

Contingent economic valuation of hill Amancaes – Bella Durmiente to promote its conservation, Independencia – Lima

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Resumen

La presente investigación tuvo como base fundamental promover la conservación de la Loma de Amancaes – Bella Durmiente, la cual está siendo afectada principalmente por el crecimiento urbano poblacional. Para llegar a promover la conservación de este ecosistema costero se planteó determinar cuál es la disponibilidad a pagar por parte de los habitantes del distrito de Independencia para promover la conservación de la “Loma de Amancaes – Bella Durmiente”, Independencia – Lima, para lo cual se tomó una muestra de 383 habitantes de una población de 119677 del distrito en mención.

Los resultados obtenidos empleando la valoración contingente permitió determinar la máxima Disponibilidad A Pagar (DAP) para promover la conservación de la Loma de Amancaes- Bella Durmiente por parte de sus pobladores, la cual es de 20 soles mientras que la mínima Disponibilidad A Pagar (DAP) es de 5 soles. Por ello, se concluyó que existe una alta disponibilidad a pagar para la promoción de la conservación de la Loma de Amancaes- Bella Durmiente.

Palabras clave: Conservación, disponibilidad a pagar, Loma, valoración económica contingente.

Abstract

The present research has as fundamental base to promote the conservation of the Loma de Amancaes – Bella Durmiente which is being affected mainly by the urban population growth. In order to promote the conservation of this coastal ecosystem, it was determined the availability of the inhabitants of the Independencia district to promote the conservation of hill Amancaes-Bella Durmiente, Independence District - Lima, it was taken a sample of 383 inhabitants for a population of 119677 of the district mentioned.

The obtained results by the contingent valuation, allowed to determine that the maximum Willingness To Pay (WTP) to promote the conservation of hill Amancaes-Bella Durmiente by the settlers is 20 soles while the minimum Willingness To Pay (WTP) is 5 soles. Therefore, it has been concluded that there is a high availability to pay for the promotion of the conservation of hill Amancaes - Bella Durmiente.

Keywords: Conservation, Willingness To Pay, hill, contingent economic valuation.

1. Introduction

The coastal hills are called fragile ecosystems, it is due to the lost evidence of their natural condition that is generally caused by the different anthropic actions that can be generated in their area. This population is mainly affected by anthropogenic action, urban population growth for this reason, we are looking for the conservation of the "hill Amancaes – Bella Durmiente" which is located in the district of Independencia. And to promote the conservation of the "hill Amancaes - Bella Durmiente" It will be used the contingent valuation method, which seeks to determine the economic value of this hill, and to know what is Willingness To Pay (WTP) by inhabitant of the neighborhood of Independencia in order to promote the conservation of "hill Amancaes - Bella Durmiente", because the trees are in a hypothetical market where the population indicates their Willingness To Pay (WTP).

The science knowledge and its applications have tremendous importance for the implementation and commercial success of revolutionary technology (Valverde, 2017). The contingent valuation method is an instrument to assess the economic value of the hill and the Willingness To Pay by inhabitant of the district of Independencia for the conservation of "hill Amancaes - Bella Durmiente" which is called as a fragile ecosystem.

The value of the environmental service such as water is very important (Cunya, 2015). This is achieved by estimating the Willingness To Pay in protected natural areas (Almendarez et al, 2016) using the contingent valuation method (Verona and Rodriguez, 2013, Valdez and Reyes, 2015).

2. Materials and Methods

The research was non-experimental due to the fact that there is no alteration of "hill Amancaes - Bella Durmiente " located in the district of Independencia.

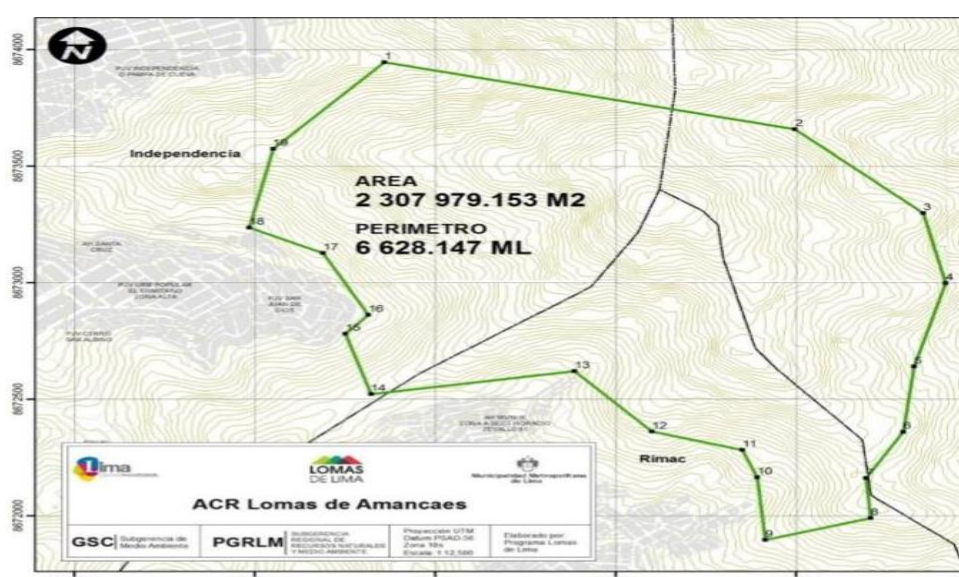


Figure 1. Location of hill Amancaes – Bella Durmiente, Lima, Peru

The research level is explanatory type, because it respond to the causes for promoting conservation in "hill Amancaes - Bella Durmiente and focuses on explaining what event occurs in addition to identifying the activities to be carried out and contribute to its conservation.

The sample used for finite data was 383 inhabitants of both sexes with different age ranges between [19 - 59], who live in the District of Independencia, department of Lima, who live among the 6 different zone zonifications of Independence. See table 1.

Table 1. Disposición de encuestas por Zona

Zone	N° surveyed people
Túpac Amaru	64
Tahuantinsuyo	64
Independencia	64
El Ermitaño	64
La Unificada	64
Zona industrial	63
Total	383

The steps of research were taken like:

Step 1: Diagnosis.

Step 2: Poll.

Step 3: Analysis of Data.

Step 4: Data interpretation and results.

3. Results and discussion

Results of Willingness-to-pay Analysis to 383 people are shown in survey.

Table 2. Gender of surveyed people

	Frequency	Percentage	Accumulated Percentage
Man	146	38,1	38,1
Woman	237	61,9	100,0
Total	383	100,0	

it can be seen in Table 2 that 61.9 of the surveyed visitors are women and 38.1 are men.

Table 3. Educational level of surveyed people

	Frequency	Percentage	Accumulated Percentage
High School	148	38,6	38,6
Superior	92	24,0	62,7
Technical	143	37,3	100,0
Total	383	100,0	

It can be seen in Table 3 that 38.6% of the visitors have High School level, 37.3% of the visitors have Technician level, and 24% of the visitors have Superior level.

Table 4. Purpose of the people surveyed during the visit to Amancaes – Bella Durmiente

	Frequency	Percentage	Accumulated Percentage
Study	135	35,2	35,2
leisure	248	64,8	100,0
Total	383	100,0	

In addition, it can be seen in Table 4, the visitors who stay longer in the hills are the ones who enjoy the most of this ecosystem since they like what they can see there. 64.8% from total go to have a leisure time.

Table 5. Time to visit hill Amancaes – Bella Durmiente

	Frequency	Percentage	Accumulated Percentage
1 a 3	138	36,0	36,0
4 a 6	245	64,0	100,0
Total	383	100,0	

In addition, it can be seen in Table 5, the 64% of the visitors stay approximately between 4 to 6 hours and 36% of visitors stay approximately between 1 to 3 hours.

Table 6. Actions to improve the landscape service in hill Amancaes – Bella Durmiente

	Frequency	Percentage	Accumulated Percentage
Training	55	14,4	14,4
Reforestation	135	35,2	49,6
Sensitization	193	50,4	100,0
Total	383	100,0	

It can be seen in Table 6, 50.4% of the visitors suggest actions like sensitization to improve the landscape service, 35.2% of the visitors suggest actions like reforestation to improve the landscape service, and 14.4% of the visitors suggest actions like training to improve the landscape service.

Table 7. Maximum willingness to pay by persons for the conservation of hill Amancaes - Bella Durmiente

	Frequency	Percentage	Accumulated
5,00	5	1,3	1,3
10,00	35	9,1	10,4
12,00	4	1,0	11,5
13,00	1	,3	11,7
14,00	1	,3	12,0
15,00	18	4,7	16,7
16,00	1	,3	17,0
17,00	2	,5	17,5
18,00	4	1,0	18,5
19,00	3	,8	19,3
20,00	309	80,7	100,0
Total	383	100,0	

There are a total of 309 people who have visited the hill Amancaes- Bella Durmiente corresponding to 80.7% of the total, which indicates that its maximum willingness to pay for the conservation of hill Amancaes- Bella Durmiente would be S/ 20 soles, followed by 0.8% with S/ 19 soles;

Therefore the maximum economic value by the inhabitants of the district of Independencia towards the hill Amancaes - Bella Durmiente to promote its conservation is 20 soles per

inhabitants. adding a total of /.6180 soles that would be generated by Visits with a capacity of 309 people. See table 7.

A total of 338 people who have visited the hill Amancaes- Bella Durmiente are satisfied and willing to conserve the place, which is equivalent to 88.3% of the population, 29 of them do not indicate satisfaction but they are also willing to keep the place, as well as the 16 that are unsatisfied.

Table 8. Influence of satisfaction on willingness to pay for the conservation of hill Amancaes - Bella Durmiente

		Satisfied	Regular	unsatisfied	Total
Conservation area	Count	338	29	16	383
	% within the conservation area	88.3%	7.6%	4.2%	100%
Total	Count	338	29	16	383
	% within the conservation area	88.3%	7.6%	4.2%	100%

4. Conclusions

- The main objective was to determine the economic valuation of Hill Amancaes - Bella Durmiente, Independencia - Lima 2017 to promote their conservation. Method of contingent valuation obtaining, thus a maximum valuation per person to protect hill is expressed in the maximum DAP of S / .20.00 soles and a DAP Minimum of S / .4 soles which corresponds to 38.4% of total.
- The results obtained from the surveys determined that the economic valuation of hill Amancaes - Bella Durmiente, by the inhabitants of the district of Independencia to promote conservation, Lima in the period 2017 is S / . 20 soles given that 80.7% of the population corresponds to 309 people surveyed indicating that value.
- The satisfaction level of the inhabitants of the district of Independencia in their visit to hill Amancaes - Bella Durmiente influences the promotion of their conservation by applying the contingent valuation method included in period 2017 because 383 persons are according to conservation of the ecosystem, although only 88.3% of the total people are totally satisfied with their visit and stay.
- The educational and cultural level of the inhabitants of the district of Independencia influence the willingness to pay to promote the conservation of hill Amancaes - Bella Durmiente, located in the district of independence, Lima - period 2017 because 102 people who correspond to 100% of the total number of people with higher education are willing to pay the maximum amount that is S/ .20 soles, followed by technicians who

correspond to 88.7% of people with Technical education are also willing to pay the maximum DAP maximum.

Acknowledgements

We gratefully acknowledge to the Department of Environmental engineering, University Cesar Vallejo – Lima Norte, for giving facilities in environmental issues. We also thank to the Institute of Environment, Centre of Research and Training to the Regional Development, (In Spanish, Centro de Investigacion y Capacitacion para el Desarrollo Regional-CINCADER) for allowing us to share technical experiences.

References

Almendares, M., Sanchez, I. and others. 2016. Proposal of quotas for conservation of a protected natural area of Mexico. Spiral. ISSN 0188-7653.

Cunya, M. 2015. Environmental economic valuation of cushion bog of district Pilpichaca, Huancavelica. Peru. Thesis.

MINAM. 2015. Valoración Económica del Patrimonio Natural Lima, Peru.

MINAM. 2016. Guía de valoración económica del patrimonio natural. Lima, Peru.

Valdez, A.; Reyes, F. 2015. "Impacts of tourism in hill Paraíso in the district Villa María del Triunfo", Lima.

Valverde, J. 2017. The challenge to save environment. Editorial. Journal of Energy and Environment Sciences. Vol 1, N° 1, 2017.

Verona, A., Rodriguez, A., 2013. Economic valuation of environmental goods and services of Laguna de Conache, Laredo, La Libertad, Peru. REBIOLEST Journal.