

RESEARCH NOTE

ONBOARD MARINE ENVIRONMENTAL EDUCATION: WHALE WATCHING IN THE SAN JUAN ISLANDS, WASHINGTON

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Marine environmental education is a powerful mechanism for shaping human conduct and for enhancing quality of life. Regulation notwithstanding, sustainable tourism depends on sustainable education. Over the last several decades, whale-watching tourism has emerged as a nature-based business and leisure activity of significant proportions. Typically, whale watching brings together vessel operators and their crew, professional onboard naturalists or interpreters, and diverse categories of whale-watching clients or tourists. This compound interest in whales as (eco)touristic objects has led to campaigns for living marine resource management regimes that protect whales while optimizing the whale-watching experience. Preliminary survey research of whale-watching tourists in the San Juan Islands, Washington (USA) reveals that whale-watchers' expectations concern seeing whales and other wildlife, along with learning about the whales and the marine environment. Whale-watchers' evaluations of their experience confirm that onboard interpreters play two important and intertwined roles, helping to avoid disappointment if/when trip expectations are not met. As interpreters are successful as educators, educational and ecological objectives are achieved. As they are successful as social directors, social and business objectives are achieved. Implications of these findings will be of interest to those in the whale-watching business and other forms of onboard tourism worldwide; those who aspire to be onboard interpreters; those who are whale watchers; and indirectly, to the whales.

Key words: Environmental education; Onboard interpreters; San Juan Islands, Washington; Whale watching

Introduction

Sustainable tourism depends on sustainable education. In a whale-watching management context,

marine environmental education complements regulation as a mechanism for changing human conduct and fosters the protection of whales. Environmental education has the added virtue of facilitating intel-

lectual, ethical, and aesthetic enlightenment. With an eye toward improving the practice of marine environmental education, this research note explores the nature of the social and educational needs of tourists. The first half of the research note discusses the rise of whale watching as a demand-driven touristic activity, emphasizing the importance of the onboard interpreter; the second half discusses preliminary research on the influence of the onboard interpreter on general trip expectations and evaluations of whale-watching tourists in the San Juan Islands, Washington (USA). The premise of the study is that formal understanding of the whale-watching experience (and the social, pedagogic, business, and ecological objectives that drive these) can be useful in the training of interpreters and the improvement and delivery of onboard marine environmental education.

Whale Watching Tourism

In 1993, the International Whaling Commission formally recognized whale watching as a legitimate tourism industry that provides for the sustainable use of whales and dolphins (Orams, 2000). Many visitors enthusiastically pay to experience the deeper psychological responses to whales that whale watching can provide (Muloin, 1998). Between 1991 and 1998, participation in whale-watching tourism increased by an average of 12.1% per year worldwide, and in 1998 the total expenditures reached just over US\$1 billion worldwide, and the amount continues to rise (Hoyt, 2001, p. 3).

As the whale-watching industry grows, it becomes increasingly important to be proactive in management in order to avoid the collapse of whale populations or of the whale-watching industry. Whale watching is demand driven. Understanding the nature of this demand fosters trip satisfaction and business success, and also protects whales through changes in human conduct. For this reason, this article focuses on the interaction between two categories of actors in the Broker–Local–Tourist (BLT) model of tourism (Miller & Auyong, 1991, pp. 76–77). *Brokers*, or those people who are directly engaged in structuring or managing tourism relations, in this case onboard interpreters; and *tourists*, or those who have planned trips to achieve some combination of recreational, instrumental, and educational objectives, in this case those who

pay to go whale watching (Miller & Auyong, 1991, pp. 76–77).

Research pertaining to whale watching has concerned both impacts on whales and people. Biological and technological studies reveal, for example, that high levels of boat traffic around cetaceans can disrupt behavior and potentially create long-term harm (Au & Green, 2000; Erbe, 2002; Foote, Osborne, & Hoelzel, 2004; National Marine Fisheries Service [NMFS], 2005; Williams, Trites, & Bain, 2002). Social and educational studies have assessed whale-watching tourists' level of environmental motivation (Meadows, 2003; Parsons et al., 2003; Rawles & Parsons, 2004) and have shown that whale watching can promote awareness of marine issues and a desire to participate in conservation efforts (Duffus & Dearden, 1993; Lück, 2003; Moulin, 1998; Neil, Orams, & Baglioni, 1994; Orams, 1997; Russell & Hodson, 2002; Shackley, 1996; Würsig, 1996). However, what people value in a whale-watching trip and the ability of onboard education programs as a tool for achieving trip satisfaction is seldom studied.

Onboard Marine Environmental Education

Whale-watching management has to do with the control of human access to whales. In this regard, education has been found to be an effective tool that fosters management objectives (Lück, 2003; Neil et al., 1994; Orams, 1996, 1997; Reynolds & Braithwaite, 2001; Russell & Hodson, 2002; Shackley, 1996). Environmental education is defined as a process aimed at increasing biological and cultural knowledge, awareness of environmental problems, and creating motivation to act responsibly towards these environments (O'Hearn, 1982). Environmental education on a whale-watching vessel is *onboard marine environmental education* (OMEE).

Onboard education influences attitudes and behavior, and also contributes to a rewarding touristic experience. Tourists may not wish to harm whales, but may be quite ignorant of the (in)direct effects of their own actions (Shackley, 1996). Well-designed OMEE programs seek to regulate tourists' behaviors around whales and to promote the personal growth of tourists. Successful onboard education programs actively involve people by attempting to

create questions in the tourists' minds, making them participants instead of observers (Orams, 1995).

The Role of the Onboard Interpreter

In the whale-watching context, OMEE is the specialty of interpreters who play two idealized roles, often blending them in idiosyncratic ways. In the first role, the interpreters behave as *educators*. When the education role is performed effectively, *pedagogic objectives* are met through the enlightenment and intellectual enrichment of tourists, externalities that carry over into other aspects of the tourists' lives. A spin-off of this is that a *business objective* is also met when the boat operators reap the benefits of returning business. This occurs, for example, when whale watchers exude to their friends what they learned and this leads to potential new customers.

There is yet another critically important benefit of the educational role. When tourists decide to change their conduct as a result of what they have learned, *ecological objectives* are achieved by the protection of whales and their habitat. In a sense, this is a "win-win" situation (Forestell, 1990, p. 35) for whales and people.

In the second role, interpreters meet *social objectives* by functioning as *social directors*. In this role, interpreters choreograph onboard activities, satisfy basic needs, and make the tourists safe and comfortable. Business objectives are also met through the achievement of social objectives. For this reason, interpreter training in visitor relations and hospitality management is as relevant as professional training in biology and marine affairs. However, when the interpreter behaves only as a social director, there is no apparent benefit to the whales and the marine environment.

Whale Watching in the San Juan Islands, Washington

This section presents a preliminary study of whale-watching tourists, assessing the influence of the onboard interpreter on trip evaluations (Andersen, 2004). The study took place in the San Juan Islands, a string of islands near the border of the US and Canada, between Washington State and British Columbia. The target species in the San Juan Islands whale-watching industry are Orcas (*Orcinus*

orca), or killer whales, specifically the southern resident population. Controversy surrounding whale watching in the San Juan Islands has increased since the early 1990s because of declining numbers of the southern resident Orca population. Several studies have linked whale watching to short-term behavioral changes in southern residents (Foote et al., 2004; Williams, Bain, Ford, & Trites, 2002; Williams, Trites, et al., 2002). Annual maximum counts of commercial whale-watching boats near whales from 1998 to 2003 was 35, with an additional 37–85 private boats (Koski, 2004). Obviously, in addition to commercial whale-watching vessels, private boats also present a large management challenge, one that is outside the focus of this study.

The number of southern resident Orcas decreased approximately 20% between 1997 and 2002 (Varanasi, DeMaster, & Tillman, 2002, p. viii). The 2003 population census counted 83 individuals (National Oceanic and Atmospheric Administration [NOAA], 2004). On November 18, 2005, the National Marine Fisheries Service (NMFS) published a final rule to list the southern resident Orcas as an "endangered" distinct population segment under the Endangered Species Act (ESA) (Federal Register, 2005). Whale watching (and broader effects of vessel noise) has been identified as a potential factor in the recent decline of the southern resident Orcas, along with contaminants, prey availability, oil spills, and cumulative effects of multiple stressors (Federal Register, 2003, 2004; NMFS, 2005; Wiles, 2004).

The ESA listing for southern resident Orcas will likely dramatically impact the whale-watching industry in the San Juan Islands. NMFS is currently exploring a range of management options for the whale-watching industry, which may include additional restrictions on viewing time limits and distances. If restrictions are indeed stiffened, the viability of the whale-watching industry will depend on finding ways of maintaining tourist satisfaction other than getting close to a whale. Therefore, it becomes vital to determine tourists' value in a whale-watching trip, and also to tailor an education program to these needs.

Methods

Anonymous social surveys were administered on 15 trips to passengers aboard two whale watch ves-

sels operating in the San Juan Islands between August 17 and September 10, 2003. The surveys contained a mixture of objective and open-ended questions (Lazerfeld, 1944). Part I—administered before the educational component had begun—included questions on tourist demographics and expectations for the trip. Part II—administered at the very end of the trip—elicited tourist evaluations for the trip. Overall, 57 surveys were collected.

In addition to the surveys, detailed ethnographic field notes (as described by Agar, 1986; Kirk & Miller, 1986; Spradley, 1979) were recorded during each trip to gather information on the tourists' level of interest in the educational component. This was done by noting the number of questions asked and specific statements made by tourists.

Results

Trip Expectations

Table 1 shows tourists' responses to the open-ended question, "What are you most looking forward to on today's trip?" Each mentioned up to 3 factors. This resulted in a total of 143 responses.

The top four factors mentioned were: 1) seeing whales (75.4%), 2) enjoying various components of the boat ride, such as the scenery, seeing the islands, enjoying the weather, or just simply being outdoors (66.7%), 3) seeing wildlife other than whales (42.1%), and 4) learning about whales, wildlife, and the area (38.6%).

Results also showed that none of the tourists' specific expectations revealed a desire to see whales close to the boat, or to see specific whale behaviors, such as breaching or socializing. These findings are important because it is a common assumption that tourists expect to view whales in close proximity that can lead operators to break viewing guidelines and regulations. Nonetheless, while tourists did not expect to view whales in close proximity or to view spectacular behaviors, it does not follow that they would not find it memorable if it were to take place. This is discussed in the following section.

It is important to emphasize that education was indeed an expectation of tourists. As noted above, 22 (38.6%) respondents stated that they were looking forward to learning about whales and the marine environment during the trip (Table 1). Therefore, it can be safely assumed that if there had not been an onboard educational component offered, 22 tourists would not have been fully satisfied with the whale-watching trip.

Trip Evaluations

Table 2 shows tourists' responses to the question, "What was most memorable about your whale-watching experience today?" Each mentioned up to 3 factors. One tourist declined to respond to this question. This resulted in a total of 74 responses.

The first two rows of Table 2 show 39 responses (69.7%), indicating that seeing Orcas in some man-

Table 1
Tourists' Trip Expectations

Trip Expectations (No. of Respondents = 57)	No. of Responses	% of Respondents
Seeing Orcas/whales	43	75.4%
Enjoying the boat ride (outdoors, scenery, islands, weather)	38	66.7%
Mention of other wildlife (besides whales or Orcas)	24	42.1%
Learning about whales (including Orcas), wildlife and the area	22	38.6%
Time with family and friends	8	14.9%
Seeing whales and wildlife in their natural form/as they should be	5	8.8%
Learning about navigation from the captain	1	1.7%
Comparing whale watching experiences	1	1.7%
Obtaining good pictures	1	1.7%
Letting kids experience whales	1	1.7%
Have a good time	1	1.7%
Other (not specifically related to whale watching)	3	5.2%

Each tourist was able to provide up to 3 responses, supplying more than 57 total responses.

Table 2
Factors Creating a Memorable Whale-Watching Trip

Most Memorable Factor (No. of Respondents = 56)	No. of Responses	% of Respondents
Seeing Orcas or large numbers of Orcas	22	39.3%
Any mention of specifics other than just "see" Orcas (specific behaviors, proximity to the boat)	17	30.4%
Learning about whales, wildlife and the area	9	16.1%
Mention of other wildlife	9	16.1%
Hearing the "blow"	4	7.1%
Boat ride/scenery/weather	3	5.4%
Small boat with personable staff	3	5.4%
Time with family and friends	2	3.5%
Other (unrelated to whale watching activity)	2	3.5%
Having whales personalized	1	1.8%
Seeing the male dorsal fin	1	1.8%
Bowriding (of porpoises)	1	1.8%

Each tourist was able to provide up to 3 responses, supplying more than 56 total responses. One tourist declined to answer this question.

ner made the trip memorable. Of this group, 22 (39.3%) responses concerned simply seeing whales, and 17 (30.4%) concerned specific whale behaviors or proximity of the boat to whales. Collectively, these findings suggest that while seeing whales close to the boat or seeing whales performing active behaviors were not expectations of tourists (as discussed in the previous section), these factors were often very important aspects of the trip. The third row shows that 9 responses (16.1%) concerned learning about the whales and the marine environment.

In passing, we note that 5 of the 56 tourists did, in fact, see whales, but did not mention this event as memorable. Instead, these respondents (4 of whom had never been whale watching in the past) found the positive experience of a small boat with personable staff and time spent with family and friends to be most memorable, showing that the interpreter was effective in the role of social director in these cases.

Tourists were also asked to rank 14 memorable factors regarding the whale-watching trip from 1 (most important) to 14 (least important). The top ranked factors were seeing a whale, seeing whales in their natural environment, seeing what whales did during the sighting, and spending time with whales (Table 3). The two factors pertaining to the OMEE

program—whale facts learned from the educator and interaction with the interpreter (rows 5 and 6)—were ranked right below the factors pertaining to viewing whales, showing that education was an important aspect of the whale-watching experience.

After each trip tourists were asked, "Were you in any way disappointed by today's whale-watching experience? How so?" Each tourist was allowed to mention more than one factor (Table 4).

Thirty-four responses (59.6%) revealed that nothing about the trip was disappointing. Twelve responses (21.1%) showed that tourists were disappointed in not seeing whales. Interestingly, 5 of these 12 respondents stated that they understood that whales are wild and therefore not always seen. Nine (15.8%) responses show that tourists felt that too little time was spent with the whales. However, 4 of these 9 respondents stated that they understood why the viewing time was limited. Disappointment pertaining to the proximity of the boat to the whales was not mentioned. It can be safely assumed that this is because on each trip in which whales were sighted, at least one individual whale came close to the boat.

Significantly, not one tourist mentioned dissatisfaction with time spent with whales or viewing distance from whales without the qualification that it was "OK" and that they understood why the time and distance restrictions are in place. Each tourist

Table 3
Rank Order of the Most Memorable Factors

Memorable Rank Order Trip Data (No. of Respondents = 57)	Ranking of Rank Order Averages
Seeing a whale	1
Seeing whales in natural environment	2
What whales did	3
Length of time spent with whales	4
Whale facts learned from educator	5
Interaction with interpreter	6
Boat ride	7
Service by captain and crew	8
Distance of boat to whales	9
Interaction with family and friends	10
Seeing other wildlife	11
Seeing Puget Sound and the Olympic Peninsula	12
Adhering to regional best practice viewing guidelines	13
Interaction with strangers	14

Table 4
Factors of Disappointment

Factors of Disappointment (No. of Respondents = 57)	No. of Responses	% of Respondents
Nothing	34	59.6%
Did not see Orcas	7	12.3%
Too little time spent with Orcas	5	8.8%
Did not see Orcas, but that is OK/know it happens	5	8.8%
Unsatisfied with time or distance to Orcas, but understand why	4	7.0%
Did not see any wildlife, or too few wildlife besides Orcas	2	3.5%
Did not see Southern Resident Orcas (saw transients)	1	1.7%
Missed picture or video opportunities	1	1.7%
Did not see bowriding	1	1.7%
Did not get close enough to Orcas	0	0.0%
No "spectacular" Orca behavior	0	0.0%

Each tourist was able to provide up to 3 responses, supplying more than 57 total responses.

who provided this disappointment qualification was on a trip in which the interpreter discussed whale conservation issues and the regional "best practice" viewing guidelines relating to vessel proximity to whales and viewing time limits. This illustrates that explaining *why* viewing guidelines are in place may help to avoid abject disappointment in the event that expectations surrounding a sighting are not met.

Ethnographic field notes revealed that OMEE was an important component leading to a memorable whale-watching trip. The number of questions that passengers asked before, during, and after whale sightings was noted and used as an indication of their interest in the educational component of the trip. The number of questions a person asks can be linked to the person's motivation to learn (Schiefele, 1991). Field notes showed that the tourists' interest in learning about the whales and the area was high on 13 of the 15 trips, especially during the "postcontact phase," or the period after which whales were seen (Forestell, 1993, p. 271). On the remaining two trips, the passengers were not averse to communicating with the interpreter, but they seemed to prefer to simply enjoy the boat ride and look around at the scenery.

Finally, statements by tourists made it clear that OMEE did enhance the whale-watching experience. On two instances, one in which whales were not seen, passengers specifically stated that it was a "bonus," or that the trip was made better, by having close contact with the onboard interpreter. Two tourists specifically stated that they "loved all the learning." On several other trips tourists implied that the onboard

interpreter increased their enjoyment by explicitly showing gratitude to the interpreter for all the time and energy spent in answering their questions and teaching them new things. These examples show that the onboard interpreter was successful in the role of social director, as well as the role of educator.

Discussion

In this article, we evaluated the importance and influence of an onboard educator on the experiences of whale-watching tourists. The research findings will be of utility to those in the whale-watching business, those who aspire to be onboard interpreters, those who are whale watchers, and, indirectly, to the whales.

Insofar as the implications of this preliminary study are concerned, we make three points. First, the preliminary research findings reveal that the presence of an onboard interpreter was an expectation of tourists, influenced tourists' evaluations of a trip, and was an important factor helping to avoid abject disappointment when trip expectations were not met. Ethnographic field notes and survey data showed that tourists desire to have contact with an interpreter on a whale-watching trip. Onboard marine environmental education and the onboard interpreter can be, and are, useful tools for living marine resource management. Education can be used to decrease the possible negative effects of harassment on the whales by educated tourists and boat operators who elect to view whales from a proper distance.

Second, it is extremely important not to underestimate the demands of a curious whale-watching public. It is ironic that so often society shows a tremendous respect for whales, but not for tourists. The savvy business operator never forgets the customer. People want to learn, and some—whether these are children, young adults, or senior citizens—aspire to participate in whale conservation. It follows that the presence of an onboard interpreter can help to achieve trip satisfaction.

Third, onboard marine environmental education must entail a multidisciplinary message. It follows that onboard interpreters must convey more than biological and ecological facts and theories. Interpreters must also be prepared to discuss local human cultures; sociological, economic, political, and historical patterns; marine mammal and fishery management regulatory regimes and laws; not to mention environmental ethics and education.

Many opportunities exist for related future research to build upon these preliminary findings. It is our hope that the pedagogic methods of environmental education find applications in all variants of onboard tourism (such as scuba and sailing instructors, ecotourist and fishing guides, and cruise ship interpreters). Onboard tourism attracts people from all walks of life to the marine environment. Because this pull is great, onboard tourism has a responsibility to sustain the very resources that it is displaying. Education makes sustainable tourism possible. A multidisciplinary onboard marine environmental education program is a key component to every responsible onboard tourism endeavor.

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