

Is the Keeping of Endangered Exotic Animals in Zoos the Most Ethical Way to Preserve, Conserve, and Educate People About These Animals?

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Introduction

To discuss the ethical considerations of zoos, we must first define a zoo. A place where exotic animals are housed on display is too broad a definition, as there is no practical way to go about discussing institutions that may vary from a person's backyard to a multi-million dollar animal park. A total of 221 institutions have earned accreditation by the Association of Zoos and Aquariums (AZA). According to the AZA, accreditation is defined as "official recognition and approval of a zoo or aquarium by a group of experts."¹ For the purpose of this paper, I will define a zoo as an AZA accredited institution.

In a 2007 survey, 131 of 136 zoos accredited by the AZA included education as a theme in their mission statements, and 118 mission statements included conservation as a theme.² Today, AZA accreditation guidelines state that both education and conservation must be at the heart of every zoo's mission and must be featured prominently in the mission statement.³ In this paper, I argue that despite the challenges zoos face, they are the most ethical method to accomplish education and conservation goals for endangered animals.

Zoos and Animal Welfare

To evaluate the ethics of zoos serving a certain purpose, we must first discuss the ethics of the zoo's very existence. Essentially, is it ethical to house endangered exotic animals on public display? Zoologist Marian Dawkins argues that this issue can be addressed by answering two key questions: "Is the animal physically healthy?" and "Does the animal have what it wants?"⁴

To comply with AZA accreditation guidelines, a zoo must employ or contract with a veterinarian to oversee the health of the collection's animals. In addition, the guidelines state that zoos should adopt the Guidelines for Zoo and Aquarium Veterinary Medical Programs and Veterinary Hospitals developed by the American Association of Zoo Veterinarians (AAZV).³ The AAZV's guidelines include an emphasis on preventative medicine and standards for facilities and surgical and medical care.⁵

While providing for animal health is clearly a priority in zoos, defining physical health comes with gray areas, especially when it comes to measuring animal stress. Physiologic measures such as corticosteroid levels are difficult to interpret because of confounding factors, including that some level of stress is usually involved in the blood draw often necessary to collect this information and that there are many causes of increased hormone levels, both normal and pathologic.⁴

Stress may also be expressed in abnormal behavior or stereotypies, where an animal performs a behavior repetitively for no apparent reason.⁴ Enrichment in zoos helps to address these stereotypies. Enrichment can range from the use of puzzle feeders, which require an animal to overcome minor obstacles in order to obtain its food, to novel scents or perfumes placed in an animal's environment. Response to enrichment varies widely both across species and by individual animal. In a review of enrichment research, Swaisgood and Shepherdson failed to determine what makes enrichment work in some situations and not in others. They suggested that future research should use larger sample sizes and should evaluate only one enrichment method

at a time. Ultimately, with more data, they anticipate being able to predict situations where stereotypies will occur and to identify the type of enrichment needed to treat them.⁶

It is less straightforward to determine whether an animal has what it wants than it is to address its physical health. An animal's daily life in the wild clearly differs from its life in captivity. In the wild, the amount of space an animal has far surpasses what is available to it in captivity. In the wild, it uses this space to search for food and other resources, such as shelter, and to avoid predators. In captivity, neither of these pursuits is necessary, as the animal is provided with a balanced diet and is protected from predators. Without introducing too much anthropomorphism, we can assume that an animal wants to eat when it is hungry and would rather not be eaten. Zoos fulfill both of these wants. Dawkins suggests behavioral research and analysis is the best way to move forward in evaluating these and other wants.⁴

Currently, zoos are very conscientious of animal welfare and guidelines are designed accordingly. Veterinary care is cutting edge and new research is in constant pursuit of the most humane ways to house and care for animals.

Conservation Roles of Zoos

Addressing the health and wants of an animal in a zoo is important when considering individual animal welfare. However, individual animal welfare is not the only factor that should be considered when evaluating the keeping of animals in zoos. Conservationists give priority to the welfare of the population of a species as a whole.⁷

According to the 2011 AZA annual report on conservation science, accredited institutions spent approximately \$160 million on more than 2670 conservation projects in over 100 countries.

These projects range from local projects such as lake sturgeon restoration in the Genesee River, funded by the Seneca Park Zoo, Rochester, New York, to international efforts such as the Southern Africa Elephant Conservation Program, funded by the San Diego Zoo.⁸ These programs can also be classified into two categories: ex situ projects, including captive breeding projects involving animals outside of their natural habitat, and in situ projects, such as preservation of the animal's natural habitat.⁸

For endangered populations of animals, creating sustainable captive populations is challenging. However, a captive population kept in a zoo is able to retain a higher level of genetic diversity than a much larger wild population.⁹ The AZA has developed over 300 Species Survival Plans to manage critical populations cooperatively.¹⁰ In the cases of the Przewalski's horse (*Equus przewalski*), Scimitar-horned oryx (*Oryx dammah*), and Siberian tiger (*Panthera tigris altaica*), sufficient levels of gene diversity were captured at the founding and growth stages to allow for a sustained level of gene diversity for the future of these animals.¹¹

Successful programs for all species are not possible or practical given the limited space and funds of zoos.^{7,9,11,12,13} Targeting keystone species has been suggested in order to prioritize resources. These keystone species would not only garner support for their own species but ultimately would also benefit less popular species living in the same habitat or niche.^{9,14}

There are many conservation benefits to maintaining ex situ zoo populations when caring for a dwindling population of an endangered species. The zoo populations allow for advances in areas such as basic research, professional training, and technology development.^{9,13} Basic research may include determining dietary needs or reproductive cycling patterns. Professional training helps to prepare the next generation of wildlife biologists and veterinarians. Technology development may include testing methods of affixing satellite transmitters and cameras to marine mammals in captivity that will be later used to track movements of their wild counterparts. All of these advances can then be used to benefit the wild populations because the more we know, the better equipped we are to protect them.

Zoos as Educators

One of the main arguments against zoos is that they still function more for entertainment than for education. In fact, most visitors define their main goal in visiting a zoo as entertainment in some form, such as a pleasant day outing or a means of entertaining children.^{15,16} However, education comes in many forms.

One of the sources of educational information in zoos is signage. In a study of visitors to the Cleveland Metroparks Zoo, relatively few people were observed reading the signage.¹⁵ However, other forms of learning such as live presentations and demonstrations had a larger impact on visitors.¹³

Additionally, emotional connections are formed between people and animals when people are allowed to observe the animals up close. This connection correlates with a visitor's desire to help the animal and its species.¹⁵ Although learning to understand a zoo animal's basic characteristics and needs is ideal, in reality a person does not need to know that a chimpanzee is a great ape and not a monkey in order to feel a connection to the animal and want to contribute something to help alleviate its strife in the wild. Even if a trip to the zoo does not teach basic animal facts about chimpanzees, the opportunity for this education is not lost. Visitors gain a desire to learn more by visiting a zoo¹⁶ and if cultivated properly, this desire to learn and the desire to help can foster public support for conservation efforts.

Apart from a connection with individual animals, zoo visitors also have been shown to reconsider their role in conservation efforts, redefining themselves as part of the solution. They also gain a stronger connection with nature.¹⁶

Alternatives to Zoos for Conservation and Education

While zoo missions focus on conservation and education,³ some suggest there is a better way to accomplish the same goals for animals in the wild without keeping these animals in captivity.

From a strictly conservation perspective, keeping *ex situ* populations of animals in zoos is extremely beneficial to *in situ* conservation goals. Examples of these strides, such as basic research and technology development, were discussed previously in this paper. Zoos are also uniquely able to support efforts in the wild by providing help with fundraising.^{7,9}

Possible alternative ways to educate the public about animals and thus gain support for conservation include television programs or films and visiting the animals in the wild. While there are many excellent educational television programs and films related to animals, the direct contact that can be achieved in zoos is more effective in changing a visitor's attitude about an animal than merely observing them or learning about them on television.¹⁴ Without the connection provided by more direct contact, support for conservation would be stifled. Seeing animals in the wild is ideal, but one must consider that most zoos house animals from multiple continents. Visiting even a small subset of the equivalent animals in the wild is impractical at best.

Conclusions

In the year 2013, the ethics surrounding zoos is constantly changing. Even over my short lifetime, I have seen changes in zoos such as how animals are housed and what animal programs are offered that reflect the changing times and attitudes surrounding what is appropriate and ethical. As a child visiting the zoo, I rode elephants. Now, AZA accredited zoos are working toward minimizing even keeper contact with elephants without a protective barrier.¹⁷

The current goals of conservation and education in zoos are of utmost importance, and I believe that zoos are the best medium to carry out these goals. By caring for animals in captivity, zoos are able to manage captive populations, advance technologies, and increase knowledge about the species, all activities that benefit wild populations. Additionally, zoos provide a forum for the

public to learn about conservation and forge a connection with the animals. These connections help to garner support for conservation efforts in the wild, and the zoos themselves provide a means for fundraising for these efforts.

I believe strongly that standards are necessary to ensure the welfare of the animals in zoos. The AZA currently provides these standards, and I urge the AZA to continue to critically evaluate zoos into the future, constantly adapting and challenging zoos to meet higher standards. In this way, we can provide an ethical backbone central to the care of all zoo animals.

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