****-3.443	-2.26040	****-3.403	-1.94488
Index of Level of Satisfaction	0.08303	0.77	0.08230	0.762	0.07081
Agreement with Construction of Walkways	1.11455	0.68	1.52129	0.935	1.30894
No. of years of Education	0.98116	****3.083	0.97686	****3.089	0.84050
Membership in an Environmental Organization	-2.46099	-1.22	-2.38353	-1.188	-2.05083
Gender	-2.72130	***-1.946	-2.65679	** -1.911	-2.28595
Age	0.09495	*1.516	0.09031	*1.448	0.07770
Monthly Household Income	0.00004	*1.434	0.00004	*1.537	0.00004
No. of Household Members	-0.00381	-0.02	-0.01440	-0.057	-0.01239
Status of Home Ownership	-4.19665	***-2.446	-4.26579	****-2.503	-3.67035
F-value (21, 272)	3.05				
R2	0.12833				
Log Likelihood Function (unrestricted)				-1,117.69	
Log-Likelihood Function (restricted)				1,912.73	
Likelihood Ratio				1,590.09	

Notes:

 $E(Y)$ at mean values of $X_i = 12.87$ $E(Y^*)$ at mean values of $X_i = 14.96$

**** significant at 99% confidence level

** significant at 90% confidence level

*** significant at 95% confidence level

* significant at 85% confidence level

Table 17
Marginal Effects of the Factors Affecting WTP at Current Level
of Services, Local SNBNP Visitors, CY 2000

Variable	Marginal Effects		
	$dE(Y^*)/dX_i$	$dF(z)/dX_i$	$dE(Y)/dX_i$
Constant	1.7534	0.0534	2.30689
TV	2.0666	0.0629	2.71894
Print Media	-0.0234	-0.0007	-0.03074
Radio	-1.3053	-0.0397	-1.71731
Friends	1.5201	0.0463	1.99993
School	0.0710	0.0022	0.09347
Government or Travel Agency	-1.8571	-0.0565	-2.44334
Spelunking	-0.9286	-0.0283	-1.22168
Scenery	0.4500	0.0137	0.59204
Recommended by Friends/ Relatives	0.3776	0.0115	0.49675
Media Ads	-1.7416	-0.0530	-0.22913
Proximity to Residence	-0.7656	-0.0233	-1.00729
Cultural Attributes	-1.4782	-0.0450	-1.94488
Index of Level of Satisfaction	0.0538	0.0016	0.07081
Agreement with Construction of Walkways	0.9949	0.0303	1.30894
No. of years of Education	0.6388	0.0194	0.84050
Membership in an Environmental Organization	-1.5588	-0.0474	-2.05083
Gender	-1.7375	-0.0529	-2.28595
Age	0.0591	0.0018	0.07770
Monthly Household Income	0.0000	0.0000	0.00004
No. of Household Members	-0.0094	-0.0003	-0.01239
Status of Home Ownership	-2.7897	-0.0849	-3.67035

Table 18
Regression Estimates of WTP to Enter SNBNP at
Improved Level of Services, by Local SNBNP Visitors, CY 2000

Variable	OLS		TOBIT		
	Coefficient	t-ratio	Coefficient	t-ratio	Marginal Effects
Constant	22.05437	1.25	15.13625	0.792	13.39837
TV	0.97756	0.20	1.59176	0.3	1.40900
Print Media	5.83669	1.22	6.28938	1.229	5.56726
Radio	-0.80852	-0.12	-1.18046	-0.162	-1.04492
Friends	3.32992	0.63	2.01139	0.356	1.78045
School	10.59087	**1.873	11.90270	***1.964	10.53608
Government or Travel Agency	-2.01328	-0.41	-2.51562	-0.476	-2.22679
Spelunking	-1.15586	-0.73	-1.94330	-1.13	-1.72018
Scenery	-1.82188	-0.83	-2.24025	-0.938	-1.98304
Recommended by Friends/ Relatives	0.13051	0.07	-0.42336	-0.21	-0.37476
Media Ads	5.79491	***3.427	6.26773	***3.417	5.54809
Proximity to Residence	-0.01978	-0.01	0.25020	0.15	0.22147
Cultural Attributes	-1.57733	-0.91	-0.92757	-0.492	-0.82107
Index of Level of Satisfaction	0.16298	0.05	0.49472	0.148	0.43792
Agreement with Construction of Walkways	2.46532	0.58	3.67576	0.803	3.25372
No. of years of Education	0.99119	1.20	1.59308	**1.736	1.41016
Membership in an Environmental Organization	-5.77014	-1.10	-4.45441	-0.792	-3.94297
Gender	-0.73510	-0.20	-1.31162	-0.334	-1.16102
Age	-0.15936	-0.98	-0.22701	-1.283	-0.20095
Monthly Household Income	0.00010	*1.426	0.00010	1.312	0.00009
No. of Household Members	-0.08282	-0.13	-0.06663	-0.094	-0.05898
Status of Home Ownership	2.16956	0.49	1.16744	0.244	1.03340
F-value (21, 272)	1.54				
R ²	0.03712				
Log Likelihood Function (unrestricted)				-1,398.65	
Log Likelihood Function (restricted)				-1,912.73	
Likelihood Ratio				1,121.31	

Notes:

$E(Y_i)$ at mean values of $X_i = 39.17$

$E(Y^*)$ at mean values of $X_i = 44.40$

*** significant at 99% confidence level

** significant at 95% confidence level

** significant at 90% confidence level

* significant at 85% confidence level

Table 19
Marginal Effects of the Factors Affecting WTP at Improved Level
of Services, Local SNBNP Visitors, CY 2000

Variable	Marginal Effects		
	$dE(Y^*)/dX_i$	$dF(z)/dX_i$	$dE(Y)/dX_i$
Constant	10.4595	0.0934	13.39837
TV	1.0999	0.0098	1.40900
Print Media	4.3461	0.0388	5.56726
Radio	-0.8157	-0.0073	-1.04492
Friends	1.3899	0.0124	1.78045
School	8.2251	0.0734	10.53608
Government or Travel Agency	-1.7384	-0.0155	-2.22679
Spelunking	-1.3429	-0.0120	-1.72018
Scenery	-1.5481	-0.0138	-1.98304
Recommended by Friends/ Relatives	-0.2926	-0.0026	-0.37476
Media Ads	4.3312	0.0387	5.54809
Proximity to Residence	0.1729	0.0015	0.22147
Cultural Attributes	-0.6410	-0.0057	-0.82107
Index of Level of Satisfaction	0.3419	0.0031	0.43792
Agreement with Construction of Walkways	2.5400	0.0227	3.25372
No. of years of Education	1.1009	0.0098	1.41016
Membership in an Environmental Organization	-3.0781	-0.0275	-3.94297
Gender	-0.9064	-0.0081	-1.16102
Age	-0.1569	-0.0014	-0.20095
Monthly Household Income	0.0001	0.0000	0.00009
No. of Household Members	-0.0460	-0.0004	-0.05898
Status of Home Ownership	0.8067	0.0072	1.03340

Table 20
Social WTP Higher Entrance Fees by Visitors to SNBNP
at Current Level of Services, in PhP, CY 2000

Year/ Statistic	Local Visitors	Foreign Visitors	All Visitors
<i>Total No. of Visitors:</i>			
1996	3,148	580	3,728
1997	3,569	833	4,402
1998	3,113	1,157	4,270
1999	3338	321	3,659
2000	3,521	174	3,695
<hr/>			
<i>Average No. of Visitors per year</i>	3,338	613	3,951
<hr/>			
Average WTP at current level ¹ (PhP)	20.87	222	
Total WTP at current level ² (PhP)	69,659.89	136,086.00	205,745.89
<hr/>			
Average WTP at improved level ³ (PhP)	47.17	268.00	
Total WTP at improved level ² (PhP)	157,444.03	164,284.00	321,728.03

Source of No. of Visitors: DENR-8 CENRO, Basey, Samar

¹ Computed using the following formulas:

For Locals: Mean WTP from regression analysis (PhP 12.87) + actual entrance fee (PhP 8)

For foreigners: (Ave. WTP from simple statistical analysis (\$2.44) + actual entrance fee (\$2)) * current exchange rate (1:50)

² Computed by multiplying average WTP with average no. of visitors per year

³ Computed using the following formulas:

Locals: Mean WTP from regression analysis (PhP 39.17) + actual entrance fee (PhP 8)

Foreigners: (Ave. WTP from simple statistical analysis (\$0.96) + WTP for current level (\$2.44) + actual entrance fee (\$2)) * 50

NPVs per Hectare:

	NPV (wtp / 12%)	NPV/ha. (840 has.)
At current level of services:	1,714,549.05	2,041.13
At improved level of services:	2,681,066.88	3,191.75

Table 21
Comments and Suggestions Regarding SNBNP
In % to Total Respondents, Samar, CY 2000

Comments/ Suggestions	Type of Visitor		
	Domestic	Foreign	All
None	62.7	72.9	64.9
Interesting/Enjoyable ¹	12.8	8.6	11.9
Good Tour Guide ²	5.3	3.1	4.8
Nature Preservation ³	4.5	3.9	4.4
Good Survey	0.6	0.0	0.5
Will go back/Recommend	0.2	3.2	0.8
Improvements/Developments ⁴	19.5	11.6	17.8
Less Changes/Development	0.4	2.4	0.8
Assistance from LGU	0.4	0.0	0.3
Expensive/Provide Packages	0.6	2.3	1.0
Survey too personal/shorten	0.8	2.3	1.2
More accommodating DENR staff	0.2	0.0	0.2
Total Number of Respondents	471	132	603

Includes:

- 1 beautiful park/excellent facilities
- 2 accommodating staff
- 3 protection/cleanliness/involvement of people
- 4 additional facilities/signs/staff/accessibility/better law enforcement

APPENDIX A

SURVEY OF VISITORS AT SOHOTON NATURAL BRIDGE NATIONAL PARK

BACKGROUND:

On June 1, 1992, Republic Act No. 7586, "An Act Providing for the Establishment and Management of National Integrated Protected Areas System, defining its scope and coverage, and for other Purposes" better known as the NIPAS ACT of 1992, was passed as a law by Congress. Sohoton Natural Bridge National Park (SNBNP), covering a total area of 840 hectares, is one of the identified initial components of NIPAS. Recently, the Protected Area Management Board (PAMB), composed of government and non-government representatives, was organized to make policies for managing the protected area.

Section 10 of the NIPAS Act states that the DENR Secretary can fix and prescribe fees from people deriving benefits from protected areas. In turn, the funds will be used for the operational and monitoring activities in the protected area.

The Samar Island Biodiversity Study (SAMBIO) is conducting a survey to determine the willingness of tourists to pay entrance fees to access Sohoton National Park. The objective of the survey is to include public opinion in decisions to manage this National Park.

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4. Why did you choose Sohoton for this visit? Use the following scale to rate the level of importance.

5 = Extremely Important 3 = Important 1 = Not applicable/
 4 = Very Important 2 = Less Important Does not matter

Reason:	Importance:				
a. Challenge of spelunking	5	4	3	2	1
b. Uniqueness of scenery/view	5	4	3	2	1
c. Flora in area	5	4	3	2	1
d. Fauna in area	5	4	3	2	1
e. Scenic boat ride	5	4	3	2	1
f. Recommendation of friends/family	5	4	3	2	1
g. Media ads	5	4	3	2	1
h. Proximity to residence	5	4	3	2	1
i. Price/ affordability	5	4	3	2	1
j. Historical/ cultural reasons	5	4	3	2	1
k. Others, specify: 1)	5	4	3	2	1
2)	5	4	3	2	1

5. Please indicate the degree of your satisfaction with the Park services and conditions during your present visit. Use the following scale to rate the services:

5 = Excellent 4 = Good 3 = Fair 2 = Poor 1 = Not used

Park Service/Condition	Satisfaction Level				
a. Access to the Park	5	4	3	2	1
b. Road/trail conditions	5	4	3	2	1
c. Boat ride conditions	5	4	3	2	1
d. Availability of litter bins/ cleanliness	5	4	3	2	1
e. Comfort rooms	5	4	3	2	1
f. Water for swimming/ wading	5	4	3	2	1
g. Tour guide/s	5	4	3	2	1
h. Picnic facilities	5	4	3	2	1
i. Park amenities, e.g. lights, signs	5	4	3	2	1
j. Personal Safety	5	4	3	2	1
k. Peace and Quiet	5	4	3	2	1
l. Others, specify: l.1)	5	4	3	2	1
l.2)	5	4	3	2	1

6. Do you favor the construction of elevated walkways within the park?

Reason/s YES NO
 a) _____
 b) _____

7. Did your experience at Sohoton meet your expectations?

- YES
 HIGHER THAN EXPECTED
 LOWER THAN EXPECTED

For official use:
1.4.a
1.4.b
1.4.c
1.4.d
1.4.e
1.4.f
1.4.g
1.4.h
1.4.i
1.4.j
1.4.k.1
1.4.k.2
1.4.k.3
1.4.k.4
1.5.a
1.5.b
1.5.c
1.5.d
1.5.e
1.5.f
1.5.g
1.5.h
1.5.i
1.5.j
1.5.k
1.5.l.1
1.5.l.2
1.5.l.3
1.5.l.4
1.6a
1.6b
1.6c
1.7 a
1.7.b
1.7.c

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PART II. WILLINGNESS TO PAY FOR SERVICES

1. You now pay PhP 8.00 as entrance fee to Sohoton National Park. However, the Park has not covered all of its costs and the Protected Area Management Board (PAMB) will need to increase entrance fees. How many **ADDITIONAL PESOS** (for local visitors) or **ADDITIONAL DOLLARS** (for foreign visitors) are you willing to pay to access the Park?

LOCAL VISITOR:

- + PhP 5 : _____
- + PhP 10 : _____
- + PhP 15 : _____
- + PhP 20 : _____
- + PhP 25 : _____

Other Amount: _____

FOREIGN VISITOR:

- + US\$ 1 : _____
- + US\$ 2 : _____
- + US\$ 3 : _____
- + US\$ 4 : _____
- + US\$ 5 : _____

Other Amount: _____

I am not willing to pay increased entrance fees because _____

2. Assume that the PAMB plans to make improvements in its services and the conditions of the Park. To do this, the entrance fee has to be increased. How many **ADDITIONAL PESOS** (for local visitors) or **ADDITIONAL DOLLARS** (for foreign visitors) are you willing to pay for each improvement:

SERVICE/CONDITION	+0	+5	+10	+15	+20	Other Amount
a. Road/trail conditions within the park						
b. Maps and information						
c. Collection of litter and cleanliness in the Park						
d. Park protection and personal safety						
e. Provision of tour guided programs						
f. Enforcement of environmental rules and regulations						

3. The PAMB is now planning new facilities in the Park and is asking visitors their preferred facilities. Please indicate which type of facilities you prefer and will use and **HOW MUCH** are you willing to pay to use them.

POSSIBLE PREFERRED FACILITIES	Preferred? Yes/No	AMOUNT WILLING TO PAY
a. Lodging facilities		
b. More comfort rooms		
c. Outdoor cooking areas		
d. Camp sites		
e.		
f.		
g.		

_____ No, I do not want any further development in the area because _____

For official use:
II.1.a
II.1.b
II.1.c
II.2.a
II.2.b
II.2.c
II.2.d
II.2.e
II.2.f
II.3.a.1
II.3.a.2
II.3.b.1
II.3.b.2
II.3.c.1
II.3.c.2
II.3.d.1
II.3.d.2
II.3.e.1
II.3.e.2
II.3.f.1
II.3.f.2
II.3.g.1
II.3.g.2
II.3.h

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PART III. TRAVEL INFORMATION

1. How long are you staying? ____ Days ____ Hours
 2. Are you here on package tour? ___ Yes ___ No
If yes, how much is the package tour? PhP _____
 3. Did you come straight from your residence? ___ Yes ___ No
If no, where did you come from?
Location _____ No. of days _____

 4. Are you going back to your residence right after here?
___ Yes ___ No
If no, where else are you going?
Location _____ No. of days _____

 5. How far is Sohoton Park from your residence? _____ Kms.
 6. How long did it take you to get here? ____ Days ____ Hours
 7. If you did not recreate at Sohoton today, what would you have done instead?
 Stayed at home
 Worked at the office
 Others, please specify: _____
 8. What means of transportation did you use to get to Sohoton from your residence? Check all that apply.
 Airplane Boat
 Own vehicle Tricycle
 Bus Hired vehicle
 Jeepney Others, specify: _____
 9. How many people are you with? Please check all that apply and indicate the number of people, including yourself.
 None
 With family/relatives, total ____ people
 With friends, total ____ people
 With office peers, total ____ people
 With schoolmates, total ____ people
 Others, specify: _____ total ____ people
- TOTAL NO. OF PEOPLE IN YOUR GROUP:** _____

For official use:
III.1
III.2.a
III.2.b
III.3.a
III.3.b
III.3.c
III.3.d
III.3.e
III.4.a
III.4.b
III.4.c
III.4.d
III.4.e
III.5
III.6
III.7.a
III.7.b
III.7.c
III.8.a
III.8.b
III.8.c
III.8.d
III.8.e
III.8.f
III.8.g
III.8.h.1
III.8.h.2
III.9.a
III.9.b
III.9.c
III.9.d
III.9.e
III.9.f.1
III.9.f.2
III.9.g

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10. How much did your group spend for A ONE-WAY TRIP FROM YOUR RESIDENCE TO SOHOTON NATIONAL PARK?

- _____ Gasoline (if you used own vehicle)
- _____ Plane fare
- _____ Bus fare
- _____ Jeepney/tricycle fare
- _____ Vehicle rental
- _____ Boat Rental
- _____ Lodging to get to Sohoton
- _____ Food/ drinks during the trip to Sohoton
- _____ Others, specify: _____
- =====
- _____ **GRAND TOTAL**

11. Who paid for the TRIP EXPENSES TO THE SITE? Indicate amount or percentage for each. If amount is indicated, note that the GRAND TOTAL should be for the entire group indicated in No. 9.

- | | Percentage | OR | Amount |
|------------------------|------------|----|--------|
| Yourself: | _____ | | _____ |
| Others, specify: _____ | _____ | | _____ |
| | ===== | | ===== |
| GRAND TOTAL: | 100% | | _____ |

12. How much did your group spend for facilities and food USED AT SOHOTON NATIONAL PARK?

- _____ Park Entrance Fees
- _____ Equipment rental
- _____ Tent rental
- _____ Tour guide/s
- _____ Food/drinks consumed at the site
- _____ Photo film
- _____ Others, specify: _____
- _____
- _____
- =====
- _____ **GRAND TOTAL**

13. Who paid for the EXPENSES AT THE SITE? Indicate amount or percentage for each. . If amount is indicated, note that the GRAND TOTAL should equal the total of no. 11.

- | | Percentage | OR | Amount |
|------------------------|------------|----|--------|
| Yourself: | _____ | | _____ |
| Others, specify: _____ | _____ | | _____ |
| | ===== | | ===== |
| GRAND TOTAL: | 100% | | _____ |

14. How many times have you visited Sohoton, including this trip?

_____ times

15. How many times do you intend to visit Sohoton within the next two years?

_____ times

For official USE:
III.10.a
III.10.b
III.10.c
III.10.d
III.10.e
III.10.f
III.10.g
III.10.h
III.10.i
III.10.j
III.10.k
III.11.a
III.11.b
III.12.a
III.12.b
III.12.c
III.12.d
III.12.e
III.12.f
III.12.g
III.12.h
III.12.i
III.12.j
III.12.k
III.12.l
III.13.a
III.13.b
III.14
III.15

PART IV. RESPONDENT'S PROFILE

1. Current residential address? _____
2. How long have you lived there? _____ Years _____ Months
3. Do you: _____ own your home? _____ rent your home?
4. Gender: _____ Male _____ Female
5. Age: _____ Years
6. Civil status: ___ Single ___ Married ___ Widowed ___ Separated

7. Including yourself, how many people live in your household? _____ people
8. How many *below 18 years old* live in your household? _____ people
9. How many people earn incomes in your household? _____ people

10. Occupation: _____ Industry: _____
11. If student, indicate current year level: _____
12. Educational attainment
 _____ Elementary _____ College, course: _____ Vocational
 _____ High school _____ Post-graduate, course: _____
13. Year of formal education: _____

14. Approximate *MONTHLY INCOME OF RESPONDENT* before taxes:

<input type="radio"/> Below PhP 3,000	<input type="radio"/> PhP 15,001 - 18,000	<input type="radio"/> PhP 35,001 - 40T
<input type="radio"/> PhP 3,000 - 6,000	<input type="radio"/> PhP 18,001 - 22,000	<input type="radio"/> PhP 40,001 - 45T
<input type="radio"/> PhP 6,001 - 9,000	<input type="radio"/> PhP 22,001 - 26,000	<input type="radio"/> PhP 45,001 - 50T
<input type="radio"/> PhP 9,001 - 12,000	<input type="radio"/> PhP 26,001 - 30,000	<input type="radio"/> PhP 50,001 - 80T
<input type="radio"/> PhP 12,001 - 15,000	<input type="radio"/> PhP 30,001 - 35,000	<input type="radio"/> Above PhP 80T

15. Approximate *HOUSEHOLD MONTHLY INCOME* before taxes:

<input type="radio"/> Below PhP 3,000	<input type="radio"/> PhP 15,001 - 18,000	<input type="radio"/> PhP 35,001 - 40T
<input type="radio"/> PhP 3,000 - 6,000	<input type="radio"/> PhP 18,001 - 22,000	<input type="radio"/> PhP 40,001 - 45T
<input type="radio"/> PhP 6,001 - 9,000	<input type="radio"/> PhP 22,001 - 26,000	<input type="radio"/> PhP 45,001 - 50T
<input type="radio"/> PhP 9,001 - 12,000	<input type="radio"/> PhP 26,001 - 30,000	<input type="radio"/> PhP 50,001 - 80T
<input type="radio"/> PhP 12,001 - 15,000	<input type="radio"/> PhP 30,001 - 35,000	<input type="radio"/> Above PhP 80T

16. Are you a member of any of the following types of organizations?

<input type="radio"/> None	<input type="radio"/> Sports	<input type="radio"/> Business
<input type="radio"/> Government	<input type="radio"/> Environmental	<input type="radio"/> Professional
<input type="radio"/> NGO/PO	<input type="radio"/> School	<input type="radio"/> Others, specify: _____
<input type="radio"/> Religious	<input type="radio"/> Civic	_____

17. Do you have any other comments?

For official use:
IV.1
IV.2
IV.3
IV.4
IV.5
IV.6
IV.7
IV.8
IV.9
IV.10.a
IV.10.b
IV.11
IV.12.a
IV.12.b
IV.12.c1
IV.12.c2
IV.12.d1
IV.12.d2
IV.12.e
IV.13
IV.14
IV.15
IV.16.a
IV.16.b
IV.16.c
IV.16.d
IV.16.e
IV.16.f
IV.16.g
IV.16.h
IV.16.i
IV.16.k.1
IV.16.k.2
IV.17.a
IV.17.b

THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION.

TO BE FILLED UP BY THE INTERVIEWER:

1. Was the respondent:

- Very cooperative
- Cooperative
- Not cooperative

2. Were other people answering together with the respondent?

- Yes
- No

3. Other Comments:

NAME OF INTERVIEWER: _____

DATE AND TIME OF INTERVIEW: _____

VENUE OF INTERVIEW: _____

For official use:
IV.1
IV.2
IV.3
Name:
Date:
Time:
Venue: