



The role of information in changing tourists behavioral preferences at the Humboldt penguin reserve in northern Chile.



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ABSTRACT

With considerable focus on ecotourism's potential to contribute to conservation, it is increasingly important to understand the implications of ecological information in triggering sustainability-relevant attitudes and actions. This study assesses whether people who have ecological information regarding the negative impact of their recreational behavior on penguins' stress will choose to remain farther away from the penguins to avoid that impact although this option will reduce the personal benefits of their tourism experience. To answer this question, we use a choice experiment with three attributes related to "Humboldt penguin watching": (1) price of the experience, (2) distance at which penguins could be observed, and (3) penguin density. In addition, we used two treatments: with and without ecological information. We used a pooled data (with and without information) mixed logit model to identify the effect of providing or not providing information. Using a chi-square test, we first tested whether people in the sample with information chose different alternatives than those individuals without information. Furthermore, we evaluate whether the coefficient associated with the attributes of the mixed logit model, and therefore people's behavioral preferences, differs among samples. Results show that, irrespective of socio-demographic differences, visitors with information were more prone to select alternatives that reduce penguin stress, despite more educated, wealthier, and older people tend to increase their welfare when they choose being closer to the penguins. People without information never choose the alternative which results in a reduction of penguin stress. Ecological information is shown to reverse this trend, in fact, tourists perceived (on average) a welfare loss of CL\$1099 (US\$1.9) if he/she is too close to the penguins once information has been granted. These results are encouraging because they support the claim that well-defined educational and informational campaigns can have important effects on the way in which people behave in areas of interest for conservation. Granting ecological information can become an important tool to encourage conservation behavior, particularly in areas where support for enforcement is weak.

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1. Introduction

A popular approach to conservation is the development of nature tourism enterprises or ecotourism. The International Ecotourism Society defines ecotourism as 'responsible travel to natural areas that conserves the environment and sustains the

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well-being of local people' (Wood, 2002). Tourism can provide significant financial benefits to areas that support charismatic wildlife (Adams and Infield, 2003) and has therefore been proposed as a relatively cheap method of facilitating both development and conservation (Cater and Goodball, 1997). According to The International Ecotourism Society (<http://www.ecotourism.org>), in 2004, global ecotourism grew three times faster than the tourism industry as a whole, which is growing at approximately 10% per year. Despite successful cases, evidence increasingly suggests that ecotourism is not a panacea for solving conservation problems (Krüger, 2005), and many projects fail to achieve both conservation and development targets. In terms of assuring conservation, problems arise when nature-based tourism affects species' natural habitats or has physiological or reproductive consequences for protected species.

In these circumstances, educating visitors and creating positive attitudes towards conservation in tourists is likely to be particularly important (Lück, 2003; Masud et al., 2014). Educational and informational campaigns have become important as a means to promote an environmentally friendly tourism industry (Lück, 2003), and it is suggested as a fundamental tool to manage protected areas (Hockings, 1994) and to reduce the negative impacts of tourism (Newsome et al., 2012).

Increasing awareness is often considered as a prerequisite to changing attitudes (Gelcich et al., 2005) and can predict certain conservation behaviors (Gelcich et al., 2008). Thus, one wants to predict changes in behavior associated to information; information raises awareness of the impacts of ecotourism on the species or ecosystems that are visited. Consequently, this awareness could drive tourists' behavioral preferences towards more sustainable ecotourism practices.

In Chile, the "Pinguino de Humboldt" coastal reserve provides a unique opportunity to test the role of ecological information on the impacts of ecotourism on tourists' attitudes and behavioral valuation of marine wildlife. This coastal reserve protects marine biodiversity with special emphasis on the Humboldt penguin as a flagship species. Currently, Tourism Management in the reserve applies best practice visitor guidelines; however, research has shown that the Humboldt penguin is extremely sensitive to human presence, and ecotourism visitors would be required to remain out of sight from the penguins' breeding and molting areas; this makes it a difficult focal species for ecotourism (Ellenberg et al., 2006). Ellenberg et al. (2006) showed physiological and breeding impacts of tourism activities for the Humboldt penguins when distances of less than 100 m are allowed. These authors actually suggest a minimal distance of 150 m for visitors, which is a marked difference with respect to the other penguin species such as the Magellanic and Yellow-eyed penguins.

Tourism that is focused on Humboldt penguins usually occurs in isolated areas with minimal enforcement; therefore, tourists' behavior and support of regulations becomes a key factor to achieve success. In this context, there is a pressing need to assess the consequences that information on the potential ecological impacts of ecotourism may have on tourists' attitudes; there is also a need to determine the bundles of attributes they value from the ecotourism experience and, eventually, their behavioral preferences. Within the context of contemplating regulations that require minimum distances for the observation of the Humboldt penguin, this paper's objective is to explore eco-tourists' minimal distance preferences for visiting Humboldt penguins and determine how those preferences are influenced by attitudes, socio-economic factors, and information regarding the ecological impacts of visitors on the natural populations of Humboldt penguins.

To assess tourists' behavioral preferences when confronted with ecological information from the possible impacts of their visitor

experience, our study is based on the theoretical and methodological underpinnings used in the non-market valuation method of choice experiments (CEs) (Alpizar et al., 2003; Bateman et al., 2002). CEs allow the estimation of people's willingness to pay (WTP) for environmental protection and allow the decomposition of the total WTP among different attributes that determine a tourism experience (Hearne and Salinas, 2002).

Evaluating the impact of information is not new in the literature of nonmarket valuation (Bateman and Mawby, 2004). In the case of CEs, the evaluation of information has been implemented particularly in the area of food and nutrition in which labeling is the main mechanism to provide information to individuals. These studies evaluate the behavior of consumers when they are informed of food attributes by the use of nutritional labels or eco-labels on different product types and whether this information is used by consumers to make their decisions (Balcombe et al., 2010; Barreiro-Hurlé et al., 2010; Gracia et al., 2009; Shen and Saijo, 2009). In marketing research, there have also been several efforts to evaluate the impact of information on people's behavior, particularly regarding the provision of excessive or minimal quantities of information (Sasaki et al., 2011).

This study focuses on assessing the impacts of ecological scientific information on visitor choices. It assesses whether people with more ecological information will choose to remain farther away from the penguins although this behavior will reduce their enjoyment of the tourism experience. The results are replicable to other areas in which there is a need to promote stewardship behavior among visitors to ecologically vulnerable sites. If people are in fact receptive to ecological scientific information and are willing to change their behavior to achieve environmental goals, making these types of tradeoffs explicit and available to tourists could become a strategy to integrate tourism activities within nature reserves, particularly in cases in which there are limited resources for enforcement.

2. Materials and methods

2.1. Study area

The "National Reserve for the Humboldt Penguin" is located in northern Chile, specifically along regions III and IV, named Atacama and Coquimbo, respectively. This reserve includes three specific islands, Damas, Choros and Chañaral (see Fig. 1). The Humboldt penguin is considered a flagship species in this area and attracts national and international tourists as well as allows the development of nature-based tourism. At the time this study was performed, two of these three islands had restricted public access (Choros and Chañaral), whereas Damas Island could be visited frequently by tourists. Tourists who visit these areas are mainly from Chile; nevertheless, the infrastructure to receive international tourists is being developed. In 1990, when this reserve was established, the number of tourists ranged from 600 to 900. By 2014, 51,050 visitors had visited the area surrounding the nature reserve, according to the national statistics of the National Forestry Corporation in Chile (CONAF, 2013), which manages the area. Punta de Choros is the only artisanal landing port in the vicinity; therefore, this is the place that tourists use as a base camp to visit Isla Damas. In addition, tourists use this port for marine wildlife watching. These boat trips have high chances for watching penguins and dolphins. The boat trip costs approximately US\$14, which includes the entry cost to the protected area.

According to the 2013 census, CONAF estimated a population of 21,000 penguins in the Chañaral Island and Choros Damas, which represents 70% of the world population of the Humboldt penguins (<http://www.conaf.cl/mas-de-21-mil-pinguinos-de-humboldt-habitan-la-reserva-nacional>).

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