

## Integrating Social and Economic Approaches to Identify Financing Mechanisms for the Establishment of Marine Protected Areas in Chile

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### Introduction

The establishment of Marine Protected Areas (MPAs) has been historically associated to impulse recovery and protection of marine ecosystems. However, their successful protection is dependent not only upon an understanding of their biological processes, but also their integration with social and economic aspects (Thur, 2010). Unfortunately, the association of these approaches required large efforts and their management as a whole system have commonly end as a abandon areas. Nevertheless, the identification of a financial path through local communities participation, while they protect key species and ecosystems could increase management interest (Wang & Jia, 2012) . At the same time tourism is a financing mechanism considered by many marine conservation initiatives (i.e., Gelcich et al. 2013). This works aims to evaluate visitors willingness to pay (WTP) for penguins and and biodiversity conservation actions as a potential funding approach in the Puñihuil Bay, Chiloe Island .

Table 1. Tourist descriptive statistics (N=250)

Item	Characteristic	Results
Gender	Male	53,60%
	Female	46,40%
Age	18 - 29	33,20%
	30 - 39	21,20%
	40 - 49	22%
	50 - 65	18%
	over 65	5,60%
Chilean citizen	Yes	74%
	No	26%
Education	Middle school	4,40%
	High school	25,20%
	College	21,60%
	University	36,40%
	Higher than university	12,40%
Income (\$chilean peso)	0 - \$250.000	20,80%
	\$250.001 - \$500.000	16,40%
	\$500.001 - \$1.000.000	29,60%
	\$1.000.001 - \$5.000.000	27,20%
	over \$5.000.000	6%
Days spent on destination	Few hours/day	96,30%
	> 1 day	3,70%
Daily budget	0 - \$10.000	36%
	\$11.000 - \$20.000	44,80%
	\$21.000 - \$30.000	11,60%
	over \$31.000	7,60%
Are you willing to pay for conservation initiatives?	Yes	89,20%
	No	10,80%
Would you increase your willing to pay if the budget will be destinate to recover penguin population?	Yes	68,80%
	No	31,20%
Knowledge of benefit associated to MPAs	Unknown	8%
	Little known	37,20%
	Known	31,60%
	Known quite	23,20%

### Methods

The study was conducted at the Puñihuil Bay (41°55'S, 74°23'W), located off the northwest coast of Isla Grande de Chiloe, south-central Chile. In January of 2016 we interviewed 250 visitors from Chile and internationals. Spanish-English interviews were used. Survey was developed to evaluate perceptions of visitors regarding to the implementation penguin conservation measures at-sea. Firstly, the group of surveyors conducted on-site questionnaire face-to-face. Visitors were interviewed randomly by selecting one of every three encounters. To conduct an optimal representation of complex questions, we attempt to i) showing some photographs of healthy marine ecosystems versus altered areas; ii) using local and international surveyors; and iii) conducting interviews in a conversational and casual manner. Descriptive analysis for all survey's variables/questions were using statistical software SPSS (Wang & Jia, 2012).

### Results

In total we surveyed randomly 250 tourists, 74% of them were Chileans and 54,4% were between 18 and 39 years. From the total of foreigners, 45% were from Europe, where 37,7% were from Germany. The majority of respondents had university degrees (70,4%) and had higher incomes than the national average. 96,3% of all tourists that visit Puñihuil bay for less than one day, and 44,8% expect to spend per person between \$10.000-\$20.000 Chilean pesos (CLP) during the visit. Results showed 89,2% of respondents were willing to pay a fee for conservation. The average for their maximum WTP fee was **\$4.646** CLP in a continuous range (min= \$1.000, max= \$10.000 CLP). Within the remain of 10,8% who were not willing to pay, 65,4% believe is government's responsibility to provide this funds. Also there is some distrust from their believe of fee destination and effectiveness. Almost 70% of total respondents would increase their maximum willingness to pay for conservation if they could be certain the revenues will go towards conservation with a positive impact. On the other hand, even when 75% of tourists arrived attracted for penguin sighting and most of them considered they knew at least a bit of the MPA benefits (74,4%), only 34% could named one or more of their threats. Tourist interaction was the threat less mentioned.

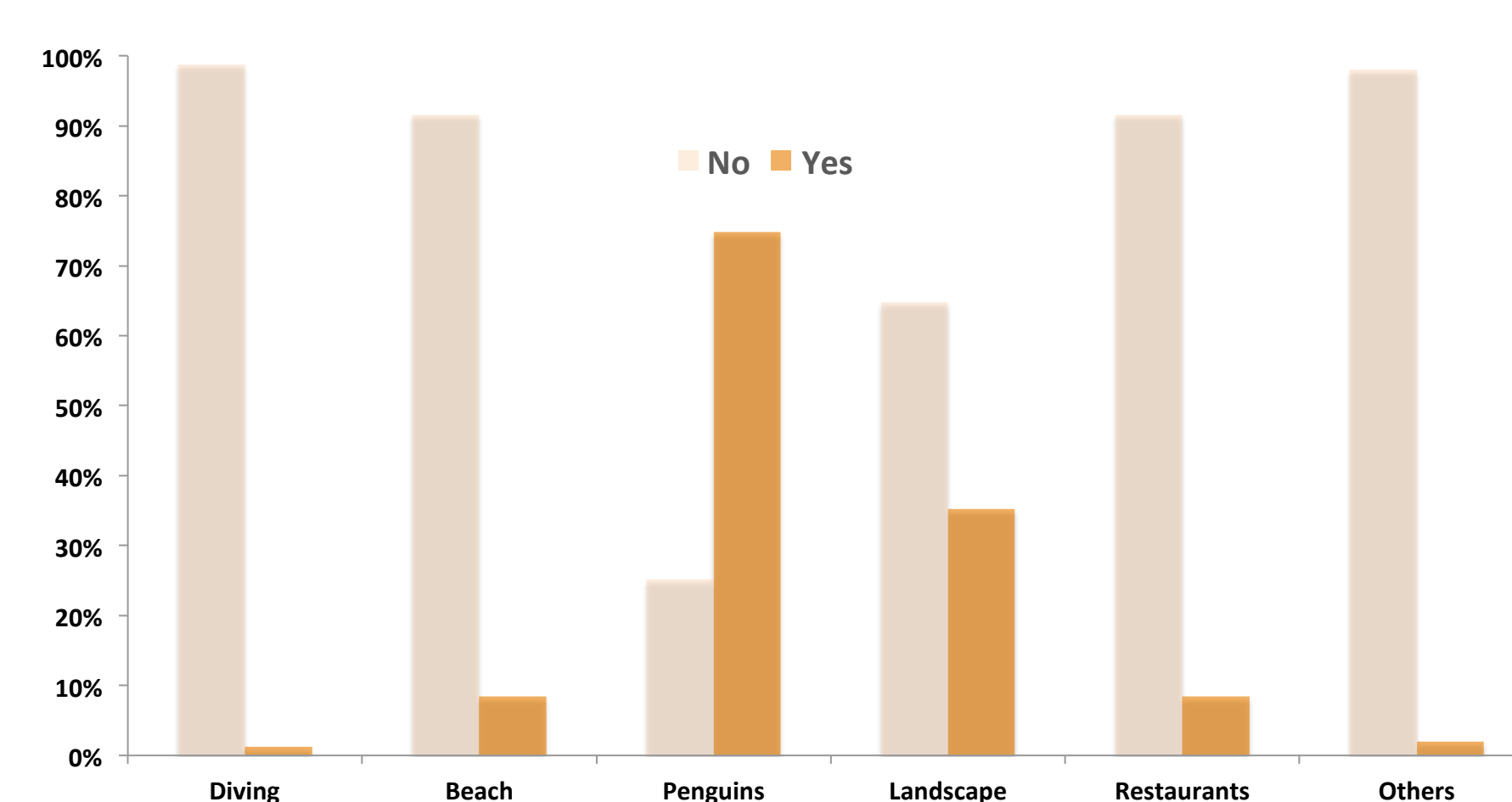


Figure 1. Visitors preference for site selection

Table 2. Reasons expressed by the respondent for negative WTP

Protest reasons	Percentage (%)
1. It is the government's responsibility	65,4
2. I can not pay; the fee is too expensive to short	11,5
3. Do not believe the money will be used for biodiversity conservation	3,8
4. I already pay enough taxes	19,2

### Conclusion

Visitors at Puñihuil's Bay showed a positive attitude for WTP for conservation initiatives. This represents an opportunity to generate funds through tourism, especially for the high demand received in the area where penguins breed sympatrically (>70.000 visitors during the breeding season in 2014) while the area at the same time is protected from their own communities. Contributing for funding ongoing management, education activates and conservation are key concern for nature and sea-based visitors (Thur, 2010). In contrast, this study showed a weak knowledge about the benefits of conservation of biodiversity, MPAs and penguin threats, in this case. Therefore, building community capacity to promote and share knowledge with visitor will increase conservation efforts. Hence, there is an opportunity to integrate socio-cultural, economic and ecosystem values, based on the protection of marine ecosystem and especially penguins, to have a proper MPA management.

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