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Whales vs. gulls: Assessing trade-offs in wildlife and waste management in Patagonia, Argentina

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ABSTRACT

In Península Valdés, (Patagonia) Argentina, the consequences of poor waste management and an overpopulation of kelp gulls has led to gulls feeding on living southern right whales, potentially causing losses to the tourism industry through loss in coastal quality and suboptimal right whale viewing experiences. Despite local progress in closing waste disposal sites and culling gulls, both waste and pest problems persist. While this problem could impact the long-term viability of the site as a whale watching destination and present conservation concerns, little research has been done concerning the socio-economic aspects of the problem. The present study interviewed 650 tourists about their willingness to pay to manage the gulls versus the waste in order to reduce the gull population and remove the risk to the whales. This research finds that tourists favor addressing the human-driven component of the problem, the waste, over culling the natural component of the problem, the kelp gulls. These findings present a remarkable insight to assessing trade-offs between two management strategies to a local problem associated with coastal development and tourism. The results could further be broadened to other destinations facing waste and pest management challenges in the face of growing tourism and urbanization.

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1. Introduction

Tourism worldwide is a growing component of local economies and driver of development, especially along coastlines. While tourism supports livelihoods and can incentivize conservation through better management of nature parks, it also challenges local governments unaccustomed to the pressures of high tourist volume. Consequently, tourism and accompanying urbanization are generating adverse consequences in once pristine natural areas (Davenport and Davenport, 2006; Holden, 2008). To sustainably manage development in these ecosystems, resource managers need to better understand the feedback loops between ecosystem health and tourism. Economic valuation studies, which survey residents and visitors, can provide insight about non-market values generated by indirect uses, such as recreation and aesthetics, in order to conduct cost–benefit analyses of the trade-offs in management policies. The present study implements a simple contingent valuation survey in a coastal protected area and tourism destination in Patagonia, Argentina in

order to assess trade-offs between different management and conservation strategies.

In coastal areas, tourism impacts often include littering, emissions from vehicles and boats, and increased demand for local water and food resources (Byrnes and Warnken, 2006; Holden, 2008). These threats are especially evident in popular destinations in Latin America, such as the Galapagos, Costa Rica, and Brazil. The study site, Península Valdés, is a protected UNESCO (United Nations Educational, Scientific, and Cultural Organization) World Heritage Site located in the Chubut Province of Patagonia, Argentina. The Peninsula, an area of 4000 km², features important coastal habitat for marine mammals, including Southern right whales (*Eubalaena australis*), Southern elephant seals (*Mirounga leonina*), South American sea lions (*Otaria flavescens*), and orcas (*Orcinus orca*).

Tourism began to develop in Península Valdés in the 1970s as part of a growing interest in viewing, rather than hunting, marine mammals in their natural habitats (Kuper, 2009). Prior to 1960s federal legislation, sea lions and right whale were commercially exploited (Schluter, 1999). Shortly thereafter, the Secretary of Tourism was established to oversee environmental protection and tourism development (Schluter, 1999). Research interests, including the New York Zoological Society and the National

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Patagonia Center (CENPAT), developed in the 1960s and 1970s to study the marine mammal populations. These initiatives later informed the *Avistaje patagonico*² model of whale watching, a method practiced by pioneer Argentine outfitters in Puerto Pirámides, the only town in Península Valdés. These efforts were accompanied by growing regulation of boating and fishing activities within the San Jose Gulf of Península Valdés, culminating in the 1999 designation as a World Heritage Site.

However, despite federal laws and local efforts to implement responsible tourism practices, threats to the long-term conservation of marine mammals and coastal ecosystem persist. Research demonstrates that fishery activities, tourism operations, and pollution threaten Magellanic penguins (*Spheniscus magellanicus*), other marine birds, Dusky dolphins (*Lagenorhynchus obscurus*), and Southern right whales throughout coastal Patagonia (Coscarella et al., 2003; Dans et al., 2003; Gandini et al., 2011; Sironi et al., 2011, 1998).

While fisheries may cause direct mortality of marine mammals through entanglement, pollution from tourism and population growth, in addition to discards from fishery operations, generates more ubiquitous effects on the region. Inadequate recycling and waste management facilities in cause the proliferation of open-air waste disposal sites outside of the Península Valdés protected area. These waste sites serve as a food source that supplements the kelp gull (*Larus dominicanus*) population (Fig. 1) (Lisnizer et al., 2011). This overpopulation of kelp gulls in Península Valdés region in turn has led to a growing number of gulls attacking and feeding on the living flesh of right whales, a behavior first recognized in the early 1970s (Rowntree et al., 1998; Sironi et al., 1998; Thomas, 1988). Further evidence demonstrates that gulls prefer feeding on the more vulnerable flesh of calves (Fig. 2) and tend to target mother-calf pairs of right whales (Fazio et al., 2012; Sironi et al., 1998). Although the consequences of this parasitic relationship between gulls and whales is unknown, it is but one of several factors potentially contributing to a growing mortality rate of Southern right whale calves in the Península Valdés region, which reached a 10-year high in 2013 with 113 dead calves (Fazio et al., 2012; Rowntree et al., 2013; Sironi et al., 1998).

The scientific uncertainty concerning the right whale mortality and the kelp gull-right whale relationship poses a significant challenge to local policymakers and park administration. While kelp gulls can be considered pests, they are naturally occurring species that serve ecological functions and add to the aesthetics of the coastal landscape valued by tourists. Local experimental efforts to target and kill kelp gulls specifically attacking right whales has been met with controversy and little success (interviews with local whale watching guides and residents). It seems unlikely that either complete gull population control or improved waste management will resolve the problem, and that the solution lies in implementing strategies that address both issues—the human-caused waste issue and the naturally-occurring pest problem.

It appears that the kelp gull attacks on whales potentially degrades the whale watching experience and that poor waste management could affect aesthetic qualities of this site. As a result, tourists should be considered one of the primary stakeholders in this management dilemma. This consideration led to the present study, which surveyed 656 tourists about their perceptions on environmental problems in the area and their preferences for a management plan that would address the gull population problem through (a) improved waste management, (b) direct gull culling, or (c) some unspecified strategy to reduce the attacks. The results demonstrate the controversial nature of this problem and the

strong preferences of tourists to address the human-caused issue, waste, over naturally occurring phenomena. The results provide interesting insight for other tourist destinations managing pest and waste problems associated with population and tourism growth, in which policymakers and resource managers need to assess tradeoffs between different management plans.

2. Material and methods

The present study is part of a larger study analyzing the value of recreational services and wildlife viewing at Península Valdés. Data for the study was collected via in-person surveys in Puerto Madryn, the main town outside of Península Valdés for tourist accommodations, and Puerto Pirámides, the main whale watching port. The principal author and four trained assistants conducted 656 surveys in English, Spanish, and French with tourists in Puerto Madryn and Puerto Pirámides. Each survey was five pages long and took 15 to 20 min to complete (Appendix A). Final survey design was based on feedback from resource economists and local researchers in Puerto Madryn and from a pre-test survey, which collected 100 responses in June 2014. The survey was conducted July through October 2014, at the height of the whale-watching season (June–December).

The survey was divided into five sections: (1) warm-up; (2) socio-demographic questions; (3) travel cost questions; (4) species contingent valuation; (5) management plan contingent valuation. The fifth and final section of the survey addressed the gull and whale issue through a close ended and open ended contingent valuation willingness to pay (WTP) question. Question design followed literature recommendations (Arrow et al., 1993), and its section consisted of a warm up question, brief informational section about the issue, and a description of three management plans, each with the goal of indirectly or directly managing the gull population: a general plan, Plan A to improve waste management, and Plan B to shoot “attacker gulls”. The general plan does not describe how the situation will be managed, only that funds from the park entrance fee will be directed towards some type of program to reduce the population. The study utilized five separate versions of the survey. Each survey was identical except for the initial proposed fee for the management plan. Survey versions [A, B, C, D, E] were randomly assigned the amount X in Argentine pesos (ARG \$) [55, 100, 75, 25, 15], respectively³. Each survey respondent was randomly assigned one of the five versions of the survey.

The opening dialogue of the question read:

There is evidence that kelp gulls, the most abundant bird in the area, have been attacking whales for food. Recently, government authorities in the province have decided to implement management actions to mitigate gull attacks on the whales.

If it cost \$ X to reduce the kelp gull population, would you pay this amount as an additional charge included in the entrance fee, with the sole purpose of being used to reduce the kelp gull population? [YES/NO].

After answering yes or no to the general management plan, respondents were then asked how much they would pay for Management Plan A, which would improve management of local disposal waste sites so it would no longer be a feeding site for gulls. Then, assuming this plan were not sufficient to address the problem, respondents were asked much they would pay for Management Plan B, which would reduce the gull population by shooting attacker gulls.

³ At the time of the survey, the average exchange rate from July to October 2013 was ARG \$5.62 for USD \$1.00.

² Patagonian whale watching (avistaje patagonico) is a special technique involving tractors to haul ships in and out of the beach. It also includes guidelines for captains to follow when interacting with southern right whales in order to prevent harassment or injury of the whales.

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