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ARE FILIPINOS WILLING TO PAY TO SAVE THE PHILIPPINE EAGLES?

by

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Abstract

The Philippine Eagle, classified by the IUCN as an endangered species, has received limited funding support from the Philippine government and private organizations relative to the needed cost for enhanced conservation efforts. To address this gap, the study sought to answer the question of: *How much are Filipinos willing to pay to increase conservation efforts that would also improve the chances for survival of the Philippine Eagles?* Results of the contingent valuation survey show low support for endangered species conservation despite high knowledge and awareness of the respondents. Parametric and non-parametric willingness to pay (WTP) values range from PhP 20 to PhP 34 and from PhP 14 to PhP 22, respectively, across sub-samples. Despite the low WTP values, however, the potential aggregate benefit is 10 times greater the cost of conservation on a national scale, thus providing a potential for fund raising activities to mobilize citizens' willingness to pay for this good.

In addition, respondents' WTP was found to be insensitive to scope (national vs. regional program), collection mechanism (water vs. electric bill), payment vehicle (mandatory vs. voluntary) and extent of the market (on site vs. off site). However, WTP was shown to be sensitive to questionnaire packaging (colored vs. black and white).

Key words: Philippine Eagle Conservation, Contingent Valuation, Willingness to pay

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1.0 Introduction

Paying for biodiversity conservation is considered one of the challenging endeavors confronting conservation programs everywhere, especially since resources are scant and many other competing uses for these resources exist. Financing biodiversity conservation mainly revolves around two aspects: looking for new resources and finding efficient means in using those resources (Panayotou 1997).

At a global scale, biodiversity conservation financing has been facing a rapid decline. The Overseas Development Assistance (ODA) has decreased by almost half from the early 1990s to 2000. Bilateral flows that reached a little more than a billion dollars from 1990-92, decreased to its previous range in the late 1980s (US$600-900 million). Multilateral flows were not also spared. From around US$500-700 million in the late 1980s, it reached almost a billion dollars in 1990-92, but eventually suffered a decline in the mid 1990s to less than US$400 million (Khare 2003)

Thus, conservation programs everywhere has to contend with insufficient funds. Matthews et. al. (2000) cited that in 1990, the United States had to spend USD 770 Million to recover 70% of its endangered species to a self-sustaining level when current funding level was only USD 50 Million a year (cited from Barker, 1993). Similarly, Canada had to spend USD 165 Million in 1998 to recover 61 endangered species while funding only totaled USD 5 Million during that year. These show that the costs of conservation are quite high and that even developed countries are unable to meet all the costs required to protect most of its species. The situation is expected to be more difficult for developing countries, like the Philippines, where resources are low and where many competing programs for limited resources exist.

This case is specifically true for the Philippine Eagle (*Pithecophaga jefferyi*), one of the largest and most powerful raptors in the world and most recently named as the rarest of all large forest eagles by the World Center for Birds of Prey (Agence France-Presse 2004). Despite this wide acclaim, it remains to be under constant threat of extinction. A recent study (Bueser et. al. 2003) has placed the number of Philippine Eagles in Mindanao somewhere between 82 to 233 pairs, based on the remaining forest land area from 1991- 1998, and using the mean nearest neighbor distance between breeding pairs of 12.74 km. According to the Regional Eagle Watch Teams (REWTs)[2], however, only 153 individual Philippine eagles have actually been seen and recorded as of March 2004(www.philippineeagle.org). Thus, the Philippine Eagle was classified by the IUCN as critically endangered.

[2] The REWTs are made up of volunteers who monitor sightings of Philippine Eagles in selected sites.

The need to sustain enhanced conservation efforts to match rising threats faced daily by the Philippine Eagles is widely recognized by the Philippine Eagle Foundation (PEF) and the Department of Environment and Natural Resources Philippine Wildlife Bureau. Two identified future expansion areas includes extending the program's activities to other parts of the country and assisting in the habitat restoration efforts for the Philippine Eagles[3], particularly in Eastern and Central Mindanao where most of the wild population exists. All these activities will require more resources (manpower, financial, expertise) than what the PEF and other players in the field could afford (Dennis Salvador, per com). These various elements of what could be considered as a Comprehensive Mindanao Philippine Eagle Conservation Program is presented in Appendix 1 based on consultations with PEF scientists. The 10-year Comprehensive Mindanao Philippine Eagle Conservation Program is estimated to cost around PhP 1.13 Billion (Table 1), given assumptions on the cost and level of activities. However, current combined funding[4] of both agencies only amounts to an average of PhP 18.8 million per year, which is clearly below the budget needed to expand conservation efforts.

With limited funds from both the PEF and PAWB, there is a need to tap other potential sources of funds, particularly, the Filipino households. The motivation of this paper is to answer the basic question of whether *Filipino Citizens are willing to pay for increased conservation efforts that would improve the probability of survival of the Philippine Eagles*. The basic premise is that the importance attached to the 'good' could be inferred on how much one is willing to pay to secure that good. Hence, if Philippine Eagles are important to people, then, one would expect that they would be willing to pay a positive amount of money to conserve and protect the remaining species and thereby, prevent its extinction. However, the Philippine Eagle Conservation is just one of the many environmental concerns that Filipinos may favor. In fact, environmental problems may just be one of the concerns of Filipinos. A study that maps out priorities of Filipinos is thus important to provide proper perspective among conservation organizations in the development of their program, particularly, if it concerns mobilizing support from the citizens of the country

On theoretical grounds, the study also tested the extent of the market (on-site vs. off-site), sensitivity to scope, sensitivity to payment mode (e.g. mandatory vs. voluntary; water vs. electric bill) and the effect of using black and white photographs. While these various tests are methodological in nature, their results will have some relevant implications in the recommendations that are developed at the end of this paper.

[3] This includes expansion in the land area of its present full-capacity breeding center, enhanced protection efforts for eagles in the wild through more community-based projects, and intensification on field research efforts in order to gain better understanding on the bird's breeding habit, lifespan, and nesting habits.

[4] The PAWB is totally dependent on government funding allocation, which is very limited. The PEF on the other hand, source out funds from international grants and donations, proceeds from the "Eagle Adoption Program" and visitors' entrance fee to the PEC.

2.0 Research Design and Methodology

2.1 CVM: Pre-survey and Survey Activities

The survey instrument developed in consultation with PEF was subjected to five focus group discussions (FGDs). This involved households from different communities (location, income, and occupational groups) within and outside of the proposed study sites. A pre-test survey, administered to 120 households in Metro Manila and Davao Province, was also carried out to narrow down bid levels to PhP 5, PhP 10, PhP 30, PhP 50, and PhP 100/150. Ultimately, both payment vehicle (mandatory vs. voluntary) and collection mechanism (electricity surcharge vs. water surcharge) were used in the final survey. The final research design is shown in Figure 1, with the sample size given per sub-group of respondents.

Table 1. Budgetary Requirements for 10-year Operation of the Mindanao Comprehensive Philippine Eagle Conservation Program, 2005.

Budget Item	**Sub-components**	**Budget (PhP)**
Education	Teachers' Education	5,560,000
	Broadcasters' Education	2,560,000
	Hunting/Gatherer's Education	2,380,000
	Forest resources users' Education	3,010,000
Habitat Preservation	Field Research	33,680,000
	Protected Area Establishment	100,000,000
	Comprehensive site development	480,000,000
Population Augmentation	Conservation breeding (5 eaglets)	10,000,000
	Pre-release (site characterization)	5,000,000
	Post-release Monitoring	40,000,000
Limiting or modifying human activity and development	Management of Philippine Eagle Critical Habitats (Livelihood support)	300,000,000
Critical habitat protection		150,000,000
TOTAL (Present Value over a period of 10 years)		1,132,190,000
Annualized value (at 4% real rate of discount)		139, 588, 774

The survey adopted the drop-off approach[5], supplemented by personal interviews[6], whenever necessary. This worked well in the Philippine context as households were given time to read the valuation scenario and to think through their answer to the valuation question. Drop-off protocols were carefully observed through a clear explanation of the purpose of the study in the cover letter of the questionnaire, including a reminder of the right of respondents to refuse the survey. De-briefing letters were also given to inform respondents that different households received different WTP bid levels.

The two areas chosen for the study are Davao Region and Metro Manila. Davao Region, the seat of the Mindanao Philippine Eagle Conservation Program, has three of its cities (out of 5 cities) chosen as study sites. This included Tagum, Digos and Davao City. Metro Manila, representing the off-site location, served as a smaller microcosm for the whole country. From its populous cities, Quezon City, Pasig and Manila, were drawn. Barangays, and subsequently, households were randomly selected from these major cities. A total of 1,208 usable questionnaires were obtained from about 1,500 households covered in the survey.

The survey instrument contains five sections: a) introduction; 2) environmental concerns in relation to other social concerns; 3) attitudinal and knowledge questions; 4) WTP for a Comprehensive Philippine Eagle Conservation Program, and 5) socio-economic characteristics.

Two scopes/levels of the conservation scenarios were used for a particular subset of respondents:

Scenario I: Comprehensive Mindanao Philippine Eagle Conservation Program

In this scenario, respondents were told that there will be an expansion of the current conservation program to cover the whole Mindanao region. This means that the current area of 300,000 hectares will be increased to about 4.3 Million hectares or about 80% of the estimated forest areas of Mindanao. The conservation activities will include habitat/forest protection, in-situ breeding activities, conservation education program, and community-based with livelihood component protection initiatives. These activities are expected to increase the survival rate of the Philippine Eagles from "fair" to "good".

Scenario II: National Comprehensive Philippine Eagle Conservation Program

Under the national program, the current Conservation Program will be expanded to all four regions of the country known to be inhabited by the Philippine Eagles. The area to be placed

[5] A high questionnaire retrieval rate of 84% was recorded in this survey using the drop-off approach.

[6] Additional personal interviews were only done in cases where there are non-response items in the questionnaire and when respondents had some questions that need to be clarified before they are able to complete the questionnaire.

under protection is close to 8 Million hectares. The conservation activities are similar with scenario 1 but given a larger coverage area, such activities are expected to increase the survival rate of the Philippine Eagles from "fair" to "excellent".

Under both scenarios, a management group led by the Philippine Eagle Foundation, in consortium with the DENR, the Local Government Units, the Business Sector and the other Non-government organizations, will be created. An Eagle Trust Fund will also be established to receive payments from citizens for the conservation of the Philippine Eagle.

Two valuation scenarios were also presented to a subgroup of household respondents. The mandatory payment vehicle, framed in a referendum context, asked respondents if they would vote to support the Conservation Program to protect the Philippine Eagle and its Habitat if it will cost their household a certain monthly payment that will be added to their utility (electricity/water) bill for five years. The scenario explicitly states that the Management Group and the Philippine Eagle Trust Fund will only be created if 60% of Filipino households would vote for the Program. Once this is obtained, every household will be made to pay the agreed amount. It is further assumed that a Law will be passed to ensure that all contributions to the Philippine Eagle Trust Fund will be spent only to support the various Philippine Eagle Conservation activities mentioned earlier.

The CV question on the voluntary payment vehicle is similarly phrased except that it would be a monthly donation in support of the Philippine Eagle Conservation Program. Similar to the mandatory payment vehicle, a Management Group and an Eagle Trust Fund will also be created. The scenario, however, requires that 50% of the annual amount required for eagle conservation be raised from households' contributions at the end of the first year, which will be matched by private sector donations. Otherwise, if the program fails to meet the target, those who volunteered to contribute will be refunded through subsequent deductions in their utility bill.

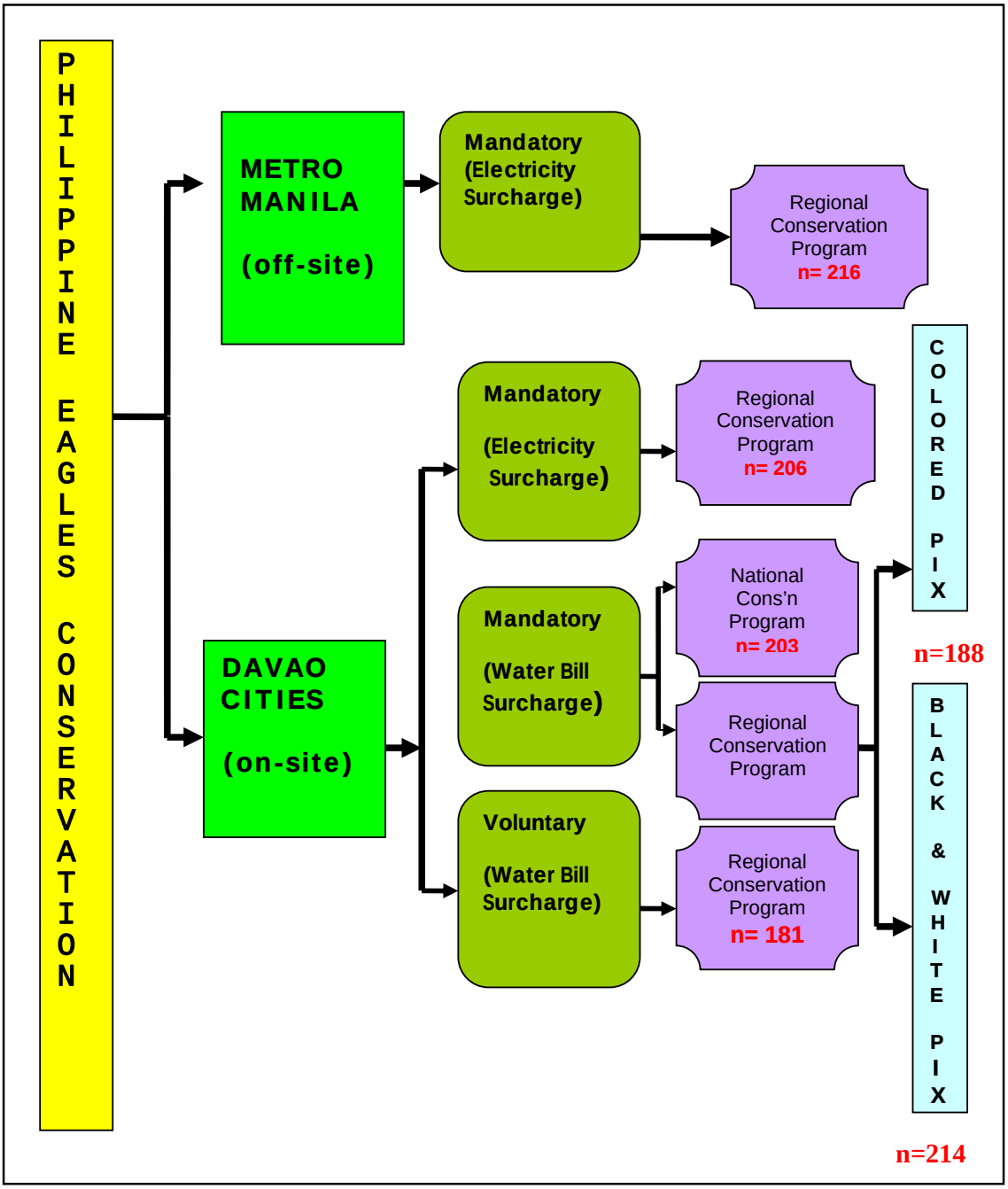


Figure 1

Research Design for the Citizen's WTP Survey for Philippine Eagle Conservation Program.

2.2 Analytical Tools

Analysis of the willingness to pay for the conservation program, framed under a dichotomous choice context, was analyzed using both parametric and non-parametric methods. The survey data was also subjected to protest vote screening and certainty questions. These methods are briefly described below.

2.2.1 Parametric WTP Estimation

Dichotomous choice WTP responses (Y) are regressed against a constant bid amount (BID) together with a vector of socioeconomic variables (X) using a logistic function (Hanemann 1989):

$$Y = \frac{1}{1 + \exp\left[-\left(\beta_0 + \beta_1 BID + \mathrm{X}'\beta_2\right)\right]}$$

The logistic function gives the probability of the individuals' willingness to purchase a particular good or service. Y is a dichotomous choice which takes the value of 1 for a "yes" response and 0 for a "no" response.

Regression coefficients, β_2, β_0 and β_1 are then used to calculate mean WTPs.

To calculate the mean WTP from the logistic distribution, the formula for the mean of a non-negative random variable is used:

$$\text{Mean WTP} = 1/B_1 * (\ln (1+\exp (B_0 + \sum(B_n(Z_n)$$

.

The median is calculated by:

$$\text{Median WTP} = (B_0 + \sum(B_n(Z_n)))/ B_1$$

where B_n is the vector of coefficients, $B_1$is the coefficient of the bid variable and Z_n are the means of the associated independent variables.

2.2.2 Non-parametric Approach

Turnbull (1976) developed a distribution-free method that eliminates the possibility of negative WTP values inherent in linear parametric models. Under this technique, the data is grouped by intervals based on bid amounts. The probability density function per bid amount, p_i, corresponds to the proportion of individuals that voted "no" to an offered bid amount (c_{j-1}). This proportion must be less than of equal to the proportion of "no" votes in succeeding higher bid amount (c_j). Therefore, it provides that the estimated probability of the individuals' maximum WTP fall within the interval of c_{j-1} to c_j $P_i = P(c_{j-1} < WTP < c_j)$.

The likelihood function can be written as:

$$L(p;N,K) = \sum_{i=1}^{M}\left[N_j \ln\left(\sum_{i=1}^{n} p_i \right) + K_j \ln\left(1 - \sum_{i=1}^{j} p_i \right)\right]$$

where N denotes the number of individuals who voted 'no' to cj, K is the number of individuals who voted 'yes' and M is the number of bid amount used. Under this method, a monotonically decreasing probability sequence is required. This can be calculated using a simple algorithm:

$$p_i = \frac{k_i}{n_i}$$

If the data set is not monotonic, adjacent values are pooled using the formula:

$$p_i = \frac{k_i - k_{i-1}}{n_i - n_{i-1}}$$

This will permit the derivation of the probability density function and the cumulative density function. The mean WTP is calculated by multiplying the monotonic probabilities (pi) by the bid amounts (cj) [Giraud et al. 2001].

2.2.3 Adjustments for Protest Responses and Certainty Factor

Protest response

The total number of usable questionnaires was screened for protest responses. Those who answered "no" to the specified bid price were asked if they are willing to pay a lower amount. Subsequent "No" answers that gave reasons other than financial constraint and zero value for the good were considered as protest responses. These reasons include disapproval of the payment vehicle

or other components of the hypothetical conservation scenario, perception of corruption and other related political issues associated with implementers and the government in general.

Certainty Calibration

Respondents were asked how certain they are in making the payment, if the proposed conservation program would be implemented. Those who answered "yes" to WTP question but are either 'not so sure' or 'not sure at all' were re-classified as "No" respondents. This approach is similar to the method used by Champ et al. (1997) where respondents who expressed degrees of uncertainty to the dichotomous choice WTP question were reclassified as "No" respondents.

3.0 Research Findings and Implications

3.1 Priority Concerns and Attitudes toward Philippine Eagle Conservation

Overall, results suggest low priority concern among Filipino households for the environment and specifically, for endangered species conservation. Across sub-samples, economic problem (inflation or rising prices of basic commodities, economic crisis, etc) consistently ranked number one on the list of priority concerns of Filipinos with poverty and political governance taking the second lead. The country's poor economic performance and rising poverty level have led Filipinos to clamor for more reforms in these areas.

Human welfare related causes like deforestation, solid waste and air pollution were chosen by the respondents across subgroups as the country's top three environmental concerns. Endangered species conservation came in mere fifth despite people's pro environmental attitude regarding the existence value of this resource and the punishment that must be placed upon poachers of wildlife species. Some did even agree that citizens ought to contribute money for this cause but not through their taxes. However, when asked to make priority trade-offs, a significant number opined that there are more important environmental concerns that the government should invest in. In particular, many held the belief that the government should prioritize people first rather than spend money on endangered species conservation. This result is consistent with our earlier findings on priority rankings.

With regards to the people's familiarity with the Philippine Eagle, results in general show that level of knowledge and awareness among Filipinos are quite high. Majority knew that the Philippine Eagle is the country's national bird, although not many have seen a live eagle or have visited the Philippine Eagle Center. Despite this, a greater number of respondents were well acquainted with the endangered status of the Philippine Eagle, except for some respondents in Davao who do not believe

that it is currently threatened—owing probably to the greater visibility of the eagles in their area. People are also aware of some recent development on this species (e.g. naming a Philippine eagle after the vice president and the captive breeding program undertaken by PEF), an information that was most likely obtained through the media (for details refer to full report at www.eepsea.org).

3.2 Willingness to support the Philippine Eagle Conservation Program

Will the low priority given to environmental concerns in general and endangered species conservation, in particular, be reflected in the respondents willingness (or lack thereof) to pay for the Philippine Eagle Conservation Program? The answer appears to be on the affirmative as shown in Figures 2a-2e.

In general, the demand behavior of respondents for this 'environmental good' is consistent with demand theory for any normal economic good. This means that the proportion of those who are WTP/saying 'yes' to the 'environmental good' decreases as price/bid level[7] increases. Overall, the proportion of those willing to support the program ranges from 23% to 30% only, with slight variations across sub-samples of household respondents (see Table 2).

Taken as a whole, the data clearly shows that the referendum, which asked if Filipinos would vote to support the proposed conservation program, will not pass. Majority of the respondents are unwilling to share the cost of conservation whether it is a national or regional program or whether electricity or water bill is used as a collection mechanism. This result is consistent with the public sentiment that other concerns deserve government priority other than the environment in general or endangered species in particular.

What are the reasons why majority of household-respondents are unwilling to support the proposed Philippine Eagle Conservation Program? Except for problems associated with the collection mechanism, respondents were generally convinced of the hypothetical conservation scenario. In particular, they believed in the threatened state of the Philippine Eagles. They also found the proposed conservation program credible including the capability of the PEF to manage it (Figure 3). If this is the case, what then explains the low support of Filipino citizens for the eagle conservation program?

Across sub-samples, the main reason for lack of willingness to pay is income constraint. Closely linked to this is the concern over the poor. Respondents believe that requiring the poor to pay

[7] The five bid levels were derived from series of focus group discussions with various groups of people; these were subsequently randomly assigned to the household respondents.

for eagle conservation would be an added burden to them. Others further opined that welfare of human beings should take precedence over animal-related concerns (Appendix Table 2a-2e).

Table 2. Willingness to Pay Estimates using Parametric and Non-Parametric Approaches.

	Parametric Restricted Mean WTP	Non-parametric Turnbull Mean (Median)
By Location (% Yes)		
Manila (30)	34	22 (27)
Davao (23)	26	17 (18)
All (26)	30	19 (23)
By Scope (% Yes)		
National (29)	25	18 (23)
Regional (24)	21	15 (19)
All (26)	23	17 (21)
By Payment Vehicle (%Yes)		
Mandatory (23)	20	14 (18)
Voluntary (24)	26	16 (22)
All (26)	22	15 (20)
By Collection Mechanism (%Yes)		
Electric (24)	25	17 (22)
Water (23)	20	14 (18)
All (24)	22	16 (20)
By Photograph Presentation (%Yes)		
Colored (33)	31	22 (28)
Black & white (24)	21	15 (19)
All (28)	26	18 (23)

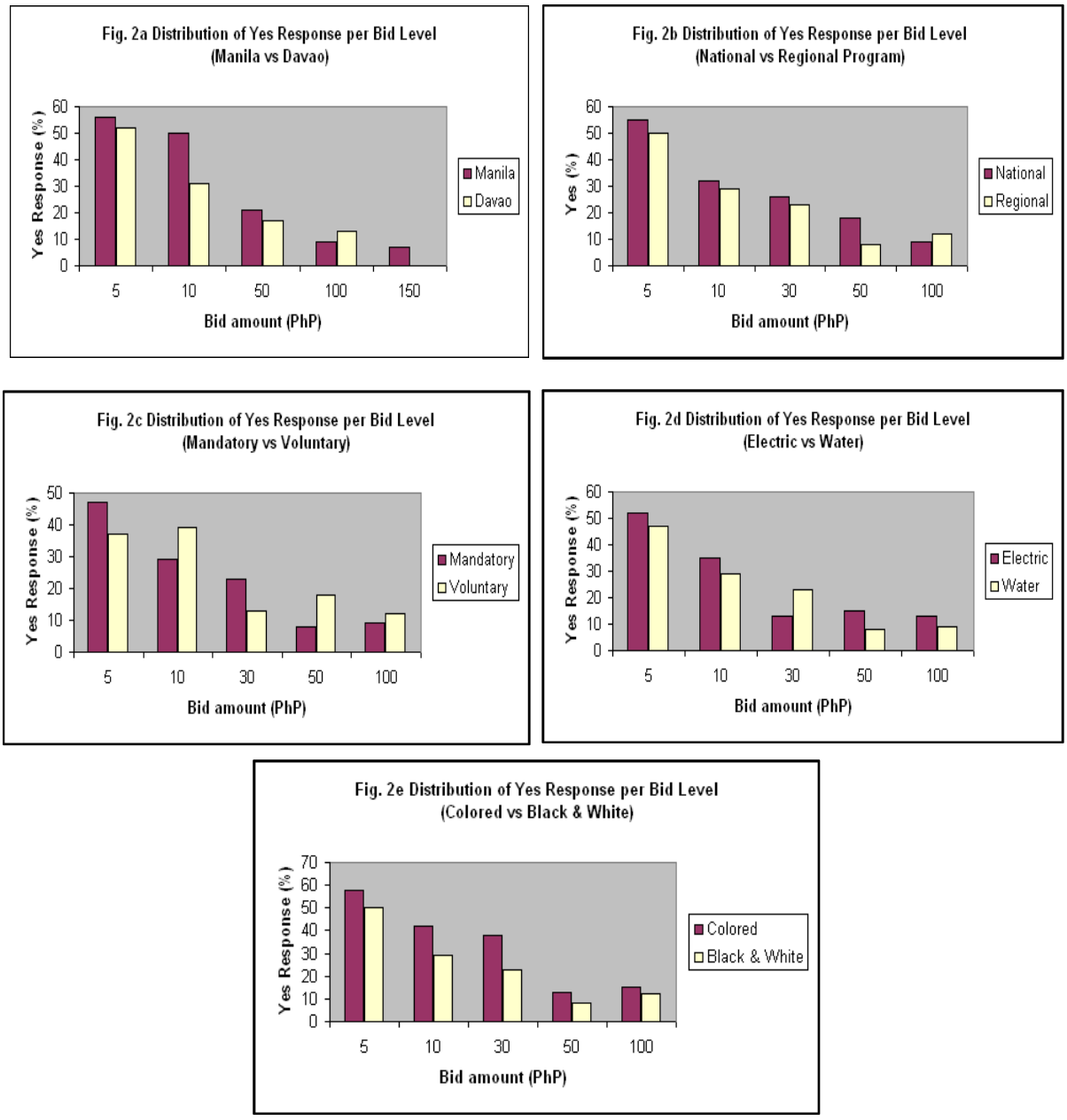


Figure 2

Distribution of 'Yes' Responses per Bid level, by Scope, Extent of Market Payment Vehicle, Collection Mechanism and Questionnaire Packaging

Meanwhile, majority of those who expressed support for the conservation program believed that the Philippine Eagle, being a symbol and pride of the country, ought to be protected. Half of the respondents also view this effort as leading towards the protection of other endangered species in the country (for details refer to full report at www.eepsea.org)

4.3 How much are Filipino Households Willing to Pay?

The mean willingness to pay for the various sub-groups of household respondents was estimated using the analytical techniques in section 3.2.1. Table 2 shows the monthly mean and median WTP of households who responded 'yes' to the conservation program. The WTP values using parametric and non-parametric approaches are relatively close implying robustness of the estimates.

The mean WTP (PhP 34/month) of Metro Manila residents do not differ significantly from the mean WTP of Davao residents (PhP 26/month), with both levied a fixed surcharge to their electricity bill. This shows that on-site and off-site communities value this environmental good/cause in the same way, regardless of whether the implementation of the conservation program is only in Mindanao. This could also be interpreted to mean that the conservation program is viewed as a national 'good', rather than a local 'good'.

By income group, non-parametric estimates for the pooled sample of Davao and Manila respondents indicate that willingness to pay increases with income. It is placed at PhP 23/mo, PhP 22/mo and PhP 14/mo for high, middle and low-income groups, respectively. Parametric WTP estimates by income level for mandatory vs voluntary, water vs. electric bill, national vs. regional and colored vs. black and white is shown in Appendix Table 3.

Insignificant differences between the national conservation program (PhP 25/month) and the regional conservation program (PhP 21/month) suggest insensitivity to scope. This implies that household respondents are only willing to pay a small amount for endangered species conservation and are not likely pay more for a greater scope of this environmental good. It is up to the program implementers to decide at what scale this amount will be used.

Similarly, we also find no significant differences across mandatory (PhP 21/month) and voluntary (PhP 26) payments for the regional Philippine Eagle program. Despite the earlier contention that the referendum failed, our findings make it clear that voluntary payments for eagle conservation can still be an option as 24% of the respondents agreed to this scheme. Since it is not contingent on the number of people contributing to the Eagle Fund, it holds potential for fund mobilization. This

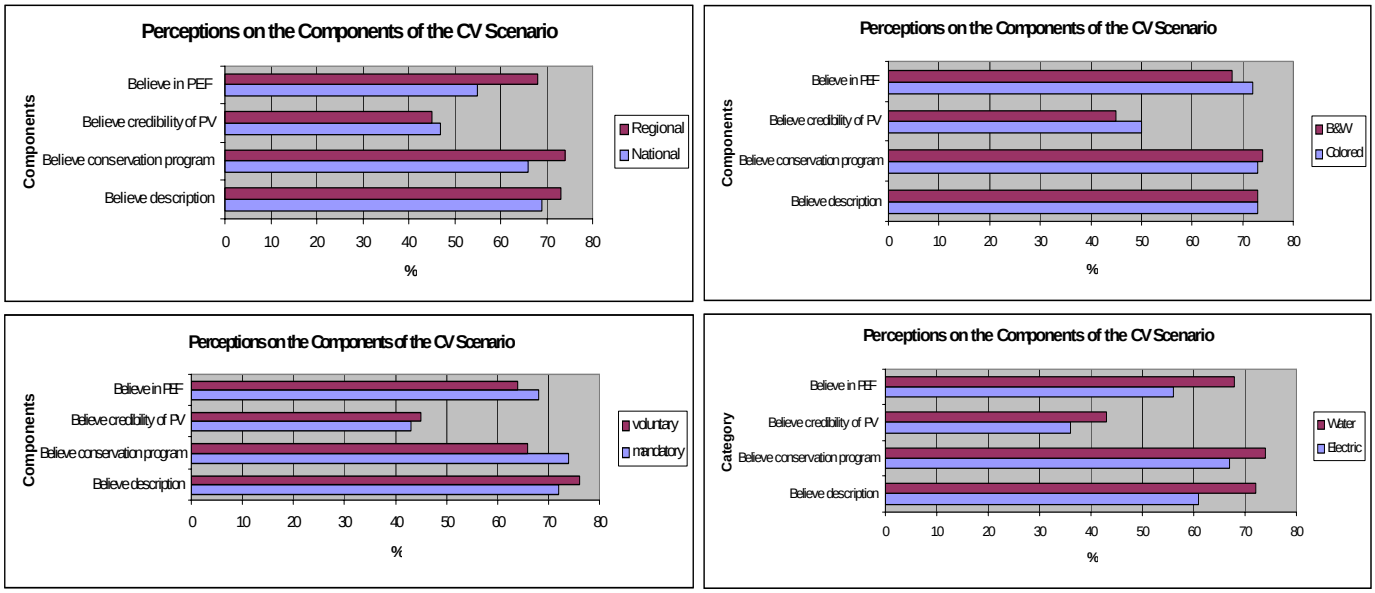
finding also challenges the assumption that developing countries are too poor to invest in environmental causes such as endangered species conservation.

Regarding the approach to fund mobilization, collections from households can be channeled either through the electricity or water bill as no significant difference were found in the mean WTP of the these two collection mechanisms (PhP 25/month and PhP 20/month, respectively). Again, this tells us that Filipinos are only willing to commit a given sum of money to support the Philippine Eagle Conservation Program and are indifferent in the way the payment will be made or collected. Of course, in the final analysis, what will matter is where potential revenue collection will be greater. This would tend to favor electricity bill collection as it has a wider coverage area than water bill.

Does colored photograph affect the household's willingness to support the program, and consequently, their WTP amount? Statistical test shows it does. Mean WTP of those with colored pictures (PhP 31/month) is significantly higher than the WTP of those who were given black & white pictures (PhP 21/month). What this result show is that 'packaging' of the good tends to be value adding and do influence the overall perception on the importance of the good being evaluated. Hence, while cost of data collection can be reduced by using black & white photographs, this could underestimate the true value of the environmental good, particularly, if the use of colored photographs leads to revelation of the truer value of the good, colored photos being a closer approximation of reality.

4.0 Conclusions and Recommendation

Based on the overall result of the study, endangered species conservation holds potential for fund raising activities through mobilizing citizens' willingness to pay for Philippine Eagle Conservation. The lack of significant difference between the WTP of on-site and off-site residents justifies the use of a wider scope of market for the good, hence, benefit cost comparison could estimate benefits applied at the national scale. The cost-benefit analysis for the conservation project is the subject of another paper (in press) but results show that benefits from the estimated willingness to pay far exceeds the cost of conservation. This is despite findings that: a) environmental concern in general and endangered species conservation in particular are not priority concerns among Filipinos; b) only a small fraction of the population is willing to pay (23%-31% for mandatory) for eagle conservation; c) mean WTP as surcharge to utility bill are generally low, ranging from PhP 20 to PhP 34 per month for parametric estimates and PhP 14-PhP 22 per month for non-parametric estimates; and d) income constraint is the overriding reason why Filipinos do not want to pay for the Program.



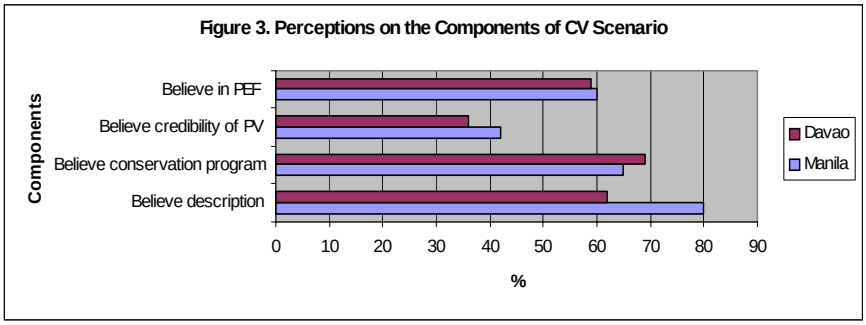


Figure 3

Respondents' Perception on the CV Scenario

Results also clearly show that majority of those who do not want to share the cost for eagle conservation are not uninformed people. On the contrary, they exhibited high level of knowledge and awareness. Thus, intensive Information, education and communication (IEC) campaigns won't solve the low willingness to pay of Filipinos. Nonetheless, evidence based on our methodological result on the value-adding effect of colored photographs on WTP, points to the importance of environmental good packaging.

As noted previously, many lack commitment to support the Program due to economic reasons. To capture this potential, income for these cities must improve in the long run. However, if we wait for this to happen, it might be too late and too costly to reverse the collapse of the population of the Philippine Eagles.

Since biodiversity is a global public good, and hence deserves global attention, the international community could step in to help in the short run. The challenge for the Philippine Eagle Foundation is not only on how to capture the potential revenue from those who are willing to pay but also on how to strengthen linkages with previous international donors and how to forge new partnerships with other international organizations to mobilize funds for eagle conservation measures. The willingness to pay of households, despite low, is quite large on the aggregate even if one had to rely solely on voluntary donations. The main message for international communities is the possibility of counterpart funding. The Philippines can share part of the cost of conservation and may not necessarily depend on grants. This is also a strong rallying point for the corporate sectors that have been investing and are yet to invest in the Philippine eagle conservation program.

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APPENDIX 1

The Comprehensive Mindanao Philippine Eagle Conservation Program[8]

To abate habitat loss, bolster the wild eagle population, protect breeding pairs and ensure their survival and productivity within Mindanao Island, we propose to implement four mitigation techniques, each with its own set of activities, within a span of 10 years. This approach would conserve four major forest blocks in Eastern, Central and Southern Mindanao (Table 1 and Figure 1) along with eagle nest sites and territories found therein. Combined, these forest blocks would cover 4,275,084 hectares of forest, comprising almost 78% of the total forest cover (5,470,302.00) for Mindanao Island as indicated by the 1997 spot mapping data of DENR.

Appendix Table 1.List of Major Forest Blocks Targeted for Preservation and Management in Mindanao Island for the Next Ten Years.

Forest Blocks	Provinces	Forest Cover (hectares)	Total per forest block (hectares)
Eastern Mindanao Corridor	Agusan del Sur	674,922	2,173,053
	Agusan del Norte	192,399	
	Surigao del Sur	322,600	
	Surigao del Norte	152,329	
	Davao Oriental	315,502	
	Davao del Norte	515,301	
Mount Apo Range	Cotabato Province	506,618	1,021,919.00
	Davao City/Davao del Sur	515,301	
Central Mindanao	Bukidnon	493,383	675,427
	Misamis Oriental	182,044	
Mount Busa and Sarangani	South Cotabato/Sarangani Province		404,685.00
Total Area			**4,275,084**

[8] Designed by Scientists from the Philippine Eagle Foundation

The population augmentation component of this plan will also result to the soft release (i.e. hacking) of 5 eaglets in Mount Apo Natural Park where a semi-permanent release site (i.e. hack site) is currently being maintained. One eaglet will be released every two years. Once each eaglet has learned to hunt on its own, it will be translocated to suitable habitats elsewhere in Mindanao. Below are the major mitigation techniques.

A. Education – the education component of this 10 year program will implement problem-specific education projects to resolve direct conflicts between humans and Philippine Eagles. These specific projects are:
   1. Teacher's Education Project
   2. Broadcaster's Education Project
   3. Upland Hunter's/Gatherer's Education Project
   4. Forest Land-user's Education Project

B. Habitat Preservation – declaration of eagle areas as critical habitats, municipal or provincial wildlife sanctuaries, critical watersheds or protected areas.

   This technique will also involve field research to gather ecological information from which to base management plans for eagle habitats. Activities towards the declaration of forest habitats as protected (e.g. critical eagle habitats, municipal watersheds, ancestral domains, or protected areas, or whichever is appropriate) will also be included.

   To sustain research and monitoring and to regulate, if not deter, human disturbance within these sites, we propose to build the capability of Para biologists, Regional Eagle Watch Teams and LGU Personnel. The Para biologists are local people to be trained in gathering field data.

C. Population Augmentation – restocking or release of captive-bred birds to become surplus birds that will replace old or mature individuals that have died.

   The main activities include: a) Breeding through natural pairing techniques and cooperative artificial insemination; b) Rearing in isolation; and c) Hacking. Release of birds into the wild will be monitored closely to learn more about the behavior of the Philippine Eagles and to ensure their protection.

D. Limiting or modifying activity and development – Restrictive strategies to mitigate impacts from numerous types of development and human activity (e.g. logging and mining).

E. Declaration of eagle habitats as protected areas at different scales.

The Philippine Eagle Foundation is working to conserve the Philippine Eagles through three levels of species conservation targets namely individual eagles, nesting territories and home ranges. The declaration of nesting sites/territories as critical habitats at the local and national level seeks to protect important breeding grounds. Philippine Eagles show strong nest site fidelity (i.e. nesting on the same place and sometimes on the same tree for long years). Installing legal protection for nesting sites and implementing a sound management plan in these sites which often overlap with human communities are therefore important.

APPENDIX 2

Reasons for NO Response by Different Sub-groups of Respondents

Appendix Table 2a. 'No' Response across Scope, National vs. Regional Program.

Reasons for No	**National**	**Regional**	**All**
1. Cannot afford the amount	66 (62)	84 (65)	150 (64)
2. Philippine Eagle conservation is not worth doing	7 (7)	5 (4)	12 (5)
3. Other species are more important than Philippine Eagles	5 (5)	5 (4)	10 (4)
4. Majority of the poor will be affected	58 (54)	62 (48)	120 (51)
5. Prefer giving money to humanitarian cause	14 (13)	14 (11)	28 (12)
6. Only people who directly benefit from eagle conservation should pay	15 (14)	11 (9)	26 (11)
7. Higher income group should pay more	25 (23)	28 (22)	53 (22)
8. Other reasons	7 (7)	9 (7)	16 (7)
Willing to pay lower amount (for "no" bids)	35 (33)	47 (36)	82 (35)
Ave lower amt (PhP)	10.38	8.36	9.19
Unwilling to pay any lower amount	72 (67)	82 (64)	154 (65)
Reasons for unwillingness to pay a lower amount			
1. Cannot afford to pay the amount	41 (57)	38 (46)	79 (51)
2. Only people who directly benefit from eagle conservation should pay	14 (19)	8 (10)	22 (14)
3. Only those with higher income should pay	27 (38)	29 (35)	56 (36)
Others	4 (6)	8 (10)	12 (8)

Note: figures in brackets are percent of total responses

Appendix Table 2b. 'No' Response across Payment Vehicle, Mandatory vs. Voluntary.

No responses	**Mandatory**	**Voluntary**	**All**
Reasons for "no"			
1. Cannot afford the amount	83 (65)	91 (69)	174 (67)
2. Philippine Eagle conservation is not worth doing	4 (3)	6 (5)	10 (4)
3. Other species are more important than Philippine Eagles	5 (4)	11 (8)	16 (6)
4. Majority of the poor will be affected	61 (48)	58 (44)	119 (46)
5. Prefer giving money to humanitarian cause	14 (11)	20 (15)	34 (13)
6. Only people who directly benefit from eagle conservation should pay	11 (9)	11 (8)	22 (8.5)
7. Higher income group should pay more	28 (22)	19 (14)	47 (18)
8. Other reasons	11 (9)	11 (8)	22 (8.5)
Willing to pay lower amount (for "no" bids)	47 (37)	28 (21)	75 (29)
Ave lower amt (PhP)	Php8.36	Php12.35	10.36
Unwilling to pay any lower amount	80 (63)	104 (79)	184 (71)
Reasons for unwillingness to pay a lower amount			
1. Cannot afford to pay the amount	37 (46)	51 (49)	88 (47.5)
2. Only people who directly benefit from eagle conservation should pay	8 (10)	9 (9)	17 (9.5)
3. Only those with higher income should pay	29 (36)	28 (27)	57 (31.5)
4. Others	8 (10)	11 (11)	19 (10.5)

Note: figures in brackets are percent of total responses

Appendix Table 2c. 'No' Response across Collection Mechanism, Electric vs. Water.

Reasons for No	**Electric**	**Water**	**All**
1. Cannot afford the amount	69 (63)	83 (65)	152 (64)
2. Philippine Eagle conservation is not worth doing	-	4 (3)	4 (1.5)
3. Other species are more important than Philippine Eagles	3 (3)	5 (4)	8 (3.5)
4. Majority of the poor will be affected	62 (56)	61 (48)	123 (52)
5. Prefer giving money to humanitarian cause	15 (14)	14 (11)	29 (12.5)
6. Only people who directly benefit from eagle conservation should pay	3 (3)	11 (9)	14 (6)
7. Higher income group should pay more	8 (7)	28 (22)	36 (14.5)
8. Other reasons	6 (6)	11 (9)	17 (8)
Willing to pay lower amount (for "no" bids)	34 (31)	47 (37)	81 (34)
Ave lower amt (PhP)	PhP 10.81	PhP p8.36	PhP 9.59
Unwilling to pay any lower amount	76 (69)	80 (63)	156 (66)
Reasons for unwillingness to pay a lower amount			
1. Cannot afford to pay the amount	35 (46)	37 (46)	72 (46)
2. Only people who directly benefit from eagle conservation should pay	5 (7)	8 (10)	13 (8.5)
3. Only those with higher income should pay	27 (36)	29 (36)	68 (36)
4. Others	8 (11)	8 (10)	16 (10.5)

Note: figures in brackets are percent of total responses

Appendix Table 2d**. '**No' Response across Presentations, Colored vs. Black and White.

Reasons for NO	**Colored**	**B&W**	**All**
1. Cannot afford the amount	71 (76)	84 (65)	155 (70)
2. Philippine Eagle conservation is not worth doing	4 (4)	5 (4)	9 (4)
3. Other species are more important than Philippine Eagles	6 (6)	5 (4)	11 (5)
4. Majority of the poor will be affected	42 (45)	62 (48)	104 (47)
5. Prefer giving money to humanitarian cause	5 (5)	14 (11)	19 (9)
6. Only people who directly benefit from eagle conservation should pay	9 (10)	11 (9)	20 (9)
7. Higher income group should pay more	20 (21)	28 (22)	48 (22)
8. Other reasons	5 (5)	9 (7)	14 (6)
Willing to pay lower amount (for "no" bids)	33 (35)	47 (36)	80 (36)
Ave lower amt (PhP)	10.33	8.36	9.18
Unwilling to pay any lower amount	61 (65)	82 (64)	143 (64)
Reasons for unwillingness to pay a lower amount			
1. Cannot afford to pay the amount	26 (43)	38 (46)	64 (45)
2. Only people who directly benefit from eagle conservation should pay	8 (13)	8 (10)	16 (11)
3. Only those with higher income should pay	22 (36)	29 (35)	51 (36)
4. Others	3 (5)	8 (10)	11 (8)

Note: figures in brackets are percent of total responses

APPENDIX 3
WTP and 'Yes' Response by Income Level and Subgroup of Respondents

Income Level	NATIONAL		REGIONAL		ALL	
	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)
High	59	63	28	40	35	53
Middle	26	29	26	28	32	28
Low	16	17	13	15	16	16
Total	(25)	29	(21)	24	(26)	26
Income Level	COLORED		BLACK & WHITE		ALL	
	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)
High	49	56	28	40	35	46
Middle	40	40	26	28	32	33
Low	21	21	13	15	16	18
Total	(32)	33	(21)	24	(26)	28
Income Level	MANDATORY		VOLUNTARY		ALL	
	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)
High	25	40	73	57	47	48
Middle	25	28	26	26	26	27
Low	12	14	12	15	13	15
Total	(19)	23	(21)	23	(21)	23
Income Level	WATER		ELECTRIC		ALL	
	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)	Mean WTP	"Yes" Responses (%)
High	25	40	17	25	27	31
Middle	25	28	17	29	27	28
Low	12	14	17	17	14	15
Total	(19)	23	(26)	24	(22)	24
Income Level	MANILA		DAVAO		ALL	
	Mean WTP[a]	"Yes" Responses (%)	Mean WTP[a]	"Yes" Responses (%)	Mean WTP[a]	"Yes" Responses (%)
High	21	37	32	22	23	30
Middle	23	29	20	30	22	29
Low	19	28	10	13	14	21
Total	-	30	-	23	-	26

[a] – non parametric mean WTP (all entries on mean WTP are parametric estimates except for Manila and Davao)
- figures in parenthesis are midpoint WTP for parametric estimates