

Contents lists available at [SciVerse ScienceDirect](http://www.sciencedirect.com)

Tourism Management

journal homepage: www.elsevier.com/locate/tourman

But are tourists satisfied? Importance-performance analysis of the whale shark tourism industry on Isla Holbox, Mexico

Jackie Ziegler*, Philip Dearden, Rick Rollins

Marine Protected Area Research Group, Department of Geography, University of Victoria, PO Box 3060 STN CSC, Victoria, BC V8W 3R4, Canada

ARTICLE INFO

Article history:

Received 19 November 2010

Accepted 1 August 2011

Keywords:

Sustainability

Marine wildlife tourism

Importance-performance analysis

Whale sharks

ABSTRACT

The objective of this paper is to understand the motivations and satisfactions of whale shark tour participants on Isla Holbox, Mexico in order to assess the success of this industry in meeting customer expectations. Whale shark tour participants were provided with a list of environmental and setting features and asked to rate the importance of, and satisfaction with, each feature. Importance-performance (IP) analysis was used to compare these scores and identify areas of management concern. The IP analysis identified key issues with false advertising, lack of educational information, perceived crowding, and tour cost. These factors are representative of larger issues related to the uncontrolled growth of the whale shark tourism industry on Holbox. Management should focus on limiting the growth of the industry, ensuring the equitable distribution of economic benefits within the industry, and developing and implementing effective guide training and interpretation programs.

© 2011 Elsevier Ltd. All rights reserved.

1. Introduction

Marine wildlife tourism has grown rapidly in the last twenty years, raising concerns over the sustainability of this sector. Increasing public interest in using the marine environment for leisure as well as for food has led marine wildlife tourism to have one of the highest growth rates in the tourism industry (Cater & Cater, 2007). By the mid-2000's, shark tourism had experienced strong growth with over 500,000 divers (Topelko & Dearden, 2005) visiting more than 300 dive sites in 40 countries (Carwardine & Watterson, 2002). Wildlife tourism is viewed as a means of transitioning local economies from unsustainable consumptive uses of marine resources to more sustainable non-consumptive ones (Graham, 2004; Troëng & Drews, 2008). However, concerns have been raised over the level of impacts these wildlife tourism opportunities have on the target species, with some researchers suggesting that wildlife tourism is simply another form of harmful exploitation of the marine resource (Orams, 1999).

Many shark populations are already facing high levels of stress due to the increased value of shark fins leading to higher catches in commercial fisheries, as well as problems with by-catch (i.e. capture of non-target species in fishing gear) issues, with approximately 20–70 million sharks killed every year (Clarke et al., 2006). An

analysis of the 2008 World Conservation Union's (IUCN) Red List of Threatened Species (Vié, Hilton-Taylor, & Stuart, 2009) revealed that of the 1045 sharks and relatives (i.e. rays and chimaeras) assessed, 20% were classified as threatened (i.e. critically endangered, endangered or vulnerable), a further 10% were near threatened and 50% were data deficient. These assessments highlight the need for shark tourism management to design and implement a range of interventions that emphasize conservation over economic returns.

Whale sharks are among those species classified as threatened on the IUCN Red List (Norman, 2005). There is also a growing tourism industry focused on interacting with whale sharks at many sites around the world (Dearden, Topelko, & Ziegler, 2008). This confluence of species vulnerability and increased tourism volume could be an indicator of an ecological and economic problem for whale shark tourism. Duffus and Dearden (1990) suggest that in the event of uncontrolled growth of a wildlife tourism site, the site may collapse due to two factors: the disappearance of the targeted species as a result of excessive environmental impacts, and reduced visitation as a result of poor visitor experience. The dual mandate of wildlife tourism managers to minimize negative impacts on the target species while also providing an enjoyable tourism experience requires a clear understanding of both the human and biological dimensions of the activity (Duffus & Dearden, 1990).

Research on whale sharks has focused on their biology and ecology (e.g. Colman, 1997; Stevens, 2007). There is growing interest in social research because of the socio-economic impacts of whale shark tourism on local communities (Catlin, Jones, Norman, & Wood, 2009; Rodriguez-Dowdell, Enriquez-Andrade, & Cardenas-Torres,

* Corresponding author. Department of Geography, Texas A&M University, Eller O&M Building, Room 810, College Station, TX 77843-3147, USA. Tel.: +1 979 599 3453; fax: +1 979 862 4487.

E-mail address: jackie.ziegler@gmail.com (J. Ziegler).

2007; Rowat & Engelhardt, 2007). However, studies examining the tourism experience itself (e.g. tourist expectation, needs and satisfaction) have been largely neglected for whale shark tourism.

Understanding the social dimensions of wildlife tourism activities is essential for the effective management of these activities. Previous research has identified factors that affect the visitor experience within marine tourism, including perceived crowding (Breen & Breen, 2008; Lankford, Inui, & Whittle, 2008), environmental impacts (Curtin, Richards, & Westcott, 2009; Uyarra, Watkinson, & Coté, 2009), and marketing approach (Semeniuk, Haider, Beardmore, & Rothley, 2009). Understanding the needs and expectations of people who are investing time and money in participating in marine tourism activities can provide valuable insight for management planning and decision-making.

This paper focuses on the human dimensions of the whale shark watching experience on Isla Holbox, Mexico. In particular, it seeks to understand the motivations and satisfaction of the whale shark tour participants in order to assess the industry's success in meeting customer expectations of environmental and setting features. The theoretical underpinnings of this research will be discussed in the following section.

2. Theoretical overview

Wildlife tourism managers have a dual mandate of providing satisfying visitor experiences, while also ensuring these experiences do not significantly alter the natural environment (Duffus & Dearden, 1990; Needham & Rollins, 2008). Visitors may be dissatisfied with experiences available at a particular site due to such issues as crowding, available facilities and services and environmental impacts (Needham & Rollins, 2008). Mannell's (1999) behavioural model of outdoor recreation seeks to understand the interrelationship of visitor motivation, experience, and satisfaction with respect to a particular nature-based tourism activity. This model postulates that people participate in a specific activity within a specific setting in order to meet various sociological needs. Whether or not these needs are met depends on the environmental and social features of the site. If the experiences do meet expectations, then the person will be satisfied and the feedback loop would result in the person seeking out similar experiences in the future. However, if experiences do not meet expectations, this could result in dissatisfaction and a lower chance of selecting this activity in the future. Consequently, understanding visitor motivations for participating in a given activity and assessing how well the activity meets those needs is critical for the successful management of a wildlife tourism site.

Motivations are the basis for behaviour and critical in explaining why people behave the way they do. Motivation within tourism research seeks to explain why people travel, and is a key component and driving force behind tourist behaviour (Crompton, 1979; Hsu & Huang, 2007). A predominant paradigm for understanding motivation in tourism research is push-pull theory (Dann, 1977, 1981; Hsu & Lam, 2003; Prayag & Ryan, 2010; Yoon & Uysal, 2005). According to Crompton and McKay (1997), "tourism motivation is conceptualized as a dynamic process of internal psychological factors (needs and wants) that generate a state of tension or disequilibrium within individuals" (p.427). This state of imbalance drives tourists to choose a particular travel destination or activity, while also being pulled or attracted by that destination's attributes (Dann, 1981). Push factors are mostly intrinsic, emotional factors and can include a desire to escape, excitement, adventure, to be with friends/family or rest and relaxation, while pull factors are mostly extrinsic site or activity specific and include recreational opportunities, cost, safety, natural scenery, cultural attractions, facilities and infrastructure (McGehee, Loker-Murphy, & Uysal,

1996; Uysal & Jurowski, 1994). Typically, push factors are considered to precede pull factors in terms of initiating travel desire (Bello & Etzel, 1985). Pull factors are more important in understanding destination choice (Bello & Etzel, 1985). However, in tourism destination management, it is important to understand not only the needs and wants of tourists, but also tourist satisfaction (Yoon & Uysal, 2005).

Satisfaction is the ability of a given tourist destination or activity to meet the needs and expectations of the tourists and is an important prerequisite to assessing the performance of a particular site or activity (Noe & Uysal, 1997; Schofield, 2000). Satisfaction is the primary method used to measure the quality of a visitor's experience (Tonge & Moore, 2007). If the visitor's experience is understood, managers can provide services and infrastructure that meet visitor expectations, as well as confirm that visitors are satisfied with the experiences provided (Hornback & Eagles, 1999).

3. Study site

Isla Holbox is a small island on the northeastern tip of the Yucatan Peninsula in Mexico (Fig. 1). Whale sharks congregate in the plankton rich waters where the Gulf of Mexico and Caribbean Sea meet from May to September every year (Remolina-Suarez et al., 2005). Holbox was predominantly a fishing village until 2002 when the locals discovered the tourism potential of the local aggregation of whale sharks. Holbox is thought to have one of the largest and fastest developing whale shark watching industries in the world (Dearden et al., 2008), with over 17,000 participants in 2008 (de la Parra, 2008). Thus, Holbox is an important study site for examining the industry's sustainability.

Projections of the whale shark industry on Holbox suggest there will continue to be an expected growth of 25% per year with an estimated 40,000 visitors in 2011 (Zenteno, 2007), up from 1500 in 2002 (de la Parra, 2008). The close proximity of Holbox to tourism destinations like Cancun and Playa del Carmen, which have millions of visitors every year, has the potential to further raise tourism numbers to unsustainable levels. Understanding the tourist market, motivations and satisfactions could help guide the industry into a more sustainable mode for the future.

4. Methodology

The methods used included the site-based distribution of a questionnaire to whale tour participants on Isla Holbox, Mexico, and in-water observation of whale shark–tourist interactions by the researcher. The questionnaire consisted of fifty-six mainly closed-ended questions, organized in four sections, addressing various aspects of the whale shark tour experience, including motivations and satisfactions, the shark diving experience, social and environmental impacts and demographics. These questions were developed through a literature review and refined following a pilot study on Holbox in June 2008. The pilot study used identical methods as formal data collection and targeted the same population. These questionnaires were included in the analysis. Questionnaires were printed on 8.5" × 14" white paper and folded to produce ten-page booklets (Salant & Dillman, 1994). Portions of the questionnaire relevant to this paper are described below.

Questionnaires included closed-ended questions regarding the importance of, and satisfaction with, a list of motivations for participating in the whale shark tour on Holbox (eleven items), environmental and setting features (ten items) and service quality (six items). Surveys were provided in Spanish and English.

Questionnaires were distributed to whale shark tour participants on Isla Holbox over a ten-week period from June to August 2008, which represents the whale shark season. Tourists were



Fig. 1. Map of the study site.

selected opportunistically as they descended from the boats upon return from the whale shark tours. Questionnaires were also distributed to hotels and travel agencies on Holbox that offered whale shark tours to distribute to their clients.

A total of 397 surveys were collected over the three-month period, resulting in a 5.0% margin of error based on a population size of 16,900 (Salant & Dillman, 1994). Approximately 90% of those participants approached completed a questionnaire. The main reasons for not completing a survey included a member of the group/couple had already completed one, language barriers, and lack of interest and/or time. The response rate for surveys collected through hotels and agencies is unknown. However, the latter group made up only a small fraction of the overall sample size (approximately 10%) due to the low numbers of surveys distributed in this manner and thus would not likely significantly affect non-response bias. The literature suggests a response rate of 60% can be considered sufficient in accurately representing the population being sampled (Dolsen & Machlis, 1991), while 70% is considered very good (Babbie, 2007). Thus, the 90% response rate provides an adequate representation of the whale shark tour participants on Holbox.

4.1. Importance-performance analysis

The mean importance and satisfaction scores were calculated for each of the environmental and setting features, as well as tour services. However, looking at satisfaction and importance values separately is ineffective in assessing a particular tourism site's success in meeting participant needs and achieving business sustainability. This approach is unable to account for differences in importance and satisfaction for particular site features. For example, examining satisfaction values alone would suggest that those site features with lower satisfaction values require management intervention. However,

when satisfaction scores are compared to the corresponding importance scores, satisfaction may be rated higher than importance suggesting that participants are in fact satisfied with the features.

Importance-performance (IP) analysis is one approach to facilitate this comparison. IP analysis is a simple graphical approach that is designed to compare the mean score for 'perceived importance' of various tour features with the corresponding 'satisfaction rating' using a two-dimensional grid. This grid classifies mean scores into four categories to aid in data interpretation and assessing management priorities: 'keep up the good work', 'concentrate here', 'low priority' and 'possible overkill', allowing management to identify the areas of highest concern that warrant the use of limited funds. One problem arising with this approach is the placement of the crosshairs used to divide the grid into quadrants. Martilla and James (1977), who pioneered this technique, highlighted the fact that IP analysis works with relative rather than absolute measures of importance and therefore the placement of crosshairs in relationship to motivation and satisfaction means is subjective. There are several cross-hair measures that have been used, including actual means, scale means and statistical means (Oh, 2001; Tonge & Moore, 2007). A further option is to place the crosshairs at a point that denotes high importance and satisfaction along the chosen scale underlying the stringent quality of the assessment made (Randall & Rollins, 2009; Wade & Eagles, 2003).

Alternatively, some researchers suggest that a diagonal line or iso-rating line model, which separates the graph into two areas, is a more appropriate means of assessing the high priority features requiring immediate management attention (e.g. Abalo, Varela, & Manzano, 2007; Bacon, 2003; Dearden & Harron, 1994; Hawes & Rao, 1985; Sampson & Showalter, 1999; Slack, 1994). The 45° line represents points where the satisfaction and importance ratings are equal. Items below the line have higher satisfaction scores than

importance scores and generally indicate a sustainable industry. Conversely, items above the line show where management attention should be concentrated as satisfaction levels are lower than importance levels. An item's distance from the iso-rating line reflects the size of the discrepancy between the importance and satisfaction ratings (the 'importance-performance error'; Sethna, 1982); the greater the distance above the iso-rating line, the greater the need for management intervention (Abalo et al., 2007). The iso-rating line approach appears to be a more sensitive method of identifying areas of concern because it focuses on differences in satisfaction and importance ratings, rather than subjective category selection. The emphasis on differences in mean scores is important considering the potential for individual evaluation of a given set of attributes to inflate importance ratings (Oh, 2001). An IP analysis was performed using the importance and satisfaction mean scores and the iso-rating line method.

5. Results

5.1. Motivations for participating in the whale shark tour on Holbox

Respondents were asked to rate the importance of a given set of motivations for participating in the whale shark tour on a five-point Likert scale with scores of 1 corresponding to 'not at all important', 2 to 'unimportant', 3 to 'neutral', 4 to 'important', and a score of 5 to 'very important'. For the purpose of analysis, a score of 4 or 5 was considered important, thus removing individuals who scored a given feature as neutral or unimportant. Fig. 2 shows the rank importance of various tour motivations based on the percentage of respondents who scored a feature as important (score of 4 or 5). The top three reasons to participate in the whale shark tour were:

- interest in whale sharks (84.2%),
- to expand knowledge (83.5%), and
- to explore new environments (83.4%),

while the bottom three reasons were:

- interest in underwater photography (37.6%),
- to be with friends/family (36.1%), and
- to develop skills and abilities (32.8%).

5.2. Environmental and setting motivations

Participants were asked to score specific environmental and setting features, as well as tour services using Likert scales, as

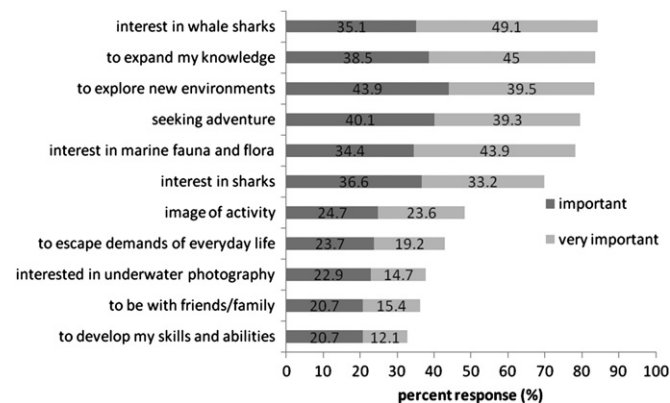


Fig. 2. Importance of social/psychological motivations for participating in whale shark tours on Holbox.

above. Fig. 3 illustrates the range of responses of 'important' and 'very important' to a list of environmental and setting features as potential motivations for participating in the whale shark tour.

All motivations were at least moderately important (score of 4 or 5), with a minimum 60% response rate. The most important motivations were:

- proximity to whale sharks (93.1%),
- commitment to the environment by the boat crew (88.9%),
- quality of marine transportation services (88.1%),
- information provided by the boat crew (87.6%), and
- good underwater visibility (87.4%).

The least important motivations were:

- easy snorkelling conditions (68.4%),
- variety of marine life (67.4%),
- abundance of large fish (61.6%), and
- abundance of marine life (61.3%).

Participants were also asked to name their top two most important environmental features from the provided list. The resulting five most important environmental features were, in descending order, proximity to whale sharks, number of whale sharks seen, good underwater visibility, number of boats, and number of other snorkelers. This order corresponds with the order of the five most important environmental features based on mean scores (although good underwater visibility and number of whale sharks was switched), confirming the validity of these results.

Respondents were asked to rate their satisfaction with the environmental and setting features and tour services on a five-point Likert scale with a score of 1 corresponding to 'very unsatisfied', 2 to 'unsatisfied', 3 to 'neutral', 4 to 'somewhat satisfied', and a score of 5 to 'very satisfied'. Fig. 4 shows the results of this analysis in terms of the percentage of respondents who rated the given motivation as 'somewhat satisfied' and 'very satisfied' (a score of 4 or 5). Overall, respondents were very satisfied with the tourism industry on Holbox with nearly all of the respondents stating that they would recommend the tour (94.7%). Looking at satisfaction for both the environmental features and tour services, the majority of respondents indicated they were satisfied with conditions

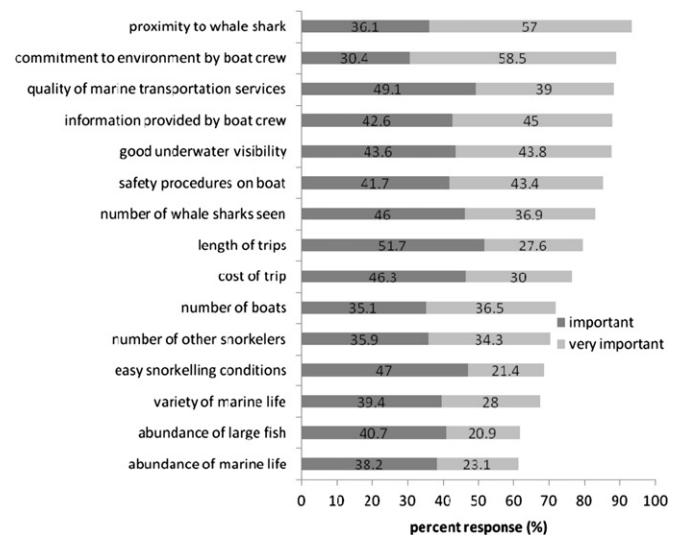


Fig. 3. Importance of destination/services motivations for participating in whale shark tourism on Holbox.

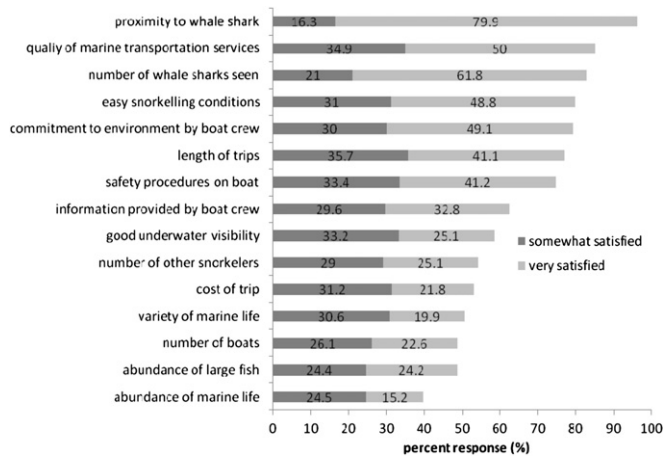


Fig. 4. Satisfaction scores for environmental and tour features of the whale shark tourism industry on Holbox.

encountered on Holbox (86.6%). However, there were a number of participants (10.6%) who were dissatisfied with the overall experience.

As shown in Fig. 4, most participants were very satisfied with:

- the proximity to whale sharks (96.2%),
- the quality of marine transportation services (84.9%), and
- the number of whale sharks encountered (82.8%).

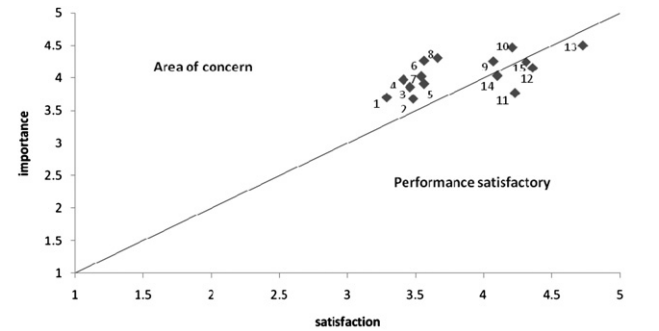
However, a significant proportion of tour participants were dissatisfied with:

- the number of boats (23.4%),
- underwater visibility (22.9%),
- the variety of marine life (20.2%),
- abundance of marine life (19.5%),
- the number of other snorkelers (18.8%), and
- the abundance of large fish (18.1%).

To gain a better understanding of what factors detracted from the whale shark interaction experience and to focus management attention, an IP analysis was performed using the importance and satisfaction mean scores and the iso-rating line method. Results suggest that respondents were satisfied with the snorkelling conditions encountered on Holbox, as well as the number of whale sharks observed and their proximity to the sharks. Respondents scored environmental and setting features with a mean score of 4.62 (possible mean score range: 1.00–5.00), with just 8.2% of respondents stating they were dissatisfied with conditions on Holbox, when asked to rate their overall satisfaction with these features. The results of the IP analysis of the detailed list of environmental features are illustrated in Fig. 5.

The IP analysis identified ten environmental and tour features of management concern. The environmental features highlighted in declining order of importance were good underwater visibility, variety of marine life, and abundance of marine life and large fish. The features related to crowding were the number of boats and snorkelers encountered in the whale shark viewing area.

In a separate question, participants were asked to rate their overall satisfaction with tour services. The tour services on Holbox received a mean score of 4.09 (possible mean score range: 1.00–5.00), with the majority of respondents (82.3%) indicating they were satisfied with services available on Holbox. However, the IP analysis identified four tour features that needed management



	Importance		Satisfaction		Gap value (I-P)	p
	mean	sd	mean	sd		
Area of Concern (importance > satisfaction)						
Environmental and setting features						
1. abundance of marine life	3.29	1.075	3.29	1.075	0.41	0.000*
2. abundance of large fish	3.48	1.163	3.48	1.163	0.19	0.008*
3. variety of marine life	3.86	0.948	3.46	1.109	0.42	0.000*
4. number of boats	3.41	1.203	3.41	1.203	0.60	0.000*
5. number of snorkelers	3.56	1.147	3.56	1.147	0.36	0.000*
6. good underwater visibility	4.27	0.809	3.56	1.180	0.73	0.000*
Tour services						
7. cost of trip	4.02	0.813	3.54	1.072	0.51	0.000*
8. information provided by the boat crew	4.31	0.722	3.66	1.264	0.64	0.000*
9. safety procedures on boat	4.26	0.768	4.07	0.976	0.19	0.002*
10. commitment to the environment by the boat crew	4.47	0.697	4.21	0.940	0.25	0.000*
Performance satisfactory (satisfaction > importance)						
Environmental and setting features						
11. easy snorkelling conditions	3.77	0.957	4.23	0.914	-0.45	0.000*
12. number of whale sharks encountered	4.16	0.788	4.36	0.982	-0.17	0.000*
13. proximity to whale sharks	4.50	0.632	4.73	0.630	-0.22	0.000*
Tour services						
14. length of trips	4.03	0.779	4.10	0.958	-0.09	0.155
15. quality of marine transportation services	4.25	0.706	4.31	0.842	-0.06	0.261
* significantly different at $\alpha=0.05$, based on a paired samples t-test						
sd = standard deviation						

* significantly different at $\alpha=0.05$, based on a paired samples t-test
sd = standard deviation

Fig. 5. Importance-satisfaction analysis and gap analysis of environmental and tour features.

attention: commitment to the environment of the boat crew, information provided by the boat crew, safety procedures on board, and the cost of the trip (Fig. 5). Despite being ranked as the second most important aspect of the tour service, the information provided by the captain and guide left a significant number of participants (22.4%) dissatisfied with what was available on Holbox. The cost of the whale shark tour received the lowest satisfaction rating (53.0%) with nearly a fifth of respondents dissatisfied (17.8%). Commitment to the environment and safety procedures on board received high satisfaction ratings, with only 5.3% and 7.8% of respondents unhappy with the services offered on Holbox, respectively. However, when the mean satisfaction and importance scores for each feature are compared in the IP analysis, mean importance is greater than mean satisfaction scores suggesting that it remains an area of improvement for management.

A gap analysis was performed to identify features with significantly different mean importance and satisfaction scores using paired t-tests. This method involves the subtraction of satisfaction mean scores from importance mean scores. The outcome represents the size and direction of the relationship between these two measures. A positive value represents a tour feature in which visitor expectations were not met, with dissatisfaction increasing with increasing size of the discordance between the two values. Negative values represent features that were found to be satisfactory. All features were significantly different ($p = 0.05$), with the exception of length of trips and quality of marine transport.

Caution must be exercised in the interpretation of results of the IP analysis in which mean scores are used, as these values do not reflect the variability present in the sample (Randall & Rollins, 2009). For example looking at item 1 (abundance of marine life) above, the mean importance score is 3.29 with a standard deviation

of 1.075. Therefore, 68% of mean scores for this feature are between 2.29 and 4.29, which would shift many people further away from the iso-rating line (i.e. worse performance) or below the iso-rating line (i.e. satisfactory), depending on the corresponding variability in response rates for the satisfaction score for this item. Consequently, IP analysis is simply one means of identifying areas for management attention and these outcomes may not reflect the views of all participants.

6. Discussion

Understanding tourist needs and expectations can help inform management interventions and improve the quality of services offered at a particular tourism destination. The results of the IP analysis for the whale shark tourism industry on Holbox identified several areas of relative concern with respect to environmental and setting attributes, crowding and tour services. Each will be discussed in turn followed by potential management approaches, including addressing issues with false advertising, implementing a license cap and developing a better guide training program.

6.1. False advertising

Results of the IP analysis identified underwater visibility as the feature with the greatest discrepancy between importance and satisfaction, and therefore of greatest concern to management. Although underwater visibility is not a factor that management can control, the dissatisfaction experienced on Holbox is at least partially because of the use of false advertising within the industry. Hotels, dive shops and tour operators use images from Southeast Asia and Australia (where water clarity is generally much higher) to sell the whale shark tour on Holbox. In comparison, the waters off Holbox have much lower visibility (at times less than 1 m) due to very high concentrations of plankton. Understandably, tourists are unhappy with site conditions when they have been sold a tour based on images of deep blue seas with excellent visibility.

Several tour agencies also make promises regarding the availability and frequency of encounters with other marine life (e.g. manta rays, turtles, dolphins, golden rays, eagle rays, flying fish) to make the tour more appealing to tourists. However, there is only a guarantee of seeing whale sharks on any given day. Thus, many tourists are enticed to go on these tours with unrealistic expectations regarding the species diversity of the area resulting in reduced satisfaction with the environmental features of the tour (e.g. abundance of large fish and marine life, variety of marine life). Problems could be avoided by ensuring that advertisements for the Holbox industry use accurate information and do not promise features or services that cannot be delivered.

6.2. Educational information

Following the issues related to underwater visibility, the IP analysis identified the information provided by the boat crew as the next feature of most importance to managers. This feature is related to the educational information available on the tour. Not only was it identified as an area of concern for management, but expansion of knowledge also was rated the second most important social/psychological motivation for participating in the whale shark tour on Holbox (83.5%).

Some of the larger operators and hotels acting as third party booking agents do provide an informational DVD during the morning briefing, but it is not required viewing. The DVD is provided in English, French, Spanish and Italian and covers safety procedures on board, as well as an overview of whale shark biology and ecology. However, the briefing typically consists of detailing

which tourists will be going to which boat while the DVD is playing in the background. The outcome is that the important information regarding safety procedures on board and whale shark ecology and conservation is not conveyed to the tourists.

Regardless of whether or not briefings are provided prior to embarkation, guides are required to provide a pre-encounter briefing for their customers. Most guides do explain the interaction rules to the tourists prior to arriving in the whale shark viewing area. However, many guides do not provide any further information (e.g. biology/ecology, research, threats), despite the fact they received this information during their mandatory certification process. The lack of communication is partially due to language and cultural barriers. The majority of those involved in the industry were, or currently are, local fishermen with a low degree of schooling (Zenteno, 2007) who are uncomfortable and/or unable to deliver the information in a second language.

The lack of information provided to whale shark watching participants affects the conservation potential of this industry. Whale sharks are emerging as a flagship species for the shark conservation campaign. However tourists visiting Holbox do not receive any significant information regarding whale shark biology and ecology nor the threats they, along with other sharks, currently face beyond what is shown in the pre-interaction DVD (which they may or may not have seen). This type of environmental information is critical in instilling a conservation ethic in tourists (e.g. Ballantyne, Packer, & Hughes, 2009; Ballantyne, Packer, & Sutherland, 2011; Zeppel & Muloin, 2008). For example, Powell and Ham (2008) found that a well-designed interpretation program had a significant impact on pro-environmental attitudes of visitors (awareness of area, support of management interventions), as well as longer-term intentions to support and participate in conservation efforts.

6.3. Perceived crowding

Another important area of concern identified in the IP analysis is the number of boats encountered in the whale shark viewing area. The problem with boat numbers is a direct result of the uncontrolled growth of the industry. Visitation has increased from 1500 participants in 2002 to over 17,000 in 2008 (de la Parra, 2008). The Mexican government's reluctance to control the growth of the whale shark watching industry on Holbox suggests a government philosophy of maximizing numbers in order to maximize economic returns for local industry. This approach, while successful in the short term, has led to a large increase in the number of operators entering the industry. The number of boats licensed to operate has gone up from 42 in 2003 to 250 during the 2010 season, despite discussion and initial planning for a license cap of 140 during the 2008 season.

The lack of government limits has created a high concentration of tour operators within the whale shark viewing area enhancing the potential for conflict amongst operators as well as increasing perceived crowding for the participants. Catlin and Jones (2010) determined that while crowding related to number of swimmers was on the decline for the whale shark tourism industry at Ningaloo Marine Park, Western Australia, crowding related to the number of boats was emerging as a new concern. Bell (2010) examined perceived crowding of visitors to Molokini Shoal Marine Life Conservation District (MLCD), Hawai'i, and found that the number of boats had a significant impact on the quality of visitor experience, with two thirds of respondents feeling crowded and 80% supporting management interventions that would limit the number of boats in the area.

The large number of boats licensed to offer tours on Holbox increases the likelihood that multiple boats will have to alternate their swimmers in order to interact with a single shark. Further,

boat captains inform other boats of the location of whale sharks, thereby increasing the number of boats wanting to interact with a given shark. The 'sharing' of sharks amongst multiple boats increases the likelihood that the limit of two swimmers and guide will be disregarded. Indeed, participant feedback suggests that more than the allowed number of swimmers was interacting with a shark at least a quarter of the time, with up to ten people in the water at once. Some boat captains drop off their swimmers regardless of whether or not there are other swimmers already interacting with a shark. On one particularly poor day for whale shark sightings during the 2009 season, more than thirty boats were observed around a single shark, with up to twenty people in the water at one time (Fig. 6). Operator disregard for the allowed number of swimmers may be behind the high dissatisfaction with the number of encountered snorkelers, as 80% of respondents supported the current limit of two swimmers and guide. The high levels of support for the current swimmer limit also suggest that a means of solving potential issues with swimmer crowding is to enforce the existing encounter rules.

The whale shark encounter guidelines on Holbox specifically state that the number of boats allowed within the viewing area should be limited; however, the guidelines do not stipulate an acceptable number (CONANP, 2008). In contrast, the code of conduct for the whale shark tourism industry in Donsol, Philippines does specify that only 30 boats are allowed at one time in the whale shark viewing area and that each tour will last a maximum of 3 h (Municipal Executive Order No. 23, 2009). Similarly, the whale shark tourism industry in Placencia, Belize has placed a cap on the number of boats allowed within the whale shark viewing zone per 1.5 h time slot (four boats per time slot, twenty-four boats per day; Carne, 2008) to restrict the number of boats (and tourists) entering the viewing area per day (Cohun, 2005). These examples suggest that the number of boats allowed within the whale shark viewing area is an important factor for the responsible management of the industry and one that is completely disregarded by the industry on Holbox.

6.4. Cost

A final area of concern identified in the IP analysis is that of tour cost. The lack of commitment in controlling the growth of the whale shark watching industry on Holbox has led to a mismatch of the supply and demand. At present, boat capacity outnumbers the number of people wanting to participate in the whale shark tour.



Fig. 6. Image of multiple boats interacting with a single whale shark off Isla Holbox, August 2009.

Consequently, there is a high turnover rate of permit holders because the operating costs for the three-month whale shark season tend to be greater than the money generated selling the tour for many of the smaller operators (Zenteno, 2007). In other words, the smaller operators are more likely to go into debt than make a profit.

The large number of boat licenses flooding the market has also resulted in an industry that is unable to provide an equal share of the market to all its members. Three or four of the larger operators on Holbox own at least 60% of the market share, leaving approximately forty of the smaller operators fighting over the remaining 40% (Zenteno, 2007). The small operators' lack of organization, limited financial capital, schooling and business acumen make it even harder for them to break even compared to the larger operators, who tend to be entrepreneurs with other business interests (e.g. golf cart rental, mini-supermarkets, food stands) (Zenteno, 2007). As a result, many of the smaller operators are forced to lower prices in order to remain competitive, despite the fact they are already struggling to make up overhead costs (Zenteno, 2007).

Price discrepancy is a real problem for the industry on Holbox and further stratifies the operators in the industry. As demonstrated in the results of the IP analysis, the cost of the tour is an immediate area of concern that must be addressed. During the 2008 season, cost varied from US\$40 to over US\$500 depending on the operator used, as well as the starting point of the tourists (i.e. day versus on-island tourist) and transport used (i.e. van, airplane). Yet the more expensive tour prices did not necessarily correspond to a higher quality experience. The larger operators rely mainly on their ties with hotels and tour agencies, and not the quality of the services offered, to attract clients. Consequently, many of these operators are more likely to provide a mass product focused on maximizing profits by offering the bare minimum in tour services at the same or an increased cost to the tourist. For example, many of the smaller tour operators provide not only the whale shark swim, but also snorkelling at a local reef to see nurse sharks. The larger operators, dealing with many of the day tourists, do not include this experience, although the booking agencies still use it as a selling point to attract tourists. Thus, the issue of cost may not reflect a problem with the actual price of the tour, but value for money spent and further problems with false advertising.

The government response to the problem of mismatched supply and demand is to increase demand. During the Second International Whale Shark Conference held on Holbox in July of 2008, a government representative suggested that these market differences would be best resolved if the industry increased tourism numbers through the implementation of a more widespread marketing campaign (regional, national, international). According to this logic, increased tourism numbers would allow all operators the opportunity to offer tours on a daily basis, instead of only once or twice a week, a practice that the smaller operators have been forced to adopt (Zenteno, 2007). The proposed strategy does not take into account the issue of sustainability for the species, the impact of too many tour operators, nor customer satisfaction.

A better approach would be to provide an equal opportunity for all operators to offer their services to potential clients. Examples of the successful implementation of this management approach exist in both the Philippines and Belize. The whale shark industry in Donsol, Philippines has a single tourist registration point, which designates which captains and guides will be with which group of tourists by rotating through an alphabetical list of available guides and captains. On the other hand, managers of the whale shark industry in Placencia, Belize implemented a lottery system for the six daily 1.5 h time slots to ensure that all operators have an equal chance of getting access to the whale shark area and prime time slots (Graham & Bustamante, 2007).

A potential solution for the problems with equitable access on Holbox could include a combination of the above approaches. The industry on Holbox is similar to Belize in that many guides and captains work for specific operators making it difficult to assign tourists to individual captains and guides. Yet, simply implementing a lottery system for tour operators would not help equalize access to the whale shark area, as operators would still be responsible to find their own customers. Creating a single registration point for tour participants (e.g. with CONANP) would resolve this issue. Registered tourists would then be assigned a boat at random using an alphabetical list of operators (not guides/captains), thereby eliminating problems associated with larger operators (with more boats) having an increased likelihood of being selected. Regardless of method, it is clear that the managing agencies for the industry on Holbox need to address problems with the inequitable distribution of the market.

6.5. Industry growth

Results of the IP analysis highlight a problem with the uncontrolled growth of the whale shark tourism industry on Holbox. If competition is not addressed, the resulting cost cutting will ultimately affect critical safety and service standards. Other marine tourism industries, such as scuba diving, face similar problems in which over supply and fierce competition lead to an overall decline in industry standards (Dearden, Bennett, & Rollins, 2007). In an attempt to set basic safety and service standards with the whale shark watching industry on Holbox, the Mexican government established regulations that control who can provide these tours and how, including setting minimum safety and environmental requirements, such as the use of four-stroke engines and radios (Remolina-Suarez et al., 2005). The guides and captains must also undergo a certification process that covers safety, such as first aid and aquatic rescue, tourist guidance, snorkelling techniques and information regarding the biology and ecology of whale sharks (Remolina-Suarez et al., 2005).

However, the results of this study suggest the industry on Holbox is already facing issues of low satisfaction with the information provided by the boat crew, as well as concerns over safety procedures and commitment to the environment. This discrepancy between operator training, above, and tourist satisfaction could signal one of two issues: (1) tourists are unaware of the training operators must complete prior to obtaining their license due to language barriers, or (2) the operators are engaging in detrimental and/or dangerous behaviours despite the training provided. In light of budgetary constraints precluding government monitoring and enforcement on-site, it is important to increase operator compliance at a grass roots level through an improved operator training program that highlights the potential consequences of poor tourism practices (e.g. Pierce, Mendez-Jimenez, Rosero-Caicedo, & Monadjem, 2010; Quiros, 2007), as well as includes English language classes to improve communication between the operators and their clients. This training programme would make the guides and captains more likely to enforce the rules when in the whale shark viewing area, as well as share their knowledge with their customers. In turn, the increased visitor knowledge could improve the conservation potential of whale shark tourism activities (e.g. Ballantyne et al., 2009; Ballantyne, Packer, Hughes, & Dierking, 2007; Orams, 1997; Powell & Ham, 2008; Tisdell & Wilson, 2005).

6.6. Conclusions

Marine wildlife tourism is one of the fastest growing sectors in the tourism industry and shark tourism is emerging as an important niche market in this sector. The rapid growth of the shark

tourism industry coupled with the fact that a significant number of shark species are considered vulnerable to extinction underline the importance of considering the precautionary principle when developing tourism activities. Yet, there has been little interest in examining the interface of the social and biological aspects of tourism activities and its critical role in sustainable wildlife tourism management.

The results of this paper demonstrate the importance of understanding the human dimensions of wildlife tourism for the successful management of these activities. The IP analysis highlighted critical aspects of the whale shark tour that were detracting from visitor experience, including problems with false advertising, lack of educational information, perceived crowding, and tour cost. These factors are representative of larger issues related to the uncontrolled growth of the whale shark tourism industry on Holbox.

Consequently, any successful solution to the problem of effective management would have to include limiting the number of boats in the industry within more sustainable limits, as well as ensuring the equitable distribution of economic benefits within the industry. If these goals can be achieved, it would eliminate current problems with questionable business practices (e.g. competition, false advertising). Further, problems with perceived crowding would be much improved if the industry simply followed the rules at hand (i.e. limit number of boats in viewing area, two swimmers at a time, one boat per shark). Finally, management should focus on improving the guide training programme to address issues with interpretation, compliance and language barriers to further the conservation potential of whale shark tourism activities. The close proximity of Holbox to tourism destinations like Cancun and Playa del Carmen, which have millions of visitors every year (Hendricks, 2005), has the potential to further raise tourism numbers to unsustainable levels. Understanding the tourist market, motivations and satisfactions can help guide the industry into a more sustainable mode for the future.

Acknowledgements

The authors would like to thank J. Catlin, C. Reilly, E. Pacheco, B. Norman, the survey participants and the local whale shark tourism operators of Holbox for their help in the completion of this project.

Appendix. Supplementary material

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.tourman.2011.08.004.

References

- Abalo, J., Varela, J., & Manzano, V. (2007). Importance values for importance-performance analysis: a formula for spreading out values derived from preference ranking. *Journal of Business Research*, 60(2), 115–121.
- Babbie, E. (2007). *The practice of social research* (11th ed.). Belmont, CA: Wadsworth.
- Bacon, D. R. (2003). A comparison of approaches to Importance-Performance Analysis. *International Journal of Market Research*, 1(45), 55–71.
- Ballantyne, R., Packer, J., Hughes, K., & Dierking, L. (2007). Conservation learning in wildlife tourism settings: lessons from research in zoos and aquariums. *Environmental Education Research*, 13(3), 367–383.
- Ballantyne, R., Packer, J., & Hughes, K. (2009). Tourists' support for conservation messages and sustainable management practices in wildlife tourism experiences. *Tourism Management*, 30(5), 658–664.
- Ballantyne, R., Packer, J., & Sutherland, L. A. (2011). Visitors' memories of wildlife tourism: implications for the design of powerful interpretive experiences. *Tourism Management*, 32(4), 770–779.
- Bell, C. M. (2010). *Encounter norms of snorkelers and scuba divers at Molokini, Hawaii: Methodological and managerial applications*. M.Sc. thesis. Corvallis, Oregon, United States of America: Department of Forest Engineering, Resources and Management, Oregon State University.
- Bello, D. C., & Etzel, M. J. (1985). The role of novelty in the pleasure travel experience. *Journal of Travel Research*, 24(1), 20–26.

- Breen, B. B., & Breen, D. (2008). Quantifying community perceptions of marine environments for marine protected area planning: when is the reef too crowded? *Tourism in Marine Environments*, 5(2–3), 101–109.
- Carne, L. (2008). Monitoring and management of whale shark tourism at Gladden Spit and the Silk Cayes Marine Reserve, Belize. In *Friends of nature, presentation at the Second International Whale Shark Conference*. Mexico: Isla Holox, 15–20 July, 2008.
- Carwardine, M., & Watterson, K. (2002). *The shark watcher's handbook*. New Jersey: Princeton University Press.
- Cater, C., & Cater, E. (2007). *Marine ecotourism: Between the devil and the deep blue sea*. Cambridge, MA: CAB International.
- Catlin, J., & Jones, R. (2010). Whale shark tourism at Ningaloo Marine Park: a longitudinal study of wildlife tourism. *Tourism Management*, 31(3), 386–394.
- Catlin, J., Jones, T., Norman, B., & Wood, D. (2009). Consolidation in a wildlife tourism industry: the changing impact of whale shark tourist expenditure in the Ningaloo Coast region. *International Journal of Tourism Research*, 12(2), 134–148.
- Clarke, S. C., McAllister, M. K., Milner-Gulland, E. J., Kirkwood, G. P., Michielsens, C. G. J., Agnew, D. J., et al. (2006). Global estimates of shark catches using trade records from commercial markets. *Ecology Letters*, 9(10), 1115–1126.
- Cohun, K. (2005). *Managing the gladden spit marine reserve: An analysis of the whale shark dive tourism industry in Placencia, Belize*. MSc thesis. Durham, NC, USA: Nicholas School of the Environment and Earth Sciences, Duke University.
- Colman, J. G. (1997). A review of the biology and ecology of the whale shark. *Journal of Fish Biology*, 51(6), 1219–1234.
- Comisión Nacional de Áreas Naturales Protegidas (CONANP). (2008). *Reglamento: código de ética Isla Holbox, Quintana Roo*. <http://www.domino.conanp.gob.mx/regla.htm> Accessed 15.07.10.
- Crompton, J. L., & McKay, S. L. (1997). Motives of visitors attending festival events. *Annals of Tourism Research*, 24(2), 425–439.
- Crompton, J. L. (1979). An assessment of the image of Mexico as a vacation destination and the influence of geographical location upon that image. *Journal of Travel Research*, 17(4), 18–24.
- Curtin, S., Richards, S., & Westcott, S. (2009). Tourism and grey seals in south Devon: management strategies, voluntary controls and tourists' perceptions of disturbance. *Current Issues in Tourism*, 12(1), 59–81.
- Dann, G. M. S. (1977). Anomie, ego-enhancement and tourism. *Annals of Tourism Research*, 4(4), 184–194.
- Dann, G. M. S. (1981). Tourism motivations: an appraisal. *Annals of Tourism Research*, 8(2), 189–219.
- Dearden, P., & Harron, S. (1994). Alternative tourism and adaptive change: insights from Northern Thailand. *Annals of Tourism Research*, 21, 81–102.
- Dearden, P., Bennett, M., & Rollins, R. (2007). Implications for coral reef conservation of diver specialization. *Environmental Conservation*, 33(4), 353–363.
- Dearden, P., Topelko, K., & Ziegler, J. (2008). Tourist interactions with sharks. In J. Higham, & M. Lück (Eds.), *Marine Wildlife and Tourism Management* (pp. 66–90). Cambridge, MA: CAB International.
- Dolsen, D. E., & Machlis, G. E. (1991). Response rates and mail recreation survey results: how much is enough? *Journal of Leisure Research*, 23(3), 272–277.
- Duffus, D., & Dearden, P. (1990). Non-consumptive wildlife oriented recreation: a conceptual framework. *Biological Conservation*, 53(3), 213–231.
- Graham, R. T., & Bustamante, G. (2007). Whale shark tourism management: exchanging information, networking and developing guidelines for best practices in the Mesoamerican Reef Region. In *Proceedings of the Whale Shark Workshop in Placencia, Belize, September 25–27, 2006*.
- Graham, R. T. (2004). Global whale shark tourism: a "golden goose" of sustainable and lucrative income. *Shark News*, 16, 8–9.
- Hawes, J. M., & Rao, C. P. (1985). Using importance-performance analysis to develop health care marketing strategies. *Journal of Health Care Marketing*, 5(4), 19–25.
- Hendricks, J. (2005). *Turismo: los resultados de una gestión, Gobierno del Estado de Quintana Roo, México*.
- Hornback, K., & Eagles, P. F. J. (1999). *Guidelines for public use measurement and reporting at parks and protected areas* (1st ed.). Gland, Switzerland: World commission on protected areas, task force on tourism and protected areas.
- Hsu, C. H. C., & Huang, S. (2007). Travel motivations: a critical review of the concept's development. In A. Woodside, & D. Martin (Eds.), *Tourism management: Analysis, behaviour and strategy* (pp. 14–27). Cambridge, MA: CAB International.
- Hsu, C. H. C., & Lam, T. (2003). Mainland Chinese travelers' motivations and barriers of visiting Hong Kong. *International Academy of Business and Economics*, 2(1), 60–67.
- Lankford, S. V., Inui, Y., & Whittle, A. (2008). Exploring social carrying capacity based on perceived levels of crowding: a case study of Hanauma Bay, Hawaii. *Tourism in Marine Environments*, 5(1), 43–53.
- Mannell, R. C. (1999). Leisure experience and satisfaction. In E. L. Jackson, & T. L. Burton (Eds.), *Leisure studies: Prospects for the Twenty-First Century* (pp. 235–252). State College, Penn: Venture Publishing.
- Martilla, J. A., & James, J. C. (1977). Importance-performance analysis. *Journal of Marketing*, 41(1), 13–17.
- McGehee, N. G., Loker-Murphy, L., & Uysal, M. (1996). The Australian international pleasure travel market: motivations from a gendered perspective. *The Journal of Tourism Studies*, 7(1), 45–57.
- Needham, M. D., & Rollins, R. (2008). Social science, conservation, and protected areas theory. In P. Dearden, & R. Rollins (Eds.), *Parks and protected areas in Canada: Planning and management* (3rd ed.). (pp. 135–168). Don Mills, On: Oxford University Press.
- Noe, F. P., & Uysal, M. (1997). Evaluation of outdoor recreational settings. A problem of measuring user satisfaction. *Journal of Retailing and Consumer Services*, 4(4), 223–230.
- Norman, B. (2005). *Rhincodon typus*. IUCN 2011, IUCN red list of threatened species, version 2011.1. <http://www.iucnredlist.org> (2011) Accessed 15.06.11.
- Oh, H. (2001). Revisiting importance-performance analysis. *Tourism Management*, 22(6), 617–627.
- Orams, M. (1997). The effectiveness of environmental education: can we turn tourists into 'greenies'? *Progress in Tourism and Hospitality Research*, 3(4), 295–306.
- Orams, M. (1999). *Marine tourism: Development, impacts and management*. London: Routledge.
- de la Parra, R. (2008). *Proyecto Dominó: informe técnico general (2003–2008). Dominó, Proyecto del Tiburón Ballena del Atlántico Mexicano*. CONANP. October 2008.
- Pierce, S. J., Mendez-Jimenez, A., Rosero-Caicedo, M., & Monadjem, A. (2010). Developing a code of conduct for whale shark interactions in Mozambique. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 20(7), 782–788.
- Powell, R. B., & Ham, S. H. (2008). Can ecotourism interpretation really lead to pro-conservation knowledge, attitudes and behaviour? Evidence from the Galapagos Islands. *Journal of Sustainable Tourism*, 16(4), 467–489.
- Prayag, G., & Ryan, C. (2010). The relationship between the 'push' and 'pull' factors of a tourist destination: the role of nationality – an analytical qualitative research approach. *Current Issues in Tourism*, 1–23.
- Quiros, A. L. (2007). Tourist compliance to a Code of Conduct and the resulting effects on whale shark (*Rhincodon typus*) behavior in Donsol, Philippines. *Fisheries Research*, 84(1), 102–108.
- Randall, C., & Rollins, R. B. (2009). Visitor perceptions of the role of tour guides in natural areas. *Journal of Sustainable Tourism*, 17(3), 357–374.
- Remolina-Suarez, J. F., Pérez-Ramírez, J. J., González-Cano, J. M., de la Parra, R., Betancourt-Sabatini, N., Trigo-Mendoza, M., et al. (2005). Whale shark management strategies, with the participation of local stakeholders, in Yum Balam, Mexico. In *Paper presented at the First International Whale Shark Conference, Perth, Australia, May 2005*.
- Rodriguez-Dowdell, N., Enriquez-Andrade, R., & Cardenas-Torres, N. (2007). Property rights-based management: whale shark ecotourism in Bahía de los Angeles, Mexico. *Fisheries Research*, 84(1), 119–127.
- Rowat, D., & Engelhardt, U. (2007). Seychelles: a case study of community involvement in the development of whale shark ecotourism and its socio-economic impact. *Fisheries Research*, 84(1), 109–113.
- Salant, P., & Dillman, D. A. (1994). *How to conduct your own survey*. New York: John Wiley.
- Sampson, S. E., & Showalter, M. J. (1999). The performance-importance response function: observations and implications. *The Service Industries Journal*, 19(3), 1–26.
- Schofield, P. (2000). Evaluating castlefield urban heritage park from the consumer perspective: destination attribute importance, visitor perception, and satisfaction. *Tourism Analysis*, 5(2–4), 183–189.
- Semeniuk, C. A. D., Haider, W., Beardmore, B., & Rothley, K. D. (2009). A multi-attribute trade-off approach for advancing the management of marine wildlife tourism: a quantitative assessment of heterogeneous visitor preferences. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 19(2), 194–208.
- Sethna, B. N. (1982). Extensions and testing of importance-performance analysis. *Business Economics*, 20, 28–31.
- Slack, N. (1994). The importance-performance matrix as a determinant of improvement priority. *International Journal of Operation Product Management*, 15(5), 59–75.
- Stevens, J. D. (2007). Whale shark (*Rhincodon typus*) biology and ecology: a review of the primary literature. *Fisheries Research*, 84(1), 4–9.
- Tisdell, C., & Wilson, C. (2005). Perceived impacts of ecotourism on environmental learning and conservation: turtle watching as a case study. *Environment, Development and Sustainability*, 7, 291–302.
- Tonge, J., & Moore, S. A. (2007). Importance-satisfaction analysis for marine-park hinterlands: a Western Australia case study. *Tourism Management*, 28(3), 768–776.
- Topelko, K. N., & Dearden, P. (2005). The shark watching industry and its potential contribution to shark conservation. *Journal of Ecotourism*, 4(2), 108–128.
- Troeng, S., & Drews, C. (2008). *Money talks: a global economic valuation of marine turtles*. NOAA Technical Memorandum NMFS SEFSC, no. 567, pp. 57, January, 2008.
- Uyarra, M. C., Watkinson, A. R., & Coté, I. M. (2009). Managing dive tourism for sustainable use of coral reefs: validating diver perceptions of attractive site features. *Environmental Management*, 43(1), 1–16.
- Uysal, M., & Jurovski, C. (1994). Testing the push and pull factors. *Annals of Travel Research*, 21(4), 844–846.
- Vié, J. C., Hilton-Taylor, C., & Stuart, S. N. (Eds.). (2009). *Wildlife in a changing world: An analysis of the 2008 IUCN red list of threatened species*. Gland, Switzerland: IUCN.
- Wade, D. J., & Eagles, P. F. J. (2003). The use of importance-performance analysis and market segmentation for tourism management in parks and protected areas: an application to Tanzania's national parks. *Journal of Ecotourism*, 2(3), 196–212.

- Yoon, Y., & Uysal, M. (2005). An examination of the effects of motivation and satisfaction on destination loyalty: a structural model. *Tourism Management*, 26(1), 45–56.
- Zenteno, I. Y. (2007). *Análisis de alternativas económicas sostenibles en la isla de Holbox como sitio de influencia en el Arrecife Mesoamericano. Proyecto ICRAN-MAR. Modelo de negocios para determinar la viabilidad financiera de la actividad económica del Tiburón ballena en Holbox*. Prepared for WWF Central America.
- Zeppel, H., & Muloin, S. (2008). Conservation benefits of interpretation on marine wildlife tours. *Human Dimensions of Wildlife*, 13(4), 280–294.