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Review

Animal–visitor interactions in the modern zoo: Conflicts and interventions

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ABSTRACT

Animal welfare, education, conservation, research, and entertainment are major goals of modern zoos, but they can be in conflict. For example, visitors enjoy learning about and observing natural behavior in captive animals, but visitors often want to observe and interact with the animals in close proximity. Unfortunately, proximity to and social interactions with humans induce stress for many species, particularly primates. We review two general classes of research examining animal–visitor interactions in zoos: (1) effects of exhibit design and the behavior of the animals on zoo visitors, and (2) effects of zoo visitors on the behavior of exhibited animals. We suggest that interventions based on careful attention to exhibit design, species characteristics, and visitor education can increase positive animal–visitor interactions and facilitate the multiple goals of modern zoos.

Contents

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1. Introduction

Most modern zoos have five primary, interconnected goals: animal welfare, conservation, education of the public, research, and entertainment (AZA, 2008; Anderson et al., 2003; Reade and Waran, 1996). While zoos unquestionably place a major emphasis on the first four goals, the majority of zoo visitors come, at least in part, for entertainment (Altman, 1998; Reade and Waran, 1996). Without attracting and entertaining visitors, zoos would struggle to maintain their other goals. A zoo's reputation for providing an entertaining experience encourages initial visits and subsequent returns to the zoo, both of which translate into greater revenue for conservation efforts, research, and general animal care and welfare. Further, research has shown that if learning about animal species also occurs, zoo visitors develop more positive perceptions of animals in zoos and become more supportive of conservation efforts (Anderson et al., 2003; Hosey, 2005).

Thus, zoos often encounter conflicts among their goals. For example, the possibility of being physically close to and interacting with animals increases the appeal of a zoo for many visitors (Hosey, 2005). If people are discouraged or prevented from interacting with the resident animals, fewer visitors attend, decreasing public financial support. Yet visitors, especially noisy, active crowds, have proved a source of stress for many species, particularly primates, affecting both their welfare and the enjoyment of the visitor (see later sections of this paper for a review of these findings).

In this paper we review literature documenting the effects of animal–visitor interactions on both the visitors and animals. First, we examine the effects of how animals are exhibited and behave on the attitudes, perceptions, and behavior of zoo visitors. Second, we review the largely negative effects of visitors on zoo animals, focusing particularly on primates. Finally, we discuss aspects of exhibit design and presentation that have been shown to decrease stress on the captive animals while allowing an acceptable level of interaction with visitors. The key issue is how to entertain and educate the visitor without placing significant stress on the exhibited animals. Our goal is to highlight interventions intended to maintain or improve both animal welfare and visitor satisfaction.

2. Effects of the presentation and behavior of animals on visitor attitudes and behaviors

In this section, we consider the effects on visitors' perceptions, attitudes, and behaviors as a result of how animals are exhibited and the behaviors the animals show.

2.1. Exhibit design and visitor perception of captive animals

Many studies have considered the role of existing exhibit design in determining zoo visitors' perceptions of captive animals. For example, Coe (1985) suggests that an African savanna setting where the viewing area is part of the exhibit eliminates visible barriers between the visitor and the animal and would be more likely to receive a visitor's full attention than a viewing area in a typical zoo setting. Similarly, Rhoads and Goldsworthy (1979) posited that an animal's environment significantly affects the characteristics ascribed to the animal by viewers. Participants were shown seven slides depicting animals in three environments and asked to rate each animal on 20 different semantic scales. The results suggested that when an animal is in a traditional zoo exhibit (i.e., pre-"naturalistic" exhibits, typically based on simple concrete and steel/iron bar designs) rather than a natural environment or naturalistic zoo exhibit, viewers tend not to attribute strength or direct appreciation to the animal but instead focus on the exhibit characteristics and the animal's domesticity.

An extension of the above study was conducted by Finlay et al. (1988). Participants' perceptions of animals in natural, semi-natural (naturalistic), and traditional environments were rated and analyzed across all species and for each species separately. They found that species in traditional, caged zoo exhibits were generally rated less positively than species in naturalistic zoo exhibits, which were, in turn, rated less favorably than species in natural environments. They also reported that ratings depended partly on pre-existing stereotypes and on the presence of visible barriers. The results of both Finlay et al. (1988) and Rhoads and Goldsworthy (1979) appear to support Coe's belief that a naturalistic zoo exhibit fosters more positive attitudes toward species in captivity; however, the results of these studies are not strictly comparable because of different rating scales.

Zoos also try to inform the public directly or indirectly about the natural behavior of exhibited animals. Tofield et al. (2003) investigated exhibit design that facilitated an animal's natural behavior and the role it may play in the perceptions of zoo visitors. In interviews with zoo visitors at the Hamilton Zoo in New Zealand, they found the most popular exhibits were the Sumatran tiger (*Panthera tigris sumatrae*), the rhinoceros, and the free-flight aviary. These exhibits were described as realistic with easily viewable animals. The design of the rhinoceros exhibit allowed visitors to get within a few meters of the animal.

The least popular exhibits were the Asiatic golden cat (*Felis catopuma temmincki*), the reptile house, and the parrot court. These exhibits were consistently described as being dark and small. The visitor comments indicated that animal preferences depend on a combination of how close the visitor is able to get to the animal, how easily the animal can be seen within the exhibit, the animal's activity levels, and naturalistic or aesthetic elements of the exhibit.

One step beyond the typical naturalistic exhibit is to allow the animal to roam freely. At the Jersey Wildlife Preservation Trust in Great Britain, visitors had the