DOLPHIN WATCH TOURISM: TWO DIFFERING EXAMPLES OF SUSTAINABLE PRACTICES AND PROENVIRONMENTAL OUTCOMES

GAYLE MAYES* and HAROLD RICHINS†

School of Management, University of the Sunshine Coast, Maroochydore, Queensland, Australia
†School of Travel Industry Management, University of Hawaii at Manoa, Honolulu, HI, USA

This study compares the management practices and content of the education/interpretation commentaries of two differing commercial dolphin watch operators in Nelson Bay, New South Wales, which is promoted as the “Dolphin Capital of Australia.” The major objective of the study was to measure and evaluate the postexperience effectiveness of the education/interpretation components on the self-reported proenvironmental attitudes, beliefs, intended behaviors, and intended actions of participants. A questionnaire was administered to participants immediately after their half-day dolphin watch cruises. The most important feature of the experience for all participants was the opportunity to see wild dolphins behaving naturally in their natural habitat. Although the management practices and content of the education and interpretation messages differed aboard the two vessels, no significant differences occurred between the two differing samples for impacts on visitors’ intended proenvironmental actions. Significant differences did occur between samples for the self-reported impacts on participants’ strength of support for conservation of marine wildlife and for conservation of dolphins. The effectiveness and influence of the dolphin watch cruises on proenvironmental attitudes, beliefs, intended behaviors, and actions of participants appears to be related to two factors: the quality and content of the education/interpretive message, and the intensity level of the dolphin watching experience.

Key words: Dolphin watching; Education; Interpretation; Proenvironmental behaviors and actions

Introduction

The rapid growth of marine wildlife tourism and increasing demands for varied dolphin encounter opportunities have been associated with negative impacts and, in some cases, major risks to the wildlife and their marine environment (Bejder & Samuels, 2003; Garrod & Wilson, 2003; Samuels, Bejder & Heinrich, 2000; Shack-ley, 1996). These negative impacts obviously need to be decreased in order to create a more sustainable and better managed marine wildlife tourism industry. Genuine marine wildlife ecotourism and the implementation of research-based, effective, and long-term wild dolphin encounter management policies, regulations, and practices are promoted as possible solutions. Additional solutions and strategies include balancing of statutory and...
voluntary approaches to wild dolphin encounter management; active interpretation and education programs; offering high-quality, safe experiences; and responsible operators working in partnerships with government (Center for Research, Innovation and Graduate Studies [CRIGS], 2001; Curtin, 2003).

Best practices in marine wildlife ecotourism commit operators to responsible management and to positively influence marine wildlife visitor behavior through education and interpretation—specifically the visitors of commercial wild dolphin encounters, who are seen as stakeholders and active partners in sustainable marine tourism (Diamantis, 2004, p. 70). However, self-regulation and the implementation of voluntary codes of conduct by operators may not always be strong enough to maintain best practices in cetacean encounters (Allen, 2006; Carlson, 2004), especially if management conflicts exist (Garrod & Fennell, 2004, p. 69). In most cases in sustainable marine wildlife management, the focus involves visitor education and management of negative impacts by the operators and visitors rather than management of the wildlife (Bramwell & Lane, 2003; Cole, 1993; Hammit & Cole, 1998; Moscardo & Saltzer, 2004; Orams, 1996; Priskin, 2003).

Education and interpretation can assist in reducing the negative impacts of marine tourism (Orams, 1994, 1995, 1996, 1997), and enhance participants’ proenvironmental behavior in the long term. "Ecotourism visitor experiences may be an effective means of influencing visitor environmental values and behaviours" (Higham & Carr, 2002, p. 291). Interpretation programs can foster "behavioural change relating to domestic lifestyle that may contribute to the long-term benefit of the environment" (p. 279). Moscardo, Pearce, Green, and O’Leary (2001) suggested that "exposure to species in combination with some form of interpretation is associated with increased support for conservation of both the target species and wildlife in general" (p. 41). More recent research appears less convincing and "open for debate as to whether the effects on cetaceans are negligible and whether tourists actually achieve heightened appreciation of the environment that is long lasting" (Bejder & Samuels, 2003, p. 229). Further investigation is therefore required to support the notion of achieving proenvironmental attitudinal and behavioral change through effective wildlife encounters and interpretation experiences. The need for further research has been progressed through this study of self-regulated voluntary codes of conduct, management practices, and the education/interpretation commentaries developed by the dolphin watch operators in Port Stephens, a coastal region in Australia.

Cetacean Watching in Port Stephens

Port Stephens was named by Captain James Cook in May, 1770. Since the time of first European contact, the region has been used by mariners, agriculturists, timber-getters, fishermen, shipbuilders, admirals (established as the first location of the Pacific Fleet during World War II), industrialists, conservationists, and more recently tourists. Port Stephens was also considered at one time as a location for a major maritime military port, a railway port, and finally became a tourist destination. The Port Stephens local government area of 979 km$^2$ has a population of approximately 63,000 and is located approximately 150 km north of Sydney (Fig. 1). Port Stephens Bay covers over 15% of the total area of the local government area (100 km$^2$) and is three times the size of Sydney Harbour.

Port Stephens and environs offers the residents, short-term visitors, and an increasing number of domestic and international holiday makers a variety of marine and coastal recreation activities, including cetacean (dolphin and whale) watching. An estimated 3,000–4,000 humpback whales migrate annually along the Australian coastline, traveling along the coastal waters of at the entrance of Nelson Bay between May and November, while up to 200 resident near-shore and off-shore bottlenose dolphins inhabit the bay and coastline area on a year-round basis (Allen & Moller, 1999). The migrating whales and resident dolphins can be seen from either the shore or the decks of the 13 dolphin watch cruise operations. In the absence of a system of licensing for dolphin watch operators, and clear and specific state regulations on marine mammal tourism, the Port Stephens Commercial Dolphin Watch Association (PSCDWA) was created as a forum of most dolphin watch boats in Nelson Bay. Its objective has been to promote the
welfare of local Port Stephens bottlenose dolphins. By the mid-1990s the PSCDWA developed and operated under a self-regulated code of dolphin-watching conduct. By 2006, 8 of the 13 vessels operated within the PSCDWA. Additional methods of environmental self-management have included the certification through Ecotourism Australia’s accreditation and/or certification programs. Four of the dolphin and whale watch vessels in Port Stephens had ecotourism accreditation in 2007.

In the state of New South Wales, 320,000 visitors watched whales and dolphins aboard vessels in 2004, while land-based viewing attracted almost twice that number at 617,000 viewers. This amounted to over one third of the total the cetacean-watching industry expenditure in Australia for the year. Within the region of Port Stephens in New South Wales, over 250,000 cetacean watchers contributed an estimated $55.5 million through total tourism expenditures. This includes 7.9 million in direct expenditures on the cetacean-watching experience with the rest in indirect tourism expenditures. These figures in the Port Stephens region are close to 60% of the total contribution in New South Wales due to cetacean viewing (International Fund for Animal Welfare [IFAW], 2004).

The Study

Two related topics were under investigation in this study. The first topic involved the content and quality of the education/interpretation messages that two ecotourism-accredited operators from the self-regulated Port Stephens Dolphin Watch Association delivered as part of their visitor experiences. The second topic under investigation was the assessment and cross-case comparison of the impacts of the wild dolphin encounters on participants’ overall satisfaction, knowledge, proenvironmental attitudes and beliefs, and intended proenvironmental behaviors and actions. The main differences between the two purposively chosen operators are the designs of the boat-based platforms used for the dolphin watching and the quality and content of the information given on, about, and for the
conservation of dolphins and the marine on board the two vessels. This study therefore compares and discusses the differences between the two operations along with the impacts of the two differing visitor experiences on the self-reported satisfaction, knowledge, and proenvironmental attitudes, beliefs, behaviors, and actions of participants.

Research Methods

This paired case study comparison is part of a larger project involving three matched pairs of differing modes of commercial dolphin encounter tourism: namely feeding, swimming with, and watching dolphins from boat-based platforms. A cross-case research design and case study protocol recommended by Yin (2003) were used as the framework and model for this study. Convergence of data was achieved by using more than one source for data collection.

Primary data were gathered by observation and with two instruments designed for the study: a visitor questionnaire and an education/interpretation content sheet. The visitor questionnaire consisted predominantly of Likert attitude scales. The second instrument was designed for gathering data on the quality of the education/interpretation component of the commercial dolphin encounter. All relevant aspects of the education/interpretive commentary were recorded on this instrument. At the end of each cruise, the visitors were advised that a researcher would be administering a short questionnaire. Every second or third adult was then approached by the researcher and/or assistants to participate in the study. If an adult declined to participate, the very next adult was approached. A sealed box for confidential postings of questionnaires was left in a designated place. In some instances questionnaires were left on tables and collected or returned to the investigator. Two hundred and six questionnaires in total were collected, with 92 fully completed questionnaires from one vessel and 94 from the other. Descriptive statistics were used for the data analysis and reporting of the cross-case comparison. This included frequency distributions, graphical presentations of data, and summary statistics (Graziouno & Raulin, 2000). Chi-square and correlated t-test analysis identified significant differences in specific items between cases.

Comparison of the Design of the Two Vessels

The photos and descriptions of the two participating craft shown in Figure 2 reveal the differences between the hull and deck design, shape, size, elevation, and carrying capacity of the two vessels. Moonshadow V and Imagine also differed in attainable top speeds, engine noise and vibrations, the fuels used, main modes of propulsion (wind or engine), and potential impacts on the dolphins and their marine environment.

Description of the Visitor Experience Aboard Imagine

The experience and wild dolphin encounter management practices aboard Imagine were informal, personalized, and friendly. Care was taken to inform participants that the dolphins were wild and would therefore not perform “tricks” or behave like captive “Seaworld” dolphins. Natural wild dolphin behaviors such as feeding, socializing, parenting, and playing in the bay area were set as the visitor expectation. During the voyage, the skipper remained at the helm and gave an informal, informative, and spontaneous interpretive commentary through a microphone. During the cruise, the two other crew members and the passengers on the deck, assisted in the information sharing and spotting of the dolphins, and served passengers the refreshments that were provided below decks.

The commentary on board the vessel initially covered the state guidelines for commercial wild dolphin tourism encounters and the pivotal role of the skipper and crew in the development of the Port Stephens self-regulated dolphin-watching industry and management guidelines. Information with an educative and conservation focus was given throughout the voyage on a wide range of topics. A dorsal fin photo identification booklet on the dolphins in the bay was readily available for participants to look through in the covered area below Imagine’s deck. A variety of books and information brochures on whales and dolphins were on display in the saloon, while a brochure with donation and application forms for two conservation organizations were displayed on the drinks and bar bench.

The skipper discussed and adhered to the regu-
Figure 2. Comparison of the designs of the boat-based viewing platforms.

Table: Comparison of Vessels

<table>
<thead>
<tr>
<th>Vessel 1: IMAGINE</th>
<th>Vessel 2: MOONSHADOW 'V'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LENGTH</strong>: 16 metres</td>
<td><strong>LENGTH</strong>: 26 metres</td>
</tr>
<tr>
<td>Ocean sailing catamaran</td>
<td>Supercat or multi-hull catamaran</td>
</tr>
<tr>
<td>Purpose designed by its owners with input from numerous experts as a model for ecotourism</td>
<td>Promoted as the largest and most luxurious vessel in Port Stephens and Newcastle</td>
</tr>
<tr>
<td>A wrap-around single level deck</td>
<td>Three levels: a main deck, a cocktail deck and an open sundeck</td>
</tr>
<tr>
<td>Deck is one metre above the water</td>
<td>Lower deck is 2.5 metres above the water, top deck is 6.5m above water</td>
</tr>
<tr>
<td>360 degree dolphin viewing</td>
<td>360 degree dolphin viewing</td>
</tr>
<tr>
<td>Licensed and constructed to sail with 48 persons offshore, and 60 persons in protected or inshore waters</td>
<td>Licensed to carry up to 300 passengers</td>
</tr>
<tr>
<td>Shaded open deck area for 40 seats</td>
<td>Open sundecks for all-weather viewing</td>
</tr>
<tr>
<td>Saloon with table seating for 20, a licensed bar, library and BBQ area</td>
<td>Luxury lounges, restaurant on the lower and middle decks, air conditioning and heating, two fully licensed bars, and dance floor</td>
</tr>
<tr>
<td>People with disabilities, babies in prams, and the very young</td>
<td>No specific mention of marginalised groups</td>
</tr>
<tr>
<td>Howspirit net and side-mounted boom net</td>
<td>Spacious bow viewing deck and rear-mounted boom net</td>
</tr>
<tr>
<td>Uses environmentally friendly bio diesel and sail power</td>
<td>Uses only petroleum-based diesel</td>
</tr>
<tr>
<td>Most highly ecotourism accredited dolphin cruise in Nelson Bay</td>
<td>Ecoltourism accredited</td>
</tr>
<tr>
<td>Equipped with microphone only</td>
<td>Equipped with microphone and advanced technology, underwater video camera &amp; TV, and a hydrophone</td>
</tr>
</tbody>
</table>

The distance from the dolphins, and demonstrated how the motorized craft was managed on the water to ensure that the dolphins were neither harassed nor chased at any stage by their own craft or other operators who were in close proximity, watching the same pod of dolphins. The behaviors of the several pods of dolphins encountered by Imagine were identified and described as traveling, hunting and feeding, or socializing, mating, and playing. The engine was cut while watching...
the dolphins and when under sail, allowing a quiet approach to the dolphins. The staff of *Imagine Cruises* gave a frequent message that they were active environmentalists, members of local, national, and international conservation organizations, and committed personally and professionally to the preservation of dolphins and whales and the marine environment. Their promotional literature gave and reinforced the same proenvironmental message. Suggestions were made to the visitors during and at the finish of the voyage about memberships with appropriate organizations and their role in the conservation of dolphins and the marine environment. The *Imagine* captains and crew discussed their role in cooperative research with institutions and the assistance that they gave to research and conservation of the dolphins and the marine environment. The *Imagine* participants heard more about conservation-themed topics and were given a “Call to conservation action” along with suggestions on ways in which they could assist in conservation of the dolphins and their marine environment. *Imagine* participants were able to sit in the bow net and view the dolphins bow riding the vessel from directly above. Visitors had access to all areas of the single viewing deck, which is lower to the water than the lowest *Moonshadow V* first level deck.

*Description of the Visitor Experience Aboard Moonshadow V*

The focus and approach to the visitor experience by the *Moonshadow V* vessel staff were to offer the largest and most luxurious vessels in Port Stephens and Newcastle and ensure that participants have a memorable and comfortable cruise. Fine wine and dining are a marketing point of difference for these cruises. Dolphin sightings during cruises were guaranteed, and the crew was promoted as being friendly and dedicated, and able to deliver a comfortable and memorable cruise for everyone, including any groups with special needs.

The captain of *Moonshadow V* presented an entertaining and less spontaneous commentary than the skipper from *Imagine*. The number of topics, detail, and depth of coverage in the commentary was less compared to *Imagine*, and no mention was made of marine or environmental conservation issues or actions. The *Moonshadow V* commentary content was minimal, information based, and entertaining. Only 3 of the 10 selected example topics in Table 1 were covered or discussed to some degree during the *Moonshadow V* dolphin watch cruise, while *Imagine* participants received information during the commentary on all areas listed.

The skipper often called the attention of the visitors to the TV screens in the lounges when dolphins could be seen with the underwater camera as they played close to the hull and rode the bow wave of the vessel. The skipper had a TV monitor in the wheelhouse and a sound system to relay the underwater sounds of the dolphins transmitted through an underwater hydrophone attached to the hull of the vessel.

*Results*

The visitor demographic data are reported first, followed by the factors of importance to visitors in visiting the area and participating in the dolphin watch cruises and their level of knowledge and interest in information about dolphins. Levels of overall satisfaction, specific satisfaction factors, and satisfaction with information are presented next. Data from the question asking for perceived impacts of the experience on participants' intended involvement in proenvironmental behaviors and actions are reported, followed by responses to participants' perceived changes in their feelings and attitudes towards conservation.

*Demographic Data*

No significant differences occurred between samples for gender, age, highest education level attained, mode of travel, or return visitation.

*Gender and Age*. The combined number of respondents of the boat-based dolphin-watching samples was 195, with 99 participants from *Imagine* and 96 from *Moonshadow V*. Overall, 118 respondents were female (60.5%) and 77 were male (39.5%, N = 195). Most respondents fell in the 31–50 years cohort (47.7%), with 33% in the 18–30 years cohort, and 19.3% in the 51 years and older cohort (N = 197).

*Education Level*. The highest education levels reached by respondents ranged from 25.8% who completed high school, to 10.8% who completed
DOLPHIN WATCH TOURISM

Table 1
Comparison of Interpretation and Information Content Delivered During the Two Dolphin Watch Cruises

<table>
<thead>
<tr>
<th>Interpretation and Content Areas</th>
<th>Imagine</th>
<th>Moonshadow V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 A &quot;call to conservation action&quot;</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>2 Education about a wide number of interesting dolphin-related topics</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>3 Naming and contact information on conservation organizations that offer (wildlife) conservation opportunities to be involved with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 &quot;A take home conservation message&quot; to participants</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>5 Suggestions of a variety of conservation behaviors, actions, and practices to be involved in after the visit, at community and individual levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Human activities and the impacts on dolphins</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>7 Whale and dolphin stranding and rescue of dolphins and whales</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>8 Information on dolphin biology and ecology</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>9 The way in which their business is contributing to research, the conservation of the dolphin, and the marine environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Identification of individual dolphins</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

TAFE or equivalent, 23.7% who completed university or hectar degree, 11.3% who completed some university studies, and 24.7% who completed postgraduate studies (N = 194). Almost half (48.4%) of the total number of respondents had therefore achieved a university degree or higher.

Mode of Travel. Only 5% of all respondents (N = 197) were part of a tour group, and less than 1% (0.5%) of the sample was traveling alone. Table 2 shows with whom participants shared the dolphin watch cruise experience. Family and friends (96.5%, N = 197) was the largest cohort of the six given categories.

Return Visitation. Of the 203 respondents, only 21.2% were return visitors. A high proportion (40.9%, N = 203) of the combined sample had visited other dolphin-humpback encounter sites. Almost 20% (19.6%, N = 203) of the combined sample had been to a captive dolphin site, while 17.1% had been on another dolphin watch activity, and a further 3.0% had experienced an activity that was a combination of feeding, watching, and/or swimming with dolphins.

Country and Australian State of Residence. Differences occurred between the two dolphin watch samples when asked about their Australian state and country of residence (p < 0.05). Just over 80% (81.8%) of Moonshadow V’s visitors were from intrastate, compared to Imagine with 58.9% intrastate visitors. Differences occurred between samples with numbers of visitors from interstate (p < 0.05, N = 172). Imagine had 4.3% of Victorian visitors and 3.2% from Queensland, while Moonshadow V had no visitors from either state. Although 23.0% (N = 200), of the combined sample were from outside Australia, 31.4% of Imagine’s sample was comprised of international visitors compared to Moonshadow V, with only 14.3%.

Table 2
Levels of Satisfaction With the Information Delivered as Part of the Cruise

<table>
<thead>
<tr>
<th>Satisfaction With the Wild Dolphin Encounter Information</th>
<th>N</th>
<th>p-Value ≤0.05</th>
<th>Imagine</th>
<th>Moonshadow V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of interest of the information given</td>
<td>200</td>
<td></td>
<td>78.2</td>
<td>68.7</td>
</tr>
<tr>
<td>Information given before the encounter</td>
<td>201</td>
<td></td>
<td>66.7</td>
<td>52.6</td>
</tr>
<tr>
<td>Information given during the encounter</td>
<td>200</td>
<td>0.012</td>
<td>84.2</td>
<td>68.6</td>
</tr>
<tr>
<td>Information given after the encounter</td>
<td>198</td>
<td></td>
<td>71.1</td>
<td>63.3</td>
</tr>
<tr>
<td>About how to help conserve the dolphins</td>
<td>196</td>
<td></td>
<td>54.1</td>
<td>50</td>
</tr>
<tr>
<td>About how to help conserve the dolphin’s environment</td>
<td>197</td>
<td></td>
<td>45.5</td>
<td>42.8</td>
</tr>
</tbody>
</table>
The majority of overseas visitors were from Europe and the UK (15.3%, N = 206), with a further 3.5% from Canada and US combined.

**Importance of Various Features When Participating in the Dolphin Watch Activity**

Responses to extremely important and very important were aggregated for these eight items. The most important item for the combined sample was the opportunity to see dolphins (91.6%, N = 202), followed by seeing dolphins in their natural habitat (90.5%, N = 201), and third, seeing dolphins behave naturally (68.5%, N = 200). The least important feature was seeing large numbers of dolphins (57.4%, N = 202), and only slightly more important was interesting information about dolphins (70.2%, N = 201).

The visitors on the Imagine tour appeared more concerned about the quality of the experience and the education components, and gave higher importance to having interesting information about dolphins and knowledgeable guides and/or staff. The Moonshadow V visitors were more concerned with the three aspects of actually watching the dolphins, namely: seeing dolphins, seeing large numbers of dolphins, and seeing the dolphins easily.

**Visitor Knowledge and Interest in Dolphin Topics**

Participants rated their levels of knowledge about dolphins before and after the cruises on a 10-point scale, with zero as no knowledge, and 10 as extremely knowledgeable. Before the experience, the highest number of preferences (22.2%, N = 203) occurred in the 5 out of 10 score. After the experience, the highest number of responses (23.8%, N = 202) was recorded for 7 out of 10. Therefore, a positive shift occurred in self-reported levels of knowledge across the combined sample.

In the second part of this section, participants were asked to show their level of interest on a 5-point scale for each of the 16 given topics about dolphins. No differences occurred between cases in any item. High levels of interest were reported in the two conservation topics. In fact, information on how to conserve the dolphins’ environment (78.7%, N = 197) was the topic of most interest, intelligence of dolphins was rated second (73.0, N = 200), while information on how to conserve dolphins (80.0%, N = 196) was ranked third, strange characteristics of dolphins was fourth (75.0%, N = 199), and dolphins and their place in the ecosystem (75.2%, N = 198) was fifth. Relationships of dolphins with indigenous people was the item of least interest to the combined sample.

**Overall Satisfaction**

On the 10-point scale, 86.1% (N = 186) of the combined sample felt that their overall level of satisfaction with the experience was 7 out of 10 or above. One-fifth of the total sample (20.4%, N = 186) felt that their experience was a 10/10 rating. Only 3.3% of Imagine visitors rated their overall satisfaction as 5 or less out of 10, while 8.5% (N = 94) of Moonshadow V visitors scored their experience as 5 or less on the 10-point scale. A significant difference occurred between cases for the overall satisfaction level (p < 0.05, N = 186). Almost 74% (73.8%) of Imagine participants rated their overall satisfaction between 7/10 and 10/10, with almost a third (30%, N = 92) of their participants rating their overall satisfaction level as a 10/10. Comparatively, only 12% of Moonshadow V participants rated their overall satisfaction at a 10/10, with almost 40% (37.2%, N = 94) at 8/10.

**Visitor Satisfaction Levels With Specific Factors**

Scores for highly satisfied and very satisfied categories were aggregated in this section. The three subfactors that visitors were most satisfied with were the encounter rules and practices (89.4%, N = 198), the health of the dolphins (87.3%, N = 196), and the natural behavior of the dolphins (87%, N = 200). Visitors expressed their lowest satisfaction level with the number of other craft in the area (47.1%, N = 195). Significant differences occurred between samples for four items, with the participants of the Imagine cruises reporting higher levels of satisfaction for: number of dolphins (p = 0.001, N = 201), unobstructed views from the boat (p = 0.002, N = 201), ability to see dolphins in the water (p = 0.003, N = 198), and natural behavior of the dolphins (p = 0.030, N = 200).
Visitor Satisfaction With Information Given as Part of the Wild Dolphin Encounter

Because of the importance and relevance of this set of items to the focus of study, responses to all questions in this section are presented in Table 2. The most responses from the combined sample were given to the satisfaction with the information given during the encounter (76.5%, N = 200). The next highest number of responses occurred with the level of interest in the information (73.5%, N = 200), while the information provided after the encounter, received the third highest number of preferences (67.1%, N = 198). The lowest satisfaction scores for information occurred with how to help conserve the dolphin’s marine environment, and how to help conserve dolphins. More Imagine participants gave higher scores for satisfaction than Moonshadow V participants with the information on all items in Table 2. However, only one significant difference occurred in the cross-case comparison, namely information given during the encounter (p = 0.012, N = 200). Twice as many Moonshadow V participants (28.3%) were moderately satisfied with this item than Imagine participants (12.9%), while almost twice as many Imagine participants (40.6%) were highly satisfied with this item than the Moonshadow V participants (24.2%).

Self-Reported Intended Involvement in Proenvironmental Actions

The next section reports on the results of an item associated with the focus of this study, namely, the influence of the dolphin watch experience on the intended proenvironmental behaviors and actions of participants (Table 3). Although the design of two dolphin watching vessels, the experiences, and the content of the education and interpretation messages differed considerably, no significant differences occurred between samples in this section.

For the combined sample, higher scores occurred for intention to act proenvironmentally were recorded with the given list of activities that required less outlay and/or commitment in terms of time, effort, and/or money. Lower levels of perceived influence as a direct result of the dolphin experience were reported with the proenvironmental activities and actions requiring greater effort, time and/or financial outlay, and/or commitment.

Strength of Feelings and Level of Support for Conservation

Participants were asked to report on the influence that the experience had on their strength of feelings and levels of support for conservation generally, and four proenvironmental attitudinal factors. Strong, positive increases in the strength of participants’ level of support towards conservation programs and culture were reported across each item in this section for the combined sample (Table 4). Interestingly, higher percentages of responses occurred on all combined scores for the Moonshadow V participants, compared to Imagine participants (Table 4).

Significant differences occurred across the two cases for two of these five proenvironmental items, namely strength of support for conservation of dolphins, and support conservation of marine wildlife (Table 4). In both instances, a greater number of responses from Imagine participants occurred in the neutral and strongly agree categories, while a higher number of Moonshadow V participants reported feeling more strongly towards these statements.

Discussion

Moonshadow V offered a mass tourism dolphin watch experience for approximately 300 visitors aboard a vessel that offered a less intense, more distant, and more technologically reliant visual and oral encounter. The associated commentary was characterized by a high entertainment, low level of interpretation quality, and content. Imagine offered a more genuine ecotourism experience aboard an environmentally friendly, purpose-designed craft and an informal, more intimate encounter that gave visitors a closer and more intense encounter with the dolphins, with a high-quality interpretation program and strong conservation messages.

Although the designs of the two boat-based platforms, the content and quality of the education/interpretation messages, and the overall visitor experiences differed considerably, no significant differences were detected between the visitor
Table 3
Influence of the Experience on Visitors' Intended Proenvironmental Actions

<table>
<thead>
<tr>
<th>Intended Proenvironmental Actions</th>
<th>Moderate (% Age)</th>
<th>High (% Age)</th>
<th>Very High (% Age)</th>
<th>Total (% Age)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Remove harmful litter from our oceans</td>
<td>19.4</td>
<td>28.3</td>
<td>31.9</td>
<td>79.6</td>
<td>191</td>
</tr>
<tr>
<td>2 Tell others of the need to care for our ocean and animals</td>
<td>29.2</td>
<td>25.5</td>
<td>24.0</td>
<td>78.7</td>
<td>192</td>
</tr>
<tr>
<td>3 Decrease the amount of personal water pollution</td>
<td>22.1</td>
<td>28.4</td>
<td>25.8</td>
<td>76.9</td>
<td>190</td>
</tr>
<tr>
<td>4 Assist in the protection of dolphins where possible</td>
<td>26.0</td>
<td>28.6</td>
<td>21.9</td>
<td>76.5</td>
<td>192</td>
</tr>
<tr>
<td>5 Remove harmful litter from our beaches</td>
<td>23.8</td>
<td>27.5</td>
<td>23.3</td>
<td>74.6</td>
<td>189</td>
</tr>
<tr>
<td>6 Donate money to an environmental organization</td>
<td>37.5</td>
<td>16.7</td>
<td>5.7</td>
<td>59.9</td>
<td>192</td>
</tr>
<tr>
<td>7 Become more involved in conservation issues</td>
<td>33.7</td>
<td>18.4</td>
<td>5.7</td>
<td>57.3</td>
<td>193</td>
</tr>
<tr>
<td>8 Assist with a marine stranding operation</td>
<td>29.1</td>
<td>9.5</td>
<td>10.6</td>
<td>49.2</td>
<td>189</td>
</tr>
<tr>
<td>9 Donate time to assist with wildlife conservation</td>
<td>31.4</td>
<td>10.5</td>
<td>6.8</td>
<td>48.7</td>
<td>191</td>
</tr>
<tr>
<td>10 Join a wildlife /dolphin conservation organization</td>
<td>28.8</td>
<td>10.5</td>
<td>6.3</td>
<td>45.6</td>
<td>191</td>
</tr>
</tbody>
</table>

demographics (age, gender, highest education levels, mode of travel, and return visitation) of the two samples. Differences between samples were detected for visitors' countries of residence, with twice as many Imagine respondents visiting from overseas.

One item not investigated was information about existing proenvironmental attitudes, beliefs, behaviors, and actions of participants prior to the experience. Differences may have existed in the existing proenvironmental attitudes, beliefs, behaviors, and actions, and the skipper of Imagine may have been preaching to the already proenvironmentally converted. A second potential limitation of the study design may be the administration of just a single posttest questionnaire. This was addressed by designing questions that asked respondents to reflect on their experience and indicate their perceived impacts and effects of the experience.

The most important reasons for dolphin watch participants go on these tours are to see and experience dolphins behaving naturally in their natural environment. Participants regarded the educational or learning experience as the lowest priority, and interesting information about dolphins was also of comparatively low importance in their initial decision-making process to participate in the dolphin watch tour. Although the overall level of satisfaction was very high, with 71% rating it between 8 and 10 out of 10, the differing designs of the vessels and the large numbers of visitors and crowding at the guard rails may be the reasons behind significantly more participants from Imagine being more satisfied and highly satisfied than Moonshadow V participants with the following wild dolphin encounter items: number of dolphins, unobstructed views of the dolphins, ability to see dolphins in the water, seeing dolphins clearly, natural behavior of the dolphins, and information given during the encounter.

Respondents from both cases reported that hav-

Table 4
Influence on Visitor Feelings and Attitudes Towards Conservation

<table>
<thead>
<tr>
<th>Influence on Strength of Feelings Towards Conservation</th>
<th>Imagine Agree + Strongly (% Age)</th>
<th>Imagine Agree (% Age)</th>
<th>Moonshadow V Agree + Strongly (% Age)</th>
<th>Moonshadow V Agree (% Age)</th>
<th>Total Agree + Strongly (% Age)</th>
<th>Total Agree (% Age)</th>
<th>N</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support conservation of the marine environment</td>
<td>76.0</td>
<td>83.9</td>
<td>79.9</td>
<td>189</td>
<td>p = 0.04</td>
<td>189</td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>Support conservation of marine wildlife</td>
<td>72.9</td>
<td>85.0</td>
<td>78.8</td>
<td>189</td>
<td>p = 0.04</td>
<td>189</td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>Help conserve the marine environment</td>
<td>73.5</td>
<td>83.0</td>
<td>78.1</td>
<td>192</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support conservation of dolphins</td>
<td>68.7</td>
<td>73.9</td>
<td>76.2</td>
<td>189</td>
<td>p = 0.03</td>
<td>189</td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>Assist with marine conservation programs</td>
<td>46.9</td>
<td>62.8</td>
<td>54.7</td>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ing an educational/learning experience was the least important motivational factor in deciding to participate; however, Imagine participants were significantly more concerned than Moonshadow V participants about having interesting information and knowledgeable guides. The self-reported levels of knowledge about dolphins positively increased for the combined sample. Although the difference between samples was not significant, Imagine participants reported greater increases in knowledge about dolphins than Moonshadow V. Although participants of the combined sample did not indicate that an educational or learning experience was of high or very high importance to them in their initial decision-making process to participate in the activity, visitors regarded conservation-based information about dolphins and the marine environment as the third and most interesting topics, respectively, when asked to choose from the 16 given topics of most interest about dolphins.

A major focus of the study was the contribution of the encounter experience to the sustainability of the dolphin watch industry and the dolphins' marine environment by enhancing the proenvironmental attitudes, beliefs, intended behaviors, and intended actions of the dolphin cruise participants. Two sets of questions addressed this central focus. Participants of the combined sample reported that moderate, high, and very high positive influences occurred in direct response to the experience in these two main areas: intention of visitors to become involved in proenvironmental activities (behaviors and actions), and strength of participants' feelings and attitudes towards conservation (attitudes).

Even though a considerable eco-performance gap between the two experiences was observed and recorded, visitors' responses were similar for all except two of the 15 given proenvironmental attitudes, beliefs, behaviors, and actions items in these two main areas: strength of support for conservation of dolphins, and strength of support for conservation of marine wildlife. The fact that Imagine participants reported feeling more strongly for both items as a direct result of their dolphin watch cruise than Moonshadow V participants suggests that the high-quality interpretive experience and more intense encounter aboard Imagine were more effective in eliciting this response. This is a globally desirable outcome for enhancing sustainability of the industry.

Conclusions and Recommendations

The results of the study indicate that the size, shape, design of the craft, and associated carrying capacity of the boat-based dolphin-viewing platforms influence the visitor experience and the overall visitor satisfaction levels. Visitors want primarily to watch wild dolphins behaving naturally in their natural marine environment. To be able to satisfy this primary need, visitors need an uncrowded, boat-based, viewing platform that can bring the participants as close as possible to the dolphins, offering an intense wild dolphin experience characterized by close encounters and clear, open, and unobstructed views of the dolphins. According to the results of this study, tours on board the multistory 300-person capacity craft did not meet the most important visitor needs and/or expectations.

Technology can be harnessed for tourism purposes to offer products and service items that can enhance, value add, and even compensate for the perception of crowding and the inability of visitors to see wild dolphins up close and clearly. Technological innovations such as real-time information given over a high-quality sound system/microphone; underwater cameras capturing and projecting images of dolphins swimming beside hulls of vessels on video screens in comfortable lounges; underwater hydrophones; water-immersed boom nets; skilled and knowledgeable education/interpretation officers; and high-quality educational and/or resource materials such as books, music, videos, and brochures or pamphlets can supplement and even replace actually seeing wild dolphins in their natural environment on the commercial cruises.

It appears that the affirmative side of the debate in the introduction regarding the positive impacts of wild dolphin experiences has been supported by several results of this study. Tourists do achieve heightened appreciation of the environment and experience proenvironmental attitudinal and/or behavior changes as a result of self-regulated, yet considerably different, marine wildlife experiences. However, the highest positive influences on in-
tended proenvironmental actions and support for conservation as a concept and set of practices occurred where least effort and commitment in terms of time, energy, and money were required on the part of the participants, namely:

- support for conservation of the environment (attitude),
- remove harmful litter from our oceans (intended action),
- support for conservation of the marine wildlife (attitude),
- tell others about the need to care for our oceans and marine animals (intended action),
- decrease the amount of personal water pollution (intended action).

This trend and associated results parallel those of the pilot study conducted by the researcher (Mayes, Dyer, & Richins, 2004) involving a matched pair of shore-based dolphin feeding operators in Australia. The results of this boat-based study also parallel the research on, and observations of, environmental concerns and conservation effort by Schultz and Oakamp (1996).

The significant differences in responses between the two samples for *strength of support for conservation of marine wildlife and conservation of dolphins* suggests that the high quality and more intense *Imagine* dolphin encounter experience was more effective in enhancing proenvironmental attitudes than *Mooshadow V*. Whether this significant difference in the short term transfers to actions in the long term remains to be investigated by a follow-up study.

Finally, both self-regulated operators at Port Stephens have developed responsible management practices including education and interpretation commentaries. The content, quality, and effects on visitors of the two wild dolphin experiences differed considerably, regardless of self-regulation and ecotourism accreditation by the same nationally-based ecotourism organization.

This study demonstrates that the two differing dolphin watch cruises have enhanced intended visitor proenvironmental behaviors and actions to varying levels as an immediate result of the wild dolphin encounters. For genuinely sustainable marine wildlife tourism to occur, however, maximizing the positive impacts on humans is only one part of the overall strategy. Minimizing the negative impacts of the operators on the dolphins and the marine environment is another contributing strategy in enhancing the health of the dolphins and their marine environment, thus building a more sustainable dolphin-watching industry. The leading example set by the environmentally friendly, purpose-built design of the *Imagine* vessel, which uses sail power and organic biodiesel fuels, needs serious consideration when councils are deliberating over extending existing permits or granting new permits to other wild dolphin tourism operators. Sustainable wildlife tourism depends on responsible actions and practices by all stakeholders in the tourism system (Newsome, Moore, & Dowling, 2001), especially the commercial tourism operators who provide the experience for the wildlife visitors.

The internationally recognized outcomes of sustainable marine wildlife tourism are to increase the positive impacts on proenvironmental attitudes, beliefs, behaviors, and actions of participants; decrease the negative impacts on dolphins and the marine environment; and create a more sustainable dolphin watch tourism industry.

The following set of recommendations has been drawn from the available literature on the positive and negative impacts of marine wildlife tourism, the results and the conclusions of this study, and the generally accepted desirable outcomes of sustainable marine wildlife tourism:

- Make marine wildlife operators more responsible and accountable for the future and sustainability of the marine wildlife and the marine environment.
- Develop specialized training programs in interpretation for marine wildlife operators and interpretive guides that show how to maximize the positive impacts on visitors.
- Educate and raise awareness in marine wildlife participants of the components of high-quality commentaries, which include interpretation aspects as an added value to the wildlife tourism encounter.
- Make inclusion of high-quality interpretation commentary by trained guides mandatory for wildlife/marine wildlife operators and specify the minimum content of the commentaries.
DOLPHIN WATCH TOURISM

- Include a test for the wildlife operators/guides as part of the marine mammal commercial permitting process that is reviewed on a regular basis.
- Support self-regulation by marine wildlife operators with external regulation.
- Provide support and incentives for the development of high-quality content and commentaries/interpretation by marine wildlife tourism operators.
- Closely monitor the marine wildlife tourism awardees of ecotourism accreditation.
- Consider a separate/higher award for wildlife/marine wildlife operators.
- Include the design and eco-performance of boat-based platforms as part of the process for ecotourism accreditation.

Concerns for the health of commercialized marine wildlife and their marine environment, effective education and interpretation, and the future of the marine wildlife industry were shared by researchers and practitioners in the Fifth International Congress for Coastal and Marine Tourism (Benham, 2007; Constantine & Bejder, 2007; Foody & Binkley, 2007; Forestell & Kaufman, 2007; Parsons & Rose, 2007; Prisvol & Ronningen, 2007; Peake, 2007; Zeppel & Muloin, 2007). The increasing demand for opportunities for high-quality, up-close, and intense encounters with dolphins and other marine wildlife needs to be responsibly managed and monitored by a sound, rigorously researched, and well-founded set of recommendations and guidelines to ensure long-term viability and sustainability of an increasingly popular industry.

Acknowledgments

This paper was first presented at the 5th International Coastal and Marine Tourism Congress held in 2007 in Auckland, New Zealand. An earlier version of this paper was published in the Proceedings of CMT '07. The success of this project relied on the strong support and cooperation of the owners, management, and crew of the two dolphin cruise tourism operations, Imagine and Moonshadow V. The researcher was allowed to remain on board each vessel for all of the cruises in order to administer the questionnaires to more than 100 people on each craft. This continuing cooperation, the "gift" of time, the offer of free seats aboard the vessels on every data-gathering occasion, and the opportunity to unobtrusively observe the participants and their experience were very much appreciated by the researcher.

Biographical Notes

Gayle Mayes has been lecturing and tutoring in the Faculty of Business at the University of the Sunshine Coast, Australia since 2000 when she began her Doctor of Philosophy thesis. This paired case comparison is just one of the three paired comparisons of dolphin tourism operations that participated in the thesis. Gayle's research and personal interests include sustainable coastal and marine tourism, ocean sports, and marine-based leisure and recreation activities.

Harold Richins is the Graduate Chair in the School of Travel Industry Management at the University of Hawaii, Manoa. His areas of expertise include small enterprise tourism marketing; management and entrepreneurship, special interest tourism niche development; tourism and hospitality marketing; sustainable tourism practices and planning for enterprises and destinations; adventure-based travel; and marine ecotourism planning; sports marketing and development; and decision making in tourism at all levels of the tourism industry. He has international experience with teaching and researching in the US, Australia, and New Zealand.

References

Cole, D. N. (1993). Minimizing conflict between recreation


