

PUBLIC AWARENESS, EDUCATION, AND MARINE MAMMALS IN CAPTIVITY

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Increasing popularity of marine parks as tourist attractions brought with it a number of concerns. Considerable attention has been paid to investigate issues, such as the ethics of keeping marine mammals in captivity, welfare of captive marine mammals, and the educational and conservational abilities of marine parks. Little research has been conducted to explore the public's awareness and opinions of these issues. Public awareness is an important tool to understand the quality of a marine park's products and services. This study was designed to investigate the public's awareness of welfare of captive marine mammals, educational and conservational purposes of marine parks, and to examine public awareness and opinions of Dunlap and Van Liere's New Environmental Paradigm. A total of 120 respondents from St. Catharines, Canada completed either a visitor or a nonvisitor questionnaire. Results indicated that most people were aware of the issues of welfare of captive marine mammals and educational opportunities offered by marine parks, but showed less awareness of the conservational issues. However, results also indicated that respondents were well aware of, and agree with, the concerns expressed in the New Environmental Paradigm.

Key words: Marine parks; Captive marine mammals; Conservation; Awareness;
New Environmental Paradigm

Introduction

The opportunities for sightseeing, shopping, entertainment, gaming, culture, and recreation have made attractions, which comprise a wide range of human-built and natural features, become the main

motivators of travel for many people (Goeldner, Ritchie, & McIntosh, 2000; Page, Brunt, Busby, & Connell, 2001). Theme parks, amusement parks, and marine parks are human-built high-profit attractions (Swarbrooke, 2002). Most aquariums only display small fish and some marine mammals, but all ma-

rine parks hold cetaceans for displays and performances. This study focuses on visitors' experiences in marine parks.

The feature performances provided by marine parks constantly amaze visitors. Children and families are especially enthralled by the agility of the animals (Goeldner et al., 2000). Today, marine parks, with captive cetaceans, such as various species of dolphins, orcas (*Orcinus orca*), and beluga whales (*Delphinapterus leucas*), are among the most popular theme parks. For example, as noted by Swarbrooke (2002), the Yokohama Sea Paradise in Japan, Sea World Florida, and Sea World California are the three marine parks on the list of the "top twenty amusement/theme parks worldwide, 1999" (p. 93).

As marine parks became popular attractions, a number of studies have been conducted based on the welfare of animals in captivity, including animal capturing procedures (Dudok van Heel, 1996; Williams, 2001), training (Abel, 1986; Defran & Pryor, 1980), the different lives of cetaceans in the wild and in captivity (Desmond, 1999; Williams, 2001), and the health of marine mammals in captivity (Mayer, 1998; Rose & Farinato, 1999; Rose, Farinato, & Sherwin, 2005; Williams, 2001). Also, there are a number of captive animal protection organizations (Mayer, 1998; Rose & Farinato, 1999; Rose et al., 2005; Williams, 2001; World Society for the Protection of Animals [WSPA], 2003) focusing on the ethical issues of keeping animals in captivity, the purposes and needs of keeping animals in captivity, and campaigns against keeping animals in captivity.

Very little research has been conducted in relation to the reasons for visitation (or nonvisitation) of a marine park, and the perceived knowledge visitors have gained from their visit. As Reade and Waran (1996) state, "the educational impact that the zoo environment exerts on a typical visitors awareness and understanding of other animal species has been poorly explored" (p. 110). Therefore, this study has been designed to fill this gap in the current literature.

Aims and Objectives of the Study

The aims of this study were to identify the reasons why the public visit or do not visit marine parks,

to investigate the public's awareness of the welfare of captive marine mammals, their awareness of educational and conservational purposes of marine parks, and to explore the perceived knowledge visitors have gained from a marine park visit. Finally it examined the public's opinion about the importance of conservation, and public support for the items on Dunlap and Van Liere's (1978) New Environmental Paradigm scale.

In order to better understand visitors' awareness of captive cetaceans, five objectives based on the aims of this study were addressed:

1. To discover the motivation for visiting, and reasons for not visiting, a marine park.
2. To investigate visitors' awareness of aquariums' or marine parks' educational and conservational purposes.
3. To explore visitors' opinions about the knowledge they gained from their visit to a marine park.
4. To explore public opinion about the importance of conserving the environment and wild animals.
5. To employ the New Environmental Paradigm (NEP) scale, in order to measure the environmental dispositions of visitors and nonvisitors.

Marine Wildlife in Captivity

History of Marine Mammals in Captivity

Whales, dolphins, and other marine mammals (e.g., pinnipeds, manatees, and polar bears) have been kept in captivity as exhibit animals for over a thousand years, in the case of polar bears, or since the middle of the 19th century for cetaceans. In 1860, P. T. Barnum captured two beluga whales and brought them to New York City for display. They died only days later, because they were kept in a freshwater tank. Two other belugas survived in a second attempt with salt water. In 1913, the New York Museum captured and displayed five bottlenose dolphins. However, those dolphins perished soon as well, with the last one dying after only 21 months in captivity. The Marine Studios in Florida captured bottlenose dolphins in 1938 and it was Cecil M. Walker who during feeding discovered that it was possible to train dolphins. The first captive orca was displayed in California, in 1961. It only survived a

few days (Whale and Dolphin Conservation Society [WDCS], 2002; Williams, 2001). Since then, literally thousands of orcas, dolphins, and belugas have been captured and displayed in aquaria and marine parks. Since the 1960s, the demand for captive animals has grown with the increase of successful captive maintenance of these animals (Defran & Pryor, 1980; Mayer, 1998). For instance, between 1961 and 2003, 134 orcas have been taken into captivity from the wild (WCDS, 2003). Rose et al. (2005) contend that of at least 185 orcas held in captivity since 1961 (wild caught or captive born) 139 are now dead. These mammals have their origin in a number of countries. Throughout history, orca captures have largely taken place in the US, Canada, Iceland, Japan, Argentina, Russia, and Spain. Japan, Argentina, Russia, and Spain remain to be potential future capture sites for whales (Williams, 2001). Currently, there are 45 orcas held in captivity worldwide, as shown in Table 1 (Lück & Jiang, 2007).

Reasons for Keeping Marine Wildlife in Captivity

One of the reasons for keeping marine mammals in captivity is the demand of visitors. According to Shackley (1996), for many people, particularly for families with children, taking a wildlife-watching holiday in some exotic destination is not financially possible, but they are still interested in seeing animals first hand. For these tourists who are unable to visit the animal in its natural habitat, there is only one solution: the animal must come to the tourist

(Shackley, 1996). In order to satisfy this demand, many destinations have developed a series of visitor attractions based around animals kept in some kind of captivity—for example, marine parks (Shackley, 1996).

There are also several reasons for questioning the educational role of marine parks, which often praise themselves as a facility of educating the public about marine life and the importance of conservation (Alliance of Marine Mammal Parks and Aquariums [AMMPA], 1999; Williams, 2001; WSPA, 2003). Larger marine parks, such as Sea World, have spent many millions of dollars in their enthusiasm to raise their educational credibility (Williams, 2001). In 1990, Sea World claimed to have spent \$3 million during the year on its educational programs (Hoyt, 1992).

Responses to a 1998 Roper poll indicate that “seeing live marine mammals enhances the educational experience for the visitors to these zoological parks and aquariums” (AMMPA, 1999, p. 19). Over 80% of those interviewed claimed they learned about marine mammal behavior, such as what the animals eat and the animals’ natural behaviors (AMMPA, 1999). On the other hand, in a study on learning at American zoos, Kellert and Dunlap (1989) discovered that only about a third of visitors specifically went to the zoo to learn about animals and even fewer to learn about wildlife conservation (most went for entertainment and recreation). Somewhat contrary to the educational claims of captive animal facilities, these researchers also discovered a typical visitor’s concern for, and interest in, the biology and ecology of animals actually decreased after a zoo visit (Kellert & Dunlap, 1989). Instead, an attitude of dominion and mastery/control over animals increased in visitors, as did negative attitudes toward animals (such as avoidance, dislike, or indifference) (Kellert & Dunlap, 1989). It is possible also that members of the public that are most interested in conservation actively avoid visiting zoos as a source of conservation information due to ethical considerations, as Kellert and Dunlap (1989) noted a link between public interest in learning about conservation issues and concern about the treatment of animals.

The educational segments of orca shows highlight notions of respect for the animals’ intelligence (Desmond, 1999). For example, during the perfor-

Table 1
Marine Parks and Aquaria Holding Orcas

Marine Park/Aquarium	No. of Orcas
Acuario Mundo Marino Buenos Aires, Argentina	1
Port of Nagoya Public Aquarium, Nagoya, Japan	1
Izu-Mito Sea Paradise, Numazu, Japan	1
Kamogawa Sea World, Chiba, Japan	6
Taiji Whale Museum, Wakayama, Japan	1
SeaWorld Orlando, USA	10
SeaWorld San Antonio, USA	8
SeaWorld San Diego, USA	7
Six Flags Marine World, Vallejo, California, USA	1
Miami Seaquarium, USA	1
Marineland Antibes, France	5
Marineland Niagara Falls, Canada	3

Sources: easyJet (2001); Jacobs (2006); Jiang (2004); OrcaInfo (1999); WDCS (2002); Williams (1996, 2001).

mance at Sea World San Diego, the narrator tells the audiences that although “it would appear that the people are educating the whales,” in fact, “it is the humans who have the most to learn” (Desmond, 1999, p. 231). The educational information delivered in this segment focuses on the natural habitat, characteristics, abilities of and some training “tips” for marine mammals, stresses the importance of one-on-one interaction of each whale with their trainer, and introduces new research on the whale’s ability to interpret audio systems of communication (Desmond, 1999; Williams, 2001). These educational sections in show programs suggest that visitors do have the opportunity to learn about the species in question.

Even though, as suggested by the studies above, captive animals facilities may not foster a concern for the environment, or greatly increase an understanding of the role of the animal’s ecology and role in their ecosystem, it could be argued that they have the opportunity to inspire a new and profound respect for marine mammals and their ocean habitat, and also to provide information to the public on basic aspects of the animal’s biology. However, Williams (2001) contends that some scientific findings are ignored or downright incorrect when the findings do not coincide with the marine park’s agenda. One example is the issue of longevity. Sea World’s research biologist, Daniel Odell, disseminates information about killer whales’ lifespan in a 1995 children’s educational book: “The most recent scientific studies suggest that a killer whale’s lifespan is between 25 and 35 years, regardless of where it lives” (Williams, 2001, p. 51). The fact is the average lifespan in the wild for a male killer whale is 29.2 years and for a female is 50.2 years, while the average length of survival of orcas in captivity is under 6 years (Rose et al. 2005; Williams, 2001; WSPA, 2003).

Marine Parks

Main Attractions

Marine parks offer the opportunity to see sea creatures on display (Desmond, 1999). According to Desmond, animal exhibits, performances/shows, and close personal interaction with the marine mammals (petting and feeding) are usually the main attrac-

tions of marine parks. Marine mammals’ performances have attracted people and have made marine parks become popular (Desmond, 1999; WSPA, 2003).

Petting and feeding marine mammals is the other main attraction of marine parks, and one of the reasons people come to the park (Schwab, 1995). Due to the high popularity, some marine parks offer visitors these personal and interactive experiences with live animals. For instance, the “Friendship Cove” in Marineland, Canada features a “petting pool” where visitors can touch orcas and belugas for an additional fee (Marineland Canada, 2002; WSPA, 2003). The Sea World Parks also feature four dolphin-petting pools, which allow marine park visitors to touch, pet, and feed dolphins for a fee (WSPA, 2003). However, the educational and conservational values of this attraction are ambiguous. Mooney (1998) claims these interactive programs are for the purpose of “taking advantage of the public, profiting by the sale of feeder fish at petting pools, and by offering pricey, inappropriate personal encounters” (p. 25).

The Captive Environment

Research related to the welfare of marine mammals often concentrates on two areas: the captive environment and the behavior of the visitors.

The captive environment is incomparable with the natural habitat of the marine mammals. The differences between the lives of cetaceans in the wild and in captivity can be divided into four categories: living condition, social life, communication, and lifespan. Table 2 illustrates these differences.

These large differences between life in the wild and in captivity have caused captive cetaceans to suffer health problems, such as stress, aggression, and diseases, which may result in injury and even death (Desmond, 1999; Williams, 2001; WSPA, 2003). It is believed stress may be a contributing factor in as many as 50% of captive deaths (Hoyt, 1992). Stress is often caused by the unnatural traumas of capture, transport, confinement, training, and performances (Williams, 2001). For example, captive cetacean mortality rates are six times higher than the mortality rates of wild orcas in the period immediately after capture or transportation (Small & DeMaster, 2005). Aggression behavior among orcas belonging to the same pod is seldom seen in the wild,

Table 2
Differences Between Life in the Wild and Life in Captivity

	Life in the Wild	Life in Captivity
Living conditions	Fast moving, deep diving predators; free to swim vast distances across open water	Bare and featureless concrete tanks; artificially salted and chlorinated water; dead fish as part of diet
Social life	Intensely social, highly cooperative animals that live in family groups called "pods"	Share tanks with animals from different pods, species, and geographic locations, or live alone
Communication	Use echolocation (sounds) to communicate and search environment	Echolocation is largely no longer needed
Lifespan	Male orca 60 years, female orca 80–90 years, beluga 35–50 years, bottlenose dolphin 40 years, Pacific white-sided dolphin 30 years	Most die at young ages; the maximum captive lifespan for orcas is 35 years; for belugas between 30 and 50 years; for bottlenose dolphins 30 years; and for pacific white-sided dolphins 25 years

Sources: Mooney (1998); WDCS (2003); Williams (2001); WSPA (2003).

but aggression between orcas is a disturbing trend in marine parks (Williams, 2001). The restricted space for orcas, the social mix of individuals (communication with animals from different pods due to the constant movement between marine parks), and the different social hierarchy or "pecking order" are believed to be major factors influencing aggression behaviors.

Visitor Behavior

As stated above, the close personal interaction with marine mammals, such as petting and feeding, is one of the motivations for most visitors to visit marine parks (Animal Protection Institution [API], 2000). Such interactive programs are threats to both marine mammals' and visitors' health. The Whale and Dolphin Conservation Society (WDCS), and the Humane Society of the United States (HSUS) (2003) contend that the marine mammals suffer from an unhealthy diet, and are prone to physical injury during the close interaction with visitors. One staff member revealed that publicly offered food may constitute as much as 40% of a dolphin's daily diet at the petting pools (WDCS & HSUS, 2003). Visitors routinely feed the marine mammals human food, including sandwiches and chips. Poor hygiene and mishandling of food can also lead to illness and death of captive wildlife (Desmond, 1999; WDCS & HSUS, 2003; Williams, 2001).

Physical injury of marine mammals can be caused by a variety of foreign objects dropped by visitors

(such as sunglasses, paper fish containers, coins, a stone, a baby's pacifier, and a hair barrette). These foreign objects have the potential to cause gastrointestinal blockage, poisoning, or even death (WDCS & HSUS, 2003). WDCS and HSUS (2003) also documented fresh wounds to the face, jaws, and dorsal fins of several dolphins in the petting pools (Fig. 1).

In addition, according to WSPA (2003), captive orcas, belugas, and dolphins are still wild animals and should be considered potentially dangerous. WDCS and HSUS (2003) record several incidents in which visitors were physically harmed, including bites, head butts, and trapped hands. Visitors were



Figure 1. Orca showing wounds at nose and forehead (Marineland, Niagara Falls, Canada). Photo: Michael Lück.

observed holding young children over the pool to let the children touch the animals, and this resulted in a child being hit in the face by a dolphin who was interacting roughly with another dolphin (WDCS & HSUS, 2003). Similarly, WSPA (2003) noted that a beluga whale bit an 11-year-old girl as she attempted to pet it.

Public Awareness

According to Shackley (1996), a great deal of interest is currently focused on the ethical and moral issues associated with the keeping of animals in captivity. Many people believe that it is wrong to utilize animals as part of circus or cabaret acts. Specifically, the 1992 Roper survey "Public attitudes towards aquariums, animal theme parks and zoos" (commissioned by the AZA) revealed that 91% of the respondents believed that it is important to educate people about the animals displayed. Respondents had mixed feelings about the entertainment at aquaria and zoos. While 64% believed in "the importance of entertaining people while they learn about the animals," 36% of respondents believed that entertaining people is unimportant while learning about the animals, 37% of respondents had the feeling that animals in animal parks generally do not live as long as they do in the wild, and keeping animals in captivity does harm the animals by removing them from their natural habitat (Williams, 2001, p. 77). Additionally, a Zoocheck poll of the general public in Canada released in 2003 shows that most Canadians oppose the use of whales and dolphins in marine parks and aquariums. A survey conducted in Greater Vancouver states that 74% of

respondents say the best way to learn about whales and dolphins is to view them in the wild, 71% understand the whales' and dolphins' physical and behavioral needs cannot be met in captivity, and 68% of people feel it is not appropriate to keep whales and dolphins in captivity (WSPA, 2003; Zoocheck Canada, 2003).

Furthermore, more and more animal protection organizations have either focused on the welfare of captive animals, or have been newly founded over the last decade, such as the WSPA, WDCS, World Wild Fund for Nature (WWF), and others. One of the aims of these organizations is to increase the public's awareness of animals' welfare in both captivity and the wild through different publications and research (WDCS, 2003; WSPA, 2003). These events suggest that public awareness is increasing, and that attitudes and values towards nature are changing. One tool to measure such values is the New Environmental Paradigm (NEP) scale, developed by Dunlap and Van Liere (1978).

The New Environmental Paradigm

The last 50–60 years saw a major shift from an anthropocentric worldview, termed the Dominant Social Paradigm (DSP), to a more ecocentric worldview, called the New Environmental Paradigm (NEP) (Albrecht, Bultena, Hoiberg, & Novak, 1982). Dunlap and Van Liere (1978) developed a 12-item scale (Table 3) in order to measure the extent to which respondents would approve the ideas of the NEP. They tested the NEP scale with two samples in the State of Washington (US). One sample included respondents from the "general public" (GPS),

Table 3

The 12 Original Items of the New Environmental Paradigm Scale (NEP)

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1. We are approaching the limit of the number of people the earth can support.
 2. The balance of nature is very delicate and easily upset.
 3. Humans have the right to modify the natural environment to suit their needs.
 4. Mankind was created to rule over the rest of nature.
 5. When humans interfere with nature it often produces disastrous consequences.
 6. Plants and animals exist primarily to be used by humans.
 7. To maintain a health economy we will have to develop a "steady-state" economy where industrial growth is controlled.
 8. Humans must live in harmony with nature in order to survive.
 9. The earth is like a spaceship with only limited room and resources.
 10. Humans need not adapt to the natural environment because they can remake it to suit their needs.
 11. There are limits to growth beyond which our industrialized society cannot expand.
 12. Mankind is severely abusing the environment.
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while the second sample included members of environmental organizations (EOS). Not surprisingly, Dunlap and Van Liere found that indeed the members of the EOS held higher environmental values and attitudes than the GPS sample members. The NEP scale has been used frequently since its inception (Albrecht et al., 1982; Geller & Lasley, 1985; Noe & Snow, 1990), and more recently also in a tourism context (Higham, Carr, & Gale, 2001; Lück, 2003; Ryan, 1999; Uysal, Jurowski, Noe, & McDonald, 1994). This study aimed to identify possible differences in environmental dispositions between visitors and nonvisitors to marine parks. In the light of an increasing public awareness, as discussed in the previous sections, it was anticipated that nonvisitors would display higher environmental dispositions than visitors.

Methodology

During the winter of 2004, survey data were gathered from residents of the City of St. Catharines, Ontario, Canada. After dividing the residents of the city into seven subgroups based on the location of their home, two versions of questionnaires were distributed: one for people who have been to one or more marine parks (visitors) and another version for those who have not been to any marine park (nonvisitors). The population of St. Catharines was 129,170 in 2001 (according to data from Human Resource Development Canada 2003). Respondents participated on a voluntary base. When administering the survey, respondents were asked whether they had ever been to any parks that hold captive marine mammals before. After this screening question, visitor questionnaires were handed out to those who had visited a park with captive marine mammals, and nonvisitor questionnaires were handed out to those who had never been to a park that holds captive marine mammals. A total of 385 questionnaires were distributed, and questionnaires were picked up after 30–60 minutes. A total of 120 questionnaires were completed (95 visitors and 25 nonvisitors), and the resulting response rate was 31.6%.

Specifically, visitors were asked to answer six sections of questions:

1. How important they felt about the activities/services provided by marine parks.
2. How well these activities/services had performed.
3. How they felt after they had visited a marine park.
4. Their environmental values and beliefs (NEP).
5. What were their past visiting experiences and their opinions about how conservational issues related to their daily life.
6. Demographic information.

Nonvisitors were asked to respond to three sections:

1. The reasons of why they had not visited a marine park.
2. Their environmental values and beliefs (NEP).
3. Demographic information.

Thus, the NEP questions and demographic information were common to both groups. Among a number of questions addressing a variety of issues, visitors were asked for the reasons of visiting a marine park by rating the importance and performance of those reasons on a 5-point Likert scale (1 = very unimportant/very poor, 2 = unimportant/poor, 3 = average/satisfactory, 4 = important/good, 5 = very important/very good). Visitors were also asked to rate 13 items that indicated their attitudes and opinions after a marine park visitation on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree).

Both visitors and nonvisitors were asked to answer the 12 NEP items created by Dunlap and Van Liere (1978). The 12 NEP items are “a scale to measure the extent to which people would accept the ideas of the NEP” (Lück, 2003, p. 229). A 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = no opinion, 4 = agree, 5 = strongly agree) was used to indicate the respondent’s agreement with these 12 NEP items. The mean for the NEP was then calculated by summing the means for each of the 12 items and dividing that value by 12. The closer this overall mean was to the value of five, the higher the endorsement of the NEP.

Demographic information was collected in the last section of both visitor and nonvisitor questionnaires. Frequencies and analyses of variance (ANOVA) were used in order to gain information about the mean values and the standard deviation.

1. How important they felt about the activities/services provided by marine parks.

This research method has three major limitations. The first limitation of this study is the research only took place in one city. The City of St. Catharines is located near Marineland in Niagara Falls. It is likely that people of St. Catharines have more opportunities to visit a marine park because of the convenient location (ca. 15 km from St. Catharines). Therefore, St. Catharines residents' opinions and awareness could be biased and be not typical due to high levels of exposure. The second limitation is that the time of data collection was not ideal. The data were collected in winter, when most aquariums in the northern part of North America are closed. This means all participants had to fill out the questionnaires based on their memories. How well the participants remembered their trips to an aquarium or marine park might have affected the results of the survey. The third limitation is that the researcher dropped off the questionnaire and came back about 60 minutes later to pick them up again. Thus, the researcher was not present when the participants filled in the questionnaires. Therefore, the researcher had no control over who filled in the survey, and whether the participants got any help from other people.

Results and Discussion

Motivations for Visitation and Reasons for Nonvisitation

Respondents indicated that the important reasons for visitation were to see the displays of marine mammals and fish (mean = 3.95, SD = 1.10), to be educated (mean = 3.94, SD = 1.09), and to watch the performances/shows of dolphins and whales (mean = 3.86, SD = 1.23). It was interesting that visitors stated that they have used marine parks as an educational opportunity to teach their children and themselves. Some visitors recognized the importance of conservation of the natural environment, and how awareness can be raised through the visitation of marine parks. As commented by one visitor, marine parks do serve a purpose in educating humans on the fragile ecosystem of marine life, and "people would be more conscience about polluting or wasting resources by interacting with marine life." This result demonstrates Reade and Waran's (1996) conclusion that "people in general recognize the need for conservation, so they look towards the zoo to

fulfill their conservation and environmental education" (p. 115). Interestingly, most visitors felt "neutral" about petting and feeding marine mammals, and a large number of visitors rated this interactive program as unimportant or very unimportant (mean = 3.00, SD = 1.30). This indicates that although personal and interactive experiences with life marine mammals attract some visitors, the majority of people would still visit a marine park without such an interactive program.

The results of this study indicate that having no interest in marine animals, the high expense of visiting aquariums or marine parks, the inconvenient location of aquariums or marine parks, and the consideration of captive marine mammals' welfare are the four main reasons for people not having visited an aquarium or marine park. These findings suggest that some people are aware of problems associated with keeping marine mammals in captivity, and they have strong feelings against the animal capture and display industry. However, the findings also imply that there is still a potential market for marine parks if they decrease the admission fee, improve the transportation for convenience, and increase people's interests.

Visitors' Awareness

More than half of the visitors (62.8%) were not aware of the issues of captive marine mammals' welfare, especially the problems related to the treatment and facilities for captive marine mammals. Also, 23.4% of visitors agreed and 4.3% of visitors strongly agreed that the facilities of the marine parks are adequate for whales and dolphins. One in five visitors did not think that there is a problem in terms of captive marine mammals' welfare, because they felt that animals enjoy their life in captivity. However, almost half (47.4%) of the visitors disagreed or strongly disagreed with the statement "I have the feeling that dolphins and whales enjoy their life at aquariums or marine parks." Based on this observation, some visitors decided not to visit a marine park in the future; for instance, one visitor commented: "I won't go back to Marineland because I feel the aquatic animals are treated inhumanely and I won't pay to see them." Almost one quarter of nonvisitors felt that it is not appropriate to keep whales and dolphins in captiv-

ity (20% of nonvisitors strongly agreed or agreed that “animals are not always treated decently/humanely at aquariums or marine parks”).

Education and conservation are the two main arguments marine parks use to justify keeping cetaceans in captivity (WSPA, 2003). As Shackley (1996) states, marine parks’ ability to educate and increase the awareness of conservation does affect people’s knowledge and behavior toward marine wildlife. The results indicate that the majority of visitors were aware of educational opportunities and information about marine wildlife offered by marine parks, but they did not realize that they have an opportunity to learn more about conservational issues. Table 4 shows the details about visitors’ awareness of the educational and conservational purposes of marine parks.

However, it was expected that people should be aware of marine parks’ educational opportunity, because all marine parks use “education” as an important purpose to keep marine mammals in captivity (Williams, 2001; WSPA, 2003). The finding that the majority of the visitors were not aware of the opportunity for conservation offered by marine parks leads to the question whether an aquarium or a marine park can deliver conservational information about the natural environment to the public.

It is worth mentioning that although “no opinion” was the modal response for two of three items

(education and conservation), this finding shows that visitors were not aware about the information on conservation. Even though visitors felt staff in marine parks had good knowledge about marine wildlife, most of them did not know that they could learn more about conservation from marine parks. These results will be discussed in more detail in the following section.

Visitors’ Knowledge Gained

The collected data indicate that most of the visitors agreed that learning about wildlife is an important issue (mean = 4.27, SD = 0.96), believed the trip to a marine park was an educational experience (mean=3.68, SD=1.04), and felt they gained some knowledge about cetaceans from marine parks (mean=3.28, SD=1.41). These findings are not surprising, because the majority of people were aware of the educational opportunities offered by marine parks.

Public’s Opinions on the Importance of Conservation

The collected data indicate that the majority of people did not become more environmentally sensitive after a marine park visitation. In other words, visitations to marine parks have no effects on visitors’ opinions about the importance of conserving the en-

Table 4
Visitors’ Awareness of the Educational and Conservational Problems

		Percentages					Mean	SD
		Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree		
Welfare of captive marine mammals	I have the feeling that dolphins and whales enjoy their life at aquariums or marine parks	25.3	22.1	28.4	21.1	3.2	2.55	1.17
	I have the feeling that the facilities of the aquarium are adequate for whales and dolphins	14.9	22.3	35.1	23.4	4.3	2.85	1.24
Education	I feel that the staff had good knowledge about marine wildlife	1.1	7.5	29.0	48.5	12.9	3.66	0.84
	I have the feeling that aquariums or marine parks portray a real image of marine ecosystems	12.9	22.3	35.1	23.4	4.3	2.80	1.09
Conservation	I have the feeling that aquariums or marine parks provide lots of information on conservation	18.3	25.8	28.0	25.8	2.2	2.68	1.11

Measured on a 5-point Likert scale, where 1 = strongly disagree and 5 = strongly agree.

vironment and wild animals. This finding answered the questions discussed above: based on visitors' opinions, marine parks do not deliver conservational information about the natural environment properly to the public. It implies that although according to most marine parks conservation is one of the main purposes to keep marine mammals in captivity (AMMPA, 1999), the majority of respondents were not aware of this ability during their visitation, and visiting a marine park did not help people to know more about conserving the environment and wild animals. This result might be slightly biased, depending on which marine park had been visited. While the survey form asked respondents to state if they have visited any marine park, the geographic proximity to Marineland in Niagara Falls suggests that the majority of the visitor group have indeed visited Marineland.

The New Environmental Paradigm (NEP)

The data collected from the NEP items indicate that the public were well aware of environmental issues in general. Comparison of the findings of previous studies (Albrecht et al., 1982; Dunlap & Van Liere, 1978; Higham et al., 2001; Lück, 2003) show that there appears to be a trend to an increasing awareness of environmental issues (Table 5).

The mean score of visitors to marine parks in Canada was at 3.1, while the mean of nonvisitors was at 3.3. Both mean scores lie within the range of those in previous studies. According to Lück (2003), mean scores being 3 or higher indicate that there is a relatively high approval of the NEP and people

are aware of environmental issues. It is interesting to note that nonvisitors were more aware about environmental issues than visitors to marine parks. This finding implies that the higher awareness of environmental issues could be one of the reasons for not visiting a marine park.

When running correlations for the NEP items and visitors' attitudes and opinions (after having visited an aquarium or marine park), there are only a few significant relationships (Table 6). Because the Pearson's correlation values are relatively low (less than 0.5), only those with the strongest significance values (0.000) will be explained.

Visitors who agreed more with the NEP statement "humans were created to rule over the rest of nature" agreed less with the item "I have the feeling that I learned a lot about marine wildlife from the visitation" ($r = -1.359, p = 0.000$). In other words, visitors who felt that they learned a lot about marine wildlife from their visitation were more likely to agree with the notion that humans were created to rule over the rest of nature.

There is a significant negative relationship ($r = -0.354, p = 0.000$) between the attitudes toward "humans were created to rule over the rest of nature" and the feeling that aquaria or marine parks portray a real image of marine ecosystems. This result indicated that visitors who felt that aquaria or marine parks portray a real image of marine ecosystems tend to disagree with the attitude that humans were created to rule over the rest of nature.

On the other hand, there is a significant positive relationship between the attitudes toward the items

Table 5
Comparison: Mean Scores of Previous Studies Employing the NEP Scale

	Sample	Mean Score ^a
Dunlap and Van Liere (1978)	General Public Sample (Washington, USA)	3.0
	Environmental Organization Sample (Washington, USA)	3.7
Albrecht et al. (1982)	Urban (Iowa, USA)	3.2
	Farmers (Iowa., USA)	2.9
Lück (2003)	Tourists (New Zealand)	3.4
Higham, et al. (2001)	Ecotourists (New Zealand)	2.8 ^b
Jiang (2004)	Visitors to aquariums or marine parks (Canada)	3.1 ^b
	Nonvisitors to aquariums or marine parks (Canada)	3.3 ^b

^aMeans were calculated by summing the average scores for each of the 12 items and dividing by 12. Possible range is from 1 to 4, with higher scores representing greater acceptance of the NEP.

^bConverted from a 5-point Likert scale.

Table 6
Correlations of NEP Items

Attitudes and Opinions	NEP Items				
	The Balance of Nature Is Very Delicate and Easily Upset	Humans Were Created to Rule Over the Rest of Nature	Plants and Animals Exist Primarily to be Used by Humans	The Earth Is Like a Spaceship With Only Limited Room and Resources	Humans Are Severely Abusing the Environment
The aquarium visitation was an educational experience		-0.298* (0.004)			
I have the feeling that I learned a lot about marine wildlife		-0.359* (0.000)			
I feel that the staff had good knowledge about marine wildlife		-0.252 (0.015)			
I have the feeling that the facilities of the aquarium are adequate for whales and dolphins		-0.316* (0.002)	-0.246 (0.018)		
I have the feeling that aquaria or marine parks provide lots of information on conservation		-0.329* (0.001)	-0.214 (0.038)		
I have the feeling that aquaria or marine parks portray a real image of marine ecosystems		-0.354* (0.000)	-0.234 (0.024)		
I have the feeling that dolphins and whales enjoy their life at aquaria or marine parks		-0.307* (0.002)			
I became more aware of the needs of preservation and conservation of the natural environment after my visitation		-0.245 (0.018)	-0.211 (0.042)		
I want to see the dolphins and whales in their natural habitat	0.233 (0.025)		0.206 (0.048)		
I believe it is important that we learn as much as we can about wildlife	0.426* (0.000)			0.233 (0.024)	0.462* (0.000)
I enjoy learning about wildlife during my visitation	0.271* (0.009)				0.383* (0.000)

Empty cells represent correlations less than $r = 0.20$.

*With p -value less than 0.001.

“the balance of nature is very delicate and easily upset” and “I believe it is important that we learn as much as we can about wildlife” ($r = 0.426$, $p = 0.000$). This indicates that visitors who agreed stronger with the item “the balance of nature is very delicate and easily upset” believe that it is important to learn about wildlife.

Similarly, with $r = 0.462$, $p = 0.000$, visitors who believe that “there are limits to growth beyond which our industrialized society cannot expand” do also think that it is important to learn as much as we can about wildlife. With $r = 0.383$, $p = 0.000$, visitors who believe that “there are limits to growth beyond which our industrialized society cannot expand” stated that they enjoy learning about wildlife during their visitation.

Conclusion

The review of literature on marine wildlife in captivity, captive marine mammals' welfare, and the educational and conservational purposes of marine parks confirms that these areas of study have received some attention from researchers. The results of this study clearly indicate that the motivation of visitors to marine parks is to see the display and performance/shows of marine mammals, and to look for educational opportunities, rather than petting and feeding marine mammals. This finding disproves one of the claims of marine parks, which is that visitors come to marine parks because of the close personal interaction with marine mammals.

The welfare of marine mammals in captivity, educational opportunities, and conservational purposes are the common issues associated with studies of captive marine mammals. However, the public's awareness about these issues, and the public's experiences about the educational and conservational ability of marine parks are often neglected. With the purpose of filling this gap, this study suggests that the public is well aware of the educational opportunity provided by marine parks. Half of the visitors were aware of the welfare of captive marine mammals. However, most visitors were not aware of the conservation-related opportunities offered by marine parks. In addition, visitors were satisfied with the knowledge they gained about marine wildlife, while at the same time they indicated that they did not gain any/enough information on conserving the natural environment. What kind of knowledge visitors have gained, and whether or not visitors gained knowledge from each visitation, is still questionable.

Regarding the NEP, this study confirms a trend identified by the comparison of previous studies: there is an increasing acceptance of the ideas of the NEP (i.e., an increase in environmental dispositions). Not surprisingly, nonvisitors showed higher environmental dispositions than visitors to marine parks.

Therefore, based on the literature and the findings of this study, it is concluded that petting and feeding marine mammals is not one of the main motivations for most people to visit a marine park; visitors are learning about marine animals from their visitations to marine parks; and visitors are not absorbing the information about conservation of the natural environment in these venues, even though they believe it is an important issue.

Based on the key findings of this study, some suggestions for possible future research can be made. Firstly, this study suggests that the majority of people are aware of the educational opportunities offered by marine parks, and indicates that they have gained some knowledge about marine animals from their visitations. However, what kind of knowledge they gained, how accurate the information is, and whether or not they gained knowledge from each visitation is still unknown. In order to answer these two questions, it is suggested that further research is to be undertaken in order to investigate what visitors of marine parks have learned, and probably what kind of educational methods are the most effective. It

would also be interesting to find out if marine parks provide as much education as, for example, a whale-watching trip, a natural history museum, an ocean-themed movie at an IMAX theater, or even simply watching marine-themed programs on, for example, the Discovery Channel.

Secondly, this study suggests that marine parks have failed to deliver conservational information to the public. In order to understand the reasons of this shortcoming, it is suggested that further research is undertaken to develop a better way for marine parks to deliver the conservational message to their visitors.

The last recommendation is that due to the limited sampling of this study it is suggested that further research is conducted with a larger sample size from different areas and cities.

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