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TOURIST ACTIVITIES FOCUSING ON ANTARCTIC PENGUINS

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Ecological tourism or ecotourism has spread to the most pristine areas of the world such Antarctica. Currently, Antarctica receives about 26,500 tourists visiting several sites roughly Antarctic Peninsula and South Shetland Islands (IAATO, 2012). Benefits from tourism are important social and economically, and can become a powerful tool for the conservation of flora and fauna (Ceballos-Lascuráin, 1993).

Among the marine fauna, penguins are one of the most important tourist resources in booming in Antarctica mainly because the assessment to their colonies (Boersma, 2008). There is pressure from the tourist industry to increase the current access to the penguin colonies, and from the tourists themselves to have access and proximity to get your precious photo of penguins.

It is a common perception that penguins are not affected by the proximity of large groups of humans, mainly since the lack of evident behavioural response particularly during the stage in which penguins are nesting (Seddon & Ellenberg, 2008, chap. 9). However, penguins could show both behavioural and physiological changes related to a response to visitors, which may impact negatively on breeding and survival (Villanueva, Walker, & Bertellotti, 2012). Long-term decline in the breeding success due to human disturbance may result in decreases in population. The colony of Adélie penguins at Cape Hallett was reduced while an Antarctic Base worked there between 1959 and 1968 (Wilson, Culik, Danfeld, & Adelung, 1991). Furthermore, a plunge in Adélie penguins at Cape Royds between 1955 and 1963 was attributed to disruption of visitors (Thomson, 1977). Another problem's tourism is the unintentional introduction of pathogenic agents. Even if ships follow all the cleaning rules, yet the possibility of carrying pathogens is imminent. Consequently, penguins could be exposed to pathogens for which they probably have no immune adaptation.

The impact of tourists adds to other factors that reduce viability of Antarctic penguin populations, which have been associated to the effects of global climate change.

Over past 50 years the Antarctic together with marine ecosystem have been significantly affected by climatic changes like the warming water and declining sea-ice (Ainley & Tin, 2012). In the Western Antarctic Peninsula, the sea-ice has been reduced in the last years bringing about changes in distribution and abundance of the Antarctic krill (*Euphasia superba*) and consequently, in the food chains depending on it, such as penguin populations (Ainley & Tin, 2012). For instance, Adélie penguins (*Pygoscelis adeliae*) have plunged 65% in the last 25 years due to reduction of krill (Emslie & Patterson, 2007). Chinstrap penguins (*Pygoscelis antarctica*) at Vapour Col in Deception Island (South Shetlands Islands) has declined by 36% between 1991 and 2008, related to climate change through effects of reduction in sea-ice extent and consequent decline in abundance of krill (Barbosa, Benzal, De León, & Moreno, 2012).

Furthermore, as consequences of climate change the “ice-dependent” Adélie penguin has moved southwards, to be replaced by the “ice-tolerant” Chinstrap penguin (Ainley, Russell, Jenouvrier, Woehler, & Lyver, 2010). In Stranger Point, Isla 25 de Mayo, the Adélie penguin population decreased 62% between 1996 and 2006, while the Gentoo (*Pygoscelis papua*) breeding population increased by 68% (Carlini et al., 2009). Emperor and Adélie penguins face the gloomy fate of global climate change. An increase in the temperature of 1.3 °C will put at risk the 40% of the world population of Emperors and the 70% of the world population of Adélies, mainly due to the reduction of the sea-ice (Ainley et al., 2010; Jenouvrier et al., 2012).

Considering the response of Antarctic penguins to the effects of climate change and the plausible impacts of tourism, the question that arises is how will tourism adapt in this climate change scenario? Therefore, it is important to consider a tourism adaptation to climate change to improve the management of tourist activities focusing on Antarctic penguins, integrating a social and ecological perspective as a potential field for future researches.

In this context, adaptation refers to an adjustment in human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (Ascanio Guevara, 2009; IPCC, 2007; Simpson, Gössling, Scott, Hall, & Gladin, 2008). This concept leads to rethink about conservation strategies including scientific research, protection for natural environment, integrated management community involvement, coordinated policies, financial incentives and political will. To conduct these actions, it will be necessary to know which are the penguin species threatened the most by climate change and which are their colonies to be selected to the tourist visits.

There are three integrated approaches to this concept of adaptation, the protection of a suitable area, the restriction on possible impacts that are not related to the climate and the tourism management (Hansen, Biringer, & Hoffman, 2003). The first should include protection of selected habitats for breeding and feeding since these are the time when penguins are more vulnerable. The second should include the selection for tourism only those areas less vulnerable to climate change, leaving those most vulnerable areas just for low-impact monitoring (e.g. Byers Peninsula on Livingston Island and/or the Adélie’s colonies, because this is the species susceptible most by the effects of climate change). Finally, since there is evidence about indirect effects of human impacts in the physiology of Antarctic penguins at colonies heavily visited by tourists compared to rarely visited ones (see Barbosa et al., 2013), it is recommended reduce to a minimum the proportion of a colony determining the distance of approaching for species, selecting sites, and avoiding the introduction of exotic species.

Continued research is required in order to understand the nature of human disturbance and its impact on Antarctic penguins, providing information that allows managers and conservationists alike to issue specific guidelines for visitors. The course of action to follow would be by establishing mutually beneficial associations among the tourist industry, the conservation authorities, the scientific community and the tourists themselves. **A**

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MODIFYING THE IOS SCALE AMONG TOURISTS

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Oftentimes, specialized travellers visit a destination for the cross-cultural interaction and exchange potential with community residents (Wearing, Stevenson, & Young, 2010). Too often, however, our field neglects to focus on the relationship between residents and tourists. Instead, the relationship between residents of and tourists to a destination is conceived of indirectly through examining residents' attitudes toward tourism and/or tourism development (Latkova & Vogt, 2012). This work arguably does not get at the core of the relationship, interaction, or encounters between residents and tourists.

The work that does speak directly to the relationship between residents and tourists is oftentimes conducted from the perspective of the former. For example, most recently Shani and Uriely (2012) examined VFR tourism in Israel, solely focusing on the host experience, just as Moufakkir (2011) did not consider tourists in his work concerning Dutch residents' perceived cultural distance with foreign visitors. A greater emphasis needs to be placed on how tourists view the relationship they have with community residents (Ward & Berno, 2011). If the relationship is perceived as negative, implications will exist for return visits to the destination. Factors that may serve to explain the perceived relationship include the extent of previous travel to the destination as well as perceived cultural and religious similarities between tourists and residents.

Assessing tourists' degree of emotional closeness with residents is one way to determine the extant relationship. Woosnam (2011) most recently utilized measures of emotional closeness within his *Emotional Solidarity Scale* (ESS) in assessing the perceived relationship between members of each group. A similar measure for emotional closeness, the *Inclusion of Other in the Self (IOS) Scale* was advanced as a one-item measure in the psychology literature by Aron, Aron, and Smollan (1992). Aron et al. first conceived of the 7-point Likert-scaled question as a visual portrayal of the perceived relationship between individuals, whereby each person is represented by a circle with the degree of closeness indicated by amount of overlap between said circles. To date, IOS has been used sparingly in its home discipline