PN-ACQ-247

RD10.00V.(a)

A REPORT ON THE SURVEY OF TOURISTS AT MOUNT PULAG NATIONAL PARK[1]

Department of Environment and Natural Resources

Philippine Economic – Environmental and Natural Resources Accounting System

Environmental and Natural Resources Accounting Project

Supported by the

United States Agency for International Development

A

PN-ACQ-247

A REPORT ON THE SURVEY OF TOURISTS AT MOUNT PULAG NATIONAL PARK[1]

ENRAP IV TECHNICAL PAPER

by

ENRAP-PAWB-PPSO Team[2]

December 1999

[1] This document was made possible through a grant provided by the United States Agency for International Development (USAID) under the terms and conditions of Contract No. 492-0465-C-00-4042-00. The opinions expressed herein are of the authors and do not necessarily reflect the views of the USAID and collaborating institutions. This document may be reproduced or quoted in other publications as long as proper reference is made to the source.

[2] The authors are from the Environmental and Natural Resources Accounting Project (ENRAP), Protected Areas and Wildlife Bureau (PAWB) and the Planning and Policy Studies Office (PPSO) of the DENR. They are: Jose E. Padilla, Deputy Project Leader, ENRAP; Rina Rosales, Research Associate, ENRAP; Sarkhan Baun, Research Assistant, ENRAP; Teresita Blastique, Senior EMS, PAWB; Sarah Jane Cabrera, Computer Programmer II, PAWB; Evangeline Corquera, Statistician I, PAWB; and Ruby Buen, DMO III, PPSO.

Table of Contents

List of Tables, Figures and Appendices
Executive Summary

1. **INTRODUCTION** 1

2. **OBJECTIVES** 1

3. **FRAMEWORK** 2
   - 3.1 Legal Framework 2
   - 3.2 Proposed Fee System Guidelines 2
   - 3.3 Economic Framework: Approaches in Measuring Recreational Values 3
   - 3.4 Survey Approaches and Methods 4

4. **STUDY: PROFILE AND REFERENCES OF VISITORS AT MPNP** 5
   - 4.1 Socio-Economic Profile 5
   - 4.2 Travel Profile 5
   - 4.3 Recreational Profile: Activities Conducted, Substitute Sites, and Satisfaction Level with Services 6
   - 4.4 Preferred Types of Development/Suggestions for Improvement 6

5. **STUDY RESULTS: PROTECTED AREA ENTRANCE FEE ESTIMATES** 7
   - 5.1 Willingness to Pay: Contingent Valuation Method 7
     - 5.1.1 Specification of the CVM Model 7
     - 5.1.2 Willingness to Pay for Entrance Fees at Current Level of Services 8
     - 5.1.3 Willingness to Pay with Improved Level of Services 10
   - 5.2 Willingness to Pay: Travel Cost Model (TVM) 10
     - 5.2.1 TC Model Specification 11
     - 5.2.2 Travel Profile of MPNP Visitors 11
     - 5.2.3 Truncated Poisson Model Results 12

6. **CONCLUSIONS AND RECOMMENDATIONS** 12

References
Technical Annex

List of Figures and Tables

Table 1	Socio-Economic Profile of Sample MPNP Visitors September 1997 to August 1998
Table 2	Educational Profile of Sample MPNP Visitors September 1997 to August 1998
Table 3	Respondents' Income and College Degree of Sample MPNP Visitors September 1997 to August 1998
Table 4	Employment Profile of Sample MPNP visitors September 1997 to August 1998
Table 5	Civil Status, Employment Status and Age of Sample MPNP Visitors September 1997 to August 1998
Table 6	Industry of Employment, Monthly Income and Employment Position of Sample MPNP Visitors, September 1997 to August 1998
Table 7	Residential Profile of Sample MPNP Visitors September 1997 to August 1998
Table 8	Involvement in Organizations of Sample MPNP Respondents September 1997 to August 1998
Table 9	Information Source/s Regarding Mt. Pulag by Sample MPNP Visitors September 1997 to August 1998
Table 10	Travel Profile of Sample MPNP Visitors September 1997 to August 1998
Table 11	Location & Duration of Lay-Over From Residence Before Visit to MPNP of Sample MPNP Visitors, September 1997 to August 1998
Table 12	Location & Duration of Lay-Over After MPNP Visit of Sample MPNP Visitors, September 1997 to August 1998
Table 13	Reasons for Choosing Mt. Pulag for Current Trip by Sample MPNP Visitors September 1997 to August 1998
Table 14	Top Ten Substitute Sites for Mt. Pulag by Sample MPNP Visitors September 1997 to August 1998
Table 15	Activities Conducted at Mt. Pulag by Sample MPNP Visitors September 1997 to August 1998
Table 16	Degree of Satisfaction with Mt. Pulag Park Services by Sample MPNP Visitors September 1997 to August 1998
Table 17	Reasons for Not Wanting Further Development by Sample MPNP Visitors September 1997 to August 1998

Table 18	Average WTP for Suggested New Facilities at Mt. Pulag National Park September 1997 to August 1998
Table 19	Suggestions for Improving MPNP by Sample MPNP Visitors September 1997 to August 1998
Table 20	Hypothesized Direction of Effects of Explanatory Variables on the WTP Bid
Table 21	Descriptive Statistics of Variables Used in the WTP Model for Entrance Fee Increase at Current and Improved Level of Services, MPNP, 1998
Table 22	Willingness to Pay for Entrance Fees of Sample MPNP Visitors With 0 Bids September 1997 to August 1998
Table 23	Frequency Table of Incremental WTP at Current Level of Services By Sample MPNP Visitors, September 1997 to August 1998
Table 24	Willingness to Pay for Entrance Fees of Sample MPNP Visitors No 0 Bids, September 1997 to August 1998
Table 25	Estimates of the Factors Affecting Park Visitors' WTP for Entrance Fee Increase At Current Level of Services, MPNP, 1998
Table 26	Marginal Effects of WTP for Increased Entrance Fee at Current Level of Services, MPNP, 1998
Table 27	Estimates of the Factors Affecting Park Visitors' WTP for Entrance Fee Increase at Improved Level of Services, MPNP, 1998
Table 28	Marginal Effects of WTP for Entrance Fee Increase at Improved Level of Services, MPNP, 1998
Table 29	Average Distances From Points of Origin to Mt. Pulag of Sample MPNP Visitors, September 1997 to August 1998
Table 30	Average Expenses per Visitor by Sample MPNP Visitors September 1997 to August 1998
Table 31	Results of the Estimation of the Travel Cost Model, MPNP, 1998

Appendix Table A	Proposed Fee System Guidelines
Table B	Study Team for the Field Surveys
Table C	Survey Instrument for the Survey of Tourists at MPNP
Table D	Econometric Models Used in Estimating WTP

Figure 1	Map of Mount Pulag National Park
Figure 2	Recreational Demand Curve

Executive Summary

This study is a pilot testing phase of the proposed fee system guidelines drafted by the Protected Areas and Wildlife Bureau (PAWB) with assistance from the Environmental and Natural Resources Accounting Project (ENRAP). The objective of the study is to provide a basis for the review of park entrance fees being imposed by the Protected Area Management Board (PAMB) at the Mount Pulag National Park.

The study team composed of ENRAP, PAWB and PPSO staff interviewed tourists from September 1997 to August 1998. Socioeconomic, demographic, travel data, and perceptions of over 300 visitors were gathered using a survey questionnaire. Onsite survey was conducted during the Holy Week, i.e. April 2-9, 1998, while the mail-in survey was conducted from May to September 1998, covering visitors that visited the site from September 1997 to August 1998. The highlights of the study are summarized below:

Socio-economic Profile of Respondents

Most MPNP visitors are male, single and young Filipinos, belonging to smaller than average-sized families. The average monthly income is PhP15,125, while the average household income is PhP36,315. Almost 25 percent of the respondents are still enrolled in school. Most of those who have college degrees finished either engineering or business/accounting. Most of them are employed, usually as employees in private or government companies and reside in Metro Manila. Almost all of the respondents belong to one or more organizations.

Travel Profile

Most of the respondents are second-time visitors, and intend to visit Mt. Pulag at least twice within the next two years. They stay at the Park for an average of three days, with one additional day for travelling to the site. Majority of the respondents travel directly to the site from their residence. Many of them stay in Baguio for a day or two before going back.

Activities Conducted at the Site

As expected, most visitors go to the site for mountain climbing and sightseeing. Camping and photography ranked next in the level of importance of activities. The scenery, climate and challenge of the climb are the main reasons cited for choosing Mt. Pulag for the current visit.

Substitute Sites

Of the top ten substitute sites, nine are in the island of Luzon, save for Mt. Apo in Davao. This is probably due to the fact that most sample respondents currently reside in Metro Manila.

Satisfaction with Park Services

On the whole, sample respondents ranked MPNP services as satisfactory. Most respondents were highly satisfied with the access to the Park, followed by the road/trail conditions to the site. The unavailability of comfort rooms was unsatisfactory to many visitors.

Preferred Types of Development/ Suggestions for Improvement

Twenty nine percent of respondents did not want any further development in the area and considered MPNP already beautiful as it is. For those who wanted further development, majority of these visitors wanted more comfort rooms and first aid stations. Least preferred were view decks/towers and lodging facilities. Willingness to pay for these types ranged from PhP1.66 to PhP9.5 per person per use.

Among the suggestions to improve the Park, the provision of better roads to the Rangers' Station ranked highest, followed by more comfort rooms. Some respondents suggested that signs along trails, as well as their overall improvement, be undertaken. Finally, there were respondents who said that overall cleanliness and maintenance, through better enforcement of rules and improved monitoring should be accomplished.

Contingent Valuation Method (CVM) Results

Using simple average, visitors were willing to pay PhP30.69 in addition to the current entrance fee, at the current level of services. Without the PhP0 bids, visitors were willing to pay an average of PhP39.04 more.

With improved level of services, the following simple average bids resulted from the survey:

	All bids	Without PhP0 bids
Improved road/trail conditions	PhP9.99	PhP13.53
Maps and information	9.35	11.58
Collection of litter and cleanliness	11.67	13.49
Park protection and personal safety	10.80	13.90
Enforcement of environmental rules	12.71	14.66

With respect to the CVM model estimates, the following variables proved to be statistically significant for an increase of entrance fees at the current level of services:

a) Satisfaction with Park services;
b) Intention to visit MPNP in the future;
c) Household income;
d) Household size;
e) Employment status; and
f) Age.

For increases in entrance fees at improved level of services, a different set of variables were statistically significant:

a) Number of years of education;
b) Participation in camping activities; and
c) Household income.

The mean incremental WTP at current level of services is PhP29.08, while at improved level of services, incremental WTP is equal to PhP53.44.

Travel Cost Model (TCM) Results

The average distance of respondents' residences to the Park is 376 km. Majority of respondents belonged to the range of 300 to 399 km from their residence to the Park. The average travel and onsite expenditures per visitor was PhP2,499.69, representing a high recreational value visitors attach to the site. Of the total, 83.04 percent is accounted for by travel costs to and from the site. Park entrance fees, which is part of the onsite expenses, make up for only 1.84 percent of the average total costs of the sample respondents.

With respect to the model estimates, the following variables were statistically significant in determining the number of visits to the Park:

a) Civil status;
b) Age;
c) Gender;
d) Household Income;
e) Travel costs per person; and
f) Participation in camping activities.

Conclusions and Recommendations

The study recommends that the entrance fees be increased to PhP125, PhP25 of which will go the LGU and PhP100 directly to the PAMB for the IPAF. This, in effect, is a doubling of the current entrance fee collected by the PAMB. Since most respondents attach a high recreational value to Mt. Pulag, higher entrance fees can capture this more appropriately. Furthermore, entrance fees constitute a very small proportion of total costs of visitors, hence a doubling thereof will not adversely affect visitation rates.

The study also recommends the implementation of one or more of the hypothetical improvements presented in the survey. The range of WTP figures for each of these improvements is between PhP9.35 to PhP14.66. This amount can cover for the difference between the additional average WTP at current level of services (PhP30.69 with PhP0 bids and PhP39.04 without PhP0 bids), and the recommended incremental amount of PhP50.

1. *Introduction*

In February 1987, then President Corazon C. Aquino established Mt. Pulag National Park (MPNP) through Presidential Proclamation No. 75 "declaring as Mt. Pulag National Park certain parcels of the public domain embraced and situated in the municipalities of Baguio and Kabayan in Benguet, Kiangan in Ifugao, and Kayapa in Nueva Vizcaya in the Island of Luzon."

MPNP is made up of three mountains, namely Mt. Pulag (2880 m), Mt. Tabayoc (2819 m) and Mt. Panatoan (2650 m). Mt. Pulag is the highest peak in Luzon and is the third highest peak in the Philippines, next to Mt. Apo in Davao and Mt. Kitanglad in Bukidnon. It is further the highest peak of the Gran Cordillera Central, which forms the mountain range of the provinces of Kalinga-Apayao, Ifugao, Mountain Province and Benguet. Politically, though, the Park is under the administration of the provinces of Benguet, Ifugao and Nueva Vizcaya. Total area coverage is 11,550 ha, of which 3,376 ha belong to Ifugao, 5,559 ha to Benguet and 2,624 ha to Nueva Vizcaya. *Figure 1* contains a map of Mount Pulag National Park.

People living inside the park rely on farming as their main source of livelihood, with vegetables as their main crops. They augment their income with gathering minor forest products such as firewood. Their diet is supplemented by trapping birds and other wildlife that inhabit the forests.

Climate is classified as Type I, with a pronounced dry period from December to April and a wet season from June to November. Occasionally, during December to January, frost is experienced.

MPNP can be accessed through Baguio City via a combination of highways and logging trails to Babadak, using a four-wheel drive vehicle. Access within the Park area is confined to a few non-surface roads and a network of hiking trails.

The Park possesses a natural scenic beauty with a high diversity of plants, mammals and birds. It is a favorite destination for local tourists whose activities include backpacking, trailing, mountain climbing, camping, and the observation of local culture. Most of these tourists come from Metro Manila. The Park is not easily accessible, hence only about 1,000 tourists visit the park each year.

2. *Objectives of the Study*

The survey of tourists at MPNP is one of the initial activities in the pilot testing activity of the draft fee system guidelines (*Appendix A*). The primary objective of the study is to estimate the value of recreational benefits derived from the park, which will serve as the basis for adjusting the current structure of park entrance fees. In addition, the study aimed to provide information on the following: the socio-economic and demographic profile of MPNP visitors; costs incurred in visiting the park; and preferred types of development in the park.

3. *Framework*

3.1 *Legal Framework*

In 1992, the Philippine Congress enacted Republic Act No. 7586 (NIPAS Act) establishing the National Integrated Protected Areas System (NIPAS) for the Philippines. The NIPAS Act mandates the creation of a system of protected areas to conserve biodiversity. Provision is made for the establishment of an Integrated Protected Area Fund (IPAF) for purposes of financing the projects of the system. All funds generated from the protected areas shall accrue to the IPAF. The IPAF Governing Board manages the central fund, and at the protected area level this will be managed by the PAMB.

The NIPAS law and its Implementing Rules and Regulations outline in detail the process in the formulation of market-based instruments in protected areas, which is one of the sources of funds of IPAF. The Secretary of the DENR is empowered to "... fix and prescribe reasonable NIPAS fees to be collected from government agencies or any person, firm or corporation deriving benefits from the protected areas." Further, he is also empowered to "accept in the name of the Philippine Government and in behalf of NIPAS funds, gifts or bequests of money for immediate disbursement or other property in the interest of the NIPAS, its activities, or its services".

3.2 *Proposed Fee System Guidelines*

To implement the above provision, a set of guidelines for setting fees in protected areas was drafted. It identified the types of fees that may be charged to various users. Moreover, the type of uses of protected areas and its resources were also identified. Recreational uses are defined to "...include but not be limited to: a) water-based activities such as snorkeling, scuba diving, swimming, boating; b) land-based activities such as mountain climbing, trekking, picnicking, and bird watching; c) either land- or water-based activities such as filming and photography; and, d) all other similar activities. The foregoing are primarily nature-based activities. It is proposed that a fee should be charged as outlined by the following guidelines:

a) Protected Area Entrance Fees shall cover access to the natural attractions of the protected area. If applicable, an additional Protected Area User Fee shall cover access to and the use of man-made facilities in the protected area.

b) For Protected Area Entrance Fees, the willingness-to-pay principle shall be the priority basis for computing fees. However, if information is not available, the cost-recovery principle shall be the basis of computation.

c) A three-tiered system of Protected Area Entrance Fees shall be developed: lower rates for local students and local senior citizens; normal rates for other local visitors; higher rates for all foreign visitors.

In estimating both fees, the following principles are suggested.

a) Cost-recovery principle. For Protected Area Entrance Fees, collected revenues shall cover, as much as possible, a reasonable proportion of all costs incurred in protecting, maintaining and enhancing the natural attractions of the protected area.

b) Willingness-to-pay principle. For Protected Area Entrance Fees, these shall be based on the willingness-to-pay estimates of the visitors based on appropriate surveys.

3.3 Economic Framework: Approaches in Measuring Recreational Values

Outdoor recreation (e.g., swimming, trekking, spelunking, etc.) has developed largely as a nonmarket commodity primarily because many kinds of activities cannot be packaged and sold by private producers to private consumers and society has rejected many market outcomes (Knetch and Davis, 1966). Ordinarily, market prices would be a good indicator of value. However, its absence necessitates the imputation of values. There are two major approaches in deriving estimates of the marginal benefits from recreational activities. Conceptually, benefits are indicated by the visitors' willingness to pay (WTP) for outdoor recreation activities as though these are purchased in the open market (Clawson, 1958; Knetch, and Davis, 1966). Further, as mentioned earlier, the marginal benefit curve may also be interpreted as the demand curve.

There are two major approaches in estimating recreational values as discussed below. The first is through direct interviews that estimate WTP and make use of the Contingent Valuation Method (CVM). The second is through imputation of demand from travel cost data using the Travel Cost Method (TCM).

In a CVM survey, park visitors are asked the maximum price they are willing to pay to avoid being deprived of the opportunity to visit a protected area. The survey makes use of a properly constructed questionnaire. The typical questionnaire contains the following elements: a description of the situation, a description of the method of payment, a description of the constructed market, and questions to assess the validity of the stated values. A number of authors (e.g., Hoevenagel, 1994) have provided detailed description of the CVM. The validity of the estimated price or WTP to recreate in the park hinges on two assumptions. The first is that a park visitor (or any other individual) attaches a value to a recreational activity that depends on the utility (satisfaction or welfare) derived from such an activity. The second is that the visitor makes a rational series of allocations of time and money to maximize utility. This implies that the visitor's WTP for the recreational activity maximizes utility.

In a travel cost model, the assumption is that the frequency of visitation to a recreational site is determined by travel costs. The travel to a site may constitute a transaction whereby the cost of the travel to a site is incurred in exchange for access to the site (Freeman, 1993). Thus, costs incurred constitute a proxy to the price of recreation and may therefore be used to value recreational benefits from a protected area. Empirical models were first developed by Clawson (1959) and Knetch (1963), which estimated the demand for recreation. The estimated equation is usually represented in *Figure 2*. The recreational value of the site is the area under the curve.

The estimated recreational demand, combined with information on the carrying capacity of the site, provides a basis for the pricing of recreational benefits. The latter which is indicated by the number of visitors that may be allowed per unit time is projected upwards in *Figure 2* to the demand curve to determine the "price" of recreation.

Both of these approaches require extensive surveys of the users of the protected area (PA). Survey data required for the TCM is more straightforward, since it requires information mainly on actual travel costs incurred by the respondent. It uses these market values to indirectly estimate the benefits derived from the site. The accuracy of the information derived from the TCM will depend on the time the survey is conducted. The closer it is to the actual site visit, the

more accurate it becomes, as it allows for better memory recall. On the other hand, the CV model 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, thus generating 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 conducting personal interviews, there is no guarantee that this is accomplished. In this aspect, the results of the TC model are said to be more accurate in describing and predicting the behavior of the users.

However, the CV model offers its own advantages over the TC model. The CV is often preferred because it is more flexible, theoretically simpler, and is easier to estimate and apply (Mitchell and Carson, 1989). It is 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.

3.4 Survey Approaches and Methods

The two approaches for measuring recreational demand were implemented in the study. The estimate in one method will serve to validate the estimate from the other, in order to have a "range" of estimates of recreational demand. For the TCM, the individual rather than the zonal model was more appropriate (Bennett, 1995) since the latter required information on the complete listing of visitors to the area for the year being studied, which was not available.

The onsite survey of visitors was conducted in April 1998 coinciding with the Holy Week, which was the second peak tourist season of each year. Due to time constraints the entire peak season was not covered. However, the onsite survey was complemented by a mail-in survey of visitors that went to the area between the period September 1997 to August 1998. Respondents were based on either the logbook of MPNP or the membership of mountaineering groups in Metro Manila.

The team composed of ENRAP, PAWB, and PPSO representatives first made a presentation of the study proposal to the Park Superintendent and the DENR Regional Technical Director (RTD) for CAR on April 2-3, 1998 (see *Appendix B* for the composition of the team). Upon arrival at the site, Park rangers were trained on how to conduct the survey of visitors (see *Appendix C* for the questionnaire).

Personal interviews of visitors were done both at the Rangers' Station and at the summit Two rangers were hired at the site. PAWB and PPSO members conducted interviews for five days, while ENRAP representatives stayed for nine days at the site. A total of 130 questionnaires was accomplished.

The mail-in survey was completed five months later, covering almost all existing mountaineering groups based in Metro Manila. Some groups from nearby provinces that were listed in the visitors' logbook were likewise tapped.

Upon completion of over 330 questionnaires, data was encoded, processed and analyzed. MS Access and SPSS were used for data encoding and analysis for entrance fee estimation.

4. *Study Results: Profile and Preferences of Visitors at MPNP*

4.1 Socio-Economic Profile

Most sample visitors were male, single and young, with an average age of 28 years (*Table 1*). They belonged to families that were smaller than the average Filipino family size (4 household members as opposed to 5). Their average monthly income was PhP15,125 each, while average total household monthly income was more than double at PhP36,315, contributed by an average of 3 income earners in each household.

Almost 25 percent of those interviewed were still enrolled in school, majority of whom were in college (*Table 2*). Meanwhile, for those who were not enrolled, most of them had earned a college degree, with an additional 10 percent having postgraduate degrees. For the college degree holders, around one-fourth finished engineering courses, and 18 percent business or accounting degrees. The high-income earners are those that have business or accounting degrees (*Table 3*).

There was a big percentage of respondents that were not employed (*Table 4*), most of whom were single (*Table 5*). Among those employed, many of them were employees, but there was a significant number who were licensed professionals, presumably the engineers. Respondents were usually in the personal and other service industries, followed by the finance industry - although a large number (32 percent) of respondents did not specify the industry where they were employed. Again, the high-income earners were those employed in the finance and service industries (*Table 6*).

Most of the respondents were currently residing in Metro Manila (62 percent), while 12 percent came from Benguet (*Table 7*). Some of them even came from distant provinces such as Laguna, Cebu and Iloilo, despite the existence of nearer substitute sites. This substantiates the reputation of MPNP as a favorite destination for mountain climbing and hiking in the whole country.

Almost all respondents belonged to one or more organizations (88 percent), with almost half of them involved in sports-related groups (49 percent), and a significant number being members of environmental associations (40 percent) (*Table 8*). Interestingly, a number of them are members of religious groups (19 percent) and student organizations (18 percent).

4.2 Travel Profile

Respondents got most of their information about MPNP from word of mouth, where 82.2 percent said they first heard about MPNP from friends and/or relatives. Media also had a big influence on providing information, with 27.1 percent of respondents claiming to have discovered MPNP from print sources *(Table 9)*.

Respondents were, on the average, second-time visitors to the Park who had intentions of going back at least twice within the next two years. The average stay of a visitor at the Park is three days, with an average of one whole day for travel time (*Table 10*). Most respondents came directly from their residence (79.8 percent), while the rest had a one-day layover at Baguio City before proceeding to MPNP (*Table 11*). However, there were more people who stopped over at Baguio for one or two days after the hike, before returning to their places of residence (29.8

percent) (*Table 12*). Most respondents took both the bus and a hired vehicle to get to the Park. There was an average of 15 people in a group, most of which were friends of the respondent.

4.3 Recreational Profile: Activities Conducted, Substitute Sites, and Satisfaction Level with Services

Most sample respondents indicated the scenery, climate, and the challenge of the climb as the most important reasons for choosing MPNP for the current trip (*Table 13*). Proximity to residence and affordability were not important factors for making their decisions to take the trip.

Given that most respondents were from Metro Manila, substitute sites they identified were those which were relatively closer, such as Mt. Banahaw in Quezon, Mt. Makulot in Batangas, and Mt. Makiling and Mt. Fami in Laguna (*Table 14*). Among the top ten substitute sites, only one site (Mt. Apo in Davao) was located outside Luzon.

As expected, majority of the respondents specified mountain climbing and sightseeing as the main activities conducted at the site. Camping and photography ranked next in the level of importance of activities, while picnicking and research followed third (*Table 15*).

On the whole, sample respondents ranked MPNP services as satisfactory (*Table 16*). More people ranked access to the park as "good" than "fair", while road/trail conditions were considered "fair" more than "good". Respondents were almost equal in rating cleanliness of the Park as either "good" or "fair", while many of them were not very satisfied with the comfort rooms available. Very few gave an excellent rating for any of the services offered in the Park.

4.4 Preferred Types of Development/ Suggestions for Improvement

Almost a third of respondents (29.8 percent) did not want any further development in the area, many of whom considered MPNP beautiful as it is (*Table 17*). Others cited avoiding environmental degradation as their main reason. Nevertheless, there were particular types of development that some respondents preferred. Comfort rooms and first aid stations were suggested by majority of the sample visitors (*Table 18*). Campsites were second, while hikers' rest areas and signal stations followed next. Less than 30 percent preferred orienteering sites, and photo opportunity sites. Least preferred were view decks/towers and lodging facilities. For all types of development, mean willingness to pay ranged from PhP1.66 to PhP9.5 per person per use. Hence, even if these facilities were provided, many of the respondents expected the costs of using them to be covered by the entrance fees.

Among the suggestions to improve the Park was the provision of better roads up to the Rangers' Station in Babadak (20.7 percent) (*Table 19*). Still, some wanted comfort rooms to be built for visitors (19.7 percent). Visitors were probably referring to the Rangers' Station rather than the summit, wherein there is only one toilet available for use. About fifteen percent of sample respondents suggested that signs along trails, as well as their overall improvement, be undertaken. Others wanted the current collection and disposal of garbage to be improved (12 percent). Finally, there were respondents who said that overall cleanliness and maintenance, through better enforcement of rules and monitoring, should be accomplished (10.6 percent). The perception was that there was a lack of manpower in monitoring the activities within the Park. During the time of the survey, there were only four rangers employed, with only two rangers manning the Station at any point in time.

5. *Study Results: Protected Area Entrance Fee Estimates*

5.1 Willingness to Pay: Contingent Valuation Method

The CVM was described earlier as one method in valuing outdoor recreation by asking respondents the maximum amount they are willing to pay to access a protected area. The CVM portion of the questionnaire was divided into three parts. The first part asked the maximum amount visitors were willing to pay at the current level of services. The next part introduced hypothetical improvements in existing services provided at the Park, and respondents were asked how much they were willing to pay (WTP) for each improvement. The third part introduced the possibility of providing new facilities at the Park, particularly new infrastructure and added services for safety and cleanliness. Here, the respondents were asked if they plan to use such facilities, and how much they were willing to pay for them (*Appendix C*). Results for the latter are contained in Section 4.4.

5.1.1 Specification of the CVM Model

The WTP for entrance fee increase at the current and improved level of services in MPNP is hypothesized to be a function of the following:

a) visitors' environmental awareness and appreciation (E_{ij}), represented by the number of years of education and membership in an environmental organization;
b) participation in activities at the site (B_{ik}) such as camping and picnicking;
c) attributes of the park (A_{ia}) as inferred from visitors' behavior towards MPNP such as satisfaction with MPNP services, degree of satisfaction with services, number of visits, length of stay, and their plan for another visit;
d) ability to pay variables (P_{ip}), including income, household size, and employment status; and
e) socio-demographic characteristics (D_{iq}) such as age, gender and civil status.

The empirical specification of the WTP function can be written as:

$$WTP_{il} = f(E_{ij}, B_{ik}, A_{ia}, P_{ip}, D_{iq}) + \varepsilon_i \qquad (1)$$

where: WTP_{il} the dependent variable, is the willingness to pay of respondent i for increased entrance fee in HINP at l level of services
$i = 1,2,\ldots,n$ observations
$l = 1,2$ level of services (current and improved).
ε = a random disturbance term

The independent variables are specified as abovementioned.

Table 20 presents the expected or hypothesized signs of the marginal effect of explanatory variables included in the WTP model, the directions of which are based on published literature and common sense. For example, WTP is higher for respondents with greater environmental awareness and appreciation. Thus, the number of years of education can be posited to positively influence WTP. Similarly, membership in an environmental organization would positively affect WTP.

Involvement in activities at the Park would likewise positively affect WTP. In particular, participation in camping and picnicking activities in the Park is seen to increase respondents' willingness to pay for higher entrance fees.

It is also posited that satisfaction with MPNP services as well as the degree of satisfaction can be expected to affect WTP positively. The effect of the duration of stay on WTP can be expected to be positive because this indicates that the respondents have experienced higher utility for the park. However, the number of visits to the park and the plan to come back in the future can be expected to influence WTP in either a positive or negative direction. People would tend to bid higher WTP if taking more visits and planning for other visits in the future are associated with a higher value for recreation. On the other hand, a strategic behavior of the respondents might prevail since they will incur higher costs per visit as frequency of visit increases and it will be more expensive for them in the future if the entrance fee is increased.

For the ability to pay variable, it is expected that the WTP for entrance fee increase can be positively influenced by household income, i.e. households with higher income are willing to pay higher amounts due to their economic ability to do so. Note that the income variable used is household income, since taking a trip to MPNP is a household decision. Similarly, employed respondents are willing to pay a higher amount for the same reason that they can afford to do so. On the other hand, household size will have a negative effect on WTP due to budget constraints. Households with bigger numbers of family members will naturally incur greater costs than with smaller households when taking a trip to the park.

In terms of other socio-economic variables, the effect of age on WTP can go either way, depending on whether MPNP appeals to older or younger people. Finally, the signs of the dummy variables for gender and civil status depend on the variation in WTP relative to the control dummy. *Table 21* contains the descriptive statistics of the variables used in the WTP model for entrance fee increase.

The Tobit model instead of the Ordinary Least Squares (OLS) method was used to estimate the effects of the independent variables on WTP for higher entrance fees. *Appendix D* contains the technical details of the description of the Tobit model and the rationale for choosing such over the OLS for the CVM portion of the study.

5.1.2 Willingness to pay for entrance fees at current level of services

Survey results show that on average, respondents were willing to pay PhP30.69 in addition to the current entrance fee of PhP50 for the PAMB and PhP25 for the LGU (*Table 22*). The median WTP was PhP25, and the mode WTP was PhP50. The second mode WTP was PhP25, representing 22.6 percent of respondents (*Table 23*). The lowest bid was PhP0, with 21.4 percent of respondents giving a 0 bid, and the highest bid was PhP150 (0.3 percent of total respondents).

If 0 bids were excluded from the analysis, visitors were willing to pay an average of PhP39.04. The lowest bid was PhP5, covering 0.8 percent of respondents (*Table 24*).

Table 25 shows the estimates of the factors affecting willingness to pay of visitors for entrance fee increase at the current level of services of MPNP. All variables specified in the WTP model above have been included in the final analysis. The test for multi-colinearity problems (results not shown) indicates the absence of high correlation coefficients of any two

independent variables. The variance inflation factors were found to be relatively small for possible serious multi-colinearity problems to exist.

The Tobit model performs better than OLS in explaining variations in WTP responses to the contingent valuation question as evidenced by significant coefficients, signs, and the goodness of fit of the model (*Appendix D* for an explanation of the econometric model used). As indicated in *Table 25*, the estimated likelihood ratio of 44.63 is greater than its critical chi-square value (or tabulated value) of 26.3 at the 95 percent confidence level. This suggests that the expected value of WTP is significantly explained by the explanatory variables under consideration.

The Tobit coefficients shown in *Table 25* are not directly interpretable as in the OLS regression model. However, the signs are immediately useful in providing the direction of the relationship between the dependent variable, WTP, and the independent variables. The positive sign of the coefficient denotes a direct relationship while the negative sign, an inverse one.

Out of the fifteen independent variables hypothesized to affect WTP, only six were significant. Results of the analysis showed that:

a) Education and membership in an environmental organization do not seem to influence WTP for entrance fee increase.

b) Participation in camping and WTP are positively correlated as expected; specifically, respondents who participated in camping activities at MPNP tend to bid higher WTP. However, picnicking had a negative relationship with WTP. Nevertheless, both activities were not statistically significant.

c) Satisfaction with Park services was statistically significant, but the degree of satisfaction was not.

d) Number of visits and duration of stay per visit do not seem to have any influence on WTP. However, the intention to visit MPNP in the next two years has a high level of significance on WTP, indicating that visitors have a high value for recreating at Mt. Pulag.

e) All ability to pay variables proved to be significant in explaining WTP variations. Income and WTP are found to be significantly and positively correlated, i.e., WTP increases with income; this result also implies that the natural park is a normal good. As expected, visitors with larger household sizes tend to be significantly less willing to pay for an entrance fee increase than with smaller households. Finally, employment status of respondents significantly affects WTP, whereby those employed have higher WTP bids than those that are unemployed.

f) Age influences WTP significantly, with older people tending to bid higher WTP than younger ones. However, gender and marital status do not seem to have any influence on WTP.

The marginal effects of the variables are contained in *Table 26*. The model predicts that there is an average willingness of respondents to pay an additional PhP29.08 at the current level of services at the Park.

5.1.3 Willingness to pay with improved level of services

The survey likewise included hypothetical situations whereby certain improvements in Park management were presented to respondents. These improvements included the following:

a) Road/ Trail Conditions
b) Maps and Information
c) Collection of Litter and Cleanliness in the Park
d) Park Protection and Personal Safety
e) Enforcement of Environmental Rules and Regulations

For the first type of improvement, respondents were willing to pay an average of PhP9.99 in addition to the current entrance fee. For the provision of maps and information, visitors were willing to pay an average of PhP9.35. If collection of litter is improved, respondents were willing to pay an average of PhP11.67. If protection and personal safety are ensured, survey results reveal willingness to pay an additional PhP10.8. Finally, with better enforcement of environmental rules and regulations, respondents were willing to pay an additional PhP12.71 (*Table 22*).

If protest bids were excluded from the analysis, WTP bids were even higher. For better roads, visitors bid PhP13.53 on the average. For providing maps and information, visitors were WTP an additional PhP11.58. For the third type of improvement, i.e., collection of litter and cleanliness in the Park, respondents bid PhP13.49 on the average. For Park protection and personal safety, the average bid was PhP13.9. Finally, for the last type of improvement, the average bid was PhP14.66 over and above the entrance fee (*Table 24*).

With respect to the Tobit model estimates, at improved level of services, only three variables proved to be significant (*Table 27*). Those who participated in camping activities were willing to pay a higher increase in entrance fees. Household income again proved to be significant as well. Finally, those with more years of education were less willing to pay increased fees at improved level of services, although the variable was significant only at the 85 percent confidence level. Overall, the results represent the best fit of the Tobit model, based on the likelihood ratio measure of goodness of fit. The computed likelihood ratio (31.89) is greater than the critical chi-square (26.30) at the 95 percent confidence level. Hence, the model performs well in explaining variations in the responses to the CVM question.

The marginal effects are contained in *Table 28*. At improved level of services, the incremental WTP estimated by the model is PhP53.44.

5.2 Willingness to Pay: Travel Cost Model (TCM)

Another method of measuring the willingness to pay to enter a recreation site is the travel cost method (TCM). This method estimates the consumer surplus through the link between environmental assets and markets for related goods using recreational trip expenditures as a proxy for willingness to pay in demand estimation. It is based on the relationship between visits to a site in some time period and a number of other variables determining these visits.

For this study, a single site individual travel cost method (ITCM) was used to measure the consumer surplus visitors obtained from each trip made to MPNP. Data on travel costs and other relevant information for each sample-visitor included in the study was gathered at the site. This information was used in estimating the trip generation model.

5.2.1 *TC Model Specification*

The recreation demand function for MPNP is specified as follows:

$$V_i = V(C_i, S_i, H_i, R_i) + \varepsilon_i \qquad (2)$$

where: i=1,2,...,n observations (i.e., sample visitors)
V_i is the number of annual visits (1997) by visitor i to MPNP
C_i are the travel costs (round trip and on-site costs) of visitor i to MPNP
S_i are socio-economic features of visitor i
such as household income, employment status,
education, age, civil status and gender;
H_i measures the importance of camping activities
in the decision of the visitor to take the current trip to MPNP
R_i is an index of the rating for facilities in MPNP by visitor i
ε_i is a random disturbance term.

Visitation rate is the dependent variable, which is a count data variable. Travel costs are the total expenses incurred by the respondent during the entire trip; which includes fare, rental of facilities, food, and the like. The opportunity cost of time was excluded from the travel cost calculation due to the difficulty involved in measuring such. Travel cost may be considered the direct price of recreation and, hence, it is expected to have an inverse relationship with the visitation rate. As usual, income is expected to have a positive effect on the number of trips, i.e., recreation is a normal good. Employment status is considered a proxy variable for the ability to undertake recreation activities. Employed visitors are assumed to have the ability to undertake recreation in terms of budget and are expected to have higher visitation rates.

Education, on the other hand, is expected to positively affect the frequency of visits since a more educated person may have a greater appreciation with nature. There is no *a priori* expectation for age, gender, and civil status. For the index representing rating of facilities in MPNP, a higher number indicates a higher rating and is expected to positively affect visitation rates.

5.2.2 *Travel profile of MPNP visitors*

Most respondents came from Metro Manila. Hence, the average distance of the majority was 376 km from their residence to Mt. Pulag National Park. For those within the range of less than 200 km from MPNP, the average distance was 84 km. Within the range of 200 to 299 km, the average distance was 273 km. For the 300 to 399 range, the average distance was 346 km Majority of respondents belonged to this range (247 sample visitors). For the fourth range of 400 to 499, there was an average distance of 478 km. Finally, for those who lived beyond 500 km from MPNP, the average distance was 978 km. These were mostly those coming from the Visayas and Mindanao, as well as the far-flung provinces of Southern Luzon (*Table 29*).

The average travel and on-site expenditures per visitor is PhP2,499.69 (*Table 30*). This is a relatively large amount for a three-day vacation, thus showing that there is a high valuation being accorded Mt. Pulag. Visitors are willing to spend that much in order to access the Park. The bulk of the expenses is accounted for by travel costs to and from the Park (83.04 percent). Transportation expenses make up for the biggest part of travel costs, with food and lodging

accounting for the remaining amount. On-site expenses are even smaller, making up for only 16.96 percent of total costs. Out of these, only 1.84 percent can be attributed to entrance fees.

5.2.3 Truncated Poisson Model Results

Table 31 presents the estimation results of the travel cost model for MPNP. Although the truncated Poisson regression is of interest in this study, the results from OLS estimation are presented also for comparison purposes (see *Appendix D* for definition of the econometric procedure used). Based on the goodness of fit statistics and coefficient variables, the truncated Poisson regression seems to fit the count data better than OLS.

Results show that the coefficient on own cost (travel cost) is significantly different from zero (at the 90 percent level of confidence). This confirms the expected negative effect of travel costs on the frequency of visit. In contrast to the expected outcome, the coefficient on household income is negative and is significant. Although this seems counter-intuitive, this has been "rationalized in the literature as arising from preference of higher-income persons for other forms of recreation" (Grogger and Carson, 1991). Nevertheless, employment status has a positive coefficient as expected, albeit not significant.

Education has no significant effect on visitation rate, and this implies that recreation is for all levels of literacy. However, age has a significant coefficient, and is positively related to visit frequency. This suggests that relatively older people tend to visit MPNP more than younger individuals. Noteworthy though is the range of the age of visitors that frequent MPNP, whereby the minimum age among the respondents is 15 years, while the maximum age is 62 years with an average age of 28 years. Hence, MPNP visitors tend to be relatively young. The positive and significant coefficient for gender suggests that males tend to visit the park more frequently than females. Civil status is found to be negatively correlated with visitation rate, which implies that single visitors tend to visit MPNP less often than married visitors.

Finally, the rating for facilities is not significant in determining visit frequency. Instead, the importance given to camping as an activity is highly significant in determining their visitation rates. This implies that MPNP is considered an ideal place for camping.

6. Conclusions and Recommendations

Based on the results, the study recommends that the entrance fees be increased to PhP125; PhP25 of which will go the LGU, and PhP100 to the PAMB. This, in effect, is a doubling of the current entrance fee of PhP50 that goes to the PAMB directly. There is a high willingness to pay for higher entrance fees in Mt. Pulag as shown by the study. This is supported by the fact that the clientele that it attracts comes from relatively middle and upper income groups, thus there is an ability to pay higher fees. A lot of the visitors are single, making them less accountable to the other household members. Hence, their recreation decisions are not influenced by the household to which they belong. Furthermore, entrance fees make up a very small amount of total costs to the visitors, thus higher fees will not adversely affect their decision to visit MPNP again.

Congestion does not seem to be a problem at the Park, given the difficulty in terms of time and travel costs involved. Thus, higher entrance fees are recommended solely for revenue generation purposes.

Finally, it is recommended that some, if not all, of the hypothetical improvements be implemented, or at least be part of an overall Park Management Plan for the Park's maintenance. The difference between the average increase in WTP of visitors for the current level of services and the recommended increase of PhP50 can be offset by the WTP for improved level of services. In particular, cleanliness and garbage collection should be a task given more attention by the rangers manning the Park. Visitors have a high value for Mt. Pulag because of its beauty and natural resources, and will be willing to pay to access the Park only if it remains to be such.

Table 1. Socio-Economic Profile of Sample MPNP Visitors
September 1997 to August 1998

Item	Number/Frequency	Percent
Age		
Average	27.94	-
Mode	27	8.7
Gender		
Male	238	71.7
Female	94	28.3
Civil Status		
Single	271	81.6
Otherwise	61	18.4
Home Owner	229	69
No. of Household Members		
Average	9.21	-
Mode	4	20.2
No. of Household Members Below 18 yrs.		
Average	1.98	-
Mode	0	45.2
Monthly Own Income (in Pesos)		
Average	15,125	-
Mode	-	26.2
Monthly Household Income (in Pesos)		
Average	36,315	-
Mode	8,500	12
No. of Income Earners in Household		
Average	2.74	-
Mode	2	31.9

Table 2. Educational Profile of Sample MPNP Visitors
September 1997 to August 1998

Item	Frequency	Percent
Enrolment Status		
Student	77	23.2
High School	5	1.5
College	69	20.8
Post Graduate	3	0.9
Non-student	255	76.8
No. of Years of Education		
Average	14.42	-
Mode	15	65.1
Highest Educational Attainment		
Elementary Graduate	8	2.41
High School Graduate	52	15.66
Vocational Graduate	21	6.33
College Graduate	216	65.06
Post College Graduate	32	9.64
Not Specified	3	0.90
College Degree		
Engineering	80	24.1
Business, Accounting	60	18.1
Medicine-related	37	11.1
Communication, Education	34	10.2
Computer-related	21	6.3
Social Sciences, Law, Math	21	6.3
Electronics	9	2.7
Fine Arts, Theater	8	2.4
Natural Sciences	5	1.5
Sports-related	5	1.5
Not Specified	36	10.8
Post-Graduate Degree		
Communication, Education	9	2.7
Business, Accounting	7	2.1
Social Sciences, Law, Math	7	2.1
Medicine-related	5	1.5
Engineering	4	1.2
Computer-related	2	0.6
Sports-related	2	0.6
Electronics	1	0.3
Not Specified	3	0.9

Table 3. Respondents' Income and College Degree of Sample MPNP Visitors
September 1997 to August 1998

College Degree/ Monthly Income	None	Business/ Accounting	Engineering	Computer-related	Social Sciences	Medicine-related	Commun./ Education	Electronics/ Technicians	Fine arts/ Theater	Natural Sciences	Sports	Did not State	Total Sample
-	8	7	20	5	6	13	18	2	-	1	2	5	87
4,000	2	3	4	2	2	2	2	1	1	1	-	4	24
5,500	4	5	13	3	3	4	1	4	4	1	-	3	45
8,500	1	5	10	1	1	5	5	2	-	-	1	2	33
12,000	1	10	10	2	4	7	2	-	2	-	-	8	46
16,000	-	7	4	2	3	1	2	-	1	-	2	1	23
20,500	-	3	6	2	1	2	1	-	-	-	-	4	19
25,500	-	2	5	3	-	2	-	-	-	-	-	1	13
31,500	-	4	4	-	-	1	2	-	-	-	-	-	11
40,000	-	2	2	-	-	-	-	-	-	-	-	3	7
52,500	-	3	-	1	1	-	1	-	-	-	-	2	8
70,000	-	1	-	-	-	-	-	-	-	-	-	-	1
80,000	-	1	-	-	-	-	-	-	-	-	-	-	1
90,000	-	2	1	-	-	-	-	-	-	1	-	-	4
120,000	-	5	1	-	-	-	-	-	-	1	-	3	10
TOTAL SAMPLE VISITORS	16	60	80	21	21	37	34	9	8	5	5	36	**332**

Table 4. Employment Profile of Sample MPNP Visitors
September 1997 to August 1998

Item	Frequency	Percent
Employment Status		
Employed	240	72.3
Unemployed	92	27.7
Employment Position		
Employee	127	38.3
Professional	78	23.5
Student	69	20.8
Entrepreneur	22	6.6
Religious	13	3.9
None	23	6.9
Industry Where Employed		
Personal and Other Services	90	27.1
Finance	54	16.3
Trade	24	7.2
Manufacturing	23	6.9
Electricity, Gas, Water	15	4.5
Construction	8	2.4
Transportation and Communication	8	2.4
Agriculture	5	1.5
None/ Not Specified	105	31.6

Table 5. Civil Status, Employment Status and Age of Sample MPNP Visitors, September 1997 to August 1998

Socio-Economic Characteristic	Civil Status			
	Single	Married	Widowed	Separated
Employment Status				
Employed	184	51	0	5
Unemployed	87	4	1	0
Gender				
Female	87	4	1	2
Male	184	51	0	3
TOTAL SAMPLE VISITORS	271	55	1	5

Table 6. Industry of Employment, Monthly Income and Employment Position of Sample MPNP Visitors, September 1997 to August 1998

Industry/ Income & Employment	None/ Did not State	Agriculture	Manufacturing	Electricity, Gas, Water	Construction	Trade	Transpo, Communic.	Finance	Services	Total Sample
Monthly Income:										
-	74	-	-	-	-	-	-	-	13	87
4,000	15	-	-	-	-	3	-	1	5	24
5,500	6	1	2	3	4	2	2	9	16	45
8,500	3	1	6	1	1	2	3	3	13	33
12,000	5	1	4	1	-	5	1	12	17	46
16,000	2	-	-	2	1	2	-	9	7	23
20,500	-	-	2	4	-	4	-	3	6	19
25,500	-	-	3	2	1	1	2	3	1	13
31,500	-	-	1	2	-	3	-	1	4	11
40,000	-	-	2	-	-	1	-	3	1	7
52,500	-	-	2	-	-	-	-	4	2	8
70,000	-	-	-	-	-	-	-	1	-	1
80,000	-	-	-	-	-	-	-	-	1	1
90,000	-	1	1	-	1	1	-	-	-	4
120,000	-	1	-	-	-	-	-	5	4	10
Employment Position:										
None	23	-	-	-	-	-	-	-	-	23
Entrepreneur	1	1	2	-	-	5	-	10	3	22
Professional	6	1	6	6	6	3	3	13	34	78
Employee	6	3	15	9	2	16	5	31	40	127
Religious	-	-	-	-	-	-	-	-	13	13
Student	69	-	-	-	-	-	-	-	-	69
TOTAL SAMPLE VISITORS	105	5	23	15	8	24	8	54	90	**332**

Table 7. Residential Profile of Sample MPNP Visitors
September 1997 to August 1998

Item	Frequency/ Number	Percent
Location of Residence		
Metro Manila	205	61.7
Benguet	39	11.7
Laguna	24	7.2
Cebu	14	4.2
Iloilo	14	4.2
Rizal	11	3.3
Cavite	9	2.7
Bulacan	4	1.2
Quezon	4	1.2
Nueva Ecija	3	0.9
Pampanga	2	0.6
Bicol	2	0.6
Isabela	1	0.3
Length of Stay at Residence (years)		
Average	16.64	-
Mode	20	5.1

Table 8. Involvement in Organizations of Sample MPNP Respondents
September 1997 to August 1998

Type of Organization	Frequency	Percent
Sports	164	49.4
Environmental	**131**	**39.5**
Religious	64	19.3
School	59	17.8
Professional	57	17.2
Civic	31	9.3
Non-government	29	8.7
Government	11	3.3
Regional	9	2.7
Business	8	2.4
None	40	12
Total With Membership [1/]	**292**	**88**
TOTAL SAMPLE VISITORS	**332**	**100**

[1/] Total does not add up due to multiple responses.

Table 9. Information Source/s Regarding Mt. Pulag by Sample MPNP Visitors September 1997 to August 1998

Information Source	Frequency	
	Number	Percent
Friends/Relatives	273	82.2
Print Media	90	27.1
School	51	15.4
Television	26	7.8
Radio	9	2.7
Travel Agency	9	2.7
Others	90	27.1
TOTAL SAMPLE VISITORS	332	

Note: Total responses exceed total no. of respondents due to multiple responses.

Others include:

a. mountaineering/ environmental groups

b. Church

c. Department of Tourism (DOT) or Department of Environment and Natural Resources (DENR)

d. Internet

Table 10. Travel Profile of Sample MPNP Visitors
September 1997 to August 1998

Item	Number/ Frequency	Percent
Average Duration of Travel Time to MPNP (days)	1	23.2
Average Stay at MPNP (days)	3	35.2
Travel Route:		
Straight from Residence (freq.)	265	79.8
Lay-over at Baguio before MPNP visit (freq.)	34	10.2
Straight back to Residence (freq.)	202	60.8
Lay-over at Baguio after MPNP visit (freq.)	99	29.8
Means of Transpo to MPNP (freq.)[1/]		
Bus	261	78.6
Hired Vehicle	220	66.3
Own Vehicle	26	7.8
Air	10	3
Boat	10	3
Truck	5	1.5
Hitchhiked	3	0.9
Helicopter	1	0.3
Ave. no. of people in the group	15	-
Family	1	-
Friends	9	-
Officemates	1	-
Schoolmates	1	-
Others	3	-
Average No. of Visits to MPNP	2	15.1
Average No. of Intended Visits to MPNP In Next Two Years	2	44.6

[1/] Note: Total does not add up due to multiple responses.

Table 11. Location and Duration of Lay-Over From Residence Before Visit to MPNP of Sample MPNP Visitors, September 1997 to August 1998

No. of Days/ Location	Less than One Day	One Day	Two Days	More than Two Days	TOTAL
Babadak	-	2	-	-	2
Kabayan	1	1	-	-	2
Baguio	13	16	1	4	34
Pangasinan	-	-	1	1	2
Manila	3	1	2	1	7
Laguna	2	-	-	-	2
Iloilo	-	1	-	-	1
Negros Occidental	-	-	1	-	1
Zamboanga	-	1	-	-	1
TOTAL SAMPLE VISITORS	19	22	5	6	52

Table 12. Location and Duration of Lay-Over After MPNP Visit of Sample MPNP Visitors, September 1997 to August 1998

No. of Days/ Location	Less than One Day	One Day	Two Days	More than Two Days	Total Sample Visitors
Babadak	-	2	-	-	2
Kabayan	-	9	1	1	11
Sagada	-	-	2	4	6
Banawe	-	-	2	-	2
Baguio	18	56	23	2	99
Ilocos Sur	-	-	1	-	1
Pangasinan	-	-	-	1	1
Manila	1	1	-	2	4
Laguna	-	1	-	-	1
Mt. Sto. Tomas	-	-	-	1	1
Undecided	-	3	-	-	3
TOTAL SAMPLE VISITORS	19	72	29	11	131

Table 13 . Reasons for choosing Mt.Pulag for Current Trip by Sample MPNP Visitors
September 1997 to August 1998

Reasons	Level of Importance									
	Extremely Important		Very Important		Important		Less Important		Not Applicable	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
a. Scenery/ View	230	69.3	71	21.4	25	7.5	2	0.6	4	1.2
b. Climate	163	49.1	98	29.5	54	16.3	9	2.7	8	2.4
c. Challenge of Climb	130	39.2	91	27.4	78	23.5	21	6.3	12	3.6
d.1 Uniqueness of species/biodiversity	80	24.1	83	25	92	27.7	36	10.8	41	12.3
d.2 Flora in area	93	28	126	38	69	20.8	25	7.5	19	5.7
d.3 Fauna in area	73	22	102	30.7	84	25.3	38	11.4	35	10.5
e. Historical/cultural reasons	62	18.7	97	29.2	91	27.4	37	11.1	45	13.6
f.1 Recommended by Friends/Family	64	19.3	77	23.2	93	28	48	14.5	50	15.1
f.2 Media Ads	12	3.6	31	9.3	68	20.5	88	26.5	133	40.1
g. Price/Affordability	37	11.1	44	13.3	91	27.4	83	25	77	23.2
h. Proximity to Residence	12	3.6	22	6.6	55	16.6	90	27.1	153	46.1

Table 14. Top Ten Substitute Sites for Mt. Pulag by Sample MPNP Visitors September 1997 to August 1998

Substitute Site	Frequency	Ave. No. of Visits Per Visitor	Percent
1. Mt. Banahaw (Quezon)	232	2.31	69.9
2. Mt. Makulot (Batangas)	222	2.58	66.9
3. Mt. Makiling (Laguna)	203	1.45	61.1
4. Mt. Fami (Laguna)	182	2.12	54.8
5. Mt. Cristobal (Quezon)	161	1.03	48.5
6. Mt. Arayat (Pampanga)	126	0.72	38.0
7. Mt. Halcon (Mindoro)	105	0.6	31.6
8. Mt. Batulao (Batangas)	78	0.38	23.5
9. Mt. Lukban (Quezon)	66	0.32	19.9
10. Mt. Apo (Davao)	59	0.21	17.8
Total Sample Visitors	**332**		

Note: Total does not add up due to multiple responses.

Table 15. Activities Conducted at Mt. Pulag by Sample MPNP Visitors
September 1997 to August 1998

Activities	Level of Importance									
	Extremely Important		Very Important		Important		Less Important		Does not matter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
a. Mountain climbing/hiking/trekking	191	57.5	89	26.8	44	13.3	3	0.9	5	1.5
b. Sightseeing/Wildlife watching	175	52.7	96	28.9	49	14.8	4	1.2	8	2.5
c. Camping	110	33.1	94	28.3	88	26.5	18	5.4	22	6.6
d. Photography	102	30.7	106	31.9	97	29.2	13	3.9	14	4.2
e. Picnicking	23	6.9	41	12.3	90	27.1	87	26.2	91	27.4
f. Research/study	34	10.2	46	13.9	85	25.6	61	18.4	106	31.9
g. Others: Meditate	7	2.1	9	2.7	4	1.2	0	0	312	94
Social	9	2.7	2	0.6	5	1.5	0	0	316	95.2

Note: Activities are conducted jointly.

Table 16. Degree of Satisfaction with Mt. Pulag Park Services by Sample MPNP Visitors
September 1997 to August 1998

Park Services	Level of Satisfaction							
	Excellent		Good		Fair		Poor	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Access to the Park	39	11.7	129	38.9	116	34.9	39	11.7
Road/trail conditions	36	10.8	96	28.9	123	37	63	19
Cleanliness	33	9.9	101	30.4	105	31.6	67	20.2
Comfort Rooms	16	4.8	51	15.4	108	32.5	96	28.9
Camping areas	42	12.7	92	27.7	107	32.2	48	14.5
Water for Drinking/Refill	48	14.5	109	32.8	94	28.3	62	18.7
Park amenities	10	3	73	22	118	35.5	78	23.5
Peace and Quiet	184	55.4	105	31.6	33	9.9	3	0.9
Personal safety	57	17.2	117	35.2	106	31.9	31	9.3

Table 17. Reasons for Not Wanting Further Development by Sample MPNP Visitors, September 1997 to August 1998

Reason	Number	Percent
MPNP is beautiful as it is	64	19.3
To avoid environmental degradation	18	5.4
Satisfied with present amenities	5	1.5
No reason stated	12	3.6
TOTAL	99	29.8
TOTAL SAMPLE VISITORS	332	100

Table 18. Average WTP For Suggested New Facilities at Mt. Pulag National Park September 1997 to August 1998

Item	Will Use		WTP
	Frequency	Percent	Mean
Comfort rooms	195	58.7	4.98
First Aid stations	191	57.5	9.50
Camp sites	144	43.4	5.42
Hikers' rest areas	123	37	3.35
Signal stations	117	35.2	4.73
Orienteering sites	95	28.6	3.94
Photo opportunity sites	77	23.2	2.11
Parking areas	68	20.5	3.40
Tour guides/ wardens	64	19.3	7.00
Outdoor cooking areas	63	19	1.66
Meditation sites	57	17.2	1.67
Lodging facilities	56	16.9	6.33
View decks and towers	51	15.4	2.28
TOTAL SAMPLE VISITORS	**332**		

Table 19. Suggestions for Improving MPNP by Sample MPNP Visitors September 1997 to August 1998

Suggestion	Frequency	Percent
Leave MPNP as it is/ No development	28	13.5
1. Better roads to Rangers' Station	43	20.7
2. Provide comfort rooms	41	19.7
3. Provide more signs along trails/ Improve trails	31	14.9
4. Improve garbage collection and disposal	25	12.0
5. Cleanliness/ Enforce rules/ Maintenance/ Monitoring	22	10.6
6. Provide water supply	17	8.2
7. Provide briefing/ more information on Mt. Pulag/ maps	17	8.2
8. Hire more rangers/ Improve staff/ personnel	16	7.7
9. Basic facilities/ Campsites/ Cooking areas/ Viewdecks	13	6.3
10. Provide First aid/ Safety measures	10	4.8
11. Add/Improve transportation to Babadak	9	4.3
12. Restrict the number of climbers at any one time	7	3.4
13. Provide communication facilities	3	1.4
14. Protect trails from erosion/ Reforestation	3	1.4
15. Add convenience stores	2	1.0
16. Enforce camping & off-camping seasons	2	1.0
17. Increase budget/ entrance fees	2	1.0
18. Provide parking areas	2	1.0
19. Provide equipment rental	1	0.5
20. Provide lodging at nearby towns	1	0.5
21. Remove facilities of Napocor	1	0.5
22. Add/ Enhance flora	1	0.5
23. Do survey suggestions	1	0.5
Total Sample That Gave Suggestions [1/]	**208**	**62.65**
TOTAL SAMPLE VISITORS	**332**	**100**

[1/] Total does not add up due to multiple suggestions/ responses.

Table 20. Hypothesized Direction of Effects of Explanatory Variables on the WTP Bid

Independent Variable	Direction of Change	Theoretical basis
Number of Years of Education (E1)	+	$\partial WTP/\partial E1 > 0$
Membership in an Environmental Organization (E2)	+	$\partial WTP/\partial E2 > 0$
Participation in Camping Activities (B1)	+	$\partial WTP/\partial B1 > 0$
Participation in Picnicking Activities (B2)	+	$\partial WTP/\partial B2 > 0$
Satisfaction with Park Services (A1)	+	$\partial WTP/\partial A1 > 0$
Degree of Satisfaction with Park Services (A2)	+	$\partial WTP/\partial A2 > 0$
Number of Visits (A3)	+/-	$\partial WTP/\partial A3 \gtrless 0$
Length of Stay (A4)	+/-	$\partial WTP/\partial A4 \gtrless 0$
Plan for Another Visit (A5)	+/-	$\partial WTP/\partial A5 \gtrless 0$
Annual Household Income (P1)	+	$\partial WTP/\partial P1 > 0$
Household Size (P2)	-	$\partial WTP/\partial P2 < 0$
Employment Status (P3)	+	$\partial WTP/\partial P3 > 0$
Age (D1)	+/-	$\partial WTP/\partial D1 \gtrless 0$
Gender (D2)	+/-	$\partial WTP/\partial D1 \gtrless 0$
Civil Status (D3)	+/-	$\partial WTP/\partial D1 \gtrless 0$

Table 21. Descriptive Statistics of Variables Used in the WTP Model for Entrance Fee Increase At Current and Improved Level of Services, MPNP, 1998

VARIABLE	Mean	Standard Deviation	Minimum	Maximum
CURWTP	29.68	27.78	0	100
IMPWTP	52.46	41.27	0	260
EDUCYRS	14.5	1.98	6	18
SATISFY	41.78	15.97	0	80
VISITMP	1.94	2.58	1	27
STAYDAY	2.84	1.22	1	8
INTENDMP	1.77	1.29	0	10
ENVMEM	0.41	0.49	0	1
DCAMP	0.34	0.48	0	1
DPICNIC	0.07	0.26	0	1
SITENDX	49.02	13.19	0	77.78
HHANINC	458,552	414,439	48,000	1,440,000
HOUSEMEM	5.46	2.37	1	15
EMPLOY	0.75	0.43	0	1
AGE	28.12	8.42	15	62
GENDR	0.7	0.46	0	1
CIVSTAT	0.81	0.39	0	1

Table 22 . Willingness to Pay for Entrance Fees of Sample MPNP Visitors With 0 Bids
September 1997 to August 1998

	Lowest		Average	Median	Mode	Highest	
	Amount	Percent				Amount	Percent
Incremental WTP at Current Level	0	21.4	30.69	25	50	150	0.3
Incremental WTP with Improved Services							
a. Road/Trail Conditions	0	26.2	9.99	10	0	100	0.6
b. Maps and Information	0	19.3	9.35	10	5	100	0.6
c. Collection of Litter and cleanliness in the Park	0	13.6	11.67	10	10	150	0.3
d. Park protection and personal safety	0	22.3	10.8	10	10	100	0.6
e. Enforcement of environmental rules and regulations	0	13.3	12.71	10	20	100	1.5
TOTAL SAMPLE VISITORS	332						

Table 23. Frequency Table of Incremental WTP at Current Level of Services By Sample MPNP Visitors, September 1997 to August 1998

Incremental WTP at Current Level	Frequency	Percent
0	71	21.4
5	2	0.6
10	57	17.2
20	2	0.6
25	75	22.6
30	2	0.6
35	1	0.3
50	92	27.7
75	2	0.6
100	27	8.1
150	1	0.3
TOTAL SAMPLE VISITORS	**332**	**100**

Table 24 . Willingness to Pay for Entrance Fees of Sample MPNP Visitors, No 0 Bids
September 1997 to August 1998

	Lowest		Average	Median	Mode	Highest		Total Sample Visitors
	Amount	Percent				Amount	Percent	
Incremental WTP at Current Level	5	0.8	39.04	25	50	150	0.4	261
Incremental WTP with Improved Services								
a. Road/Trail Conditions	1	0.4	13.53	10	10	100	0.8	245
b. Maps and Information	1	0.4	11.58	10	5	100	0.7	268
c. Collection of Litter and cleanliness in the Park	1	0.3	13.49	10	10	150	0.3	287
d. Park protection and personal safety	1	0.4	13.9	10	10	100	0.8	258
e. Enforcement of environmental rules and regulations	1	0.3	14.66	10	20	100	1.7	288

Table 25. Estimates of the Factors Affecting Park Visitors' WTP for Entrance Fee Increase At Current Level of Services, MPNP, 1998

VARIABLE	OLS		TOBIT	
	Coefficient	*T-ratio*	*Coefficient*	*T-ratio*
CONSTANT	-9.22	15.75	-23.64	19.32
EDUCYRS	0.25	0.92	0.14	1.12
SATISFY	0.10	0.10	0.181 *	0.12
VISITMP	-0.40	0.61	-0.72	0.80
STAYDAY	0.45	1.29	1.13	1.57
INTENDMP	3.14 ****	1.22	4.39 ****	1.49
ENVMEM	2.30	3.21	2.45	3.89
DCAMP	2.08	3.50	1.83	4.25
DPICNIC	-5.69	6.47	-9.73	8.07
SITENDX	0.07	0.12	0.07	0.15
HHANINC	1.1E-05 ***	0.00	1.5E-05 ****	0.00
HOUSEMEM	-1.099 **	0.67	-1.268 *	0.81
EMPLOY	7.48 **	4.40	10.56 **	5.42
AGE	0.43 **	0.24	0.47 *	0.29
GENDR	1.73	3.52	1.29	4.30
CIVSTAT	3.04	4.51	3.84	5.48
σ (Sigma)	-	-	31.53 ****	1.49
F-value (15,299)	2.77 ****		-	
R^2	0.122		-	
Log-Likelihood function (unrestricted)	-		-1261.4	
Log-Likelihood function (restricted)	-		-1283.7	
Likelihood ratio statistic	-		44.63	
Chi-square (DF=15; α=5%)	-		25.0	

**** = significant at 99% confidence level ; *** = significant at 95% confidence level

** = significant at 90% confidence level ; * = significant at 85% confidence level

Table 26. Marginal Effects of WTP for Increased Entrance Fee at Current Level of Services, MPNP, 1998

VARIABLE	MARGINAL EFFECTS		
	∂E(Y*)/∂Xi	∂F(z)/∂Xi	∂E(Y)/∂Xi
EDUCYRS	0.0779	0.0012	0.1077
SATISFY	0.1035	0.0017	0.143
VISITMP	-0.4098	-0.0066	-0.5662
STAYDAY	0.6438	0.0103	0.8896
INTENDMP	2.5113	0.0403	3.4699
ENVMEM	1.4016	0.0225	1.9366
DCAMP	1.0461	0.0168	1.4454
DPICNIC	-5.5588	-0.0892	-7.6805
SITENDX	0.0421	0.0007	0.0581
HHANINC	8.80E-06	1.40E-07	1.20E-05
HOUSEMEM	-0.725	-0.0116	-1.0017
EMPLOY	6.0338	0.0968	8.3369
AGE	0.2685	0.0043	0.371
GENDR	0.7364	0.0118	1.0175
CIVSTAT	2.1924	0.0352	3.0292

E(Y) at mean values of all Xi = 29.08; E(Y*) at mean values of all Xi = 36.86

Predicted probability of Y>limit given average X(i) =0.7889

Table 27. Estimates of the Factors Affecting Park Visitors' WTP for Entrance Fee Increase At Improved Level of Services, MPNP, 1998

VARIABLE	OLS		GMM	
	Coefficient	T-ratio	Coefficient	T-ratio
CONSTANT	61.745 ****	2.606	57.643 ***	2.388
EDUCYRS	-2.085 *	-1.511	-2.056 *	-1.464
SATISFY	-0.236 *	-1.551	-0.209	-1.337
VISITMP	-0.591	-0.641	-0.566	-0.602
STAYDAY	0.456	0.235	0.333	0.168
INTENDMP	2.162	1.18	2.41	1.287
ENVMEM	0.512	0.106	0.91	0.185
DCAMP	10.618 ***	2.017	11.012 ***	2.053
DPICNIC	-2.854	-0.293	-5.616	-0.561
SITENDX	-0.079	-0.427	-0.074	-0.393
HHANINC	2.1E-05 ****	3.412	2.2E-05 ****	3.528
HOUSEMEM	-0.492	-0.492	-0.47	-0.461
EMPLOY	8.577	1.296	8.435	1.249
AGE	0.28	0.775	0.276	0.748
GENDR	4.149	0.784	4.304	0.798
CIVSTAT	3.566	0.526	4.21	0.608
s (Sigma)	-	-	40.762 ****	24.168
F-value (15,299)	2.23 ****		-	
R2	0.1004		-	
Log-Likelihood function (unrestricted)	-		-1551.151	
Log-Likelihood function (restricted)	-		-1567.097	
Likelihood ratio statistic	-		31.89	
Chi-square (DF=15; a=5%)	-		24.99	

**** = significant at 99% confidence level ; *** = significant at 95% confidence level
** = significant at 90% confidence level ; * = significant at 85% confidence level

Table 28. Marginal Effects of WTP for Entrance Fee Increase At Improved Level of Services, MPNP, 1998

VARIABLE	MARGINAL EFFECTS		
	∂E(Y*)/∂Xi	∂F(z)/∂Xi	∂E(Y)/∂Xi
EDUCYRS	-1.4522	-0.0091	-1.843
SATISFY	-0.1475	-0.0009	-0.1872
VISITMP	-0.4	-0.0025	-0.5076
STAYDAY	0.2353	0.0015	0.2987
INTENDMP	1.7021	0.0106	2.1602
ENVMEM	0.643	0.004	0.816
DCAMP	7.779	0.0486	9.8726
DPICNIC	-3.9673	-0.0248	-5.035
SITENDX	-0.0526	-0.0003	-0.0667
HHANINC	1.60E-05	9.80E-08	2.00E-05
HOUSEMEM	-0.3317	-0.0021	-0.421
EMPLOY	5.9582	0.0372	7.5618
AGE	0.1947	0.0012	0.2472
GENDR	3.0402	0.019	3.8584
CIVSTAT	2.9742	0.0186	3.7746

E(Y) at mean values of all Xi = 53.44; E(Y*) at mean values of all Xi = 59.61

Predicted probability of Y>limit given average X(i) =0.8965

Table 29. Average Distances From Points of Origin to Mt. Pulag of Sample MPNP Visitors September 1997 to August 1998

Distance (kms.)	Average	Median		Mode		No. of Respondents
		Frequency	Percent	Frequency	Percent	
< 200	84	0	0	84	100	39
200 - 299	273	264	22.2	294	44.4	9
300 - 399	346	334	30.4	334	30.4	247
400 - 499	478	496	80	496	80	5
500 and up	978	954	46.9	954 / 1034 [1/]	46.9	32
All Respondents	**376**	**334**	**22.6**	**334**	**22.6**	**332**

[1/] Multiple modes exist.

Table 30. Average Expenses per Visitor by Sample MPNP Visitors September 1997 to August 1998

Item	Amount (PhP)	Percent to Total
Trip Expenses While Traveling to MPNP	**2075.64**	**83.04**
1. Transportation	1148.62	45.95
a. Fare	604.46	24.18
b. Vehicle Rental	494.76	19.79
c. Gas	49.4	1.98
2. Food during trip to MPNP and back	558.8	22.35
3. Lodging to & from MPNP & Other expenses	368.22	14.73
On-Site Expenses at MPNP	**424.05**	**16.96**
1. Food consumed on-site	236.32	9.45
2. Photo film	79.06	3.16
3. Park Entrance Fee [1/]	45.92	1.84
4. Souvenirs	32.99	1.32
5. Other expenses	29.76	1.19
AVERAGE EXPENSES PER VISITOR	**2499.69**	**100.00**

[1/] Note: Not all paid

Table 31. Results of the Estimation of the Travel Cost Model, MPNP, 1998

VARIABLE	OLS		TRUNCATED POISSON		
	Coefficient	T-ratio	Coefficient	T-ratio	∂E(Y)/∂Xi
CIVSTAT	-0.4526	-1.066	-0.2903 ***	-2.256	-0.3212
AGE	0.023	0.994	0.0222 ****	2.968	0.0245
GENDR	0.4297	1.282	0.4799 ****	3.281	0.531
EDUCYRS	0.0314	0.459	0.0356	1.217	3.90E-02
HHINCYR	-2.89E-07	-0.748	-2.91E-07 **	-1.913	-3.20E-07
EMPLOY	0.0096	0.023	0.0413	0.25	0.0457
EXPERMAN	-2.06E-04	-0.771	-3.74E-04 **	-1.937	-4.14E-04
SATISFY	0.0029	0.313	0.0038	1.115	0.0042
DCAMP	0.5478	1.145	0.6504 ****	2.816	0.7197
F-value (9, 299)	1.03 ns			-	
R^2	0.0301			-	
Log Likelihood function (unrestricted)		-		-521.8094	
Log Likelihood function (restricted)		-		-612.3176	
Chi-squared (df=10; α=5%)		-		181. 0165 ****	
E(Y|X) =1.93					

**** = significant at 99% level of confidence; ** = significant at 90% level of confidence

*** = significant at 95% level of confidence; * = significant at 85% confidence level

ns = not significant

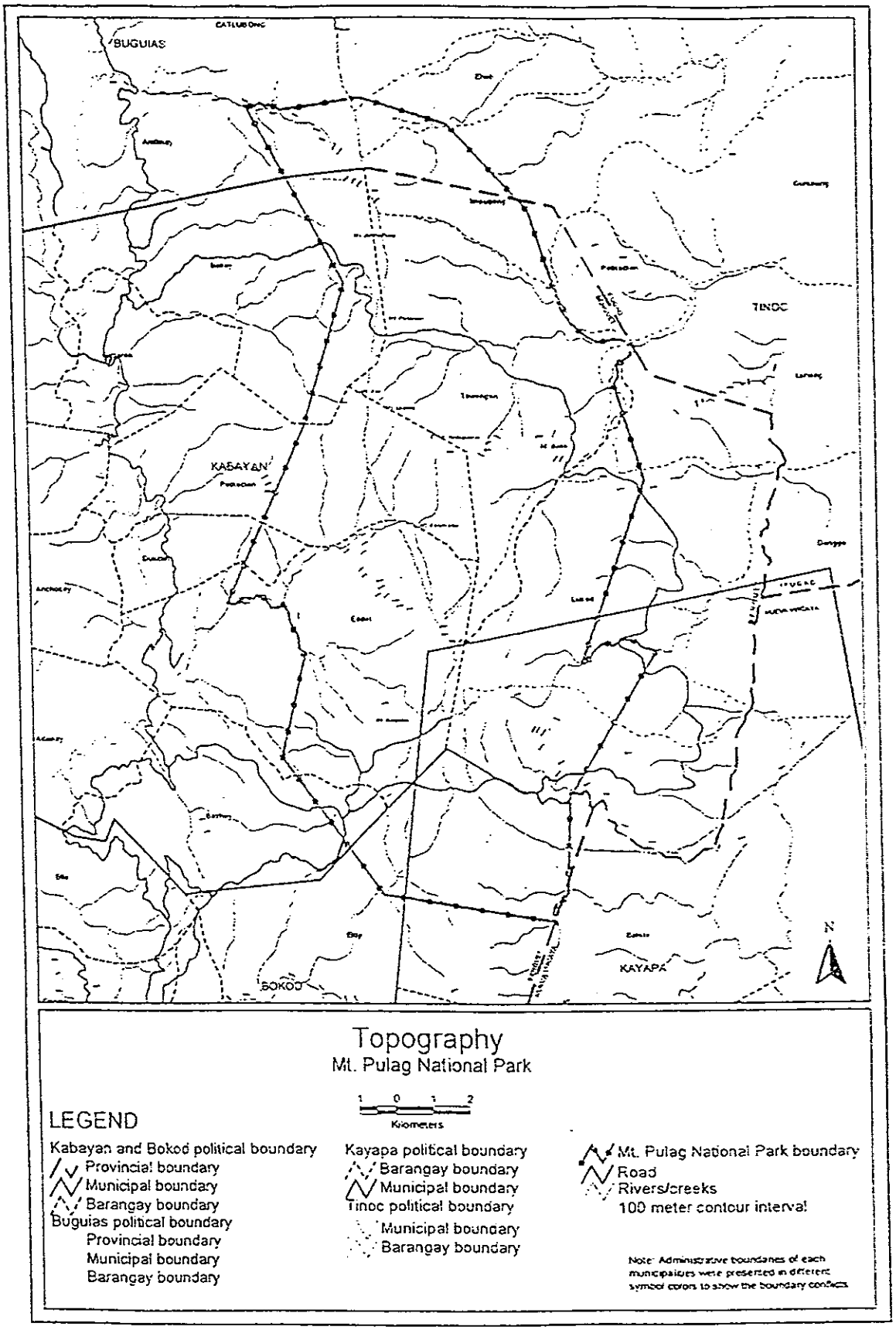

Figure 1. Map of Mt. Pulag National Park

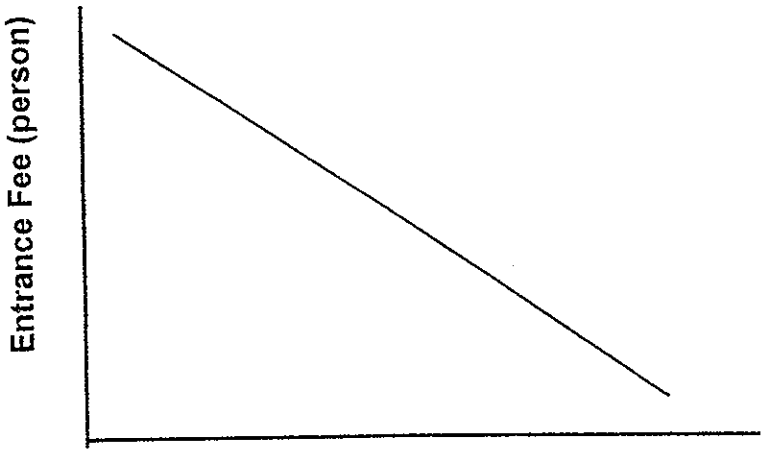

Figure 2. Recreational Demand Curve

References

Choe, K., D. Wittington, D.T. Lauria. 1996. The economic benefits of surface water quality improvements in developing countries: A case study of Davao, Philippines. *Land Economics*. 72(4): 519-37.

Clawson, M. 1959. Methods of measuring the demand for and value of outdoor recreation. RFF Reprint 10, Washington, D.C.: Resources for the Future.

Freeman, M.A. III. 1994. The measurement of environmental and resource values: theory and methods. Washington, D.C.: Resources for the Future.

Gomez, I.A. and T. Ozuna, Jr. 1993. Testing for overdispersion in truncated count data recreation demand functions. *Journal of Environmental Management*. 37: 117-125.

Greene, W.H. 1993. Econometric analysis. MacMillan Publishing Company, New York.

Greene, W.H. 1998. Limdep version 7.0 user's manual. Econometric Software, Inc. NY, USA.

Halstead, J.M., B.E. Lindsay, and C.M. Brown. 1991. Use of the Tobit Model in contingent valuation: experimental evidence from the Pemigewasset wilderness area. *Journal of Environmental Management*. 33: 79-89.

Hoevenagel, R. 1994. The contingent valuation method: scope and validity. Rotterdam, The Netherlands: Academish Proefschrift and Vrije Universiteit.

Judge, G.G., R.C. Hill, W.E. Griffiths, H. Lutkepohl, T.C. Lee. 1998. Introduction to the theory and practice of econometrics. John Wiley and Sons. USA..

Knetch, J.L. 1963. Outdoor recreation demands and benefits. *Land Economics* 39(4): 387-396.

Knetch, J.L. and R.J. Davis. 1966. Comparison of methods for recreation evaluation. In A.V. Kneese and S.C. Smith (eds.) Water Research. Baltimore: Johns Hopkins Press for Resources for the Future. pp. 125-42.

Maddala, G.S. 1983. Limited-dependent and qualitative variables in econometrics. Cambridge University Press, New York.

McDonald, J.F. and Moffitt, R.A. 1980. The uses of Tobit analysis. *The Review of Economics and Statistics*. 62:318-321.

Padilla, Rosales, et. al. November 1999. A Report on the Survey of Tourists and Resorts at Hundred Islands National Park (HINP), Environmental and Natural Resources Accounting Project (ENRAP) Phase IV-B.

Tobin, J. 1958. Estimation of relationships for limited dependent variables. *Econometrica*. 26: 26-36.

TECHNICAL ANNEX AND APPENDICES

Appendix A

PROPOSED FEES SYSTEM GUIDELINES (Draft)

SUBJECT : GUIDELINES AND PRINCIPLES IN DETERMINING FEES FOR ACCESS TO AND SUSTAINABLE USE OF RESOURCES IN PROTECTED AREAS

Pursuant to the provisions of Republic Act 7586 otherwise known as the National Integrated Protected Areas System (NIPAS) Act of 1992 and its Implementing Rules and Regulations, and in order to provide guidelines and principles in accessing and sustainably using resources in protected areas, this Order is hereby issued for the guidance of all concerned.

SECTION 1. **TITLE** - This Administrative Order shall be known as "Guidelines and Principles in Determining Fees for Access to and Sustainable Use of Resources in Protected Areas"

SECTION 2. **OBJECTIVES** - It shall be the objective of this Order to set forth the procedure which DENR through the Protected Areas and Wildlife Bureau (PAWB) and the Protected Area Management Boards (PAMBs) shall follow in determining fees for access to and sustainable use of resources located in protected areas for recreational, commercial, subsistence and all other purposes.

SECTION 3. **SCOPE** - This Order shall cover identified major uses of all resources and facilities in areas comprising the National Integrated Protected Areas System (NIPAS).

SECTION 4. **DEFINITION OF TERMS** - For the purpose of this Order, the following terms shall mean as follows:

a. **Resources** - include all living and non-living, renewable or non-renewable, terrestrial, aquatic or both, surface or subsoil resources found within protected areas.

b. **Development of Land and Other Resources** - involves all forms of improvement or enhancement of land and other resources within a protected area for any purpose.

c. **Extractive Use** - is the use of resources involving gathering, tapping, diverting, or any form of removal of resources within the designated multiple use zone, sustainable use zone and buffer zone.

d. **Recreational Use** - is the use of resources for the primary purpose of personal enjoyment but which does not entail any form of extraction, except, for example, in recreational or sports fishing where a regulated number of fish may be taken.

e. **Subsistence Use** - is the use of resources to satisfy the minimum basic requirements of households of indigenous cultural communities and tenured migrants including but not limited to food, dwelling, clothing, medical assistance and recreation.

f. **Commercial Use** - is the use of resources in excess of subsistence use.

g. **Indigenous Cultural Communities/ Indigenous People (ICCs/IPs)** - refer to a group of people or homogenous societies identified by self-ascription and ascription

by others, who have continuously lived as organized community on communally bounded and defined territory, and who have, under claims of ownership since time immemorial, occupied, possessed and utilized such territories, sharing common bonds of language, customs, traditions and other distinctive cultural traits, or who have, through resistance to political, social and cultural inroads of colonization, non-indigenous religions and cultures, became historically differentiated from the majority of Filipinos. ICCs/IPs shall likewise include peoples who are regarded as indigenous on account of their descent from the populations which inhabited the country, at the time of conquest or colonization, or at the time of inroads of non-indigenous religions and cultures, or the establishment of present state boundaries, who retain some or all of their own social, economic, cultural and political institutions, but who may have been displaced from their traditional domains or who may have resettled outside their ancestral domains (RA 8371).

h. **Tenured Migrants** - or communities within protected areas are those who have actually and continuously occupied such area five (5) years before the designation of such as protected area in accordance with the NIPAS Act and are solely dependent on the resource for subsistence. (RA 7586)

i. **Marketed Resources** - are resources whose use entail voluntary exchange involving monetary transaction or non-monetary transaction as in the case of barter.

j. **Non-marketed Resources** - are resources whose use do not entail market transaction.

k. **Fishing** - is the taking of fishery species from their wild state or habitat, with or without the use of fishing vessels.

l. **Final consumption** - refers to the use of resources where the resource is no longer used as input to production of other goods or services.

m. **Carrying capacity** – refers to the ability of the natural or environmental resource to absorb stress without experiencing unacceptable instability and degradation.

SECTION 5. **TYPES OF USES** – The following are the types of uses of resources in protected areas on which fees shall be assessed or may be applied.

5.1 Subsistence uses shall include but not be limited to hunting of wildlife for household consumption, gathering of forest products for house construction, agriculture or fish culture to raise crops or fish for household consumption. Subsistence uses shall apply to indigenous cultural communities and tenured migrants only.

5.2 Recreational uses shall include but not be limited to: a) water-based activities such as snorkelling, scuba diving, swimming, boating; b) land-based activities such as mountain climbing, trekking, picnicking, and bird watching; c) either land- or water-based activities such as filming and photography; and d) all other similar activities.

5.3 Extractive uses shall include but not be limited to: a) extraction or diversion of water for irrigation or domestic uses; b) collection or gathering of forest products such as vines, rattan, bamboo, resin, ornamental plants, bird nest, guano; c) collection of wildlife such as monkeys, wild pigs, butterfly, honey; d) extraction of flora and fauna and its by-products, parts and derivatives, including, but not limited to leaves, blood and samples; e) fishing either in small-scale or commercial scale.

5.4 The development of land and other resources for commercial uses shall be categorized in terms of capital investment of each development project into the following in accordance with Department of Trade and Industry (DTI) guidelines: small-scale; medium-scale; and others. The current estimate of investment required for each development are as follows: 150,000 pesos and below for micro-scale; 150,000 pesos to 1.5 million pesos for cottage; above 1.5 million pesos to 15 million pesos for small; above 15 million pesos to 60 million pesos for medium; and above 60 million pesos for others.

The development of land and other resources shall include but not be limited to the following: kiosks for vending food and souvenir items; restaurants; shops for rental of recreational equipment such as boats; fishpens and fishcages; tapping of geothermal energy or impounding of water for electric power generation and for any other purpose; construction of tourist facilities with lodging facilities; construction of highways, relay stations and similar communication or transportation structure.

SECTION 6. **TYPES OF FEES**

6.1 Protected Area Entrance Fee - is a fee paid to enter a protected area for recreational purposes.

6.2 Protected Area User Fee - is a fee paid for the privilege of using man-made facilities inside a protected area.

6.3 Resource User Fee - is a fee paid for the sustainable commercial use of a specified quantity of resources within a protected area over a specified period of time.

6.4 Concession charge - is a fee paid for the use of land or other resources or the privilege of undertaking micro-scale and cottage-scale development. The concession charge is for a specified period of time and for a specific nature of development. The concession is granted to a person or entity.

6.5 Development Fee - is a fee paid for the use of land or other resources or the privilege of undertaking small-scale, medium-scale and other bigger scale development in protected areas for whatever purpose. The fee is for a specified period of time and for a specific nature of development. The privilege is granted to a person or entity.

6.6 Royalty may be defined as a fee paid based on the gross output value or gross sales from products out of resources derived from a protected area.

SECTION 7. **OVERRIDING PRINCIPLES IN THE UTILIZATION OF RESOURCES IN PROTECTED AREAS.**

7.1 Sustainability is the overriding consideration in determining all types and rates of use of all resources in protected areas. Sustainable use shall be operationalized as follows:

a. For the extraction of renewable resources such as forest flora and fauna and other forest products, surface and ground water, fisheries, geothermal energy and similar resources, sustainable use shall be the rate of extraction that is lower than either the rate of regeneration or the rate that shall not endanger life forms inside the protected area. The rate of use shall be

within the carrying capacity of the protected area and its immediate surroundings when taken individually or collectively or in relation to other uses of the area.

b. Any development of land and other resources in a protected area shall not alter the landscape and shall not significantly disrupt normal ecological functions and processes.

c. The recreational use of resources for tourism, for filming or photography, shall preserve the natural landscape and shall not put significant stress on living resources by considering the carrying capacity of the protected area. Any form of use shall preserve the socio-economic and cultural aspect of the area.

d. In the process of resource utilization, the introduction of substances or chemicals harmful to the environment shall not be allowed.

7.2 Subsistence use of resources by IPs and tenured migrants shall be exempt from the payment of user fees.

7.3 Pending the issuance of certification by the National Commission on Indigenous People (NCIP) in accordance to the Indigenous Peoples Rights Act (IPRA), IPs in protected areas shall be given preferential access to and be levied lower fees for the commercial extraction of allowable resources in protected areas.

7.4 Prior to the full implementation/operation of the IPRA Law, free and informed prior consent from indigenous people shall be sought in the gathering of biological and other resources within protected areas.

7.5 The collection and research of biological and genetic resources in protected areas for scientific and/or related purposes shall be governed by the provisions of Executive Order No. 247 and its implementing rules and regulations.

SECTION 8. **SPECIFIC GUIDELINES AND PRINCIPLES IN DETERMINING FEES** - One or more guidelines and/or principles may be employed in determining fees based on the following: a) capability to approximate closely the correct fee; b) availability of data as basis for computations; and c) costs to be incurred in estimating the fee.

8.1 Protected Area Entrance Fees and User Fees

Guidelines

a. Protected Area Entrance Fees shall cover access to the natural attractions of the protected area. If applicable, an additional Protected Area User Fee shall cover access to and the use of man-made facilities in the protected area.

b. For Protected Area Entrance Fees, the willingness-to-pay principle shall be the priority basis for computing fees. However, if information is not available, the cost-recovery principle shall be the basis of computation.

c. For Protected Area User Fees on man-made facilities managed by private entities, these shall be determined by the private entity but shall be comparable to fees for the use of similar facilities in a comparable location. All Protected Area User Fees shall be determined in consultation with the PAMB.

d. For Protected Area User Fees on man-made facilities managed by the government, these shall be determined using the cost-recovery principle but shall be comparable to the fees for the use of privately managed facilities with similar characteristics.

e. A three-tiered system of Protected Area Entrance Fees shall be developed: lower rates for Filipino students and senior citizens; normal rates for other Filipino visitors; higher rates for all foreign visitors.

Specific Principles

a. Cost-recovery principle. For Protected Area Entrance Fees, collected revenues shall cover, as much as possible, all costs incurred in protecting, maintaining and enhancing the natural attractions of the protected area. For Protected Area User Fees, collected revenues shall cover, as much as possible, a reasonable proportion of all costs incurred in providing and maintaining the man-made facilities in the protected area.

b. Willingness-to-pay principle. For Protected Area Entrance Fees, these shall be based on the willingness-to-pay estimates of the visitors based on appropriate surveys.

8.2 Resource User Fees, Development Fees and Concession Charges

Guidelines and Principles

a. The PAMB shall, to the extent feasible, enter into co-production, joint venture or production-sharing agreements with interested parties in the commercial extraction and/or development of resources in protected areas.

b. The government share of the protected area in these agreements shall be a reasonable proportion of the excess profits derived from the commercial extraction of resources.

c. All types of development are required to undergo the EIA system as prescribed by PD 1586 and other pertinent laws and regulations.

8.3 Royalty

Guideline and Principle

For any use of resources that results in the sale of goods or services where the value of total sales can be easily monitored, the resource fee may be based on royalty.

SECTION 9. **OTHER PROVISIONS**

9.1 The computation of the excess profit shall be guided by the formula specified in the technical annex. The corresponding government share from the excess profit shall be determined consistently with the appropriate instrument agreed upon by the contracting parties.

9.2 The rate of subsistence use shall be specified for each resource and where possible, for each household of indigenous people and tenured migrants. Such rate shall be in accordance with the rural annual per capita threshold income by

region which is determined by the National Economic and Development Authority (NEDA). The subsistence rate of use shall be indicated explicitly in the rights of indigenous peoples and in the tenure instruments granted to tenured migrant communities in protected areas and shall be updated in accordance with the NEDA guidelines.

9.3 The classification of development projects in protected areas in terms of investments shall be updated in accordance with DTI guidelines.

9.4 The guidelines and principles enumerated herein shall be elaborated and operationalized in a handbook that shall be developed after pilot-testing in a sufficient number of protected areas.

SECTION 10. RESPONSIBILITIES OF PAWB AND PAMB

10.1 PAWB shall:

a. take the lead in pilot-testing these guidelines and principles in key resources and uses in collaboration with the PAMBs and DENR field offices;

b. develop a manual to be used by PAMBs in the implementation of the guidelines and principles after pilot testing in a sufficient number of areas;

c. assist the PAMBs to operationalize the manual; and

d. assist in providing experts required by the PAMBs in the implementation of the guidelines and principles.

10.2 PAMB shall:

a. collaborate with PAWB in the pilot testing of the guidelines and principles;

b. be guided by the manual developed by PAWB in implementing the guidelines and principles;

c. approve all types of uses of resources in a protected area through a Memorandum of Agreement with the concerned entity;

d. conduct public consultations/ dialogues with interested parties on proposed fees;

e. formulate and pass all resolutions required to enable and facilitate the collection of fees; and

f. determine through consultations with indigenous people the traditional uses of resources within protected areas.

This Order shall take effect fifteen (15) days after publication and revokes, supersedes, and amends any order and/or instructions inconsistent herewith.

ANTONIO CERILLES
Secretary

Computation

A. Computation of Excess Profit

The excess profit per year that arises from a natural resource-based activity shall be computed using the following formula.

Excess Profit = gross sales (GS) of natural resource-based product or service
less cost of production
less margin for profit
less margin for risk

where: GS = (quantity of product or service) x (farm-gate price)
Cost of Production includes: payment for wages;
material costs, e.g., gasoline;
rentals for equipment, buildings, etc.;
depreciation; and
payments for taxes normally paid by any business enterprise (e.g, income taxes, permit fees, etc.).

Margin for Profit = normal return to entrepreneurial capital, usually determined through prevailing conditions in the financial market
Margin for Risk = a premium to cover losses from natural calamities and other causes

The margin for profit and risk shall be set at a maximum of 30 percent of the total cost of production.

B. Computation of Williness-to-Pay

The willingness-to-pay for a natural resource good or service shall be computed from appropriate surveys employing accepted economic tools such as travel cost method or the contingent valuation method. These surveys shall arrive at an estimate of the willingness-to-pay for a natural resource good or service taking into account factors such as income, education, occupation, and nationality, among others.

Appendix B

Study Team for the Field Surveys

Protected Areas and Wildlife Bureau

1.	Teresita Blastique	Senior Environmental Management Specialist
2.	Sarah Jane Cabrera	Computer Programmer II
3.	Evangeline Corquera	Statistician I

Planning and Policy Studies Office-DENR Central Office

4.	Ruby Buen	Development Management Officer III
5.	Imelda Matubis	Development Management Officer II

Environmental and Natural Resources Accounting Project Phase IV-B

6.	Jose E. Padilla	Deputy Project Leader
7.	Rina Maria P. Rosales	Research Associate
8.	Sarkhan Baun	Research Assistant
9.	Bernardo Batayola	Driver

Attachment C

CONTROL NO. _____
NAME OF RESPONDENT _____
CONTACT NOS: Residence _____
Office _____

SURVEY OF VISITORS
AT MT. PULAG 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. Mt. Pulag National Park (MPNP) 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 Environmental and Natural Resources Accounting Project (ENRAP) is conducting a survey to determine the willingness of tourists to pay for access to Mt. Pulag for hiking expeditions. The objective of the survey is to include public opinions in decisions to manage Mt. Pulag.

PART I. RECREATION BEHAVIOR OF VISITORS

1. How did you first learn about Mt. Pulag? Check all that apply.

a. _____ Television
b. _____ Print Media
c. _____ Radio
d. _____ Friends/Relatives
e. _____ School
f. _____ Travel Agency
g. _____ Others, *specify:*
g.1 _____
g.2 _____

2. Aside from Mt. Pulag, have you visited any other mountain climbing site in the Philippines?

		No. of visits:
a.	Mt. Makulot	_____
b.	Mt. Makiling	_____
c.	Mt. Data	_____
d.	Mt. Banahaw	_____
e.	Mt. Cristobal	_____
f.	Mt. Guiting-Guiting	_____
g.	Mt. Fami	_____
h.	Mt. Isarog	_____
i.	Mt. Canlaon	_____
j.	Mt. Apo	_____
k.	Mt. Hibok-Hibok	_____
l.	Mt. Halcon	_____
m.	Mt. Arayat	_____
n.	Mt. Batulao	_____
o.	Mt. Lukban de Banahaw	_____
p.	Mainland Palawan	_____
q.	Others, *specify:* _____	_____
	_____	_____
	_____	_____

3. Please use the following scale to indicate the importance of the following activities on your decision to take this trip.

5=Extremely Important *3=Important* *1=Does Not Matter*
4=Very Important *2=Less Important*

Reason:	***Importance:***				
a. Mountain climbing/ hiking/ trekking	5	4	3	2	1
b. Sightseeing/ Wildlife watching	5	4	3	2	1
c. Photography	5	4	3	2	1
d. Picnicking	5	4	3	2	1
e. Camping	5	4	3	2	1
f. Research/ Study	5	4	3	2	1
g. Others, *specify:* g.1)	5	4	3	2	1
g.2)	5	4	3	2	1
g.3)	5	4	3	2	1

For official use:
I.1.a
I.1.b
I.1.c
I.1.d
I.1.e
I.1.f
I.1.g.1
I.1.g.2
I.2.a
I.2.b
I.2.c
I.2.d
I.2.e
I.2.f
I.2.g
I.2.h
I.2.i
I.2.j
I.2.k
I.2.l
I.2.m
I.2.n
I.2.o
I.2.p
I.2.q.1
I.2.q.2
I.2.q.3
I.2.q.4
I.2.q.5
I.2.q.6
I.3.a
I.3.b
I.3.c
I.3.d
I.3.e
I.3.f
I.3.g.1
I.3.g.2
I.3.g.3
I.3.g.4
I.3.g.5
I.3.g.6

4. **Why did you choose Mt. Pulag 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*

Reason:	*Importance:*				
a. Challenge of climb	5	4	3	2	1
b. Scenery/ View	5	4	3	2	1
c. Climate	5	4	3	2	1
d. Flora in area	5	4	3	2	1
e. Fauna in area	5	4	3	2	1
f. Recommended by 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. Uniqueness of species/ biodiversity	5	4	3	2	1
k. Historical/ cultural reasons	5	4	3	2	1
l. Others, *specify*: i.1)	5	4	3	2	1
i.2)	5	4	3	2	1
i.3)	5	4	3	2	1

5. **Please indicate the degree of your satisfaction with the Park services 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:	*Satisfaction:*				
a. Access to the Park	5	4	3	2	1
b. Road/trail conditions	5	4	3	2	1
c. Availability of litter bins/ Cleanliness	5	4	3	2	1
d. Comfort rooms	5	4	3	2	1
e. Camping facilities	5	4	3	2	1
f. Water for drinking/ refill	5	4	3	2	1
g. Park amenities, e.g. lights, signs	5	4	3	2	1
h. Personal Safety	5	4	3	2	1
i. Peace and Quiet	5	4	3	2	1
j. Others, *specify*: h.1)	5	4	3	2	1
h.2)	5	4	3	2	1
h.3)	5	4	3	2	1

6. **Did your experience at Mt. Pulag meet your expectations?**

_____ *YES*
_____ *HIGHER THAN EXPECTED*
_____ *LOWER THAN EXPECTED*

For official use:
I.4.a
I.4.b
I.4.c
I.4.d
I.4.e
I.4.f
I.4.g
I.4.h
I.4.i
I.4.j
I.4.k
I.4.l.1
I.4.l.2
I.4.l.3
I.4.l.4
I.4.l.5
I.4.l.6
I.5.a
I.5.b
I.5.c
I.5.d
I.5.e
I.5.f
I.5.g
I.5.h
I.5.i
I.5.j.1
I.5.j.2
I.5.j.3
I.5.j.4
I.5.j.5
I.5.j.6
I.6.a
I.6.b
I.6.c

PART II. WILLINGNESS TO PAY FOR SERVICES

1. You now pay PhP 50.00 as entrance fee to Mt. Pulag 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:	*FOREIGN VISITOR:*
+ PhP 0 : _____	**+ US$ 0 :** _____
+ PhP 10 : _____	**+ US$ 5 :** _____
+ PhP 25 : _____	**+ US$ 10:** _____
+ PhP 50 : _____	**+ US$ 15:** _____
+ PhP100 : _____	**+ US$ 20:** _____
Other Amount: _____	*Other Amount:* _____

2. Assume that the PAMB plans to make improvements in its services. 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:	*+0*	*+5*	*+10*	*+15*	*+20*	*Other Amount*
a. Road/trail conditions (e.g., varying levels of difficulty)						
b. Maps and information						
c. Collection of litter and cleanliness in the Park						
d. Park protection and personal safety (e.g., signal lights, railings)						
e. Enforcement of environmental rules and regulations						

3. Assume that the PAMB is planning to provide new facilities to the Park. They may have to implement user charges for these facilities. **Please indicate which you intend to use, and HOW MUCH are you willing to pay to use them.**

FACILITIES	WILL USE (✓)	AMOUNT WILLING TO PAY
a. More lodging facilities		
b. Comfort rooms		
c. Parking areas		
d. Outdoor cooking areas		
e. Camp sites		
f. Meditation sites		
g. First aid stations		
h. Orienteering sites		
i. Photo opportunity sites		
j. View decks and towers		
k. Hikers' rest areas		
l. Tour guides/wardens		
m. Signal stations		

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

_____.

For official use:
II.1.a
II.1.b
II.2.a
II.2.b
II.2.c
II.2.d
II.2.e
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.1
II.3.h.2
II.3.i.1
II.3.i.2
II.3.j.1
II.3.j.2
II.3.k.1
II.3.k.2
II.3.l.1
II.3.l.2
II.3.m.1
II.3.m.2
II.3.n

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 Mt. Pulag from your residence?** _____ Kms.

6. **How long did it take you to get here?** ____ Days _____ Hours

7. **What means of transportation did you use to get to Mt. Pulag from your residence? Check all that apply.**

   _____ Airplane
   _____ Own vehicle
   _____ Bus
   _____ Hired vehicle
   _____ Others, *specify*: _____

8. **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.7.d
III.7.e
III.8.a
III.8.b
III.8.c
III.8.d
III.8.e
III.8.f.1
III.8.f.2

9. **How much did you spend for *A ONE-WAY TRIP FROM YOUR RESIDENCE TO MT. PULAG*?**

_____ Gasoline
_____ Bus/Plane fare
_____ Vehicle rental
_____ Lodging to get to Mt. Pulag
_____ Food/ drinks during the trip up to Mt. Pulag
_____ Others, *specify*: _____
====
_____ *GRAND TOTAL*

10. **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 equal the total of no. 9.**

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

11. **How much did you spend for facilities and food *USED AT MT. PULAG*?**

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

12. **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%		_____

13. **How many times have you visited Mt. Pulag, including this trip?**
_____ times

14. **How many times do you intend to visit Mt. Pulag within the next two years?** _____ times

For official use:
III.9.a
III.9.b
III.9.c
III.9.d
III.9.e
III.9.f.1
III.9.f.2
III.10.a
III.10.b
III.10.c
III.11.a
III.11.b
III.11.c
III.11.d
III.11.e
III.11.f
III.11.g
III.11.h.1
III.11.h.2
III.12.a
III.12.b
III.12.c
III.13
III.14

PART IV. RESPONDENT'S PROFILE

1. **Where is your current home located?** _____

2. **How long have you lived there?** _____ Years _____ Months

3. **Do you:** _____ own your home? _____ rent your home?

4. **Gender:** _____ Male _____ Female

5. **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. **Age:** _____ Years

11. **Occupation:** _____ **Industry:** _____

12. **If student, indicate current year level:** _____

13. **Educational attainment:**

___ Elementary ___ College, course: _____ ___ Vocational
___ High school ___ Post-graduate, course: _____

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

___ Below 4,000
___ 4,000 – 7,000
___ 7,001 – 10,000
___ 10,001 – 14,000
___ 14,001 – 18,000
___ 18,001 – 23,000
___ 23,001 – 28,000
___ 28,001 – 35,000
___ 35,001 – 45,000
___ 45,001 – 60,000
___ 60,001 – 80,000
___ 80,001 – 100,000
___ Above 100,000

14. **Approximate *HOUSEHOLD MONTHLY INCOME* before taxes:**

___ Below 4,000
___ 4,000 – 7,000
___ 7,001 – 10,000
___ 10,001 – 14,000
___ 14,001 – 18,000
___ 18,001 – 23,000
___ 23,001 – 28,000
___ 28,001 – 35,000
___ 35,001 – 45,000
___ 45,001 – 60,000
___ 60,001 – 80,000
___ 80,001 – 100,000
___ Above 100,000

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

___ Religious
___ Environmental
___ Regional grouping
___ Sports-related
___ Civic, e.g. Rotary
___ Others, *specify:* _____
___ School, e.g. Fraternity
___ Government
___ Non-government/People's
___ Business, e.g. Chamber of Commerce
___ Professional

16. **Do you have any suggestions for improving facilities and/or services at Mt. Pulag?**

_____
_____

17. **Do you have any other comments?**

_____
_____

THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION.

Appendix D

Econometric Models in Estimating WTP

I. Contingent Valuation Method: Estimating the WTP Function

In most CVM studies using an open-ended format, the WTP responses are usually confronted with a censored data problem. This type of data precludes the use of Ordinary Least Squares (OLS) procedure because OLS does not account for qualitative differences between those observations at the limit (Y=0) and the unlimited ones (Y>0) (Greene, 1993). The recommended analytical approach of analyzing censored data is the use of the Tobit model (Halstead et al, 1991). This model is considered more theoretically correct in analyzing WTP data sets with large number of zero bids, or when the dependent variable is censored, i.e., no bids below 0 are allowed in this case. The maximum likelihood 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 employed to estimate the WTP function in general, and to test the factors that are hypothesized to affect WTP for entrance fee increase at current and improved level of services of MPNP in particular.

The Tobit model is given as:

$$\begin{aligned} Y_i &= X_i\beta && \text{if } X_i\beta + u_i > 0 \\ &= 0 \text{ otherwise} && \text{if } X_i\beta + u_i \le 0 \\ & && i = 1,2,\ldots,n \end{aligned} \tag{2}$$

where Y_i is the dependent variable (WTP); X_i is a vector of explanatory variables; β is a vector of unknown coefficients; u_i is an independently distributed error term assumed to be normal with zero mean and a constant variance σ^2; N is the number of observations. Thus, the model assumes that there is an underlying stochastic index equal to $(X_i\beta+u_i)$ which is observed only when it is positive, and hence qualifies as an unobserved, latent variable.

The expected value of Y in the Tobit model is (Tobin, 1958)

$$E(Y) = X\beta F(z) + \sigma f(z), \tag{3}$$

where z = is the normalized Tobit index $(X\beta/\sigma)$; $f(z)$ is the unit normal density function of a normal, random variable; $F(z)$ is the cumulative normal distribution function; σ is the standard error of Tobit regression. The unknown β_i and σ parameters were estimated using the maximum likelihood estimation procedure.

Furthermore, the expected value of Y for observations above the limit, Y*, is simply $X\beta$ plus the expected value of the truncated normal error term (Amemiya, 1973):

$$E(Y^*) = X\beta + \sigma f(z)/F(z) \tag{4}$$

The Tobit coefficients cannot necessarily be treated as estimates of the change in the dependent variable from a unit increase in the independent variable. In censored regression models, however, the marginal effect in Y for any given change in X was determined using the equation (Maddala, 1983; Greene, 1993):

$$\partial E(Y/X)/\partial X = \Phi(X\beta/\sigma)\beta = F(z)\beta \tag{5}$$

Thus, in order to interpret the estimated coefficients, they need to be transformed. The coefficients need to be multiplied by the cumulative normal distribution function [F(z) or $F(X\beta/\sigma)$] to give the total change $[\partial E(Y)/\partial X_i]$ indicating the effect of a unit change in any independent variable on the dependent variable, *ceteris paribus*.

The above marginal effect, which is referred to as the slope, is decomposed into two components as suggested by McDonald and Moffitt (1980) to obtain: (1) the change in Y of those above the limit, weighted by the probability of being above the limit; and (2) the change in probability of being above the limit, weighted by the

conditional mean. For this study, the marginal effect is disaggregated into the marginal change in the WTP given a one unit change in the independent variable for those respondents indicating a positive WTP bid (i.e., above the limit) represented by the coefficient $\partial E(Y^*)/\partial X$, and the percentage change in probability of a positive WTP bid (by zero bidders) given a change of one unit in the explanatory variables, which is equivalent to $f(z)\beta/\sigma$. The decomposition of slope is derived from the following equation:

$$\partial E(Y)/\partial X_i = F(z)(\partial E(Y^*)/\partial X_i) + E(Y^*)(\partial F(z)/\partial X_i) = F(z)\beta \qquad (6)$$

These derivatives were evaluated at the mean of all characteristics of the sample. The relative magnitude of these two quantities is an important indicator with substantive implication for environmental quality protection.

Tobit Model Estimation and Evaluation

Tobit regression analysis was done through the maximum likelihood estimation technique using LIMDEP 7 for Windows 95 (Greene, 1998). Prior to estimation of the willingness to pay model, the data was examined for multicollinearity problems. A simple linear correlation analysis among independent variables was done to measure for the severity of multicollinearity. If the correlation coefficient between the values of two variables is greater than 0.8, then a serious multicollinearity problem exists (Judge et al., 1988). Another method used to detect multicollinearity was through the variance inflation factors. The variance inflation factors are the diagonal elements of the $(X'X)^{-1}$. If any variable is orthogonal to all other explanatory variables, then its inflation factor is 1.0. Multicollinearity exists in some degree if the value of the inflation factor is greater than 1.0, which means that 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.

The model was also evaluated in terms of goodness of fit measures using the likelihood ratio test. This test is used to test the hypothesis that the variables in the model have no effect upon the value of the dependent variable. In other words, the likelihood ratio test whose statistic follows a chi-square distribution is used to test the null hypothesis that all estimated coefficients, excluding the intercept, are zero. Statistically, the null (Ho) and alternative (Ha) hypotheses are denoted as:

Ho: $\beta 1 = \beta 2 = \ldots \beta k = 0$
Ha: some $\beta I \neq 0$; $i = 1,2,\ldots,k$

The test statistic for the above hypothesis is $-2*(L_0-L_1) \approx \chi^2$ where: L_0 is the value of the maximum likelihood function for the null hypothesis (restricted model), and L_1 is the value of the maximum likelihood function for the full model (unrestricted 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 appropriate degrees of freedom, then Ho is rejected.

Sample Used in Tobit Regression Analysis

Randomly chosen site visitors were interviewed to serve as sample respondents in the study. Of the total 332 respondents, there were about 71 zero bidders and the rest offered positive WTP bids. For the total zero bidders, none are considered protest bidders. Had there been any, they would have been excluded in the final sample used in regression analysis, since protest bids are thought of as irrelevant in demand estimation. Thus, the final sample used in regression analysis for MPNP at the current and improved levels of services was 332 observations.

II. Travel Cost Model: Visit Demand Estimation

The sample data in TCM survey were derived from MPNP visitors during the conduct of the study. Each visitor was asked the number of visits made to the site. An individual may make any number of visits, but many respondents have made two. Because of this situation, the ITCM dependent variable is considered discrete or count. Since there is no observation available for individuals who do not make any visit, the sample is said to be truncated[3].

[3] A truncated sample is one in which the values of the explanatory variables are observed only if the value of the dependent variable is observed (Judge et al, 1988). For ITCM, the data were gathered only on individuals who actually visit the site in a given time period.

As a result, the dependent variable for the ITCM is truncated to one, i.e., zero visit individuals are necessarily omitted or excluded from the sample. Given the sample included in the study and the type of data gathered from the survey, we used the Truncated Poisson Regression Model to fit the data.

The model is formulated as follows: Define a 'latent' variable, Y, which is the underlying Poisson variable with the following probability (poisson) distribution:

$$f_p(\mathrm{Y_i} = y_i \mid \lambda_i) = \frac{\exp(-\lambda_i)(\lambda_i)^{y_i}}{\mathrm{y_i}!} \text{ for } \lambda_i > 0 \qquad (9)$$
$$= 0 \qquad \text{otherwise,}$$

where Y_i is the ith observation on the count variable of interest, $y_i = 0,1,2,\ldots$ are the possible values of Y_i, λ_i is the Poisson parameter to be estimated, and $i = 1,2,\ldots,n$ observations. This has a one-parameter distribution with mean and variance of Y_i equal to λ_i. In a count regression model, let the expected count, $E(\mathrm{Y}_i) \equiv \lambda_i$, to vary according to:

$$\lambda_i = \exp(\beta' x_i) \Rightarrow \ln\lambda_i = \beta' x_i, \qquad (10)$$

where x_i and β are conformable vectors of exogenous variables and parameters, respectively. The log-likelihood function, reduced to sufficient statistics, for this standard Poisson regression model can be written as:

$$\ln L = \sum\{-\lambda_i + y_i(\beta' x_i)\}, \qquad (11)$$

where $\sum$ is the summation from $i = 1$ to n. However, for count data truncated on the left at the value of zero, the common statistical structure of truncated estimators is the probability of observing Y_i, given that it exceeds a truncation point, say, c (Grogger and Carson, 1991; Gomez and Ozuna, 1993). This concept can be written in terms of probability distribution functions as:

$$f_c(Y_i) = \frac{f_p(Y_i)}{1 - F_p(c)}, \qquad (12)$$

where $f_c(Y_i)$ is the truncated probability function above the truncation point c, $f_p(Y_i)$ is the probability function and $F_p(c)$ represents the distribution function evaluated at the truncation point c.

Following Grogger and Carson (1991), the maximum likelihood estimator can be obtained by applying a suitable discrete probability function to the condition probability found in equation (9). For the case of Poisson distribution truncated at zero, the probability function can be expressed as:

$$f_{cp}(Y_i = y_i \mid \lambda_i, Y_i > 0) = \frac{\exp(-\lambda_i)(\lambda_i)^{y_i}}{y_i!}\left[1 - F_p(0)\right]^{-1} \qquad (13)$$

where $i = 1,2,\ldots,m$ observations ($m<n$), $y_i = \min[y,t]$ is the observed variable composed of positive integer values larger than 0 and $F_p(0)$ is the probability distribution of the basic Poisson model evaluated at zero. The first part on the right hand side of equation (13) is the probability density function of the standard Poisson model and the second part accounts for the unobserved zeroes.

Greene (1998) also shows the general probability function for a truncated distribution from below, for instance, at a value and that the distribution of y_s applies only to values above c. Thus, equation (13) can also be written as:

$$\mathrm{Prob}[\mathrm{Y_i} = y_i \mid y_i > c] = \frac{\exp(-\lambda_i)\lambda_i^{y_i} / \mathrm{y_i}!}{\mathrm{Prob}[\mathrm{y_i} > c]}, \text{ for } \mathrm{y_i} = \mathrm{c}+1, \mathrm{c}+2, \ldots \qquad (14)$$

where c is a known integer, which is zero in this case. For computational purposes, the distribution function is reduced to $\mathrm{Prob}[y_i > c] = 1 - \mathrm{Prob}[y_i \le c]$.

The log-likelihood for this model (reduced to sufficient statistics) is simply:

$$\ln L = \sum\{y_i(\beta' x_i) - \ln[\exp(\lambda_i) - 1]\}, \tag{15}$$

where $\sum$ is the summation from $i = 1,2,\ldots,m$ observation (i.e.,truncated sample). Consistent parameter estimates for equation (15) can be obtained through the use of Newton's method of approximation.