The House Committee on Natural Resources Subcommittee on Insular Affairs, Oceans and Wildlife, regarding educational aspects of public display of marine mammals 27 April 2010

Good morning. I am Naomi A. Rose, Ph.D. and I am senior scientist for Humane Society International (HSI), the international partner of The Humane Society of the United States. On behalf of our more than 11 million members and constituents, I wish to thank you, Chairwoman Bordallo, and members of the Subcommittee, for inviting me to testify on this panel addressing the educational aspects of public display of marine mammals. I very much appreciate the opportunity this hearing provides to have all views on this issue presented. I would like to take this opportunity to thank my co-author, Megan Draheim, who analyzed the online materials addressed in my testimony today.

Introduction

The Marine Mammal Protection Act (MMPA) exempts the public display of marine mammals from the prohibition on 'take' because the U.S. Congress has taken the view that such display is an important tool in educating the public about marine mammal biology, conservation needs, and value to marine ecosystems.[1] When the MMPA was amended in 1994 to transfer oversight of the care and maintenance conditions for captive marine mammals solely to the USDA's Animal and Plant Health Inspection Service (APHIS), Congress retained oversight of education programs within the MMPA.[2]

Congress concluded, after much controversy and debate, that it was redundant for the MMPA and its implementing agency (for cetaceans and pinnipeds, except walrus), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), to share jurisdiction over the animals and their welfare with the Animal Welfare Act and APHIS once the animals were inside a public display facility. (The HSUS and HSI do not agree with this conclusion and nothing in my testimony today alters our previous position that NMFS should fully share jurisdiction over captive marine mammals with APHIS.) Nevertheless, Congress also decided that NMFS should still oversee the information to which millions of people are exposed every year at these facilities. For its part, NMFS recognized that it must "still determine whether a [permit holder] offers a program for education or conservation purposes based on professionally recognized standards of the public display community."[3] Clearly Congress did not mean to remove all governmental oversight from the education programs that form the very basis of the public display exemption.

Unfortunately to all intents and purposes this oversight has been removed. NMFS published the education program standards of two professional associations, representing 60% of facilities in the U.S.,[4] in the *Federal Register* in October 1994, to serve as interim guidance for public display permit holders and applicants for permits, but never formalized them in regulations. A proposed rule to amend existing public display regulations and to promulgate new regulations to implement the public display amendments of 1994 was published in July 2001,[5] but the rule was never finalized. With no regulations,[6] there is no process by which NMFS can oversee the

education programs of public display facilities, or under which it can cite or sanction any facility that fails to meet "professionally recognized standards of the public display community." In short, the public display community, in regard to its public display permit obligations, has been largely self-regulating for 16 years, to the detriment of the educational experience of those who visit these facilities and use their online resources. This surely was not Congress' intent when it amended the MMPA in 1994. I hope my testimony will convey the need for, and importance of, on-going government oversight of the statutory requirement that a public display permit holder have an education program that meets professionally recognized standards of the public display community.

SeaWorld: An Example of Problematic Public Display Education

There are three SeaWorld theme parks, in San Diego, California, San Antonio, Texas, and Orlando, Florida. The company represents its enclosures, husbandry and training practices, veterinary care, and conservation, research, and education programs as the best in the world. My testimony today will address only the education programs, with some commentary on the conservation and research programs, as these are under the authority of the MMPA.

Without government oversight of its education programs, this for-profit company has come to use its educational materials and messages to further its own commercial agenda: making captivity acceptable to the general public and convincing the public to patronize its business. SeaWorld uses education as a marketing tool; it has a larger stake in promoting attendance than non-profit institutions, as breaking even is not acceptable. These statements are not meant as insults or accusations – they are facts of business.[7] It was the oversight of the U.S. government prior to 1994 that restrained the company from straying too far from the standard of "best current scientific knowledge."[8]

While SeaWorld has developed extensive education programs, offered through its facilities, through such forums as "Shamu TV," and via its website, some of its educational content is incorrect, contradictory, or misleading. SeaWorld also ignores the latest scientific discoveries when doing so serves its commercial purposes – this is the action that is perhaps at greatest odds with the goal of the MMPA, which exempts public display of marine mammals *only* because Congress believes such display serves the greater good of accurately educating the public.

The online educational content available to the public consists of a variety of materials targeted at different audiences, including teachers, children, and parents. A list of the web materials critiqued here, and the websites where they can be found, is appended to the end of this testimony as Attachment 1.

Conservation messages as business promotion

SeaWorld's online materials carry persistent promotional messages, while offering explanations of what SeaWorld does to help both the animals in its care and wild populations of marine life. The materials can be broken down into several categories: conservation education, marine animal research, captive breeding programs, and rescue and rehabilitation efforts.

Conservation education

In the *Bottlenose Dolphin Information Book*, SeaWorld lists a series of threats to dolphins, including diseases (viral, bacterial and fungal infections; stomach ulcers, skin disorders, tapeworms, flukes, and roundworms); predators (killer whales, sharks, and stingrays, which, it acknowledges, are not dolphin predators, but are included here because some dolphin deaths have resulted from "trauma, infection, and poisoning from stingray wounds"); red tide; and humans, including hunting and fisheries interactions (but no mention of the live trade in dolphins, which for bottlenose dolphins is particularly active and controversial in the international conservation community[9]). With this daunting list (some items of which are clearly unlikely to be a conservation threat to most dolphin populations – for example, predators are a natural hazard and prey species have co-evolved with their predators to cope with this source of mortality), SeaWorld seems to imply that living in captivity with health care and a regular supply of food is a relatively easy life – and even preferable – compared to the wild. This seems an implicitly anti-conservation message, suggesting that people might find it more practical to give up on protecting wild habitat and accept that today's zoos and aquaria are "arks" that are better in the end for the animals.

The *Beluga Whale* information book lists all of the rather frightening things that can happen to beluga whales in the wild: environmental hazards; subsistence hunters (but no mention of those who capture belugas for live trade); toxins; oil; habitat alteration; diseases (viral, bacterial and fungal infections, skin diseases, tumors, heart disease, urogenital disorders, and respiratory disorders – some of these can be "brought on or compounded by toxic contamination"); and even the frightening vision of whales entrapped in ice, where they are susceptible to being eaten by polar bears, starvation, and suffocation. SeaWorld paints a picture of the wild as a scary place full of things that can harm and kill beluga whales. It again does not distinguish between natural hazards, which these species are adapted to handle, and human-caused threats with which they struggle to cope.

In its online information books, SeaWorld makes the case that captive animal facilities such as SeaWorld teach people about animals, their ecosystems, and conservation. One book claims that:

> Most people do not have the opportunity to observe these animals in the wild. Visitors are not only entertained, but also educated. The unique ability to observe and learn directly from live animals increases public awareness and appreciation of wildlife.

As evidence of this, the book cites a 2005 Harris Interactive® poll released by the Alliance of Marine Mammal Parks and Aquariums. The survey found that 97% of respondents agreed that captive facilities such as SeaWorld "play an important role in educating the public about marine mammals they might not otherwise have the chance to see;" that 96% of respondents believed "marine life parks, zoos, and aquariums provide people with valuable information about the importance of oceans, waters, and the animals that live there;" and that 93% agreed that visiting a captive facility "can inspire conservation action…and that people are more likely to be concerned about animals if they learn about them at marine life parks, aquariums, and zoos."[10]

Although SeaWorld cites the 2005 poll as evidence that its programs educate the public to care about conservation issues, this poll is deficient in several important ways. For example, the poll only addresses the perception people have of the questions – it asks what they think or believe, not what they know. The poll does not ask respondents about the specific knowledge they have gained, or what specific conservation actions they will undertake after visiting a public display facility. Rather, they are asked only about their perception of whether or not they have learned something and if they hold stronger feelings about conservation. Social scientists make this distinction when designing study methodologies, as the responses have very different meanings.

Other studies (including by Dr. Lori Marino, a witness at this hearing) have called into question the effectiveness of public display education programs and the methodologies used to evaluate them, particularly the failure to conduct adequate long-term follow-up. For example, a study conducted in Europe evaluated the knowledge of students after a lesson on marine mammals, one lesson conducted in an aquarium setting and one in a traditional classroom, at one day, two weeks, and three months post-lesson. The results suggested that students who learn about marine mammals in an aquarium setting do not retain information any better than students who learn about them in a traditional classroom after several months have passed.[11] One day and two weeks after the lesson, there was a significant difference between the two groups of students, with those at the aquarium scoring higher on a knowledge quiz based on the lesson. However, three months after the lesson, the two student groups had similar scores when tested. These results demonstrate the need to evaluate the effectiveness of education well beyond days or weeks after the educational experience.

Dolphin-human interaction

In the 2005 Harris Interactive® poll, 91% of respondents "agree that interacting with dolphins offers people a deeper understanding and appreciation of them." However, this question (like the others mentioned before) investigates people's *opinions* about dolphin interaction programs, not the actual impacts of these programs. SeaWorld does not offer any evidence that interacting with dolphins really does deepen participants' understanding and appreciation of dolphins, especially in the long term; the survey respondents simply believed it would. Indeed, the wording of the questions made it nearly impossible to disagree.

Although SeaWorld claims that dolphin interaction programs are important conservation and education tools, a study published in the *International Journal of Tourism Research*[12] indicated that participants in swim-with-dolphin programs (including those at SeaWorld facilities) had a different perception. Participants experienced a cognitive dissonance after some time (ranging from two months to three years) had passed. While most of the participants had held a long desire to have a close encounter with a dolphin, most felt post-experience that it was disappointing. The study broke down this disappointment into two categories: 1) disappointment with the actual experience (e.g., it felt too staged, it was not one-on-one, too much emphasis on tricks, too short); and 2) a dissonance between their "strong desire to swim with dolphins versus the question of large marine mammals being held in captivity." Most of the participants were disappointed with the captive facilities and felt that they were inadequate for the dolphins, and many were also by and large disappointed in the educational materials presented by the programs.

The *Bottlenose Dolphin Information Book* also tackles dolphin-human interactions, starting with a stern admonition that humans should not attempt to interact with wild dolphins:

> United States federal laws do not permit people to feed or swim with dolphins or other marine mammals in the wild. These actions are considered 'harassment'… Feeding and swimming with marine mammals in the wild is harmful to animals and sometimes dangerous to people.

SeaWorld then discusses why these actions can be dangerous to humans and marine mammals: making wild animals dependent on humans for food; feeding junk food and non-edible items to wild marine mammals; injuries to humans from animals who associate humans with food; and disruption of wild marine mammals' lives (e.g., resting time, social interactions). SeaWorld then contrasts this with captive facilities, which "offer many animal interaction programs that are carefully controlled, monitored by knowledgeable staff, and approved by the government, and are safe, positive experiences for both human and animal participants." Although SeaWorld provides reasons why these interactions are beneficial to humans, it does not provide any evidence that these programs are beneficial (or even that they are not harmful) to the dolphins.

SeaWorld also implies that the "do as we say, not as we do" approach is an effective way to educate. Yet there is reason to suppose that this approach leads to greater harassment of wild dolphins. People may be taking home the wrong message after seeing visitors and trainers interact with and feed captive dolphins, inadvertently being conditioned to try to repeat these behaviors with wild animals. The problem has been so severe that in the late 1990s NMFS developed a campaign to address wild dolphin harassment (e.g., feeding, swimming with) known as the "Protect Dolphins" campaign.

SeaWorld offers its own programs as alternatives to activities prohibited under the MMPA in much of its education content. SeaWorld provides NMFS' policy on marine mammal interactions: "In U.S. waters, it is illegal to feed, touch, swim with or disturb the natural behavior of wild dolphins." On the other hand: "SeaWorld Parks and Discovery Cove offer safe, enjoyable interactions with dolphins and other marine mammals." As elsewhere, SeaWorld here uses its educational materials to promote its own for-profit programs.

<u>Marine animal research</u>

SeaWorld claims that the research that takes place in captive facilities has a direct, positive impact on wild populations of marine mammals. In one of its information books, SeaWorld claims that data gathered in captive situations allows researchers to observe behavior that would be difficult to see in the wild. To a certain extent this is true; however, this claim ignores the fact that captivity can have a dramatic and at times negative effect on an animal's behavior and, in recent years, has led researchers to improve means of observing wild marine mammals and minimize use of captive animals for behavioral studies.

In one of its information books, SeaWorld says that its training programs have benefited science in a number of ways. The book cites several examples of legitimate conservation research, but much of the work cited (including "honing [the animal's] skills" with training methods) does not

address conservation issues at all. These latter studies address the complexities of maintaining a captive population of marine mammals; that is, they address husbandry issues. For example, the book states:

> …animal training techniques developed at [SeaWorld facilities] have become a valuable tool. More than ever, zoological parks around the world are enjoying the benefits of using various animal training techniques in animal husbandry.

The benefits of sound training techniques for captive animals are uncontested (including the potential for some relief of boredom and a lesser degree of stress for animals undergoing veterinary care). However, these techniques do not directly assist conservation efforts.

Breeding captive animals

Captive breeding programs for marine mammals and other species are listed as a positive aspect of SeaWorld's work with endangered and protected animals, even when these animals will never be released into wild populations. SeaWorld claims that by increasing the world's population of these animals, it is assisting conservation efforts. However, this is not consistent with the generally accepted concept of conservation-based captive breeding, which includes the final step of releasing captive-bred progeny into the wild.[13] In addition, many of the species bred at SeaWorld facilities are not endangered or threatened, such as bottlenose dolphins and killer whales.

For example, a SeaWorld teacher's guide states "Sometimes a species can be reintroduced into its native habitat. SeaWorld has *captive breeding* programs for the endangered Humboldt penguin and the white-winged wood duck" (emphasis in original). This suggests that the programs in question are related to reintroduction programs and therefore links reintroduction to SeaWorld's captive breeding programs, even when this is invalid. Most of SeaWorld's breeding programs involve breeding non-endangered marine animals to replace captive animals that die in its facilities, a practice that has little to do with conservation, other than reducing pressure to seek replacements from the wild. However, this is circular reasoning – the only reason these captures would occur in the first place is to maintain display collections.

SeaWorld states that training techniques advanced at its facilities have been a driving force behind its reproductive successes; for example, SeaWorld's training programs have enabled the parks to develop a successful artificial insemination (AI) technique for whales and dolphins. It states that "advances in artificial insemination, made possible through our training techniques, may even aid in the conservation of endangered animal populations." Although SeaWorld does not claim that its AI programs currently help conservation efforts, the "may even" in the above statement links the company's breeding programs and development of a husbandry technique to conservation efforts in the minds of readers (parents, teachers, and students), even though it is highly unlikely that AI will ever aid with conservation of endangered whales or dolphins. Indeed, the problem for such species is rarely reproductive failure (they usually breed perfectly well the old-fashioned way) but vanishing and degraded habitat.

Rescue and rehabilitation efforts

In one of its teacher's guides, SeaWorld describes its efforts to rescue an orphaned gray whale calf, known as J.J., stranded near Los Angeles in 1998. Although the activity that goes with this depiction is a mathematical exercise involving the formula fed to the calf, it also explains SeaWorld's rescue of this whale. One of the discussion cues, in fact, is: "Discuss J.J.'s rescue and rehabilitation at SeaWorld with your students." Yet SeaWorld does not explain in this guide that after J.J. was released back to the wild after more than a year of rehabilitation, her tags were shed within three days and she was never seen again.[14]

A SeaWorld teacher's guide states that sea turtles, sea otters, and manatees are some of the species that have benefited from SeaWorld's rescue and rehabilitation efforts, and that those that recover are released into the wild. Yet despite the central Florida location of SeaWorld Orlando and its superiority over other receiving facilities in terms of space available and budget, SeaWorld Orlando only accepted and cared for approximately 14% (87/632) of the rescued juvenile and adult sea turtles in Florida during the period 2005-2009[15], and did not take in any post-hatchlings at all. In fact, of the seven facilities that comprise the sea turtle stranding network in Florida, SeaWorld Orlando ranked only fifth in terms of the number of juvenile and adult sea turtles it accepted for rehabilitation.

In the same section of this teacher's guide, the text goes on: "When you visit [SeaWorld parks], you can see some of the more than 40 threatened and endangered species currently in our care." This implies that the captive animals in SeaWorld's care are animals that SeaWorld rescued; although SeaWorld does display some non-releasable rescued animals, this is not the case for most of its animals. A similar example occurs on the frequently-asked-questions section of its website. In response to the question: "Where do you get your animals?" the website replies:

> With proper government permits, we may collect animals from the wild or rescue sick, orphaned, or injured animals. SeaWorld has the finest facilities on the planet for the rescue, rehabilitation, and release of stranded animals, so many of the creatures that you see at our parks have been rescued. Our main goal is to release these animals. However, some of them are so badly injured that they would not survive in the wild.

SeaWorld discusses its rescue and rehabilitation programs in the same breath as it mentions its "collection" (i.e., capture) operations, thereby linking rescued animals to its public display animals in the reader's mind. The majority of the paragraph focuses on rescue and rehabilitation activities, a positive message that overshadows the brief mention of SeaWorld's position on wild capture. This also implies to the reader (given the original question in the FAQ) that most of SeaWorld's display animals were rescued from strandings and cannot be released, when this is not in fact the case. Most of SeaWorld's marine mammals, as recorded in the MMPA Marine Mammal Inventory Reports,[16] were in fact purpose-caught from the wild as healthy juveniles or are captive-born descendants of such animals.

SeaWorld consistently portrays wild habitat as dangerous to animals. One of the activities in a teacher's guide is a game dubbed "Survivor!" The stated goal is for "students [to] investigate how a sea lion pup's behavior is important for its survival." The introductory comments say that 40-60% of California sea lions do not make it past their first year, due mostly to predators, weather, and food availability. Teachers are instructed to tell students that "many sea lions don't survive the first few years of life. They succumb to predators or aren't successful at foraging for prey." Students (who are instructed to look at this from the perspective of a sea lion pup) are sent through a course that has several stations. Most of the stations describe negative encounters with their environment (e.g., storms, sharks, killer whales, trash), even when the outcome is positive for the student (e.g., "You are too fast for a predator to catch. Go directly to the food challenge"). One of the few positive-outcome stations states that the "SeaWorld Animal Rescue Team cuts you loose from a net."

Again, the message that students receive from playing this game is that the wild is a scary place for young sea lions, with many potential disasters; however, SeaWorld acts as a safety net and is there to help. Little effort is made to celebrate the grandeur of nature in this game or the fascinating abilities these animals have to navigate their natural habitat. No mention is made that the pup mortality rate is a natural mechanism that prevents the planet from becoming overrun with sea lions. Again, no distinction is made between natural hazards, with which sea lions are adapted to cope, and human-caused threats, implying that even natural hazards are evils from which these pups need to be protected, a message that may encourage children to view nature in a negative light and to view SeaWorld's "safe" enclosures favorably by comparison.

Scientific information – "Best currently available" or "best for the bottom line"?

There is a great deal of scientific information missing from SeaWorld's educational materials, especially information about killer whale social structure, the importance of acoustics in group identity and communication, and other aspects of their natural history, including cultural differences. As a killer whale biologist who spent hundreds of hours in the field with this species, this missing information is especially striking to me. However, my testimony focuses on information that is present rather than information that is absent, in the interests of brevity.

<u>Collapsed dorsal fins</u>

Repeatedly, SeaWorld's materials make use of images and text that attempt to characterize the fully collapsed fins of its adult male killer whales as normal. For example, in the *Killer Whale* information book's conservation section, there are three photographs of wild killer whales. Out of the three, one has a collapsed dorsal fin. In the *Killer Whales* teacher's guide, SeaWorld describes how scientists use photographs of killer whale dorsal fins to identify individual whales (photo-identification). The text is alongside a picture of a killer whale with a fully collapsed dorsal fin, and from the picture it is impossible to determine whether the whale is captive or wild. The caption reads: "Some killer whales have irregular-shaped dorsal fins, sometimes leaning to one side." On the next page, there is an activity that asks students to match up sketches of killer whale dorsal fins that were taken five years apart. In the first set, there are two collapsed fins, and in the second there is one.

The repeated use of these images implies that fully collapsed fins are frequently seen in nature. SeaWorld points to a wild whale population to support this claim, stating that of the 30 adult male killer whales catalogued in New Zealand, seven have collapsing or bent dorsal fins (this does not distinguish "collapsing" or wavy/bent fins and fully collapsed fins). However, in most wild populations, only a small percentage of adult males have fully collapsed fins,[17] while 100% of adult male whales in captivity do. In fact, erect fins – to heights of 1.8m in adult males – are the norm in nature.

The *Killer Whale* information book goes on to say that no one knows why some dorsal fins collapse (or "bend"), but that some possible causes are genetics, injuries, or "because the fins can be taller than many humans [are] without any hard bones or muscles for support." This last 'cause' is completely unsubstantiated by empirical observation – *most* adult male killer whales in nature have erect fins, despite their height. Clearly the fact that male killer whale dorsal fins have no bones or muscles for support is irrelevant to their stability. This statement is in fact extremely misleading, suggesting as it does that mere gravity might cause a fin to collapse when in nature there is absolutely no evidence of this – when fins collapse in wild killer whales, gravity alone cannot be the cause or it would be a common rather than a rare phenomenon.

The *Small Wonders: Killer Whales* page also touches on collapsed dorsal fins:

> Scientists have a couple of theories as to why the dorsal fins of some killer whales flop over. One theory is that the surrounding water helps support the dorsal fin. A killer whale that spends more time at the surface, with its fin protruding out of the water, has a greater tendency for its fin to bend. Additionally, collagen becomes more flexible when warmed, such as if it is exposed to sunlight. Another theory supports a genetic tendency for a dorsal fin to bend. These two factors may work in combination or there may be other factors involved. The dorsal fin of an adult male killer whale can grow to six feet tall, which may be why their fins have a greater tendency to bend. Neither the shape nor the droop of a whale's dorsal fin are indicators of a killer whale's health or well-being.

If, SeaWorld seems to be saying, you see a killer whale that spends a lot of time at the surface, then chances are he will have a collapsed fin. Of course, captive whales, in contrast to wild whales, do spend a great deal of time on the surface and are prevented from diving to great depths by the relative shallowness of their tanks. By making the time spent at the water's surface (and not the conditions that make this happen) the issue, SeaWorld again attempts to make fully collapsed fins seem normal. They also portray this as a trait that might be passed down in family lines – given the pervasive references to breeding in captivity throughout the online materials, it is probably a short jump for readers to conclude that the captive males with collapsed fins must be related to each other. SeaWorld pointedly says here and elsewhere that the condition of a killer whale's fin does not reflect his health, which in fact is unknown in the case of wild whales with this condition.

Ultimately, SeaWorld pointedly avoids clarifying in its educational materials that fully collapsed fins (versus wavy or bent fins, which are actually a separate phenomenon) are seen in 100% of adult male killer whales in captivity and that erect fins are the norm for adult males in the wild.

Longevity

Killer whales

Throughout its online materials, SeaWorld attempts to maintain a degree of ambiguity about the longevity of cetaceans by sometimes providing its audience with conflicting and false information. While proclaiming that scientists will only learn the truth from studies that last decades longer than existing research projects (which is untrue – actuarial tables, similar to those used by insurance companies to determine probable longevity of prospective clients, are common tools in determining life expectancies), SeaWorld also states that scientists are still refining methods of aging cetaceans (for example, by counting growth layers in teeth). However, in some cases SeaWorld ignores recent studies examining cetacean longevity and aging techniques.

In the *Killer Whales* teacher's guide, SeaWorld states that the typical lifespan of killer whales is "probably" 25 to 35 years, and in the *Killer Whales* information book it claims that: "No one knows for sure how long killer whales live," followed by an observation that scientists believe killer whales in the Pacific Northwest might live at least 35 years. A little later, however, this is revised again to state that a female's life expectancy is 50 years and a male's is 30 years (if they survive the first six months of life). Conspicuously, SeaWorld never mentions the life span of killer whales in captivity and is vague about assigning "maximum" or "average" to the life spans it presents.

In fact, these data are misleading and in some cases incorrect. The best current scientific knowledge on killer whale longevity is from a 1990 study published by the International Whaling Commission and confirmed in a 2005 study for the Canadian Science Advisory Secretariat and in the second edition of the *Encyclopedia of Marine Mammals*.[18] Mean life expectancy for males is approximately 30 years and for females approximately 50. Maximum estimated life expectancy for males is 50-60 years and for females 80-90. SeaWorld mentions some of this information, but strongly implies that there is still considerable scientific debate about these estimates, when in fact the only place the debate continues is within the public display community – these estimates are firmly established in the marine mammal science community. As for mortality rates, the annual mortality rate for all non-calf killer whales (both sexes) is approximately three times higher in captivity than in one well-studied wild population[19] – SeaWorld does not mention this information anywhere in its educational materials.

When discussing calf mortality, SeaWorld mentions several wild populations where killer whale calves seem to have a high rate of mortality – for example, 43% of calves in the Pacific Northwest, and 50% in "other" populations, die in their first year. Materials cite "unknown reasons." Although it never cites its own calf mortality rate, the implication is clearly that high calf mortality is quite common and should be expected, including in captivity. Yet this is inconsistent with the effort to portray captivity as a safer, healthier environment than the wild (where presumably calf mortality should be lower). There is also no discussion of how causes of death, particularly of calves (who in the wild are vulnerable to poor maternal condition, predators, and other natural hazards that are not present in captivity), might differ between the two environments.

These materials also say "With continued research, it is likely that differences in longevity will be found in killer whale populations around the world." While this is probably true, the fact that in one wild population, conditions are good enough to allow killer whales to realize life spans that are similar to human beings is barely mentioned. If one wild population can achieve these life spans, then certainly captive killer whales, if conditions are safe and healthy (as SeaWorld claims), should be able to achieve them. Yet in fact only two captive female killer whales (currently alive) have passed 40 (in 45 years of maintaining the species in captivity and out of almost 200 individuals), only one or two others passed 30 before their deaths, while dozens have died in their pre-teens, teens, and 20s. No captive males have yet passed 35, less than a handful has reached 30, and most have died in their pre-teens, teens, and early 20s.

In fact, 22 killer whales, all but one younger than 25 years of age at death, have died in the past 24 years at SeaWorld facilities. These deaths have been relatively evenly spread out over this time frame. The most recent death was in 2008, of a very young animal. This information is not offered anywhere in SeaWorld's educational materials.

Beluga whales

SeaWorld inaccurately portrays beluga whales' life spans as being half of what the scientific community currently believes them to be, and continues to refer to an aging technique that is obsolete. In its *Beluga Whale* information book, SeaWorld states that beluga whales "probably live about 25-30 years." However, a recent study concluded that the methodological assumption on which this estimate is based is wrong.[20] This study shows that beluga whales only lay down one dental growth layer group a year, as opposed to the earlier assumption that they lay down two growth layers a year. The authors showed that belugas actually live twice as long as scientists first thought: 50-60 years, not 25-30. This study came out in 2006; SeaWorld has had ample time to correct its online content, but has not. SeaWorld even describes the way that beluga life spans were calculated before the 2006 study, as if it were still current: "Scientific evidence indicates that belugas may deposit up to two growth layer groups annually." Again, SeaWorld has chosen not to acknowledge the best current scientific knowledge.

It serves SeaWorld's interests to continue to maintain that belugas only live 25-30 years, as this is the maximum life span attained by any captive belugas over the years. Now that it is clear that this is half a natural life span, it is also clear that beluga welfare in captivity is compromised. This information is obviously not to SeaWorld's advantage, giving it a financial motivation to ignore this science.

Bottlenose dolphins

Bottlenose dolphins are said to have life spans of 20-30 years in SeaWorld's online materials. In a fact sheet, however, SeaWorld cites the maximum dolphin age to be about 40-45 years for males and about 5-10 years longer for females (with only 1-2% of animals reaching that age). Unlike the claims for killer whale life spans, the dolphin life span information includes captive statistics, perhaps because the mean life expectancy of bottlenose dolphins is similar in both captivity and the wild. Because of the positive nature of this claim, SeaWorld makes use of it in many places. (Arguably dolphins should be living longer in captivity, if it is a safer and healthier

environment, yet they do not. While SeaWorld's materials don't dispute this observation, they also don't explain or even mention it.)

In addition, SeaWorld states that a one-year old bottlenose dolphin in an Alliance facility is expected to live an average of over 25 years. However, this does not take into account all the calves that do not make it to their first birthday. A recent analysis, looking at data obtained from the Marine Mammal Inventory Reports, showed that approximately 60% of dolphin calves born in American facilities die before the age of one,[21] a mortality rate that is no improvement over rates in the wild and may be worse.

Although SeaWorld touts captive bottlenose dolphins' longevity as proof that life in captivity is good (and in fact may be better at SeaWorld than in the wild, although for this to be true, captive dolphins should be living longer), it should be remembered that SeaWorld obfuscates and offers partial (and even full) misstatements of fact about other species' life spans.

Conclusion

All of these examples of biased, misleading, and/or incorrect information, found in the online educational materials from one theme park attraction, illustrate the urgent need for NMFS to actively oversee the education programs of MMPA public display permit holders. The agency's jurisdiction and oversight do *not* end when a marine mammal enters a public display facility. Regulations are urgently needed to establish a process by which permit holders will periodically demonstrate that they continue to comply with the Section 104(c)(2)(A)(i) provisions of the MMPA and that their education materials and conservation programs continue to meet "professionally recognized standards of the public display community."

While the MMPA no longer has jurisdiction over marine mammals once they are inside a public display facility, it continues to have jurisdiction over public display permit holders. HSI hopes this hearing will clarify the problems with the current situation, where some members of the public display community have a conflict of interest in self-regulating their educational content. Millions of citizens are exposed to the educational materials and messages delivered by marine mammal public display facilities and we have serious concerns that their interests are not being protected by the status quo. We urge NMFS to re-engage in its implementation and enforcement of the public display provisions of the MMPA. NMFS is currently undertaking a major revision of its Section 104 regulations, an ideal opportunity to rectify this situation. We ask the members of this Subcommittee to add their voice to ours in support of the strongest possible public display regulations and offer, as Attachment 3, our recommendations for these regulations.

Attachment 1
List of website materials analyzed for testimony of Naomi A. Rose, Ph.D., Humane Society International

SeaWorld Educational Materials
All materials were accessed during spring 2008

Teacher's Guides:
- Arctic Animals: 4-8
- Animal Behavior and Training: 4-8
- Bottlenose Dolphins: 4-8
- Endangered Species: 4-8
- Killer Whales: 4-8
- Whales: 4-8

All teacher's guides can be found at: http://seaworld.org/just-for-teachers/guides/index.htm

Information Books:
- Animal Training: http://seaworld.org/animal-info/info-books/training/index.htm
- Beluga Whales: http://seaworld.org/animal-info/info-books/beluga/index.htm
- Bottlenose Dolphins: http://seaworld.org/animal-info/info-books/bottlenose/index.htm
- Killer Whales: http://seaworld.org/animal-info/info-books/killer-whale/index.htm
- Zoo Careers: http://seaworld.org/career-resources/info-books/zoo-careers/index.htm

Animal Bytes Factsheets:
- Bottlenose Dolphins: http://seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordata/craniata/mammalia/cetacea/bottlenose-dolphin.htm
- Killer Whales: http://seaworld.org/animal-info/animal-bytes/animalia/eumetazoa/coelomates/deuterostomes/chordata/craniata/mammalia/cetacea/killer-whale.htm

Small Wonders:
- Bottlenose Dolphins: http://seaworld.org/animal-info/small-wonders/dolphin/index.htm
- Killer Whales: http://seaworld.org/animal-info/small-wonders/killer-whale/index.htm

Miscellaneous
- Wildlife Newsletter: http://www.abap-wildlife.com/
- FAQ, Killer Whales: http://seaworld.org/ask-shamu/faq.htm#killer-whales

Attachment 2

Endnotes for testimony of Naomi A. Rose, Ph.D., Humane Society International

[1] S Rep. 220, 103rd Cong. 2d Session at 293 (25 Jan 1994) and also see H Rep. 970, 100th Cong. 2d Session at 33 (23 Sep 1988): Congress recognized the importance of public display facilities in providing "…an important educational opportunity to inform the public about the esthetic, recreational, and economic significance of marine mammals and their role in the ocean ecosystem."

[2] MMPA §104(c)(2)(A)(i): "A permit may be issued…only to a person which the Secretary determines offers a program for education or conservation purposes that is based on professionally recognized standards of the public display community."

[3] FR Doc. 94-24787, 5 October 1994

[4] These were the education standards of the Association of Zoos and Aquariums (AZA) and the Alliance of Marine Mammal Parks and Aquariums (Alliance). The AZA and Alliance submitted, for reference purposes only, the professionally accepted standards on which their members base their education and conservation programs.

[5] 66 FR 35209

[6] 50 CFR 216.43 Public display – [reserved]

[7] See also Davis, S.G. 1997. *Spectacular Nature: Corporate Culture and the SeaWorld Experience*. University of California Press: Berkeley.

[8] Alliance of Marine Mammal Parks and Aquariums education standards, as published in FR Doc. 94-24787, 5 October 1994; SeaWorld is a member of the Alliance.

[9] Reeves, R.R., Smith, B.D., Crespo, E.A., and Notarbartolo di Sciara, G. 2003. *Dolphins, Whales, and Porpoises: 2002–2010 Conservation Action Plan for the World's Cetaceans*, Gland, Switzerland: IUCN, http://iucn.org/dbtw-wpd/edocs/2003-009.pdf.

[10] However, an AZA study found that only 42% of respondents felt that zoos and aquariums "play an important role in conservation education and animal care". Falk, J.H., Reinhard, E.M., Vernon, C.L., Bronnenkant, K., Heimlich, J., and Deans, N.L. 2007. *Why Zoos and Aquariums Matter: Assessing the Impact of a Visit to a Zoo or Aquarium.* Association of Zoos and Aquariums: Silver Spring, MD.

[11] Reinhard, B. and Killian, A. 2004. The Blue Classroom: Teaching the young. Presented at the European Cetacean Society 2004 Conference, Kolmarden, Sweden.

[12] Curtin, S. and Wilkes, K. 2007. Swimming with captive dolphins: Current debates and post-experience dissonance. *International Journal of Tourism Research* 9:131-146.

[13] See, e.g., N. F. R. Snyder et al. 1996. Limitations of captive breeding in endangered species recovery. *Conservation Biology* 10: 338-348. See also Article 9 (ex-situ measures) of the Convention on Biological Diversity, which states that Parties shall adopt measures for the "rehabilitation of threatened species…[and for] their reintroduction into their natural habitats under appropriate conditions." See also the current NMFS scoping document (http://www.nmfs.noaa.gov/pr/pdfs/permits/mmpa_regulations_scoping.pdf) for proposed revisions to the MMPA Section 104 regulations, wherein it is proposed to define "enhancement" as "Enhancement activities include, but are not limited to, captive propagation and *release to the wild* if required under an ESA recovery or MMPA conservation plan…" (emphasis added).

[14] See http://www.seaworld.org/animal-info/gray-whale/news-main.htm.

[15] Data from Florida Fish and Wildlife Conservation Commission, www.myfwc.com.

[16] MMPA §104(c)(10)(A-H): "The Secretary shall establish and maintain an inventory of all marine mammals possessed pursuant to permits issued under paragraph (2)(A)…"

[17] See, for example, Ford, J.K.B., Ellis, G., and Balcomb, K. 1994. *Killer Whales: The Natural History and Genealogy of* Orcinus orca *in British Columbia and Washington State.* University of British Columbia Press: Vancouver. In one population, only one out of 40 adult males had a fully collapsed fin – in another, none of the 16 adult males had a fully collapsed fin.

[18] Olesiuk, P.F., Bigg, M.A. and Ellis, G.M. 1990. Life history and population dynamics of resident killer whales (*Orcinus orca*) in the coastal waters of British Columbia and Washington State. *Rep. Int. Whal. Comm Spec. Iss.* 12: 209-242; Olesiuk, P.F., Ellis, G.M. and Ford, J.K.B. 2005. *Life History and Population Dynamics of Northern Resident Killer Whales (*Orcinus orca*) in British Columbia.* Canadian Science Advisory Secretariat. Department of Fisheries and Oceans, Canada; and Ford, J.K.B. 2009. Killer whale. In: *Encyclopedia of Marine Mammals, 2nd Edition*. Edited by W.F. Perrin, B. Wursig and J.K. Thewissen. Academic Press: New York.

[19] Small, R.J. and DeMaster, D.P. 1995. Survival of five species of captive marine mammals. *Marine Mammal Science* 11: 209–226.

[20] Stewart, R.E.A, Campana, S.E., Jones, C.M. and Stewart, B.E. 2006. Bomb radiocarbon dating calibrates beluga (*Delphinapterus leucas*) age estimates. *Canadian Journal of Zoology* 84: 1840-1852.

[21] M. Draheim, unpublished data.