



Determinants of the potential demand for whale watching in Loreto Bay National Park



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ABSTRACT

Mexico's Federal Programme of Actions for the Conservation of the Blue Whale (PACE) (*Balaenoptera musculus*) prioritizes whale watching (WW) research in the Loreto Bay National Park due to the increase of this activity. The aim of this study was to investigate whether whale watchers' socioeconomic characteristics, motivations, attitudes towards whale conservation, and boat crowding influence the potential demand for WW for both first visits and the willingness to return to Loreto Bay National Park. A total of 143 structured surveys were conducted during the 2014 winter season after WW boats had returned to port. Logit econometric models in STATA were used in this analysis. The results show that the first WW experience is determined significantly by gender, nationality, whether hotel activities are a motivation for travelling, and knowledge about whales. The willingness to return depends on gender, nationality, sun and beach beauty, plans for WW before leaving home, and attitudes towards whale conservation. The results show that the reported crowding of whale mothers and calves and the willingness to accept more boats is negatively related to the willingness to return. Management recommendations are to maintain the current legislation, continue with passive observation and optimize the number of trips and tourists per boat. Differences in the demand determinants and in the type of tourists for first and repeat visitors suggest the possibility of creating different market segments. A national programme for WW that considers WW diversity and conservation initiatives would enhance sustainable wildlife tourism as part of marine policies.

1. Introduction

Many countries offer whale watching (WW), a wildlife tourism activity that generates economic benefits [1] and serves as a diversified source of income for coastal communities [2]. Around the world, the rate of WW increased an average of 11.3% annually from 1998 to 2006 which is three times the growth rate of tourism [3]. Among Latin American countries, Mexico ranks third in WW, which is growing at a rate of 5.6% and represents 14% of its nature tourism revenue [3]. Mexico began offering WW in the 1960s, and by 1998, the direct economic benefits of this enterprise had surpassed 40 million USD [4].

Loreto Bay National Park harbours 30 species of marine mammals, which represents 75% of Mexico's marine mammal species. Whales are

a major tourist attraction in Loreto, and among the whale species in Loreto Bay, the blue whale (*Balaenoptera musculus*) the largest living animal on the planet, is an ideal tourist attraction. However, the species has special protection under the Mexican endangered species norm [5] (discussed below), and the International Union for the Conservation of Nature (IUCN) considers the blue whale to be threatened [6]. The economy of Loreto is predominantly based on tourism, which increased 4.11% between 1992 and 2013 [7]. WW revenues reached approximately \$5 million US dollars (\$348,500.00 pesos) in 2009, which has prompted a remarkable increase in the number of WW permits that have been issued over the years [8].

In the literature, several studies have recorded changes in cetacean behaviour in response to WW boats [1], including changes in surfacing/

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diving and in active behaviour, swimming speed and direction [9,10]. In particular, noise disturbances can have severe effects on their behaviour, ventilation rate and communication [11]. In Mexico, both the ventilation and behaviour (direction and speed) of humpback and grey whales have been shown to be affected by boat noise [11,12]. These studies demonstrate that although there is still much to learn about human impacts on whales, boats affect whales' behaviour, and as a result, WW is controlled.

WW regulations around the world focus primarily on command and control instruments that restrict the maximum number of boats that can approach the whales as well as the travel distance and observation time [13]. The use of economic instruments such as price regulation, taxes and compensation schemes has so far been limited in WW management. Jakus and Shaw [14] argue that regulating the number of visitors to WW areas is the most acceptable option and is at least preferable to a price increase. Other voluntary and more flexible options exist, such as voluntary restricted areas for WW, codes of conduct and rest periods [15,16]. Moreover, environmental policy has generally moved away from coercion and towards more voluntary instruments [17,18], which can be implemented if tour operators agree and tourist satisfaction is maintained.

In Mexico, WW is regulated by a norm that specifies the observation techniques, distance and number of boats for each specie and region (NOM-131-SEMARNAT-2010) [19]. Other policy instruments for whale conservation are the endangered species norm (NOM-059-SEMARNAT-2010) [5], the management programmes of protected marine areas, and the National Programme for the Conservation of Endangered Species (PROCER). In 2009, the federal government initiated the Programme of Action for the Conservation of the Blue Whale (PACE) under the PROCER, and many of these recommended activities occur in Loreto Bay National Park [8].

Despite WW regulations and conservation instruments, the expansion of WW and marine vessel traffic has led to increased boat congestion in some regions of Mexico and in other areas around the world [8,13]. This boat congestion is due to insufficient law enforcement or a lack of information regarding the observation techniques by vessels that are dedicated to other activities.

Therefore, in addition to the national legislation that is specific to WW operators, it is necessary to promote voluntary agreements and codes of conduct. However, companies and vessels must be convinced regarding the social, economic and environmental benefits of these agreements and codes. Ethics, social capital, and trust, are some social aspects that can influence decisions and environmental consciousness. This paper starts from the proposition that if tourists are satisfied with their experience, they will return or recommend WW. This return or recommendation, in turn, will provide economic benefits to tour companies and can therefore be expected to drive operator behaviour. Thus, it is important to study the determinants of WW demand to identify tourist support for WW management measures and to convince operators to enforce or continue to apply good practices to ensure both a minimum impact on whales and economic revenues.

Few studies in Mexico have focused on wildlife tourism demand determinants and whether to promote tourism or to develop more effective management strategies and regulations. The attributes of a destination, in addition to tourists' socioeconomic characteristics, previous experience, motivations and satisfaction (including congestion), are relevant factors to consider [20]. However, these factors can vary depending on whether the tourist is a first-time or repeat whale watcher. For example, a tourist who has seen blue whales in Loreto many times may have a different level of sensitivity to crowding compared with someone who has yet to see a whale in person.

Therefore, this article investigates whether whale watchers' socioeconomic characteristics, motivations, and attitudes towards whale conservation, as well as boat crowding, influence WW demand in Loreto Bay National Park. Demand is modelled in terms of first visits and willingness to return, and these models attempts to provide WW

management recommendations. Accordingly, the conceptual foundation is described first, followed by the study site and the models. Finally, this paper presents the results of the models, the discussion and conclusions.

2. Conceptual foundation

The determinants of wildlife tourism have been widely studied. Reynolds and Braithwaite [21] note that successful wildlife tourism is based on tangible (infrastructure, services, and comfort) and intangible factors among which the destination's attributes and the tourist's socioeconomic characteristics, specialization, motivations and satisfaction are the most important [21–23]. The socioeconomic characteristics that have been widely studied include education, age, gender and income. The specialization literature is vast, and different typologies for wildlife tourists exist, from simple classifications such as casual compared with serious [24] or hard- compared with soft-core [25] to a more extended classification that includes naturalistic, moralistic, scientific, aesthetic, and utilitarian motivations. Eubanks et al. [24] propose three types of wildlife tourists, namely, committed, active and casual viewers. A committed tourist looks for contact with nature, has a specific interest in certain species, has previous experience, and generally plans activities before leaving home. An active tourist has the same characteristics but is also interested in other complementary activities, and a casual tourist is a person who does not plan wildlife viewing but still engages in it occasionally. In other wildlife activities, such as birdwatching, typologies such as being casual, committed and active are based on variables that are related to motivations, birding skills, past experience (frequency), expenses and commitment [26–28]. Therefore, in this study, whether tourists planned their WW excursions, as well as their motivations, previous experience, and knowledge of whales are analysed as proxies for casual or specialized whale watchers. Additionally, in this study, crowding is used as part of the destination attributes and tourist satisfaction. The number of encounters determines if a tourist had a good experience while wildlife watching. This satisfaction can be used to define the maximum capacity of arrivals at a location. Therefore, crowding is an indicator of tourism satisfaction and social carrying capacity, which are relevant variables when assessing wildlife tourism demand.

Crowding is a widely used approach to assess satisfaction in leisure studies, especially regarding terrestrial environments and more recently, in marine and coastal environments [29]. Congestion from both tourists and boats has been observed in different coastal activities, including WW, scuba diving and swimming with dolphins or whale sharks [13,29–31]. Methods that examine the minimum acceptable conditions have used crowding, such as the Limits of Acceptable Change [32], Visitor Impact Management (VIM), the Tourism Optimization Management Model (TOMM), and Visitor Experience and Resource Protection (VERP) [13].

The concept of crowding is divided mostly into reported, perceived and norm crowding [32,33]. Reported encounters are the number of visitors that an individual remembers seeing during a trip; in this particular case, it is the number of boats. Perceived crowding is a negative and subjective evaluation of these encounters, that is, whether tourists consider the number of boats to have been excessive. Finally, norm crowding is the number of encounters that a respondent would be willing to accept [30,32–34]. In this study, norm crowding is the willingness to accept changes in the number of boats that would make someone willing to return to Loreto for WW. Additionally, because a WW experience depends not only on the number of boats but also on the boats' distance and speed, these variables were included in each crowding category.

A link between the three forms of crowding has been reported in the literature that shows that when tourists reported fewer encounters than their norm, they did not report feeling crowded [29]. In the Azores, Bentz, et al. [29] showed that perceived crowding is not correlated to a

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