Conservation education in zoos – a literature review

Introduction

Zoos have a very long history: keeping wild and/or exotic animals captive was already known in ancient Greek and Roman times (e.g. Barantay and Hardouin-Fugier 2003; Kisling 2000; Miller 2013). Zoos and aquaria differ from place to place, but in general zoos can be understood as areas designed for the public viewing of animals (Anderson 1995; 1998). Viewing animals is usually the main reason for the zoo visit (Roe & McConney 2015, 879). Thus zoos can be seen as choreographed and constructed places for controlled interaction between human and non-human animals, guiding the interaction between the visitors and the captive animals in many concrete, subtle and practical ways (e.g. Braverman 2011).

In many of today’s cities, large areas of land have been designated for zoos, and annually more than 700 million people visit zoos and aquaria worldwide (Gusset & Dick 2011). Zoos organize themselves into networks for cooperation, research, certification, monitoring and development purposes; these networks include the Association of Zoos & Aquariums (AZA), the European Association of Zoos and Aquaria (EAZA) and the World Association of Zoos and Aquariums (WAZA). In Europe, the mission of EAZA is to facilitate cooperation within the European zoo and aquarium community towards the goals of education, research and conservation (www.eaza.net). In fact, zoos are better conceptualized as a network that circulates and governs animals and information about animals (Braverman 2013; 2015).

Zoos have undergone a transition over the past 40 years, moving the focus from entertainment to conservation-based education (Roe et al 2014; Wijeratne ym. 2014; Bayma 2012;
Ballantyne ym. 2007; Patrick et al. 2007) and this shift is still ongoing. The former legitimization of zoos as places for viewing exotic animals has been increasingly challenged, and new legitimization claims, those of education and the conservation of endangered animals, have been introduced. (Bayma 2012; Beadsworth & Bryman 2001, 89; Fennell 2013). These two are combined in the claim that zoos educate their visitors on conservation by exhibiting live animals—zoos act not only as reservoirs of endangered animals but they also claim to make visitors more “conservation-minded” after their zoo experience (Fennell 2015; Fernandez et al 2009). Thus, it is fundamental to the ethics of keeping animals in zoos (Wijeratne et. al. 2014; Moss & Esson 2013; Fennell 2012; Fernandez et al. 2009) to ask if seeing animals in the flesh contributes to the visitors becoming more “conservation minded”.

Empirical Zoo visitor research and environmental education

In this review, we look at how the alleged conservation education in zoos has been studied in empirical zoo visitor studies. We have undertaken a qualitative meta-analysis (Zimmer 2006; Evans 2008; Walsh & Downe 2004) of the empirical articles on zoo visitors and environmental education, with a focus on methodology and the nature of “nature conservation”. We searched for empirical visitor research particularly on learning, education and conservation, and chose 31 articles for...
standing and knowledge of actions to help protect biodiversity had increased as a result of zoo and aquaria visits (Moss et al. 2014a). But establishing the leap to conservation action (behaviour change) is challenging (Moss et al. 2014a) and the connection is not simple and linear (Spannring 2017, 68).

Many have tried to measure the change that environmental education in zoos attempts to make. Interestingly most of these studies use different names for the change they are trying to measure: e.g. “pro-environment sentiment” (Powell & Bullock 2014), “conservation ethos” (Catibog-Sinha 2008), “conservation intentions” (Smith & Sutton 2008; Miller et al. 2013), “conservation mindedness” (Powell & Bullock 2014), “conservation caring” (Skibins & Powell 2013, 530), “conservation attitudes and behaviour” (Ballantyne et al. 2007), “environmental intentions” (Jacobs & Harms 2014) and “biodiversity literacy” (Moss, Jensen & Gusset 2014) were mentioned. These concepts do not necessarily mean the same thing and there doesn’t seem to be a consensus on which concept to use. Jacobs and Harms (2014) provide a slightly broader interpretation (as compared to many other authors) incorporating the different, related concepts, and noting that “values, attitudes, knowledge, norms, awareness of consequences, feelings of responsibility, and affect and emotion” are “psychological antecedents
of environmental intentions, and by extension, wildlife conservation intentions.”

The studies also utilize different methods of empirically operationalizing the studied change in the analysis. Swanagan (2000) uses the evidence of visitors signing a petition as a sign of commitment to conservation, but mostly self-reporting has been in use, as when Powell and Bullock (2014) ask about the visitors’ emotional responses and willingness to change their behaviour (e.g. change daily activities or donate to conservation organizations).

This wide variety of concepts and operationalizations probably reflects the fact that measuring learning and tracing behavioural changes is notoriously difficult. Learning is not a fast, simple, one-way process, but complex, slow and interactive. Many writers admit that it is not really possible to study the effects of zoo visits *per se* since information and experience of the visit is processed differently from individual to individual, depending on different background knowledge and attitudes (e.g. Ballantyne et al. 2007, 375). For example, Davidson et al. (2009) conclude that learning during a student field trip depends strongly on the sociocultural context of the classroom and is less dependent on the zoo educator’s agendas. The most important thing for the students is the social context – being with friends. Even if the visitor learns, the step from learning to action is anything but straightforward (Smith et al. 2008; Spannring 2017).

For this reason, much of the research has focused on which aspects of the zoo visit might make a difference. Studied variables include naturalness and interactiveness of the exhibits (e.g. Swanagan 2000; Ballantyne et al. 2007, 372; Ross et al. 2012; Lukas & Ross 2014), animal activity and eye contact with the animals (Powell & Bullock 2014), animal charisma (Smith & Sutton 2008), interpretation of conservation (by guides) (Jacobs & Harms 2014) or duration of stay (Smith & Broad 2008). The post-visit material has also proved important (e.g. MacDonald 2015; Wu et al., 2013).

To summarize the empirical results of the studies mentioned above, they seem to indicate that the visitor learns best if

1) s/he is already a “conservation minded” visitor,
2) the visit takes place in an interactive and naturalistic setting
3) the animals are active and/or charismatic
4) there is contact, such as eye contact with the animal
5) the visit is comparatively longer
6) the social context (such as that of the classroom) and the post-visit material support the learning aims of the visit.
Fundraising for snow leopard conservation. Helsinki zoo, January 2016

Snow leopard. Helsinki zoo, January 2016
The material and methods vary in the articles under analysis, but surveys and self-reporting connected to quantitative methods are common. The data from surveys and structured interviews used for quantitative analysis, however, give only a narrow view of the different meanings and experiences of zoo visits, and do not seem a good measure of conservation education in zoos. We feel that qualitative, interpretive analyses of visitor experiences are needed to understand this aspect better.

What is “nature conservation”?

Environmental and often more specifically conservation education and learning is the objective of zoo education, and many articles strive essentially to measure the effects of this education. But how does this volume of research envision nature, nature conservation and the zoos’ role in conservation?

Nature conservation spans a broad field of practices big and small, ranging from protected areas to international conservation agreements, to zoos and the managing of biodiverse gardens. Zoos have long advocated their conservation role as genetic reservoirs and captive breeding centres, and refugia for species of animals whose natural habitats are severely threatened (Dickie et al. 2007), in addition to conservation education. Some zoos have stronger connections than others to in-situ conservation (see Gusset & Dick 2010) and many have developed conservation campaigns around select species, hoping to raise public awareness and action for conservation among zoo visitors (Skibins & Powell 2013, 529). The ongoing debate between “new conservation” and traditional conservation (see e.g. Braverman 2015a; Gusset & Dick 2010; Soulé 2013) makes defining conservation even more difficult: if there is no wilderness and pristine nature “out there”, what is nature conservation all about?

Anderson (1995) and Braverman (2012; 2014) have shown how zoos separate humans from other animals and from non-human nature. Zoos place humans above and separate from non-human nature, as a threat or a saviour, a learner, a visitor, a tourist. Braverman concludes that in zoos the public is educated about the definition and identity of nature, as well as the proper human relationship to this nature. A zoo’s nature is juxtaposed with modern urban life and it is seen as a pre-existing entity that “reinforces the notion of humans and nature as separate and remote”. (Braverman 2012, 837; also Braverman 2014; 2015.) “Zoo nature” – “wild” animals – is portrayed as different from non-wild nature such as pets but also as inferior to the in situ nature of conservation projects. Zoos may separate the visitors from non-human nature, rather than connect them to it. The articles analyzed
here do not take a critical stance on the portrayal of nature in the zoos.

The “conservation” or “nature” of “nature conservation” is often not explicitly defined in the articles studied. Implicitly, however, they reflect the zoos’ own narrow view of conservation: zoos are portrayed as reservoirs and as captive environments for nonhuman and often exotic and charismatic animals, involved in in situ and reintroduction projects.

Examples of this separation in the articles include the following:

1. Conservation is often implicitly portrayed as something that is done by someone else, not by the visitors.

This is evident in the way conservation learning or behaviour changes are measured: in the surveys, conservation often means donating money to a conservation programme or signing a petition. Only occasionally does it mean something more personal and active, e.g. recycling (Smith et al. 2008). This also seems to reflect the expectations of zoos – Roe & McConney (2014, 876, 881) found that the zoo representatives believed their visitors are least interested in learning about what they can do themselves to help save the animals. Some studies address the issue of connecting visitors’ everyday lives and the fates of endangered zoo animals (Ballantyne et al. 2007, 377; Roe et al. 2014, 538; Smith et al. 2008; Chalmin-Pui & Perkins 2016). The research cited by Ballantyne et al. (2007, 377) and Smith et al. (2008, 547) suggests that in general zoo visitors are already convinced that conservation problems exist (the only conservation related information often provided by zoos), and they would want to learn about solutions and actions they can undertake themselves.

2. As a consequence of the above, (in situ) conservation and endangerment is often implicitly displayed in the articles as happening somewhere else, somewhere far away from the city or country where the zoo is located.

Zoos have a colonialist history, displaying exotic animals (sometimes even human animals) from faraway countries, and this heritage is still alive today (Anderson 1995). Most of the articles do not take this into consideration at all. As an exception among the articles studied, Chalmin-Pui and Perkins (2016) note critically this same omission in the information provided at the London Zoo’s BUGS exhibit.

3. If visitor post-visit actions were measured (i.e. asked to self-report), these actions would appear rather modest (e.g. recycling paper for hawk conservation as in Smith et al. 2008) when compared to the seriousness of the biodiversity crisis.
In general, however, there seems to be a move towards more effective actions such as lifestyle changes as reported in the more recent literature.

4. The role of human-animal relationships, specifically the role of emotion and affect between human and nonhuman animals is mentioned in a number of articles, but mostly these are studied quantitatively and from survey material.

Analysis of the role of non-human animals in zoo encounters and the relationships between animal and human individuals is largely missing. The so-called “animal turn” is also slowly surfacing in environmental education research (Spannring 2017) and clearly it would also require more attentive and qualitative research in zoos (see Ojalammi & Nygren, forthcoming).

Conclusions

Our conclusions based on the literature review are that the studied zoo visitor literature doesn’t take a critical enough stance on the zoos’ own conservation views, which point to a rather narrow set of practices and to a narrow view of human-animal relationships. Research based on surveys and quantitative methods also give little, if any, room for a diversity of meanings concerning zoo visits and more-than-human practices in zoos.

We believe that more qualitative methods should be used in visitor studies, and that it is urgent to widen the view of nature conservation, human-animal relations and environmental education in zoos.

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