
34. Using aquariums and their visitor experiences to promote ecotourism goals: issues and best practice

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WHY AQUARIUMS?

While zoos and aquariums are generally grouped together as visitor attractions that feature wildlife, aquariums, with their focus on aquatic animals and ecosystems, have some unique challenges and concomitantly distinctive advantages when using their facilities to promote ecotourism goals. While there is an increasing body of research looking at the role of zoos in ecotourism, very little attention has been paid to aquariums (Frost & Roehl, 2008; Mason, 2000).

The oceans cover over 70 per cent of the surface of the Earth, yet remain the most unexplored part of our planet. The oceans help to regulate the Earth's climate, provide most of the world's oxygen, soak up carbon dioxide, supply 2.9 billion people with at least 15 per cent of their average per capita animal protein intake (FAO, 2009), transport goods and people and provide employment and recreation. Despite their incredible importance, the current state of the oceans is disturbing. According to the state of the oceans report (Rogers & Laffoley, 2011), the capacity of the oceans to support life is decreasing at a rate faster than previously assumed. Over the past 50 years overfishing, pollution and unsustainable practices have resulted in the loss of over 40 per cent of the world's coral reefs (Hoegh-Guldberg, 2011). While 28 per cent of the world's major fisheries are either overexploited or depleted and 52 per cent are fully exploited (FAO, 2009), 90 per cent of the large predatory fish of the Atlantic have been lost (Myers & Worm, 2005) and habitats such as mangroves and seagrass beds are disappearing at an unparalleled rate (Rogers & Laffoley, 2011). The combination of these stressors, together with the impacts of climate change, have the potential to cause mass extinctions in the oceans (Barnosky, Matzke, Tomiya, Wogan, Swartz, Quental, Marshall, McGuire, Lindsey, Maguire, Mersey & Ferrer, 2011). Freshwater ecosystems, equally critical for life on Earth, face even more frightening challenges. While freshwater habitats cover less than 1 per cent of the world's surface, they provide a home for 7 per cent of the estimated 1.8 million described species (Vié, Hilton-Taylor & Stuart, 2009). From a human perspective, the loss of the goods and services supplied by freshwater ecosystems will have serious and long-term impacts.

As terrestrial species, humans have generally had relatively little contact with the oceans. The pioneer Jacques Cousteau's early television programmes introduced millions to the 'Silent World' and inspired a generation of ocean enthusiasts. Recent years have seen an explosion of documentaries on the oceans and freshwater ecosystems. However, while interest has increased (Rodger, Smith, Newsome & Moore, 2011), many people remain disconnected from aquatic life. With the exception of marine mammals, people do not often have a natural empathy for fish or other marine animals and usually

view them as food. Aquariums are in a unique position to change this perception and to connect people to the aquatic realm to inspire visitors to care about aquatic ecosystems and animals. Aquariums can also create an awareness of the challenges facing aquatic systems and empower visitors to take tangible action to address these issues.

THE AQUARIUM INDUSTRY

There are approximately 300 substantial public aquariums in the world and this number is increasing each year with over 100 public aquariums being opened around the world in the last 20 years, 35 of which opened in China and Japan, and 32 in Europe and the USA (Penning, McReid, Koldewey, Dick, Andrews, Arai & Garratt, 2009). The use of aquariums as attractions in areas with high visitor flows including tourism precincts, such as regenerated inner cities and docklands, tourism-orientated shopping malls and hotels (Frost, 2011), detracts from the fact that many aquariums do play an important role in conservation and education initiatives. Requiring relatively little space, aquariums are ideal 'anchor attractions' for redeveloped land. Examples include the uShaka Marine World complex in Durban, South Africa, the Sydney Aquarium in Darling Harbour, Australia and the National Aquarium in Baltimore's Inner Harbour, USA. On the positive side, the existence of aquariums in such high flow areas, the variety of settings and locations in all regions of the world, create many opportunities for ecotourism goals to be achieved amongst a diverse and multicultural audience representative of all socio-economic categories (Penning et al., 2009). It is clear that aquariums are now a worldwide, multi-million dollar industry.

In order to build an understanding of the diversity of aquariums internationally, an attempt was made to find the websites of the world's larger (with respect to visitor numbers) stand-alone aquariums, based on the list in Penning et al. (2009), with additions. This review revealed that aquariums encompass a broad spectrum of organizational types, including for-profit and not-for-profit models; those operated by municipal or regional authorities and those privately owned; and aquariums embedded in commercial marine theme parks or hotels.

English translations of websites could not be found for eight Chinese aquariums. The 44 remaining aquarium websites were analysed to obtain a mission statement and to determine the ease with which the terms conservation, education and sustainability could be found. If the terms could be easily located on the front page or within a second page, the website was noted to have the component. If it required more than a cursory search, then the terms were considered to be absent. Analysis of the websites and mission statements used the typology described by Patrick, Matthews, Ayers and Tunnicliffe (2007), where education was considered to have been included if the site or mission statement included words such as inspire, instill, motivate, understanding, teaching, knowledge and inform, while conservation-related words such as protect and stewardship were noted. Where possible, if the website was in a language other than English, it was translated using Google Translate.

The mission statements of 34 of the aquariums were located. Of these, only one did not mention conservation or education (or words related to these two terms); 27 mentioned both education and conservation and six mentioned education with no reference to

conservation. This was similar to the finding by Patrick et al. (2007), where the mission statements of 136 accredited zoos in the USA were analysed. They found that the theme of education appeared in the statements of 131 zoos, while 118 zoos specifically mentioned conservation in their mission statements. A similar survey of 190 zoos and aquariums in 40 countries found that of the 86 per cent of the organizations that had mission statements, 77 per cent specifically included biological conservation (Zimmermann & Wilkinson, 2007).

Of the 44 aquarium websites analysed, 34 held easy references to education and 30 mentioned conservation. This is a significant finding in that for many people the first contact with an aquarium is through its website. If over half of the websites feature both conservation and education relatively prominently, the first impression of many visitors may well be an introduction to these important ecotourism concepts. In contrast to the zoos of the world, which tend to be owned by local authorities, municipal institutions, charitable trusts or private companies (Cain & Meritt, 1998), it is notable that many aquariums are owned or operated by a commercial, for-profit company. Examples include Australia's Oceanis group, Merlin Entertainments group (SeaLife aquariums in Australia, Europe, UK and the USA) and the Spanish-based Parques Reunidos and Aspro Ocio groups. In the USA, Busch Entertainment Corporation operates three Sea World marine theme parks and Walt Disney Parks and Resorts operates 'The Seas with Nemo and Friends Pavilion' in Epcot, part of DisneyWorld. Kerzner International Resorts Incorporated operates two aquariums in its hotel complexes in Dubai and the Bahamas, and Ocean Park Corporation owns Ocean Park Hong Kong, which added the Grand Aquarium in 2011. The trend of aquariums being owned and/or operated by commercial enterprises has both positive and negative implications for the future of aquariums as serious sites for ecotourism. Should these companies be committed to the principles and goals of ecotourism, their enormous visitorship across a wide spectrum of countries and cultures would bode well for the future of aquariums. Conversely, should these holding companies be primarily focused on profit, with lip service being paid to the principles of environmental sustainability and education, all aquariums run the risk of being viewed as commercial enterprises that utilize captive animals for profit.

WHO VISITS AQUARIUMS AND WHY?

Visitors to aquariums, like those who visit zoos, can be characterized as seeking recreational or leisure experiences, primarily in a social context with family and friends (Adelman, Falk & James, 2000; Briseño-Garzón, Anderson & Anderson, 2007; Packer & Ballantyne, 2002). Aquarium visitors tend to be grouped together with zoo and sometimes museum visitors for research purposes, but people who visit aquariums do have some distinct characteristics, which will be described below (Falk, Heimlich & Bronnenkant, 2008).

Understanding why people visit educational leisure settings (like aquariums, zoos, science centres and museums) has been a focus of visitor research for some time (Dierking, Burtnyk, Büchner & Falk, 2002; Packer & Ballantyne, 2002) partly for marketing reasons, but primarily to improve the impact of the visitor experience related to the institution's purpose or mission. Demographics of visitors by themselves are not

particularly helpful in telling us what motivates someone to attend, the knowledge and attitudes visitors bring with them during a visit or how their experiences might influence their behaviour afterwards. Previous research on science centre visitors by Falk and Storksdieck (2005) found that the motivations individuals have for visiting appear to cluster around just a few identity-related reasons. In a study at the National Aquarium in Baltimore, Falk and Adelman (2003) found support for their theory that grouping visitors based on their entering understanding and attitudes was helpful in more accurately assessing changes in visitors' conservation learning.

Building on that research, Falk et al. (2008) found that visitors to zoos and aquariums in the USA arrive with specific identity-related motivations and these motivations directly impact how they conduct their visits, as well as the outcomes they experience. Nearly half (48 per cent) of visitors who participated in this research came for a single, dominant identity-related motivation, though the majority came for multiple reasons. Relevant to ecotourism efforts, visitors whose primary motivation for visiting is to see an important site tend to be tourists or those in the community who like to promote their local attraction. Interestingly, this group possessed the least knowledge about conservation or natural history and had the lowest expectations for their visit; however, this is the group that showed the most significant positive change in both cognition and affect. Visitors who are primarily seeking a contemplative and/or restorative experience comprised the smallest group overall (only 4 per cent of the entire sample) but were more common in aquariums than zoos. Packer and Ballantyne (2002) found that visitors to an aquarium in Australia listed learning and discovery goals as second only to enjoyment goals, while visitors to a museum viewed learning as their primary goal.

ECOTOURISM

Before it is possible to consider the role of aquariums and their visitor experiences in promoting ecotourism goals, it is necessary to determine the extent to which aquariums are considered ecotourism venues. The concept of ecotourism has been hotly debated for many years (Garrod, 2003). Despite a lack of a universally accepted definition, the following general principles are accepted: ecotourism must be intrinsically nature-based; it must be managed to be sustainable; social equity is essential; and it must include an educational component (Donohoe & Needham, 2008; Weaver & Lawton, 2007; Wilson & Garrod, 2003). Given these principles, many aquariums could consider themselves to be ecotourism destinations.

Ryan and Saward (2004) propose that aquariums could be considered to be at the far end of a continuum of wildlife tourism operations that range from seeing animals in their natural habitats with limited human intervention to captive animal facilities, a view shared by Orams (1996). Cater (2010) noted that marine aquariums are not ecotourism *per se* but that they fulfil tourist needs for interaction with animals, while Cater and Cater (2007) suggest that aquariums are a type of 'fake' ecotourism, where animals, particularly marine mammals, are excessively anthropomorphized in order to commodify nature. Interestingly, similar anthropomorphizing may take place during whale watching tours, dolphin encounters or turtle nesting experiences (Bulbeck, 2005; Cater & Cater, 2007). Another view holds that classifying aquariums as ecotourism negates

the contribution of ecotourism to genuine sustainable ecotourism (Wearing & Jobberns, 2011). Cater and Cater (2007) conclude that ecotourism should rely on 'wild' animals, which would exclude aquariums from their definition. However, they do recognize the enormous educational potential of aquariums, the role of aquariums in research and the possibility that aquariums could help relieve pressure on wild ecosystems and animals. The potential for education and conservation led Mason (2000) to suggest that captive animal facilities could be considered as ecotourism attractions and there is an increasing body of research to support the view that ecotourism attractions, including aquariums, do contribute to increasing visitors' knowledge and awareness of environmental matters (Ballantyne & Packer, 2011; Ballantyne, Packer, Hughes & Dierking, 2007).

An interesting trend has been the 'Disneyization' of captive animal facilities whereby zoo exhibits and, to a lesser extent, aquarium exhibits are made to 'replicate' an authentic wildlife experience (Beardsworth & Bryman, 2001; Ryan & Saward, 2004). It has been suggested that, in the electronic age, consumers are more relaxed about authenticity, as they seek out experiences that are effectively staged and entertaining, allowing them to enjoy wildlife in captive as well as in wild environments with equal ease (Beardsworth & Bryman, 2001; Cater, 2010; Frost & Laing, 2011). In many popular marine aquariums and parks, reality and fantasy are integrated into exciting animal-based attractions (Mann, 2005). However, the challenge remains to ensure that aquariums do not devolve into amusement parks exhibiting animals as décor between funfair-type rides with no relevance for or reference to conservation (Conway, 2004).

WHAT ARE THE ECOTOURISM GOALS OF AQUARIUMS?

While an exact definition of ecotourism is elusive, there appears to be greater agreement on the goals of ecotourism, which include education and interpretation, conservation and research, socio-economic benefits and environmental sustainability (Cater & Cater, 2007; Donohoe & Needham, 2008). The World Zoo and Aquarium Association (WAZA) Global Aquarium Strategy (Penning et al., 2009) defines nine focus areas in which action is required in order for aquariums to achieve their goals in conservation. These focus areas include integrating conservation into all aquarium operations, contributions to the conservation of wild populations, science and research, education and training, effective communication and marketing, sustainability and ethics. Many of these focus areas could be considered to be the ecotourism goals of aquariums.

Integrating Conservation

For a tourism activity to be considered an ecotourism venture, conservation should be considered as integral to all operations. In the case of aquariums conservation should be woven into the culture of the organization, with integrated conservation a clear and explicit aim (WAZA, 2005). The importance of conservation in an aquarium can be gauged only partly by its mission statement. Although simply including conservation in the mission statement of an organization does not necessarily mean a serious commitment to conservation principles, it is encouraging to note that almost 80 per cent of the aquarium mission statements found on their websites contained references to

conservation. However, it should be remembered that visitors are increasingly critical of what is perceived as 'greenwashing' and aquariums need to ensure that they can back up their conservation-based mission statements with environmentally sound practices throughout their operations. Evaluation of the effectiveness of the conservation efforts of aquariums, as well as ecotourism operations, remains a challenge that requires more attention worldwide (Gusset & Dick, 2010; Mace, Balmford, Leader-Williams, Manica, Walter, West & Zimmermann, 2007).

Sustainability

The operation of an aquarium requires consumption of natural resources. Huge power and water consumption is required to run life support systems and most buildings have been designed to require air-conditioning and artificial light, which all contribute to the environmental footprint of the industry. However, issues related to sustainability are increasingly being addressed by aquariums:

- financial sustainability – does the aquarium have the financial means to sustain itself into the future?
- biological sustainability – where does the animal collection come from and how are the animals fed?
- environmental sustainability – what is the overall environmental impact of the facility with respect to resources such as water, energy and waste?
- social sustainability – does the facility employ local people and contribute to local economies and does the aquarium have the support of the local community?

It is increasingly clear that aquariums need to prove sustainability in all four areas to be considered as truly meeting the goals of ecotourism. In addition, aquariums need to demonstrate their commitment to sustainability to ensure that their credibility is maintained. If an aquarium curio shop sells endangered turtle shell products or the restaurant serves seafood that is not harvested sustainably, visitors will question the credibility of the aquarium, which in turn calls into question the commitment of the organization to conservation (Frost, 2011).

Science and Research

Research should play an important role in contributing to the development of sustainable ecotourism (Cater & Cater, 2007) and is also critical for the success of sustainable aquariums. Aquariums provide unique opportunities for environmental and biological research, as well as research on the social and economic facets of the operation (Fraser & Wharton, 2007).

While some attention has been devoted to measuring the effectiveness of the educational and interpretive programmes offered by aquariums, less attention has been paid to determining the success of the environmental sustainability and conservation efforts of aquariums (Rodger et al., 2011). In addition, very little research has been undertaken in aquariums in Asia, and, with the growing market for aquariums in this region, research in this area is sorely needed (Frost & Roehl, 2008).

Education, Interpretation and Training: Creating the Visitor Experience

Only a small body of research exists to help characterize the visitor experience in aquariums (see Schram, 2011), perhaps because motivations for visiting vary so widely, as do the activities, programmes and exhibitions offered. Researchers have focused more attention on experiences in zoos, but several studies specific to aquariums have shed light on what visitors are learning, feeling and doing during and after their aquarium visit.

Since the pioneering work done by Serrell (1977), little attention was paid to aquariums until Adelman et al. (2000) undertook a comprehensive visitor research study that looked at four key aspects of the visitor experience at the National Aquarium (Baltimore, USA): incoming conservation knowledge, attitudes and behaviour of visitors; patterns of use and interaction with exhibition components throughout the aquarium; exiting conservation knowledge, attitudes and behaviours of visitors; and over time, how the experience altered or affected individuals' conservation knowledge, attitudes and behaviours.

While visitors were generally more knowledgeable about, more concerned about and more involved in conservation-related issues than the general public, they still absorbed ocean conservation messages put forward by the aquarium. Changes in visitors' conservation knowledge, understanding and interests persisted over six to eight weeks after visiting. However, the aquarium experience rarely led to new conservation behaviours. As might be expected, visitors' enthusiasm to act and emotional commitment to conservation dropped to original levels over time.

These findings are supported by evaluation studies conducted at the Monterey Bay Aquarium and synthesized by Yalowitz (2004). Visitors to the aquarium were interested in and receptive to conservation content and learned new conservation information from exhibitions. Visitors' interests were most influenced by their personal involvement with conservation issues and previous visitation to the aquarium. After leaving the aquarium, there is evidence that a minority of visitors retained specific conservation information and maintained levels of concern about conservation topics for weeks, and even months, after their visit. This is consistent with research done in Australian ecotourism venues (Ballantyne et al., 2007; Ballantyne, Packer & Falk, 2011), which stressed the importance of creating an emotional affinity with animals as well as the opportunity to reflect on their experiences with wildlife.

In a study about adult learning experiences at the Vancouver Aquarium, Briseño-Garzón et al. (2007) found that the adult members of family groups learn as a result of their visit to the aquarium in cognitive, social and affective ways. After their aquarium experience, the adults were able to recall specific facts and concepts regarding habits and habitats of marine animals and ocean conservation, although there was little evidence of higher order intellectual skills such as analysis, synthesis or evaluation of concepts associated with the aquarium visit. Visitors did, however, tap into their past affective experiences when they interacted with living creatures, eliciting emotional responses and connections. This research also found that other important affective outcomes for adult visitors were appreciation of marine life diversity and the opportunity to be close to it. The authors suggest that this plays a role in the desire to engage in future activities related to the ocean.

An interesting attitudinal finding of the adult zoo and aquarium visitor impact study (Falk et al., 2008) was that visitors may see their visit to an aquarium or zoo as a nature

experience, and that visit experiences can successfully encourage nature exploration and valuing. Ballantyne et al. (2007) also note that wildlife tourism ‘offers unique opportunities that allow participants to reconnect with nature in a potentially life-changing way’. This supports the idea that aquariums fulfil an ecotourism role, especially for urban dwellers, who may not have other nature options.

Fraser, Gruber and Condon (2008) posit that tourists to urban zoos (and, by extension, aquariums) are seeking novel, real experiences with animals as a tool to explore their own environmental identity. Based on responses to poetry in a zoo setting, the authors suggest that seeing iconic wild animals, even in a simulated natural environment, encourages visitors to contemplate human responsibility to the natural world. The tourism value of zoos, therefore, may be more about visitors’ encounters with live animals than the simulated experience of artificial nature. The authors further suggest that zoo experiences are ‘more meditative than spectacular’, which can arguably apply to aquariums even more so than zoos.

HOW CAN AQUARIUMS PROMOTE BEHAVIOURS THAT RELATE TO ECOTOURISM CONSERVATION GOALS?

Just as many ecotourism ventures have struggled to measure their impact with respect to changing tourists’ environmental knowledge, attitudes and behaviours (Tisdell & Wilson, 2005; Zeppel, 2008; Zeppel & Muloin, 2008), so too have aquariums been challenged by the need to demonstrate their role in changing visitors’ environmental capacity. Public opinion research conducted via an online survey by The Ocean Project (2009) showed that Americans view aquariums, zoos, museums and other types of independent, non-profit organizations as trusted authorities on many environmental issues. As a result of this trust, respondents seem to be receptive to messages in aquariums about how they can help ocean conservation. For example, respondents strongly agreed with the statement ‘I trust non-profit agencies such as an aquarium to protect the quality of the ocean’ and overwhelmingly agreed with the statement ‘Aquariums should suggest or recommend specific behaviours or ways for the general public to protect the environment.’

Aquariums and zoos have typically taken an environmental education approach to encouraging conservation (Ballantyne et al., 2007), focusing on helping visitors – especially children – to develop environmental literacy and an environmental ethic. More recently, many aquariums have also added a social marketing approach to facilitate conservation behaviour, which complements the necessarily longer-term ethic-building among visitors. These could be considered to be post-visit action resources, the value of which has been shown in a number of studies (Ballantyne & Packer, 2011; Hughes, Packer & Ballantyne, 2011). The Ocean Project survey also found support for this approach, especially in one area that aquariums and some other conservation organizations have focused on over the past ten years: providing recommendations to consumers about purchasing sustainable seafood. The most well known of these is Monterey Bay Aquarium’s Seafood Watch programme, which offers science-based suggestions about seafood choices via a pocket guide and smart phone app. Other programmes such as the South African Sustainable Seafood Campaign, the Seafood Choices Alliance Produits de

la Mer in Europe and Australia's Sustainable Fish Guide also provide consumers with specific recommendations regarding seafood to enjoy or avoid.

Research into the effectiveness of Seafood Watch specifically found that most visitors who picked up a pocket guide at the Monterey Bay Aquarium continued to use it months later and had changed their seafood buying habits in several respects (Dianto-Kemmerly & Macfarlane, 2009). While seafood awareness campaigns have been criticized (Jacquet & Pauly, 2007) and it is not conclusive yet whether those individual consumer choices have collectively made a difference in shifting fishing practices (and ultimately a positive impact on fish populations), the programmes have encouraged increasing numbers of seafood buyers and chefs, who control what is served in restaurants, to utilize sustainable seafood options. Over two thirds of the world's fish consumption is in Asia, yet Asia has very few seafood choice campaigns (Jacquet & Pauly, 2007). The potential for the development of new sustainable seafood campaigns amongst Asian aquariums is, therefore, considerable.

A study at the Monterey Bay Aquarium – called the Inspiring Ocean Conservation (IOC) project (Vernon, Yalowitz, Ferguson & Macfarlane, 2012) – was begun in 2006 to determine the extent to which the aquarium was achieving its mission to inspire conservation of the oceans through its on-site visitor experience. The purpose of this multi-year, outcome-based research project was to define and measure the ways in which visiting the aquarium inspired people to become more interested in and concerned about ocean conservation, and to want to engage in conservation actions during their visit as well as at home. Researchers used a variety of methods including on-site surveys, follow-up online surveys and whole-visit observational tracking to examine the relationship between three sets of factors: visitors' individual characteristics, interests and backgrounds; their on-site visit experiences; and their post-visit experiences.

The IOC project found that positive conservation-related outcomes were influenced by a visitor's incoming beliefs and values, but these outcomes were bolstered by certain types of aquarium experiences. Impacts were greatest for visitors who were conservation-minded when they arrived at the aquarium, but significant differences were seen if visitors viewed more of the aquarium's conservation exhibits, attended certain programmes, talked to aquarium staff members or volunteers or took home a Seafood Watch pocket guide. Conservation messages that resonated most with visitors were specific, repeated, interactive and tied to live animal displays; feeding presentations appeared to be particularly effective at delivering these messages. Many visitors who encountered conservation information or experiences during their visit retained and translated these encounters into personal actions that persisted for months following their visit.

Increasingly, aquariums are bringing attention to another conservation issue that will arguably have the greatest impact on the ocean, and probably marine ecotourism, in the future. Climate change caused by carbon emissions is degrading ocean health by both warming the ocean and making it more acidic, and an increasing number of aquariums are interpreting this information for visitors. Exhibitions on climate change and the ocean have been mounted at NAUSICAA (France), Ocean Park (Hong Kong, China), Steinhart Aquarium (San Francisco, USA), Birch Aquarium (La Jolla, USA) and Monterey Bay Aquarium (California, USA); and many others, for example the New England Aquarium (Boston, USA), uShaka Sea World (Durban, South Africa) and the National Aquarium (Baltimore, USA), incorporate messaging into public programming

about this issue. Evaluation of the climate change exhibition and programmes at the Monterey Bay Aquarium indicates that visitors are more likely to absorb climate change messaging from interactive programmes (such as theatrical performances and conversations with interpreters) than from exhibitions (Korn, 2011).

Visitors to aquariums (and zoos) in the USA are more likely to agree that climate change is happening compared to the general public (Luebke, Clayton, Saunders, Matiasek, Kelly & Grajal, 2012) and are more likely to be categorized as 'alarmed' and 'concerned' according to the Yale University/George Mason University *Global Warming's Six Americas* public opinion research (Leiserowitz, Maibach, Roser-Renouf & Smith, 2010). This finding is true across all categories of visitors, including tourists. Aquariums appear to be a logical ally for other ecotourism efforts to encourage conservation action on this issue.

SUMMARY

Just as marine ecotourism faces numerous dilemmas and challenges, so too do aquariums face challenges in their attainment of ecotourism goals. Both marine tourism and aquariums are fast growing tourism market segments (Cater, 2003; Penning et al., 2009), and both face the challenge of how to manage their activities sustainably. Many aquariums are dynamic institutions that are actively challenging the criticisms levelled at them and are continually reinventing themselves to be more proactive in reaching the goals of ecotourism. However, just as not all ecotourism ventures are committed to the goals of sustainability, not all aquariums are committed to sustainability. The gap between the theory of ecotourism and operational realities is as evident in ecotourism operations (Ross & Wall, 1999) as it is in the operations of aquariums. Equally challenging are efforts to meaningfully evaluate how effective such ventures are in attaining their goals. It seems clear that aquariums have the opportunity, through the experiences they offer, to promote learning (cognitive, affective and behavioural) that is in synch with ecotourism goals. Visitors to aquariums are predisposed to absorbing information about the natural and cultural history of an area, and are receptive to suggestions for personal actions they can take on behalf of conservation. Aquariums should be considered important partners to other ecotourism ventures that seek to conserve the environment and sustain local people by providing educational and responsible wildlife experiences.

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