A zoo animal’s neighbourhood: how conspecific neighbours impact welfare

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Abstract

While the zoological community strives to provide the best possible living environment for non-human animals, space limitations constrain where zoos can house particular species. Therefore, an individual may live in proximity to animals that impact its behaviour, physiology, reproductive function or overall welfare status. This article examines how solitary and social species living in managed settings are positively and negatively affected by conspecific neighbours. When making housing decisions, zoos should follow husbandry recommendations outlined by zoo associations, integrate natural history information and attempt to view the environment from the perspective of the species of interest. Furthermore, researchers can collect survey, behavioural and physiological data to examine how variables, such as density, distance between neighbours, the age/sex of conspecifics and types/amount of exposure to others influence welfare. Ultimately, zoos should consider the needs of individuals and investigate whether welfare can be enhanced by modifying enclosures, husbandry routines, enrichment schedules or access to conspecifics. A zoo’s willingness to alter an animal’s exposure to conspecifics may have a substantial impact on physical, mental and emotional health.

Keywords: animal welfare, behaviour, conspecific neighbours, physiology, welfare monitoring, zoo animals

Introduction

In recent years, the international zoological community has boosted efforts to proactively identify and address welfare issues for non-human animals. Organisations, such as the World Association of Zoos and Aquariums (WAZA), the European Association of Zoos and Aquaria (EAZA) and the Association of Zoos and Aquariums (AZA) have called for higher welfare standards within the zoo industry (eg Mellor et al 2015). These associations provide member institutions with the resources, guidelines and protocols needed to surpass national and regional welfare legislation. While welfare scientists argue that welfare audits should incorporate animal-based measures that reflect an individual’s physical and psychological states (eg hormones, behaviour), the zoo industry has traditionally adopted a resource-based approach that focuses on what facilities provide to the animals (Barber 2009; Butterworth et al 2011; Siegfried 2013; Whitham & Wielebnowski 2013). For example, to maintain accreditation, zoos are expected to meet certain environmental (eg space, shelter) requirements and follow particular management practices. In addition to these Accreditation Standards, AZA recruits experts to develop taxon-specific Animal Care Manuals (ACMs) that offer husbandry templates and outline best practices for enhancing welfare (AZA 2018; see also Barber 2009). Each ACM considers the natural history of the species and provides recommendations relating to management approaches, diets, medical treatments, housing arrangements, and the social environment — including any available information about how individuals of particular age-sex classes are influenced by conspecifics. Between the Accreditation Standards and ACMs, zoos place a great deal of emphasis on the living environment for each species. While certain elements of the environment are relatively easy to control (eg water temperature), others are more challenging to manipulate due to factors such as overall available space, exhibit design, existing features and safety considerations.

For instance, because most zoos are constrained by limited space, an individual may live in close proximity to animals that impact its behaviour, physiology, reproductive function or overall welfare status. Individuals sometimes reside in mixed-species exhibits with animals that they would naturally associate with in their wild habitats (Daoudi et al 2017). Some “timeshare” their enclosures with members of the same or different species by rotating on/off exhibit during different times of the day (Coe 2004). A considerable amount of research has also focused on the effects of living near predator or prey species. For example, cheetahs (Acinonyx jubatus) which live near lions (Panthera leo) may experience reduced reproductive success (Hediger 1965). In addition, leopard cats (Felis bengalensis) housed in non-enriched enclosures within auditory and olfactory contact of large felids (eg lions, tigers) may exhibit elevated cortisol concentrations, increased stereotypic pacing and