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Confinement for Conservation: An Ethical Overview of Zoos

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Abstract:
This work describes the workings of modern zoos and considers the core ethical challenges which face those who choose to hold and display animals in zoos, aquariums or sanctuaries. Using a number of normative ethical frameworks this thesis explores impacts of modern zoos. The impact of zoos include the costs to animals in terms of animal welfare, the loss of liberty and even impact on the value of animal life. On the positive side of the argument are the welfare and health outcomes for many of the animals held in zoos, increased attention and protection for their species in the wild and the enjoyment and education for the people who visit zoos. This paper concludes that zoos and aquariums are ethically defensible when they align conservation outcomes with the interests of individual animals and the interests of zoo operations. The impending extinction crisis requires large scale interventions which address human values and facilitate consideration of wildlife in decision making. Considering the long term relationship zoos have with animals, their extensive reach within communities and their reliance on animals to deliver positive experiences for people, it is appropriate that zoos pay back some of humanity's debt to wildlife by making a meaningful contribution to wildlife conservation.

Keywords: Zoos, Animals, Animal Protection, Ethics.

INTRODUCTION

The adaptations of animals have evolved in response to various environmental pressures and it is reasonable to assume that the best place for wild animals is in their natural habitat. In an ideal world, wild animals would have the freedom to live (and die) as they have for countless generations. However, historically human and non-human animals have built a controversial and unstable relationship, as described by Gannon (2002, p. 589) "We eat them and we cuddle them. We feed them, we play with them, we make money from them, we hunt them, we build tourism around them, we breed them, we teach them tricks, and we pass legislation to protect them. In short, we use them for any purpose we wish." Moreover, the interaction between humans and animals is a one-side built relationship, in which the animals do not have a representation due to the lack of representatives with human-verbal communication skills among themselves. This brings probably the most significant challenge for Animal Studies - giving a human voice to animals. As a result, we witness endless varieties of anthropocentric interpretations on what animals "say", feel and need. The attitude towards non-humans varies time and location wise. Consequently, I believe that today humankind has evolved in a moral and philosophical sense, which demands a more complete and up-to-date re-thinking the human-nonhuman relationship.

However, the animals are still under represented in science, which also creates a gap between the knowledge in academia and the business. The current literature is stuck on the 'battle' "are the zoos good or bad". For new legislation on animal welfare to be introduced in practice, we need contemporary research. As there is already a fair amount of research proving that zoos are beneficial neither for the animals nor for the humans, it is time to move on. Yet, it seems that so far studies in tourism have not done enough for the animals. As a result, often animals are not considered at all in the human-centred tourism management, which positions the mere human experience on the top of the pyramid as a primary and most significant aspect of tourism design. Moreover, according to Burns (2015, p. 50), animals are even missing from the UN World Tourism Organisation's Global Code of Ethics for Tourism, where the animals are not only ignored, or at best assumed to be included under labels of Nature, but they are also not considered as tourism stakeholders, even in models that attempt a broad inclusion of interested parties. The codes consist of several human-centric values, defined around the enhancement of human experience and rights to access to tourism, and except 'sustainable development,' there is no a single word about Nature and Animal Ethics. According to Fennell (2014), animals are missing almost entirely from the discussion on the environment is any specific reference, apart from the need to preserve endangered species of wildlife. What is not apparent in the complexity of how and who we ought to conserve and whose interests are at stake in the political, economic and participatory struggles that emerge from these issues is the intrinsic value of non-humans.

Zoos are a laboratory in the sense of representing a situation where animal's lives are restricted by humans. One hardly can think of a better example of human domination over animals. However, we could say that there is something exceptionally cruel about zoos over other examples of human domination. While in cases where animals are used for food, labour or experiments, one can find practicality of using animals, zoos primarily goal is a mixture of social entertainment and conservational purposes. This controversial practice has a significant impact not only over the animals but over the human too. Challenging the zoo advocates' perspective in academia is an integral part of understanding how we see and interact with animals. Therefore, analyzing and deconstructing the ethics involving zoos is the goal of this paper. Thus, the purpose of this paper is to expose the ethics involving zoos.

THE ANIMAL RIGHTS DEBATE

From times immemorial, human beings have been debating about their attitudes and behavior towards non-human animals (hereinafter "animals"). Although in certain eras, animals were sometimes worshipped as Gods, they have, for the most part, been used for various human needs and purposes (Orams, 2002), which in many cases implies inflicting pain and suffering on them. Animals have been reared and hunted for foods, used in agriculture and transportation, have served as scientific research subjects and for entertainment and amusement (Bowd, 1984). The general discomfort and concerns which arose from using animals to serve man have caused societies, through their philosophers and scientists, to reflect on the way animals were treated. Typically, the purpose was to formulate ideas and theories, which would justify maintaining the current state and would perpetuate the view of animals as being subordinate to humans. For the sake of this purpose, both religious and secular justifications were raised throughout history. While the religious reasons are naturally more ancient, they have also made their way into today's discourse on the status of animals in modern society.

The Religious Discourse

Most of the world's main religions support or at least enable the domination of man over animals, though not without limitations. Although protecting the welfare of some animals and rituals designed to minimize suffering are found in Judaism, Islam and to a lesser degree Christianity (Coşgel&Minkler, 2004). Waldau (2006) notes that the Abrahamic traditions are "characterized by the recurring assertion that the divine creator specially elected humans and designed the earth primarily for our benefit rather than for the benefit of all forms of life" (p. 74). The main Eastern religions - Hinduism, Buddhism and Jainism - adopted a different approach when asserting that humans and animal are interconnected through reincarnation, thus animals are human souls in a different bodily

form (Coward, 2007). However, humans are still considered superior to animals, especially because they have a mental and spiritual conscience. Because the law of karma (the belief that all living beings are born and reborn into stations of life, based on their past deeds) is central in these traditions, this means that animals acted in 19 previous lifetimes in a way that justify their current inferior status (Waldau, 2006). Consequently, the domination of man over animals is approved even by the Eastern religions, though it might take different forms than in the Abrahamic traditions (Fox, 1978). Nevertheless, within the entire spectrum of world religions, a minority of religious leaders hold alternative views on human-animal relations. While in most cases, they still do not advocate the granting of moral rights to animals, they express compassion and encourage a greater consideration for their needs. Besides the Eastern religions' mass adoption of vegetarianism, some religious streams in Judaism and Christianity also encourage their followers to adopt vegetarianism as a way of life (Sabaté, 2004). Rabbi Stephen Fuchs (2003), for example, argues that although in Genesis God grants us to "have dominion" over the fish, birds and beasts, this means to be responsible for them (i.e. treat them kindly), rather than to exploit them mercilessly. He further argues that initially, God intended humans to be vegetarians, but that after the flood, man was permitted to eat meat because of God's frustration over human nature. However, according to Fuchs, adopting a compassionate and caring way of life (including abstaining from eating meat) brings us closer to God's initial plan, and fulfills the divine potential with which God created man.

The Question of Animal Capabilities

Dealing with the moral issue of the way animals are treated is not limited to the religious sphere. Scientists have been debating this issue mainly from a rational and secular point of view - which, at times were marked by some religious influences. Throughout history, supporters of the use of animals for human purposes were, of course, the vast majority. One of the most influential thinkers in this regard was the 17th century French philosopher René Descartes. According to his 'animal machine' doctrine, animals, in contrast to humans who were created in the image of God and have souls, are merely machines and automata. Therefore, they cannot think, nor do they have language, self-awareness, or feelings. Descartes' doctrine had a major impact in those days, especially in the field of animal experimentation. Approaches that deny the ability of animals to feel pain and suffering are not currently common. In her survey, Dawkins (2006) describes three sources of widely accepted evidence that animals are capable of feeling pain and suffering: (1) physical health - most animals have a nervous system that is very similar to that of humans; thus injury or disease is likely to cause them pain; (2) physiological signs - expressions of stress and discomfort, such as changes in brain activity, heart rate, and body temperature; and (3) behavior - vocal or physical expressions of pain, the avoidance of situations that cause pain, and the attraction to situations that cause pleasure. Nevertheless, although not widespread, arguments which reject animal suffering still appear in the animal rights' debate.

More recently, Bermond (1997) claimed that pain and suffering are in essence emotional and conscious experiences. Since there is no evidence showing that most animals are self-aware, it is likely that most animals are unable to experience suffering. However, as noted before, other types of arguments are at the center of the justification of the use of animals. Assuming that animals are indeed capable of experiencing pain and suffering, the premise according to which animals are irrational, inferior creatures that do not have selfawareness, led to a cross-cultural philosophy which maintains that animals are a means to accomplishing human purposes, and not an end in themselves (See, e.g., Broadie & Pybus, 1974, on the 18th century German philosopher Immanuel Kant's perspective on animals). Contemporary research on animals, nonetheless, reveals that at least a few non-human species possess characteristics that differentiate them from other animals and even classify them as persons (beings with certain complex forms of consciousness), or at least borderline persons. DeGrazia (1999) reports on several studies which exemplify how a few Great Ape species (bonobos, chimpanzees, gorillas and orangutans) and dolphins, and perhaps others, have human properties, such as social self-awareness, reasoning, planning, moral thinking, future awareness and even, in some cases, enough linguistic competence to count as possessing a language. These types of research lead to arguments that the findings on the resemblance of great apes to humans must result in their receiving full equal consideration - eliminating their confinement, their use as research objects and the destruction of rainforests (Cavalieri& Singer, 1993). But this, as noted before, is a much more

recent development. Over the years, certain philosophers and researchers presented perspectives on the issue of animal rights that differed from mainstream philosophical thinking, but without widespread recognition of their ideas. The foundations of this philosophy were not seriously questioned until the 1970s. Indeed, animal welfare organizations were established in Europe, and dissatisfaction and protests against the maltreatment of animals in research and agriculture were apparent before. However, the animal rights movement as we know today, with organized doctrines, theories and ideas, only started developing in the early 1970s.

Contemporary Philosophical Theories

The most important book written in the 1970's, which still has an enormous influence on the animal rights' debate today, is "Animal Liberation" by the Australian Philosopher Peter Singer, first published in 1975. Singer, who belongs to the utilitarian school of philosophy, presented a profound and shocking claim against the treatment of animals in Western society. The major change in Singer's approach, compared to previous attempts at protesting against the current practices toward animals, lay in his insisting to stick to a rational, cold and unemotional line of argument, leading to his conclusions. He argued that acting towards changing the way society perceives and treats animals is only a moral conclusion derived from a logical ethical analysis of the subject. At the heart of his analysis, Singer made an analogy between the historical struggles and arguments for equal rights on behalf of blacks and women, to his current demand for the recognition of animal rights. In his view, there are no fundamental differences between discrimination on the basis of race (racism), gender (sexism) or species (speciesism). All the arguments put forward in order to justify the domination of one group over another are arbitrary. Many have countered this argument by stating that while racism and sexism are based on false assumptions (that women and blacks are mentally or physically inferior to white males), animals clearly do not share the same characteristics as humans. Thus discriminating against them is justified. For example, Machan (2002) recently claimed that "one reason for that propriety of our use of animals is that we, as members of the human species, are more important or valuable than other animals and some of our activities may require the use, even killing, of animals in order to succeed at our lives, to make it flourish most" (p. 9).

As a response to such views, Singer (2002) argues that it leaves us with no defense from other possible forms of discrimination on the basis of group "membership". One can suggest, for example, that those with IQ scores below 100 should become slaves to those with IQs over 100; or that we should be able to perform medical experiments on the severely retarded and brain damaged humans, since they are less "valuable". In addition, no one can guarantee that future research will not find empirical evidence for the genetic inferiority of blacks or women. Singer then goes on to ask whether racism or sexism can be justified in a civilized society and what, then, is the key criterion for granting rights. According to Singer, it is not the ability to think, reason, or having self-awareness. The only relevant factor for possessing rights is the ability or the capacity for suffering and/or enjoyment, or happiness. By granting equal "rights" to animals, Singer does not mean to provide the exact same rights that humans hold (such as the right to vote or to drive a car), but rather equal consideration of interests. Since animals do not have any interest in voting or driving, it is irrelevant to discuss whether they should have the right to fulfill these activities. They do, however, have an interest in a life without suffering, wide living open spaces, accessible food and water, and living with other companions of the same species. As noted before, Singer draws his arguments from the utilitarian school of thought. Utilitarianism is an ethical theory whose rule is: "Act in such a way as to maximize the expected satisfaction of interests in the world, equally considered" (Matheny, 2006:14). Therefore, we need to sum up evenly the interests of all the parties involved, without discriminating, and choose an action that will result in the greatest good for the greatest number. Singer and other utilitarian philosophers have argued that the universalistic principle of the utilitarian ethical doctrine - as it takes into considerations the interests of all those affected by an action, regardless of their traits or characteristics - is enough for choosing in favor of animal rights. However, it is the aggregative principle – the greatest good for the greatest number – that raised some concern in another leading animal rights' philosopher, Tom Regan. Regan (1983) has severely criticized the reliance on utilitarianism in the case of animal rights. Although he accepts utilitarianism's principle of equality, he argues that this is not the type of equality an animal rights' advocate should have in mind. The main weak point in the utilitarian call for animal rights, according to Regan, is that it focuses on the

interests or the 24 feelings of the animals, rather than on their inherent value. The consequences of that might be the justification of many of the practices used against animals in modern society. If, for example, we can prove that by conducting medical experiments on a few animals - in the course of which they will suffer a great deal of pain - we can save many humans (or even many animals), a utilitarian might conclude that it is moral to do so, since it has led to the best results for more individuals. Indeed, Singer (2006) acknowledged that, albeit in extreme circumstances only, it may be justified to use animals for human purposes. Therefore, Regan believed that only a rights-based theory, which grants an inherent value to animals, regardless their or other individuals' interests, will always ensure the ethical treatment of animals. Regan's animal-rights view protects individual animals' interests regardless the benefits that might be generated for the common good, thus granting unconditional rights to animals. Regan's view was perceived to be much more extreme and uncompromising than Singer's utilitarian view, although the consequences in both cases were practically the same: the end of the use of animals as we know it today, and a fundamental change in the way we perceive animals. Indeed, as DeGrazia (1999) stated, "utilitarianism and animal-rights views appear far more alike than different" (p. 112). Both positions see speciesism as being deplorable and call for adopting vegetarianism and eliminating animal research – at least most of it (Herzog, 1990).

However, the growing appeal of the animal rights' philosophy has not been translated into major changes in the way humans treat animals on a daily basis; rather, it has resulted in a greater awareness and more focus on the welfare of animals. While supporters of animal rights' ethics, also called animal liberators, which are still in a clear minority, reject any act which could adversely affect the welfare of a single animal, supporters of the animal welfare position, also called reformers (Herzog, 1990), accept that some animal suffering may be justifiably incurred if the benefits to human welfare - or the welfare of all animal species - outweigh the costs (i.e. pain and suffering) to the single animals. They accept the use of animals but want to eliminate as much suffering as possible. While there are a few definitions of animal welfare, Blandford, Bureau, Fulponi& Henson (2002) state that it is now widely accepted that while animals can be used for the benefit of humans, such use carries five main obligations. These are the provision of essential food, water and shelter, health care and maintenance, the alleviation of pain and suffering, and the ability to enjoy minimal movement. Evidence of the influence of the animal welfare approach can be seen in many aspects of life (Shani & Pizam, 2008). To name a few examples, as reported by Singer (2002), the battery cage system of producing eggs, known for its inhumane crowdedness, was outlawed in Switzerland. In addition, the European Union has agreed to phase out the standard bare wire cage altogether, and required egg producers to enlarge the cages the chickens are held in. Even outside Europe there is progress in this direction, albeit a much slower one. For example, the Israeli Supreme Court has recently outlawed the fattening of geese in farms, arguing that it violates the laws for the prevention of cruelty to animals. However, despite these developments the animal rights' debate continues to raise troubling questions, from both sides of the barricade. The importance of the animal ethics debate also requires a close assessment of people's attitudes toward the treatment of animals (Bassey 2020).

A BRIEF HISTORY OF PUBLIC ZOOS

People have held animals and worked with wild animals for thousands of years. The earliest significant accounts of keeping wild animals come from Egypt and China as far back as the 4th and 5th millennia BC (Van Reybrouck 2005). Accounts of keeping wild animals in antiquity show our fascination for animals and the multiple ways that humans have used them to advance their status through display, sacrifice, warfare, games and hunting or even as culinary delicacies (). The wealthiest citizens kept wild animals for decoration to indicate their wealth and power. Gifts were common between counterparts and led to the spread of wild animals around the world. While small in number, the trade of animals was of great diplomatic value and helped maintain relations with sovereigns. In the first half of the sixteenth century, the age of discovery heralded the creation of colonies and the exploration of global biodiversity. Travel diaries show that European explorers liked to take home animals, particularly birds and monkeys. In Europe birds were popular with ladies and were held in cages, while 'ferocious' big cats and bears were held in pits near residences and exotic hoof stock roamed in parks and estates (Kawata 2014). Wild animals were tamed as pets and even big

cats were kept inside on occasion. Zoological gardens emerged in the nineteenth century as public facilities managed by professional staff, replacing private animal collections and menageries. The expansion of exotic animal collections in Europe can be traced back to the influx of exotic animals resulting from the development of new trading routes in the fifteenth and sixteenth century (Kawata 2012). Trading routes opened access to foreign destinations and facilitated access to exotic animals. Leaders exchanged animals as a sign of power and influence, resulting in the need for facilities to display the animals received as gifts.

The first zoos in Europe were private, holding facilities but over time the costs of maintaining the collection of animals and public interest resulted in a new model. The public curiosity with exotic, fierce creatures was initially met in a number of ways. Unusual animals were paraded across Europe as a spectacle and attracted significant attention. Circuses and games showed off the strength, ferocity or rarity of animals to a fascinated audience. Towns created small menageries to house exotic or culturally significant animals, from the lions at the Tower of London to bears at the City of Bern. Permanently sited zoos emerged in a number of waves, driven by enthusiasm for democracy and the sharing of opportunity with all people. This aspiration for education and access to exotic animals lay behind the emergence of a great number of facilities established across Europe. The Jardin des Plantes, in France, was the first example of a new type of facility intended to serve the entire nation, rather than a select few (Kawata 2012). Opposition to princely menageries surfaced in France during the enlightenment. Following the French Revolution, menageries of royalty and aristocracy suffered from lack of funds and the removal of animals. The idea of creating an animal menagerie joined to the Jardin de Plantes in Paris was raised in 1790. The first step was taken in 1793 when the Paris police ordered that all animals exhibited on public highways should be transported to Jardin de Plantes (Lindburg 1999). Initially lack of funds and poor facilities hampered operations, but the management persevered. Requisition from princely menageries added animals, with the survivors of Versailles arriving in 1794. Forty years of construction followed, creating new landscapes with animals on display, immersed into the seemingly natural environment. Over the next 150 years, many others followed this model creating gardens with animals for scientific study and the enjoyment of all people, The London Zoological Gardens was established in Regents Park in 1828, (Uddin 2017).

Zoos sprung up in Netherlands, Belgium and smaller French towns between the 1830s and 1860s (Uddin 2017). A significant wave of zoo development followed the proliferation of industrial and trading towns along the Rhine when the Germanic states formed themselves into a federation. Through 1850 – 1900 most major European cities developed and opened zoos. The rapid spread of zoos was driven by the nature of competition between nations. Zoos were seen as an important tool in confirming or maintaining the status of a city, much like museums, theatres and art galleries. The power and status of holding exotic animals had transferred from princes and sovereigns to the city and its citizens. In the United States zoos began to appear after the civil war, with the first zoo opening in Philadelphia in 1868, other big cities followed. Serious growth of zoos started in 1885 with another 20 zoos opening from 1885 to 1900, thereafter zoos continued to open at a rate of about 2 new zoos a year until 1940 (Berger and Corbett 2018). Around the world zoos were developed, reflecting the tastes of the colonial powers and local standards. Some zoos thrived when the colonial powers left but many struggle to meet the costs of caring appropriately for animals without sufficient resources or skills. The ongoing popularity of zoos means that at any given time numerous zoos and aquariums are being planned and developed. Aquariums with their smaller footprint, all weather access and great adult appeal are emerging as a popular addition to cities leisure attractions. Much has been written on the history of zoos, the running of zoos and the science of looking after animals. Cultural attitudes to animals change rapidly, 100 years ago the public delighted in seeing animals in cages. Visitors prodded animals to see a reaction, animal fights showed the strength of the beasts and animal shows entertained visitors. As humans we were entranced by the sheer power and otherness of the animals.

The history of the development of zoos shows how our relationships with animals have changed over time. Fear was replaced with curiosity and a desire to own and control animals. Our relationships with animals mirror changes in society. When human society was hierarchical the collection of animals was the exclusive practice of the rich and powerful. Later, with enlightenment, came the

desire to know more of animals. Collections became important for scientific study allowing early representations of fanciful beasts to be updated and replaced through detailed studies of both live and dead animals. Today, zoos are an indicator of the nature of a society and its people. They reflect values and attitudes, much like other cultural institutions. It is not unusual to find terrible zoos in places with poor human rights and well run zoos in places where basic human needs are secured. In many ways, zoos reflect the social issues of their time. During wars, zoos experience great hardship, shortages of food become pronounced and many animals die horrible deaths. Through the Great Depression in the USA, zoos became the focus of many of the public works projects included in the New Deal. Animals and animal welfare improved with investment primarily aimed to facilitate employment (Hancocks 2008). With the pressures of climate change and increased public interest in the environment, modern zoos have increased their conservation focus.

Zoos have also changed with an increased understanding and knowledge of animals. Gradually, humans have accepted that animals can feel pain and suffer and with that understanding, our perception of the acceptable treatment of animals has changed. Zoos enclosures that were acceptable 30 years ago have become obsolete and unacceptable (Berger and Corbett 2018). The sensationalised theatre of early zoos has been replaced with talks and educational presentations. While early zoos focused on entertainment, zoos have evolved into scientific bodies, places of education and conservation centres. Artists, writers and zoologists have found zoos as rich sources of inspiration and material to study, be it animals, people or the complex interaction between people and animals (Berger and Corbett 2018). In the last 50 years zoos have increased their value to a community by engaging in conservation activities, scientific studies and public education. Membership of regional or global bodies, that specify standards and codes of conduct, serves to improve the quality of the zoo. Zoos are complex operations. The complexity arises from the combination of tasks and businesses that are intertwined in zoo operations. Animals have specific needs and requirements, visitors have different and sometimes conflicting needs and desires, while the demands of education, science and conservation are significant. Any one of these undertakings is challenging, but zoos bring all four different operations, animals, visitors, education and conservation together, while still trying to maintain assets and run a sustainable business.

GOALS OF ZOOLOGICAL PARKS

The changing relationship between humans and animals has influenced the development of modern zoological parks. Private collections of exotic animals were once a status symbol of the wealthy, such as the Versailles menagerie, created by Louis XIV, when he built an enclosure for lions and elephants around his palace (Anderson, 1995). In Europe, these menageries developed into places of public entertainment. The increase in numbers of zoological parks throughout Europe and later in the United States resulted in public concern for the treatment of the animals in captivity (Mench and Kreger, 1996). In 1970, the Animal Welfare Act was established in the United States to implement ethical protocol among the zoological parks, prompting the development of the modern zoo. Today, zoological parks are dramatically different from the earlier menageries. The parks often boast their "new" goals to change negative public attitudes towards their practices: (1) education, (2) conservation, (3) research, and (4) recreation (Mench and Kreger, 1996; Shettel-Neuber, 1988).

Education

Education is an important mission of most American Zoo and Aquarium (AZA) accredited zoological parks. Wolf and Tymitz (1980) found that many parents use zoos for direct educational purposes. Parents often take children to zoos to learn animal identification, extinction and conservation, and animal habitats. They also found school groups of all ages touring zoos to complete assignments regarding a variety of animal species. Art classes use zoos to practice drawing animals, zoology students carry out research projects, and many visitors who are interested in birding and photography make use of zoological parks (Wolf and Tymitz, 1980). Research has shown that visitors spend more time at naturalistic exhibits than at artificial exhibits and prefer to view healthy animals that are active and involved with the staff (ShettelNeuber, 1988). As visitors spend more time at well-managed exhibits, they will obtain a greater appreciation of the educational value of the animals and their natural habitats. For many people, zoos are the only place where they will ever see a majority of

the animals presented (Anderson, 1995). They learn about the animals, but also about regions of the world where the animals are found in the wild (Anderson, 1995). There is a growing trend in the zoo community to recreate habitats that resemble the animals' natural habitats, which will have an even greater impact on the educational value of zoological parks. Doherty and Gibbons (1993) agree that education programs are important components of every zoological park because people develop an appreciation for plants and animals while learning about wildlife conservation and ecosystems. Mench and Kreger (1996) found that when visitors entered an exhibit that immersed them within that habitat, which was free of bars or barriers, they would leave with a greater understanding of the animals and their habitats.

Conservation

During the 1960's and increasingly in the 1980's, the successful breeding of endangered species in captivity for reintroduction into the wild became a major goal of many zoological parks. Specialty scientists, such as population and reproductive biologists, examined gene pools in the zoo stock to determine how they could contribute to the conservation of animals threatened with extinction (Anderson, 1995). Computer databases were created to help zoos manage animal exchanges that would avoid the possibility of inbreeding. Bradley et al. (1999) present four requirements for the establishment of a captive breeding program. First, biological knowledge of the species is necessary, especially knowledge of species' habits, diet, and life cycle. This may be difficult to obtain for some rare or littlestudied species. Second, husbandry protocols for captive breeding of the species are important. Third, information on the species' breeding behavior is necessary including the number of offspring, the seasonality of behavior, and conditions necessary for breeding to take place. Finally, genetic implications of the species are important to understand. Predetermining the level of inbreeding within both the wild and captive population is necessary for captive breeding success. Successful captive breeding reintroduction programs include the Przewalski's horse (Equusprzewalski), black-footed ferret (Mustelanigripes), Arabian oryx (Oryx leucoryx), and the golden lion tamarin (Leontopithecusrosalia) (Mench and Kreger, 1996). Captive breeding reintroductions have also been successful for many felid species such as tigers, leopards (Pantherapardus), servals (Leptailurus serval), Iberian lynx (Lynx pardinus), cheetahs (Acinonyxjubatus), and European wildcats (Felissilvestris) (Law et al., 1997). A large portion of the information on the reproductive biology of felids has come from studies of captive animals (Law et al., 1997). Doherty and Gibbons (1993) point out that many outdated zoo environments do not encourage natural behaviors for those species that are to be reintroduced into the wild. This knowledge has added to the transition from "sterile" exhibitory to the modern "natural" exhibits.

Research

Zoological parks provide research opportunities for animals that are difficult to study in the wild (Doherty and Gibbons, 1993). The parks provide unique sites for research because they house a diverse set of animals in a standardized and controllable area (Kleiman, 1992). Zoos are excellent places for studies regarding environment-behavior relationships and human-animal relationships (Martin and O'Reilly, 1988). Journals such as Zoo Biology, International Zoo Yearbook, and Environment and Behavior are the foremost scientific journals in the field of zoological research. Martin and O'Reilly (1998) have established three types of researchers that use zoological parks. Researchers may be hired by the zoo to solve day-to-day design problems, 10 usually in education, or research and evaluation departments. Others are hired as consultants to conduct research on specific projects, and the third group conducts academic research. Law et al. (1997) provide interesting examples of how captive felid research is important to the study of wild felids. Researchers studying wild populations can use plaster casts of captive animals' footprints to identify the presence of a particular species in their study area. This technique has been used in the study of wild margay (Leoparduswiedii) and jaguars (Pantheraonca). Similarly, vocalizations of captive felids have been used to determine whether the same species is present in wild areas, for example, clouded leopards (Neofelisnebulosa) in Southeast Asia.

Recreation

The American Zoo and Aquarium Association [AZA] (2001) found that almost 135 million people visited zoos and aquariums throughout the United States in 2001. Zoos are a place for human

enjoyment of the "natural" environment. People go to zoos for mental and physical relaxation, and to get away from it all (Wolf and Tymitz, 1980). Many people simply enjoy watching animals, especially if the animals are in good condition and they are in a naturalized exhibit (Finlay et al., 1988). Templeton (2002) found that overall visitor satisfaction could have a significant impact on whether visitors will make repeat visits. Templeton (2002) also found that the geography of visitor attendance was directly related to the diversity of species represented in the zoo because visitors want to see a wide variety of animals rather than large numbers of animals.

CONCLUSION

Because of the world's rapid population growth and its insatiable demand for both resources and land, the earth is under increased strain to accommodate the billions of humans that reside on this planet. This rapid growth is taking previously untouched land and utilizing it for living space or agriculture. The "wild" that was once left to the animal kingdom, is now being used for human needs, and is drastically affecting all other species on this planet. Almost simultaneously with the decline of the animal kingdom arose the existence of the zoo. These institutions have existed since the earliest of civilizations, but did not have conservation as a main focus. As time progressed and zoos evolved, they shifted their focus towards conservation, education, entertainment and research – a great deal more comprehensive than their original purposes. These modern zoos still draw a great deal of criticism from many sources who argue that zoos wrongfully "imprison" animals, however that shows only a superficial knowledge of the work that zoos do, and therefore is irrational. Zoos are an essential resource in the field of wildlife conservation because of their multi-faceted approach to saving wildlife worldwide. These zoological parks should be supported through political and financial means because the work they do saves species that are crucial to ecosystems across the globe. Therefore the modern zoo serves as a vessel both for the conservation of the animal kingdom, but also to inspire and foster a new generation committed to the preservation of all species.

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