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# CONSERVATION AND EDUCATION BENEFITS OF INTERPRETATION ON MARINE WILDLIFE TOURS

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Marine wildlife tourism can provide a range of education and conservation benefits for visitors. These benefits derive from close personal encounters with marine wildlife and visitor learning about marine species and ocean environments. There has been limited assessment of marine wildlife tourism experiences and educational programs to identify whether these increase tourists' knowledge, promoting attitudinal shifts and also lifestyle changes that aid marine conservation and help to conserve marine wildlife. Similarly, there has been little evaluation of on-site and longer term conservation intentions, or behaviors, of visitors that benefit marine wildlife and environments. This article reviews the education and conservation benefits of marine wildlife experiences in Australia using Orams' framework of indicators to manage marine tourism. The key indicator for tourists assessed in this article is behavior/lifestyle change that benefits marine species, along with three indicators of conservation outcomes for marine environments. Information is drawn from selected case studies of research on guided tourist encounters with whales, dolphins, and marine turtles from 1996 to 2007, mainly in Australia. This analysis found tourist learning during mediated encounters with marine wildlife contributes to proenvironmental attitudes and improved on-site behavior changes, with some longer term intentions to engage in conservation actions that benefit marine species.

Key words: Marine wildlife; Interpretation; Education benefits; Environmental behavior; Conservation actions

## Introduction

Marine wildlife tours can provide a range of personal, educational and conservation benefits for visitors (Andersen & Miller, 2006; Ballantyne, Packer, & Hughes, 2006, 2007; Finkler & Higham, 2004; Forestell, 1993; Lück, 2003; Mayes, Dyer, & Richins, 2004; Milstein, 2007; Muloin, 1998; Orams, 1997, 2000; Orams & Hill, 1998; Peake, 2007; Tisdell & Wilson, 2005; Townsend, 2008; Wilson & Tisdell, 2003; Zeppel & Muloin, 2007a, 2007b). The educational benefits of marine wildlife tours include visitor learning and knowledge from information presented about marine species and ocean environments. The conservation benefits include increased protection of marine species

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and habitats. This article provides a systematic, in-depth evaluation of marine wildlife tourism experiences and educational programs to identify techniques that increase tourist knowledge, promoting attitudinal shifts and also lifestyle changes that aid marine conservation and help to conserve marine wildlife (Samuels, Bejder, Constantine, & Heinrich, 2003).

To date there has been limited evaluation of the on-site and longer term conservation intentions, or behaviors, of visitors that benefit marine wildlife and environments. This article reviews the conservation benefits of some key Australian marine wildlife experiences using Orams' (1999) framework of indicators to manage marine tourism. The key indicator for tourists assessed in this article is behavior/lifestyle change that benefits marine species. Other indicators of conservation outcomes for the marine environment, including minimize disturbance, improve habitat protection, and contribute to the long-term health and viability of ecosystems, are also evaluated. Information is drawn from selected case studies of research on guided tourist encounters with whales, dolphins, and marine turtles from 1996 to 2007. This article analyses whether tourist learning during mediated wild marine animal encounters contributes to proenvironmental attitudes and behavior changes. Some longer term intentions by visitors to engage in conservation actions that benefit marine wildlife are also examined.

## Marine Wildlife Tourism

Marine wildlife tourism is defined as "any tourist activity with the primary purpose of watching, studying or enjoying marine wildlife" (Masters, 1998, p. 6). It includes marine wildlife watching holidays, wildlife boat trips in marine or estuarine areas, guided island or coastal walks, observing marine life from land viewpoints, visiting marine or coastal nature reserves, participating in a marine life study tour or conservation holiday, and visiting marine wildlife visitor centers and marine aquaria. Marine wildlife includes "flora and fauna that live in the coastal and maritime zone and are dependent on resources from the marine environment" (Masters, 1998, p. 6).

This article focuses on mobile free-ranging marine animals such as whale, dolphins, and sea turtles. Marine mammals, in particular, are a key tourism attraction (Birtles, Cuthill, Valentine, & David, 2001; Duffus & Dearden, 1993; Higham & Lusseau, 2004; Muloin, 1998; Orams, 2003; Stokes, Dobbs, & Recchia, 2002). Popular marine mammals include dolphins (O'Neill, Barnard, & Lee, 2001; Orams, 1997); whales and porpoises; dugong and manatee (Sorice, Shafer, & Ditton, 2006); and seals and sea lions (Booth, 1998; Kirkwood et al., 2003; Scarpaci, Nugegoda, & Corkeron, 2005). Other marine wildlife of tourist interest includes whale sharks (Davis, Banks, Birtles, Valentine, & Cuthill, 1997) and other shark species (Dobson, 2006, 2007); fish and rays (Lewis & Newsome, 2003); sea turtles (Wilson & Tisdell, 2001); and penguins, albatross, gannet, and other seabirds. Worldwide, 500,000 divers a year now feed, photograph, and swim with sharks (Topelko & Dearden, 2005). Nesting or rookery areas for seabirds and marine turtles (Higham, 1998, 2001; Schanzel & McIntosh, 2000; Tisdell & Wilson, 2002) and haul-out areas for seals and sea lions (Orsini & Newsome, 2005) also attract visitors. In Australia, in 1999, there were over 70 marine species targeted for marine tourism, from whales (e.g., humpback, southern right, and dwarf minke), dolphins, turtles, sea lions, and seals, to penguins, fish, sharks (e.g., reef, grey nurse, great white, and whale sharks), rays, sea dragons, and cuttlefish (Birtles, Valentine, & Curnock, 2001). A survey of 376 marine tourism operators in New Zealand also found viewing marine wildlife was a key attraction, focusing on marine mammals (44%, with 22% on dolphins), sea birds (42%), fish (30%), penguins (18%), and other marine wildlife (16%) (McKegg, Probert, Baird, & Bell, 1998; Orams, 2003).

## Interpretation on Marine Wildlife Tours

Environmental interpretation is often promoted as a key element of sustainable visitor interactions with wildlife (Foxlee, 2001; Ham & Weiler, 2002; Moscardo, 1998; Moscardo, Woods, & Saltzer, 2004; Orams, 1995, 1996; Orams & Hill, 1998; Peake, 2007; Russell & Hobson, 2002; Schaenzel, 1998; Woods & Moscardo, 2003). Interpretation activities or education programs in marine areas

typically involve talks by tour guides, interpreters, and rangers onboard boats or at shorelines, along with visitor centers, displays, signs, and brochures. This information covers the biology, ecology, and behaviors of marine species, best practice guidelines, and threats to marine life. Visitor benefits from interpretation of marine wildlife tourism experiences can include enhanced educational and conservation outcomes (Andersen & Miller, 2006; Cater & Cater, 2007; Finkler & Higham, 2004; Forestell & Kaufman, 2007; Higham, 1998; Hughes & Saunders, 2005; Lück, 2003; Madin & Fenton, 2004; Mayes et al., 2004; Muloin, 1998; Orams, 2000; Schanzel & McIntosh, 2000; Tisdell & Wilson, 2005; Townsend, 2008). The personal benefits of viewing and learning about wildlife are the basis for conservation actions (Manfredo & Driver, 2002). On-site benefits of increased understanding or emotional responses to marine wildlife encounters (Schanzel, 2004) may also lead to off-site benefits such as greater environmental awareness, supporting nature conservation work, and protecting endangered species (Forestell & Kauffman, 2007; Milstein, 2007; Orams, 1997; Wilson & Tisdell, 2003).

### *Framework for Managing Marine Wildlife Tourism Experiences*

This article follows the framework devised by Orams (1995, 1999) that measures positive changes in both tourists and the marine environment for effective management of marine tourism (Table 1). Indicators of tourist benefits from marine animal encounters include enjoyment and learning, contributing to proenvironmental attitudes and behavior changes, along with conservation benefits for marine environments and marine wildlife. Indicators of conservation benefits include tourists reducing wildlife disturbance, protecting habitats, and aiding the viability of marine ecosystems. The framework by Orams (1999) was based on a previous model of experiential education in whale-watching ecotourism programs in Hawaii (Forestell, 1993; Forestell & Kauffman, 1990). This model focused on the cognitive states or learning of visitors using interpretation in marine settings to reduce impacts and promote proenvironmental behaviors on whale-watching tours. Lück (2003) evaluated the key role of interpretation on swim with dolphin tours in New Zealand, based on models by Forestell and Kaufmann (1990) and Orams (1997). Orams (1999) extended the three-step experiential education sequence of Forestell (1993) into a four-stage sequence of desirable tourist outcomes from marine education programs. Mayes et al. (2004) also adopted a model based on changing attitudes, beliefs, behaviors, and actions through wildlife interaction and interpretation with benefits for animals, the environment, and visitors. This article applies Orams' (1999) key indicators of behavior/lifestyle change in tourists and conservation outcomes for the marine environment from marine wildlife tours.

Table 1
Indicators for Managing Marine Wildlife Tourism Experiences

| Tourists | Marine Environment |
|---|---|
| Satisfaction/enjoyment | Minimize disturbance |
| Education/learning | Improve habitat protection |
| Attitude/belief change | Contribute to long-term health and viability of ecosystem |
| **Behavior/lifestyle change** | |

Source: Orams (1995, 1999).

## Behavior and Lifestyle Changes in Marine Tourists

Studies by Orams (1996) and Mayes et al. (2004) suggest that marine wildlife tours with a strong educational focus can create longer term behavioral or lifestyle changes in visitors. These behavioral changes can include minimizing impacts, donating money, and direct actions supporting environmental issues (Moscardo et al., 2004). Table 2 presents selected changes in the personal behavior or lifestyle of visitors during or after a marine wildlife tour. For example, after viewing sea turtles at Mon Repos beach (Queensland, Australia) visitors indicated strong support for protecting sea turtles, taking care using beaches, and not buying turtle products overseas. They would also take more care with fishing gear, plastics, and lights near beaches (Tisdell & Wilson, 2002, 2005). Howard (2000) found 74% of visitors (37 out of 50) surveyed 6 months after visiting Mon

Table 2
Personal Behavior or Lifestyle Changes on or After a Marine Wildlife Tour

| Behavior or Lifestyle Changes | % Response |
|---|---|
| **Mon Repos Conservation Park QLD** (Tisdell & Wilson, 2002) | |
| Take personal action to conserve sea turtles | 87 |
| Other respondents (partner, family, children) protecting sea turtles | 81 |
| Take care using beaches used by sea turtles for nesting | 75 |
| Don't buy or consume tortoiseshell products, eggs, meat, soups (overseas) | 73 |
| Switch of lights near beaches | 68 |
| Be more careful disposing of plastics | 62 |
| Take care with fishing gear | 47 |
| **Mon Repos Conservation Park QLD** (Ballantyne, Packer, & Bond, 2007)[a] | |
| Practiced recycling (previsit) | 85 |
| Conserved water (previsit) | 67 |
| Donated money to conservation groups (previsit) | 15 |
| Participated in public land or water clean ups (previsit) | 10 |
| Volunteer work for an environmental group (previsit) | 8 |
| Recognized specific behaviors needed for wildlife conservation (postvisit) | 18 |
| Adopted new behaviors: donated money, told others about conservation (postvisit) | 9 |
| **Jurabi Turtle Experience WA** (Smith, 2006)[b] | |
| Aware of code of conduct for viewing nesting turtles | Independent visitors 72/JTE tour 98 |
| Avoid sudden movements (JTE tour) | 94 |
| Staying low (JTE tour) | 68 |
| Walked below high tide | Independent visitors—beach only 84/JTE display 89/JTE tour 29 |
| Closer than 15 m to turtle digging pit | Independent visitors—beach 75/JTE display 86/JTE tour 23 |
| Did not stay behind the turtle | Independent visitors—beach 69/JTE display 100/JTE tour 12 |
| **Dolphin feeding QLD** (Mayes et al., 2004)[c] | |
| Remove beach litter that could harm dolphins | 75 |
| Assist in the protection of whales and dolphins where possible | 64 |
| Decrease their contribution to water pollution | 60 |
| Tell others about the need to care more for our oceans and wildlife | 56 |
| Become more involved in marine conservation issues | 23 |
| Touching dolphins is OK (Tin Can Bay/Tangalooma) | 25/3 |
| **Dolphin education & feeding Tangalooma QLD** (Orams, 1996)[d] | DEP visitors/control |
| Get more information on dolphins | 41/13 |
| Picked up rubbish from beaches | 65/44 |
| Become more involved in environmental issues | 32/6 |
| Made a donation to an environmental organization | 23/11 |
| **Humpback whale watching, NSW** (Stamation et al., 2007)[e] | Land/boat |
| Donate to and/or be actively involved in an environmental group | 17/23 |
| Recycle | 43/48 |
| Choose household products better for the environment | 41/48 |
| Avoid putting oil, fat, paint, or turps down sink or toilet | 47/50 |
| Avoid putting litter or detergents into gutters or storm water drains | 46/49 |
| Use alternatives to plastic bags when grocery shopping | 40/43 |

[a]Previsit questionnaire completed by 452 visitors, 140 returned postvisit questionnaires with 112 in a follow-up web survey.
[b]Independent visitors that visited the beach only and independent visitors that also saw the JTE interpretive display: JTE tour ($n = 42$), independent visitors and JTE display ($n = 29$), independent visitors—beach only ($n = 25$).
[c]Definitely responses only, $n = 105$ questionnaires (54 Tangalooma, 51 Tin Can Bay) for visitors feeding wild dolphins.
[d]DEP = Dolphin Education Program visitors $n = 104$, control group (pre-DEP), $n = 110$ (phone interviews).
[e]1,037 questionnaires from six whale-watching boats and 1,569 surveys from land-based whale watchers in southern NSW.

Repos reported behaviors such as talking to friends/family and teaching people about turtles, removing beach litter, reporting turtle sightings, releasing turtles trapped in nets, and volunteering. Ballantyne, Packer, and Bone (2007) in a previsit survey of 452 people found visitors to Mon Repos often practiced recycling (85%) and conserved water (67%). They also donated money to conservation groups (15%), participated in cleaning up public land or water (10%), and did volunteer work for environmental groups (10%). A follow-up survey of 140 visitors up to 6 months later also found that "18% of respondents indicated that they wanted to or had recognized the need to adopt specific behaviours in relation to wildlife conservation and 9% of respondents indicated that they actually *had adopted* new behaviours (including donating money, and telling others about conservation issues)" (Ballantyne, Packer, & Bond, 2007).

Surveys of land-based ($n = 1{,}569$) and boat-based whale watchers ($n = 1{,}037$) in southern New South Wales also recorded 40–50% response rates for environmentally friendly activities such as recycling, proper disposal of liquid wastes, not using plastic bags, and choosing less harmful household products (Stamation, Croft, Shaughnessy, Waples, & Briggs, 2007). There was a lower response for active involvement or donating to conservation groups (17–23%), although visitors with a higher environmental rating were more likely to support environmental groups. A follow-up survey 6–8 months later of 130 boat-based and 178 land-based whale watchers found no overall changes in performing these six environmentally friendly behaviors: 18% stayed the same, 37% increased, and 45% decreased (Stamation et al., 2007).

At the Jurabi Turtle Experience (JTE) tour at Exmouth (Western Australia) nearly all visitors (98%) that joined a tour ($n = 42$) knew about the code of conduct for viewing nesting sea turtles. Some visitors on this JTE tour still breached aspects of this code, but far less so than independent visitors. Most JTE tour participants avoided sudden movements (94%) and stayed low to the ground (68%) when viewing turtles. In contrast, independent visitors were more likely to walk below the high tide mark (84–89%), or go closer than 15 m to a nesting turtle (75–86%) compared to visitors on a JTE tour (Smith, 2006). Since 2004, volunteer turtle guides and tour operators at Jurabi Turtle Centre increased the level of information and public education about turtle viewing behavior and conserving marine turtles (Macgregor, 2006). However, 77% of tourist groups at Jurabi still breached the code of conduct by shining lights directly at the turtles, not staying behind turtles, and going closer than 3 m, with 51% of breaches disturbing nesting turtles (Waayers, Newsome, & Lee, 2006).

Visitors on wild dolphin feeding tours ($n = 105$) at Tin Can Bay and Tangalooma (56–75%) stated they would remove beach litter, assist in protecting dolphins, decrease water pollution, and tell others about caring for oceans and marine life (Mayes et al., 2004). For on-site behaviors, 25% of Tin Can Bay visitors thought it was acceptable to touch dolphins compared to 3% of visitors at Tangalooma that learned about human impacts on dolphins at feeding talks. More than half of these dolphin visitors (63%), though, were not involved in environmental organizations or activities (Mayes et al., 2004). At Tangalooma Resort, follow-up phone interviews conducted with visitors 2–3 months after the dolphin experience also found longer term changes in environmental behaviors. Visitors that participated in the dolphin education program actively sought dolphin information, picked up beach rubbish, were more involved in environmental issues, and donated money to environmental organizations (Orams, 1996, 1997). The Tangalooma education program also reduced inappropriate on-site behaviors such as visitors touching dolphins (Orams & Hill, 1998). Most of these studies measure intention to act rather than actual behaviors (e.g., JTE turtle tour) and rely on self-reporting by visitors, with no longer term studies of changes over 1–5 years.

## Conservation Benefits of Marine Wildlife Tourism

The conservation benefits gained from wildlife tourism include: 1) wildlife management and research; 2) finances for conservation of species; 3) socioeconomic benefits; and 4) education of visitors, potentially leading to more conservation-focused behavior and support (Higginbottom & Tribe, 2004). According to (Orams, 1995, 1999),

the conservation outcomes for marine wildlife and marine environments aim to: 1) minimize disturbance; 2) improve habitat protection; and 3) contribute to the long-term health and viability of ecosystems. Table 3 presents conservation appreciation and actions by visitors on four different marine wildlife tours. At Mon Repos, these included minimizing threats to turtles; talking about sea turtles, reporting mistreated, sick, or injured sea turtles; protecting sea turtles as an ancient/unique species; and donating money to conserve sea turtles (Tisdell & Wilson, 2001, 2002, 2005). A follow-up survey of 140 visitors 6 months after visiting Mon Repos also found that people recognized the specific behaviors needed for wildlife conservation (18%) and had adopted new conservation behaviors such as donating money or telling others about conservation issues (9%) (Ballantyne, Packer, & Bond, 2007). Visitors on whale-watching tours and at wild dolphin feeding programs also exhibit a higher level of conservation appreciation (Mayes et al., 2004; Wilson & Tisdell, 2003). Visitors on boat-based whale watch trips ($n = 1,037$) in southern NSW were more likely to pick up litter (59%), tell people general facts about whales (70%), and tell people about whale conservation (48%). Boat-based whale watchers also told others more frequently about whales than land-based watchers (Stamation et al., 2007). Visitors on whale-watching tours in Hervey Bay ($n = 702$) indicated that they would do more to protect whales within Australia (80%); support a global ban on commercial

Table 3
Conservation Appreciation or Actions by Participants on Marine Wildlife Tours

| Conservation Appreciation or Actions | % Response |
|---|---|
| **Mon Repos Conservation Park QLD** (Tisdell & Wilson, 2002)[a] | |
| Take more action to minimize threats to sea turtles | 98 |
| Talk about sea turtles at Mon Repos to friends and relatives | 98 |
| Increased desire to protect sea turtles as unique species | 90 |
| Report poaching or mistreatment of sea turtles | 88 |
| Take more personal action to conserve sea turtles | 87 |
| Report the sighting of sick or injured sea turtles | 66 |
| Protect sea turtles because they are an ancient species | 66 |
| Contribute more money for sea turtle conservation | 40 |
| Protect sea turtles because they have recreational value | 32 |
| Protect sea turtles because they can generate income | 23 |
| **Humpback whale watching QLD** (Wilson & Tisdell, 2003)[b] | |
| Take more action to protect whales in Australia | 80 |
| Complete worldwide ban on whaling | 78 |
| Report stranding of whales and injured/mistreated whales | 73 |
| **Humpback whale watching, NSW** (Stamation et al., 2007)[c] | Land/boat |
| Pick up litter that may be harmful to wildlife | 49/59 |
| Tell people about whales generally | 54/70 |
| Tell people about whale conservation | 33/48 |
| Find out more information on whales | 46/50 |
| Find out more information on other wildlife | 28/31 |
| **Dolphin feeding QLD** (Mayes et al. 2004)[d] | Tangalooma/Tin Can Bay |
| Tell others of the need to care and conserve | 61/50 |
| Consider using more energy-saving devices | 44/21 |
| Donate time to assist wildlife conservation | 28/2 |
| Donate money to environmental organization | 22/8 |
| Join wildlife or dolphin preservation organization | 17/4 |
| Consider joining a mammal stranding organization | 17/4 |

[a]Subscribe to a newsletter with updates on sea turtle conservation work. Form a "friends of sea turtles" group. More access to (translated) material on sea turtles. Current threats and conservation measure; Ban photography.
[b]$n = 702$ questionnaires from whale watchers in Hervey Bay (Qld).
[c]1,037 questionnaires from six whale-watching boats and 1,569 surveys from land-based whale watchers in southern NSW.
[d]Definitely responses only, $n = 105$ questionnaires (54 Tangalooma, 51 Tin Can Bay) for visitors feeding wild dolphins.

whaling (78%); and 73% would report stranded or injured whales (Wilson & Tisdell, 2003). Ninety visitors surveyed on other whale-watching cruises reported that they conserved water and energy, bought eco-friendly products, and regularly participated in recycling (Ballantyne et al., 2006).

Dolphin feeding visitors at Tangalooma also recorded a strong commitment towards informing others about conservation; using energy saving devices; donating time/money to wildlife conservation or environmental organizations; and joining a dolphin or mammal stranding group (Mayes et al., 2004). Visitors ($n = 195$) on dolphin-watching boats in Port Stephens (NSW) also expressed high to very high support for proenvironmental actions such as removing harmful litter from oceans (60%) and beaches (51%); decreasing personal water pollution (54%); assisting in protection of dolphins (49%); and telling others about caring for marine areas and wildlife (49%). There was moderate support for actions requiring time, money, or effort such as donating money to conservation organizations (37%); getting involved in conservation issues (33%); donating time to wildlife conservation (31%); helping stranded mammals (29%); and joining a conservation group (28%) (Mayes & Richins, 2007).

Conservation messages delivered on tours, brochures, and displays at seven marine wildlife attractions in New Zealand (e.g., dolphin, whale, penguin, albatross, and shorebirds) also highlighted hunting of whales; protection of marine mammals and migratory birds; predator management and eradication; the Southern Ocean Whale Sanctuary; recreational set netting/fisheries bycatch; marine pollution/urban waste management; and Maori environmental values. Some 54% of visitors on Dolphin Watch Marlborough, where tourists could participate in collecting and recording data about dolphin sightings and behaviors, stated their wildlife experience had affected their environmental values and actions (Higham & Carr, 2003).

Visitors to Seaworld Australia ($n = 475$) also stated they would support wildlife conservation by actions such as recycling (20%), giving money (14%), supporting wildlife networks (13%), looking after animal habitats (8%), reducing pollution (8%), conserving energy/water (6%), and cleaning up waterways (5%). Education (26%), respecting wildlife (12%), and awareness of wildlife (6%) were other conservation-minded actions reported by visitors to Seaworld (Saltzer, 2001). In sum, personal encounters with marine wildlife linked with education programs were more likely to generate conservation appreciation and action by visitors. However, again most of these studies measure *intention* to act rather than *actual* conservation behaviors and rely on self-reporting by participants, with no longer term studies (i.e., beyond 6 months) of conservation actions or outcomes (Gralton, Sinclair, & Purnell, 2004). Few studies observe on-site or actual visitor behaviors, compared to intended behaviors, such as approaching nesting marine turtles (Waayers et al., 2006).

### *Visitor Benefits From Marine Wildlife Interpretation*

This article identified a range of education and conservation benefits for visitors on guided marine wildlife tours. The on-site benefits of increased understanding or emotional responses to marine wildlife encounters can lead to off-site benefits such as greater environmental awareness, supporting nature conservation work, and protecting endangered species. Empirical studies of marine wildlife tourism experiences were assessed against the framework devised by Orams (1995, 1999) measuring positive changes in both tourists and the marine environment for effective management of marine wildlife tourism operations and sites. Tourists' benefits from marine animal encounters include enjoyment and learning, contributing to proenvironmental attitudes and behavior changes, and the longer term intention to engage in conservation actions that benefit marine wildlife and environments. Therefore, marine wildlife tours with a strong educational focus and interpretation program can create attitude, behavior, or lifestyle changes in visitors (Ballantyne, Packer, Hughes, & Dierking, 2007). This review of visitor benefits from guided encounters with marine wildlife thus supports the framework developed by Orams (1999) for managing marine tourism experiences and also the experiential education sequence model in marine ecotourism programs (Forestell, 1993). Conservation outcomes were gained where learning

benefits obtained from information about marine wildlife reinforced the emotional benefits of directly experiencing marine animals in their natural habitats.

Marine wildlife tours with a strong educational focus changed the proenvironmental attitudes, beliefs, and behavior of some visitors. On whale and dolphin tours, tourists changed their attitudes to conservation, displaying a greater knowledge of cetaceans and awareness of threats to marine life. Other changes in the personal behavior of visitors on a guided tour of turtle nesting beaches included better overall adherence to minimal impact guidelines at the Jurabi turtle experience. Visitors interacting with sea turtles at Mon Repos and dolphins at Tangalooma Resort also adopted short-term proenvironmental behaviors (up to 4 months later) such as cleaning up beaches, recycling, and donating money to wildlife groups. Other conservation benefits were enhanced appreciation of marine wildlife and engaging in actions to reduce human threats or impacts on wildlife (Howard, 2000). A postvisit survey of 140 visitors at Mon Repos 6 months later also found support for behaviors supporting wildlife conservation (18%) and specific actions such as donating money and taking about conservation matters (9%) (Ballantyne, Packer, & Bond, 2007). Close proximity to marine wildlife during in-water encounters, near nesting turtles, or shore-based feeding interactions with dolphins magnified these conservation and education benefits. The level or intensity of the encounter with marine wildlife needed to change tourist attitudes was linked to direct, close encounters with animals more so than passive viewing from a boat or on land.

The quality of marine wildlife interpretation also influenced conservation outcomes and other environmentally responsible behaviors as reported by visitors. For example, whale watchers in southern NSW did not tell others about whale conservation, as this was not covered in the interpretation. An educational brochure given to boat-based whale watchers in 2003, however, increased visitor knowledge about threats to whales and awareness of whale conservation. Interpretation promoted stronger environmental appreciation in boat-based whale watchers (Stamation et al., 2007). Only about half of surveyed visitors on two dolphin watching boats in Port Stephens were highly satisfied with interpretation about conserving dolphins (52%) and their ocean environment (42%), indicating a need for improvement in this area. However, there was greater support for conservation of dolphins and marine wildlife onboard the boat with a full interpretation of dolphins linked to conservation messages and behaviors (Mayes & Richins, 2007). A study of interpretation delivered by tour guides onboard eight whale watching boats in Hervey Bay (Qld) found less than 50% delivered whale conservation messages; 25% encouraged conservation actions such as joining an environmental or wildlife group; and 12.5% mentioned the impacts of Japanese whaling in 2005. In addition, a survey of whale watch visitors ($n = 1,520$) found only 30% received a conservation message while over 40% received no conservation messages at all from their experience (Peake, 2007). However, the Pacific Whale Foundation provides interpretation onboard seven whale watching boats in Hawaii based on modeling and reinforcement of desired conservation behaviors and environmental best practice to minimize impacts on marine areas (Forestell & Kaufman, 2007). Thus, in summary, it can be concluded that incorporating conservation messages and actions in marine wildlife interpretation increases visitor support for protection and care of marine animals and environments.

These personal, educational, and conservation benefits for visitors, however, depend on sound management of marine animal encounters and interpretation programs that integrate knowledge with the emotional aspects of observing marine wildlife. The level of visitors' commitment to marine wildlife conservation related to impacts on their knowledge, their attitudes, and then behaviors. According to Ballantyne, Packer, and Bond (2007), the personal impact of viewing marine turtles on nesting beaches at Mon Repos and concern for their conservation related to visitors in four main ways. First, their knowledge and interest; second, their understanding and attitude toward turtles; third, their general attitudes towards wildlife and nature conservation; and fourth, their personal beliefs. The benefits for participants on marine wildlife tours are realized when the affective (emotional) benefits and excitement of seeing

unique marine life are integrated with the cognitive (education) benefits of learning new facts about marine wildlife. Thus, educational entertainment in marine wildlife interpretation needs to include both cognitive and affective aspects of experiential learning (Howard, 2000; Schanzel, 2004). Visitor learning for fun and enjoyment during leisure activities is an important part of tourism experiences (Packer, 2006). Hence, marine wildlife interactions that involve making personal connections with marine animals in a learning context can provide a range of conservation and educational benefits. Marine wildlife tourism experiences that increase both environmental awareness and positive feelings are more likely to generate environmental actions, resulting in conservation benefits for marine wildlife and their coastal or marine habitats.

## Further Research

Further research is required on the links between the content of marine interpretation programs and the conservation benefits deriving from guided marine wildlife tours. Much of the research on marine wildlife tourism is site or species specific, focused on biological impacts, and is limited to one type of encounter. Visitors at aquariums and seaworld parks need to be surveyed about the conservation and educational benefits of marine wildlife encounters at these captive sites (Adelman, Falk, & James, 2000; Ballantyne, 2007; Ballantyne et al., 2007). The conservation attitudes and behavior of staff and operators of marine wildlife tours also need further investigation (Groff, Lockhart, Ogden, & Dierking, 2005; Peake, 2007). The environmental attitudes of marine visitors in regard to whale watching and commercial or subsistence whaling need further investigation (Higham & Lusseau, 2007; Orams, 2001), along with cross-cultural attitudes to wildlife conservation in marine tourism settings (Takei, 1998). The level of recreational involvement or specialization, intensity, and emotional aspects of marine experiences can also influence environmental behaviors (Thapa, Graefe, & Meyer, 2005, 2006). Longer term studies are also need to measure ongoing actual conservation actions of visitors 1 to 5 years after marine wildlife interactions, beyond self-reported intentions to act environmentally. These conservation behaviors by visitors and operators need to firstly, minimize disturbance; secondly, improve habitat protection; and thirdly, contribute to the long-term health and viability of marine ecosystems (Orams, 1999). The wildlife experience itself in a scenic natural area may heighten visitor concern and appreciation for wildlife, but behavioral changes or conservation outcomes may not always result. Thus, more in-depth evaluation of educational programs in marine wildlife tourism will validate techniques that increase tourist knowledge and promote conservation behaviors that benefit marine wildlife and ocean environments.

## Conclusions

This analysis of selected marine wildlife tourism case studies in Australia and New Zealand found that mediated encounters with popular marine wildlife, such as whales, dolphins, and turtles, can provide a range of education and conservation benefits for visitors. Marine wildlife interpretation programs that highlight species biology and human impacts can also influence visitor attitudes, beliefs, and conservation outcomes. Guided interactions on marine wildlife tours can motivate visitors to respect marine life, foster environmentally responsible attitudes and behaviors, and benefit marine conservation. Linking affective and cognitive responses to marine wildlife increases environmental awareness, modifies intentions to act proenvironmentally, and fosters conservation appreciation and actions by wildlife tourists. These conservation outcomes also depend on the intensity and frequency of tourist encounters with marine wildlife and the type of learning experience provided. Conservation messages about human threats to marine life and ocean environments need to be a core part of this interpretation. On-site visitor behavior around marine wildlife improves with guided tours and structured interpretation, but more research is needed on longer term conservation outcomes. This research can be guided by Orams' (1999) key indicators of behavior/lifestyle change in tourists and positive conservation actions for marine environments. The visitor benefits of marine interpretation and the overall structure of wildlife encounters thus need to be considered

by the managers and operators of marine wildlife tours. Marine interpretation programs need to engage visitors and deliver effective conservation messages about marine animals and ecosystems while also managing the visitor desire for close interaction with marine wildlife.

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## Biographical Notes

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