

Benefits of Zoos

Zoos house many different species from all around the world from small to large animals. Zookeepers attempt to provide habitat, food, and enrichment which resembles what they would experience in their natural environments however, much controversy still surrounds these organizations. Specifically, the benefits zoos provide for animal conservation have been questioned by a select portion of the population. Considering zoos serve as educational centers for conservation, participate in conservation-related projects, engage in novel research contributing to animal conservation, and can interfere to help prevent extinctions, they are critical for protecting threatened and endangered species.

Zoos serve as educational centers for the general public providing them with chances to see and learn about various species from around the world along with conservation methods. Zoo visitors can learn about an animal or ways to help its conservation through the signs provided or presentations done which highlight their unique capabilities, significance to the ecosystem or conservation actions that can be done. A study surveying 5,661 visitors from 26 zoos and aquariums across the world regarding their understanding of conservation actions, found people could better recall and identify certain conservation actions they can take following a visit than before their visit (Moss et al. 2015). Due to the vast amounts of information provided to visitors, zoos can be considered education centers promoting the conservation of threatened/endangered species to the public.

Zoos participate in numerous conservation-related projects either directly or indirectly through partnerships with other organizations. One study states the world zoo and aquarium community spends approximately US\$350 million annually on conservation-related projects for wild animals (Gusset & Dick 2011). Zoos are involved in projects like captive breeding, reintroduction programs, and fieldwork which all serve to protect various species and their habitats. The 'Critically Endangered' Western Swamp Tortoise *Pseudemydura umbrina* is just one example of a species undergoing captive breeding and subsequent reintroduction led by a zoo (Durell & Keeley 2019).

In addition, the zoo takes part in various population assessments which provide critical information to the field of conservation. Che-Castaldo et al. (2018) claim there is more evidence pointing to the countless conservation projects zoos are involved in from the various partnerships they have with numerous organizations both federal and non-profit. The sole purpose of these partnerships is to conserve certain species and habitats, indicating zoos do benefit animal conservation. Considering the numerous amount of conservation projects zoos are engaged in, threatened and endangered species are more likely to be protected indicating the importance of these facilities.

Zoos along with other educational organizations conduct research bringing forth novel information critical to animal conservation.

These organizations perform research not only on the animals in their care which may be otherwise difficult to study in the wild but on wild animals as well such as the ex-situ study of Chimpanzee behavior (Herrelko et al. 2012; Zareva-Simeonova et al. 2009). This new research has the potential to yield groundbreaking information aiding in preventing the extinction of a certain wild population and providing better methods to care for individuals in captive breeding or reintroduction programs.

With the novel information zoos research about certain threatened or endangered species and their habitats, zoos are significant contributors to knowing how to approach struggling populations.

The story of the Dodo bird's (formerly *Didus ineptus*, and now *Raphus cucullatus*) extinction, due to human colonization coupled with non-native species being introduced to their habitat on Mauritius island, is just one example of a critical opportunity missed for intervention (Bergman 2005; Gold et al 2016). Colonists abandoned the need to invest precautions for moderation and pursued these trusting birds considering they had no fear of humans. The Dodo bird is only one example of how a struggling population in the wild was quickly exterminated due to greed, carelessness, and a lack of value for the natural world. There are many endangered and threatened species alive today sharing a similar story like the Javan Rhinoceros *Rhinoceros sondaicus*, which may be only a few decades away from extinction without the appropriate conservation tools in place from various organizations such as zoos (Brook et al. 2014; Nardelli 2016).

Zoos serve as critical organizations for protecting threatened and endangered species across the world. Not only do they serve as educational centers for the public to learn about animals and how to protect them, but zoos participate in countless conservation projects, contribute to novel information supporting their welfare, and have the potential to prevent extinctions.

Considering the zoo's vast involvement with animal conservation, the resources dedicated to protecting endangered and threatened species would be significantly less without these efforts. The general public should thus support the zoo as a major resource for conserving threatened or endangered species.

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