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The Role of Zoos and Aquariums in Manatee Conservation

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When it comes to protecting and conserving endangered species, many complex issues come into play: balancing the needs of humans with the needs of the species, considering the requirements of individual animals with the overall well-being of the species, and caring for the fragile ecosystem to ensure future survival. Modern zoos and aquariums are in a unique position to carry out conservation programs despite these complications, as they form a well-respected, well-funded, and highly motivated network of professionals throughout the world. Zoo and aquarium conservation programs are vital to the survival and preservation of West Indian manatee (*Trichechus manatus*) populations because they reach and educate a huge number of people around the world, and they have the resources to carry out projects critical to conservation, including captive behavioral studies, rehabilitation and release, and on-site research programs.

Human beings have long had an intricate and tumultuous relationship with nature. Ancient traditions and drives to conquer the natural world have led to the destruction of countless habitats and species throughout human history. Zoos and aquariums began as a way for men to collect and display exotic creatures; it was both an exhibition of power over nature and a source of curiosity and wonder (Hargrove, 1995). Animals were taken from the wild to fill the cages, and very little, if any, thought was given to the effect such actions would have on the individual animals, the species as a whole, and the environment. Most modern zoos and aquariums are the direct descendants of Victorian menageries, and while many retain the structure of past institutions, inasmuch as they hold captive animals for public viewing, modern zoos and aquariums operate with a very different mission and vision for the future (Garibaldi,

2001). Today's zoos work to ameliorate some of the damage done to the environment and work to encourage people to live in a much more environmentally conscientious way.

Modern zoos and aquariums, as accredited by the Association of Zoos and Aquariums (AZA), are worldwide leaders in education, conservation, and research. In the first decade of the 21st century alone, AZA institutions have spent over \$70 million per year on conservation programs, which include 3700 projects in over 100 countries (*Conservation commitments and impacts*, n.d.). AZA accreditation represents the highest standard for the zoological world, and to demonstrate the industry's dedication to excellence, accreditation standards become more stringent and more comprehensive nearly every year. Any zoo seeking accreditation must demonstrate an ever increasing commitment to conservation (Maple, 1995). It is precisely because of this regulation and obligation toward species preservation that zoos and aquariums are exceptionally qualified to become leaders in manatee conservation.

Education and conservation go hand in hand. One must understand the threats, habits, and needs of a species before it can be protected; this is where conservation education in zoos and aquariums plays an increasingly important role. The goal of conservation education is to create an awareness and understanding in the general zoo visitor that leads to future, and hopefully lifelong, knowledge, interest, and action toward environmental issues (Patrick, Matthews, Ayers, & Tunnicliffe, 2007).

According to the AZA website, 150 million people visit accredited zoos and aquariums per year in North America alone (n.d.). This gives zoos a unique and powerful position to reach both conservation-minded and casual, leisure-seeking persons, alike. Though most people look to zoos as a form of entertainment for family outings, educational information can reach the general public if presented in a fun and accessible way. A study by Jiang, Lück, and Parsons

(2008) indicated that visitors to institutions with marine mammals were less aware of environmental concerns than non-visitors, and guests indicated that they visited such institutions for entertainment and educational purposes. Such findings signify that people are lacking, but open to information, so zoos should capitalize on the opportunity to educate while the animals captivate the audience.

The excitement zoo goers feel with watching animals can be fostered into a conservation ethic, as individual animals become ambassadors for their wild counterparts. With proper education, at least some of those 150 million visitors will be moved to act, and because we live in a world community, it does not matter whether the ambassador animal is from their own backyard or from a far-away land. Money spent at the zoo can be, and usually is, put toward conservation projects in-house and around the world (Swaigood, 2004). People may be moved to support worldwide conservation organizations. They may live their daily lives in a more conservation-minded way. When they travel, zoo goers may be more likely to respect habitats and become more conscious of the tours and activities in which they engage while on vacation.

Most people are aware of the manatee's plight, as it is a recognizable and charismatic species, but until they see one up close, they may not form a strong attachment to the animal. By looking at one nose to nose, as one can do at the Columbus or Cincinnati Zoos, among other places far from the manatee's natural habitat, visitors may begin to feel a personal bond to the animal. Many of these same people will likely travel to manatee habitat one day, whether purposely to see and learn about the manatee in the wild or simply because such places as Florida and the Caribbean are popular tourist destinations. While traveling, people who may have once been casual zoo visitors may now observe boating restrictions, avoid polluting the

waterways, and have a true respect for the manatee and its habitat that might not be possible without a simple, personal, experience at a zoo.

Zoos and aquariums also have a reach far beyond the general public, as they are world-class institutions that “enjoy a high measure of scientific credibility and public respect” (Garibaldi, 2001). Scientific inquiry was never far from the minds of zoo and aquarium founders throughout history, even if entertainment and curiosity seemed to be at the forefront of zoo development (Hutchins, Dresser, & Wemmer, 1995). Particularly as it relates to manatees, zoos and aquariums can play an incredibly important role in several different ways: as sites for behavioral research, as rescue, rehabilitation, and reintroduction facilities, and as leaders in on-site conservation.

Zoos present scientists with a location to study behaviors that would be difficult or impossible to study in the wild (Swaigood, 2004). Information gained through captive study can, then, be disseminated for use in the natural habitat by scientists and governments to better protect the species. For example, studies conducted in zoos have suggested both that manatees may not hear low frequency sounds, such as those emitted by boats, and that even if they do hear the sounds, they may become acclimated to them over time. Both situations may lead manatees to not maneuver away from the noise source, which could account for many injuries sustained by manatees as a result of boat strikes (Baytos, Feist, Howard, Lambourne, Rohrkasse, Walz, et. al., 2003). Such studies could have serious implications for policies and conservation efforts in the wild. Perhaps lowering boat speeds is detrimental to manatees, as they may be less able to hear the roar of the motor when it is in a lower gear, or perhaps boats should be fitted with an apparatus that produces higher frequency sounds to which manatees more strongly respond (Baytos, Feist, Howard, Lambourne, Rohrkasse, Walz, et. al., 2003).

Captive propagation of individuals is another focus of zoos. Conservation at this level is primarily seen as a short term fix. It is a tool to keep the species viable in captivity, and in some cases, to ensure that there are individuals to reintroduce into the wild, should the natural habitat support such an action (Garabaldi, 2001). Captive breeding is an “insurance policy, providing a genetic reservoir for reintroduction should in situ efforts fail” (Swaigood, 2004). In addition to captive breeding, rehabilitation is a key component of zoos’ commitment to manatees. Many manatees are brought into captivity after being orphaned or injured, and while some are kept in captivity throughout their lives and entered into breeding programs, some manatees are rehabilitated with the intention of reintroducing them to the wild.

Fortunately, reintroduction is a realistic goal for some manatees in captivity. Because zoos generate a controlled environment for the protection of individuals and species, they are also able to create naturalistic environments for the animals prior to reintroduction. Candidates for release are able to practice and prepare for the challenges of nature. This is particularly important since conditions in the natural habitat may be drastically different than the circumstances in captivity (Swaigood, 2004). Just this year, a manatee that had lived at Disney’s Epcot facility since 2001, after being rescued as an orphan, was released into its natural habitat in Florida (*Manatee Returns to Natural Habitat after Walt Disney World Rehabilitation*, 2009).

Through reintroduction efforts, scientists can learn more about manatees in their natural environment, as reintroduced animals are often fitted with radio transmitters. Through observation of released individuals, and studies which examine social patterns and spatial use in captive and semi-captive manatees, researchers now have a better understanding of wild

populations and the requirements for healthy captive animals (Harper & Schulte, 2005; Horikoshi-Beckett & Schulte, 2006)

Working with local communities is another way zoos and aquariums can affect conservation on a global scale. The Dallas World Aquarium, for example, has opened a manatee rehab center for orphaned and injured manatees in Venezuela (Garibaldi, 2001). There are similar facilities in manatee habitats around the world, but by being partnered with an AZA institution, the facility in Venezuela will likely have much more exposure, support, and funding than most other locally based centers.

Manatee conservation is a complex, yet worthwhile, undertaking for many people around the world. Zoos and aquariums happen to be uniquely qualified to become authorities on manatee conservation due to their popularity, their influence, and their resources. By reaching so many people around the world, zoos and aquariums can and should educate visitors on manatee conservation issues, particularly since most of the people visiting the institution have either a rudimentary understanding or no understanding of the natural history, behavior, and threats to manatees. In addition, because they have the means and the personnel, zoos and aquariums are, and will continue to be, leaders in manatee behavioral studies, captive breeding, rescue and rehabilitation, reintroduction and local conservation.

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Discussion questions:

1. Nearly all of my references focused on Florida manatees or generally on West Indian manatees, while at least some sources suggested that the ecology and behavior of Antillean manatees will likely differ from the Florida subspecies. Should zoos make a concerted effort to focus on Antillean manatees? If so, how: by taking a few individuals into captivity, by working with locals in Belize and Central America, by funding research projects on the natural habitat, etc.?
2. How might zoos and eco-tourism operators work together to mitigate threats to manatees and to promote conservation and education?
3. Does the overall good of the species justify compromising the natural experience of an individual? Should humans take representatives of all endangered species into captivity to create a modern-day “ark”, in case conservation efforts fail in the wild?