



Navigating assumptions of wildlife viewing impacts

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Abstract

Wildlife viewing is an important activity that has the potential to raise money for conservation efforts and support small, local ecotourism operations, and communities. It is often assumed to be low impact since it is non-consumptive; however, research shows there can be negative impacts to wildlife as a result of viewing activities, which we explore in different examples below. We provide recommendations for organizations that manage these operations to keep in mind as they consider the potential impacts of these activities and develop strategies to minimize them.

Introduction

Wildlife observation is a major focal point of nature-based tourism and ecotourism activities, with millions of tourists traveling each year for a chance to see animals in their natural habitat. Wildlife safaris, eco-cruises, and guided nature hikes promote wildlife as an attraction, and may focus on marketing single species or the broader biological community in a particular location. Wildlife watching is often marketed as a low-disturbance, non-consumptive activity that can provide mutual benefits to humans and wildlife; however, researchers have challenged this premise, arguing that the human gaze is inherently consumptive of wildlife, and that its impact has been understated by those who benefit financially from this activity (Tremblay 2001; Moorhouse 2007; Knight 2009). A wide range of negative effects of wildlife watching has been documented across a range of scenarios, providing evidence that wildlife watching is not always a net neutral or net positive for the wildlife being observed (Green and Higginbottom 2000).

The benefits of wildlife watching and ecotourism have been documented for both humans and wildlife across

many areas (Higginbottom and Tribe 2004), but many of these efforts have focused on measuring the economic benefits to people rather than the conservation benefits for the species and landscape that host the visitors (Moorhouse et al. 2017). The ability of wildlife watching to confer benefits to wildlife, or people, is variable based on the type of activity being promoted, the species involved and their life histories, the visitors' behavior and perspectives, and the tourism operators or providers involved. Where the direct connection to wildlife conservation is unclear, managers and tourists interested in using wildlife watching as a conservation tool should critically evaluate if the benefits attributed to wildlife outweigh the risks. In situations where the benefits are solely economic, the activity may exploit wildlife for profit-driven motives with no interest in the animals' welfare (Moorhouse et al. 2017).

Within the arena of wildlife watching tourism, wildlife is often an under-considered stakeholder in the planning and development process, and any negative impacts, even if minimal, can be detrimental to their well-being.

Understanding how humans impact wildlife via viewing activities, as well as the ethical considerations from a species perspective, are relevant to designing a sustainable and equitable future for these activities. Although the effects of habitat modification and other land use activities are more destructive to conservation overall, challenging the assumption that wildlife watching is inherently neutral is crucial to understanding how to design tourism activities that minimize the unintended and unplanned consequences to wildlife, and to considering the effects of human presence from the perspective of the wildlife being observed.

The objective of this paper is to provide a brief overview of wildlife viewing, the benefits to humans and conservation that it may produce, the negative effects it presents, and the perspective of wildlife as a stakeholder. We limit our treatment of wildlife watching activities to those that intend to view wildlife in their natural habitat. We do not include activities that promote interactive experiences with wildlife, such as touching or riding, since these activities are discouraged in protected areas, and the effects of these direct interactive activities are more clearly documented than “passive” activities that are often assumed to have no negative impact (Moorhouse et al. 2017). We conclude by providing general considerations that can be incorporated into design and management plans to minimize the risks wildlife watching may pose to wildlife.

Benefits of wildlife viewing to the observers and the observed

Wildlife observation may provide benefits to wildlife via direct activities, such as management interventions to protect species and their habitats, fundraising to support conservation initiatives, or through indirect benefits to wildlife via broader changes in human behavior (Higginbottom and Tribe 2004). As a direct and important source of revenue, wildlife watching is one way to fund conservation-related activities, primarily through entry fees or other associated tourism costs, which may then be used to fund conservation programs. However, many of these fees are used for operational and administrative costs, which usually require supplementation from government, leaving little funds to dedicate to conservation management activities. Conversely, indirect benefits may arise from changing human behavior, which may include encouraging pro-environmental behaviors among wildlife observers, increasing political support for conservation initiatives, or increasing people’s willingness to donate to conservation-related initiatives (Halpenny 2010). These behavioral changes are presumably founded upon the opportunities people encounter in forming deeper

connections with the wildlife they observe. Incorporating education into wildlife watching activities has been claimed to support the development of these behaviors; however, the lack of monitoring and evaluation tools to assess the effectiveness of these campaigns leaves gaps in understanding the impact of these activities.

For communities near wildlife watching areas, inclusive, equitable initiatives that incorporate local stakeholders may provide alternative income sources and increase incentives to conserve and protect species (Higginbottom and Tribe 2004). Indeed, wildlife watching may provide direct economic benefits to these local stakeholders if they are involved in the decisionmaking process and are incorporated as equal participants. In some cases, particularly in the Global South, economic benefits are often controlled by local elites or outside institutions that have the initial capital to develop wildlife watching activities. In these cases, the ability to provide economic benefits equitably may be reduced if local people are limited to low-level participation or if they are outright excluded, which may lead to resentment and retaliation against wildlife tourism and the wildlife itself. Initiatives that are well planned and inclusive of local interests have resulted in net benefits for wildlife conservation, including the creation of widely supported conservation-related policies, and informal protective “shields,” wherein local residents may prevent illicit take or harm.

In worst-case scenarios, operations may gain income for exploitative endeavors that fail to invest in conservation, animal welfare, or local communities. Efforts to provide more socially equitable conservation have resulted in broader stakeholder inclusion in some areas, but considerations of wildlife as a stakeholder are still widely lagging. Failure to design conservation objectives and management plans with intentional benefits for wildlife may lead to their exploitation for profit, and a perverse incentive to ignore or understate the impacts that watching may have on them (Moorhouse et al. 2007).

Misperceptions of impact

Wildlife watching is often presented as a non-consumptive activity when compared to activities such as hunting and fishing that involve direct take (i.e. capturing, harming, or killing), which is traditionally considered to have “consumed” the animal (Tremblay 2001). The use of the term “non-consumptive” to describe wildlife watching misrepresents the activity as completely neutral and conceals the considerable impacts that wildlife watching can have on the animals (Knight 2009). Well-intentioned observers may accept this dichotomy and fail to acknowledge that their participation has any negative effect on the environment and wildlife. Wildlife viewers

may perpetuate the unintentional impacts of ecotourism and wildlife viewing through biases, ignorance, and the values and priorities they hold surrounding their viewing experiences. While ecotourism companies can vary in the extent to which they hold themselves to higher ethical standards, not all tourists may take the time and effort to research their options. They may defer to broader cultural norms and assume that ecotourism is inherently low impact or beneficial. Tourists may also defer to those they consider trustworthy authorities, such as tour operators, and believe false or misleading claims about certain ecotourism practices being harmless. Participants who care about animal and environmental welfare may research best practices before making decisions to engage in an ecotourism activity; however, incomplete or overwhelming amounts of information about the ethics of ecotourism, and lack of information on best practices may hinder individuals' decisionmaking (Moorhouse et al. 2017). Additionally, wildlife viewers may have emotional motivations to connect closely with nature and create memories that meet their expectations. These motivations may cause viewers to bend or break ethical guidelines by engaging in activities such as approaching, feeding, or touching wildlife. Individuals may also have biases toward believing that their impact is relatively minor, without considering that when this perspective is held by many, the cumulative effects on the wildlife being observed can be significant.

Impacts to wildlife

The impacts of wildlife watching, and of ecotourism activities in general, depend on the characteristics of the observer and on the individual of the species being observed; the latter's age, sex, condition, and life stage all affect its ability to be tolerant of human presence or disturbance (Green and Higginbottom 2000). The effects of wildlife watching can vary in type and intensity, and can include physiological or behavioral changes to individuals, such as disruptions to foraging, breeding, defense, vigilance, or other activities. The cumulative effects of this disruption can lead to long-term changes in mortality and breeding success, which can impact wildlife at the population level. Additionally, while monitoring has focused on the impacts of management interventions on focal species, the effects on non-target species are less obvious, particularly if they are rare or elusive (Higginbottom and Tribe 2004).

The degree of effect on wildlife varies depending on the type of disturbance, its intensity, frequency, and distance to the individuals being observed. Whether observers approach on foot, in cars, in boats, or with drones will have different levels of impact, which also depends on the life stage of the individual or population being

observed. For example, breeding and nesting periods have high energy requirements, and interruptions in these activities can lead to declines in long-term population and species survival, particularly for endangered species with small populations. Recently, a visitor crashed a drone in a preserve on the California coast while trying to photograph nesting elegant terns, causing the large-scale abandonment of nests and chicks across the entire colony and in turn leading to concerns about population reductions for this species (Firozi 2021). Nesting raptors are also highly sensitive to disturbance, and boats approaching nesting raptors can cause the birds to flee the nest before those in the boat are even aware of the birds' proximity (Green and Higginbottom 2001).

Wildlife watching has been assumed to have little or no impact due to the non-obvious nature of the disturbance, unless, for example, animals are observed to flee. However, human presence alone is a stimulus introduced into the environment, which can either lead to wildlife's avoidance of an area or acceptance of the change if the interaction with humans is frequent and non-threatening (Knight 2009). The effects of minimally invasive, short-term activities are not obvious, but they may have negative long-term impacts by changing patterns in foraging, movement, parental care, reproduction, defense, and migration (Higginbottom and Tribe 2004). Stress-induced responses such as increased heart rate, body temperature change, and other endocrine responses may lead to weight loss, reduced breeding success, and increased vulnerability to disease and predation (Green and Higginbottom 2001). Noise introduced by humans can seem subtle, but still be impactful, eliciting stress-induced responses. These require energy and thus must be compensated for by additional foraging, which in turn may be limited due to an avoidance of preferred feeding areas being disturbed. Research on changing soundscapes has found that minimal introductions of noise can affect species that are sensitive to sound, such as nocturnal mammals, calling amphibians, and other vocal species whose ability to hunt, find mates, or avoid predators may be compromised by changes to their ability to sense vibrations and frequencies due to interference from introduced noise (Shannon et al. 2015).

Even small efforts to reduce human impact can have large benefits for wildlife. Light introduced to beaches via development or people on night walks can confuse and interfere with the navigation ability of nesting sea turtles. As a result, tourists on night walks are now often required to use red lights to minimize disturbance (pers. observations). In the Tambopata National Reserve in Madre de Dios, Peru, clay licks are a natural attractant to native wildlife such as parrots, and the predictability of

their use of the licks has led to them being a reliable and sought out destination for wildlife watching. To minimize disturbance to wildlife, visitors are required to enter the area at a distance of over 500 m from a clay lick, where they may observe parrots silently through binoculars and spotting scopes. Visitors are also encouraged to wear natural-colored clothing to camouflage themselves, as bright-colored clothing could attract or distract the parrots (pers. observations).

Tourist expectations

Even well-intentioned tourists who are interested in animal welfare and conservation may engage in activities that are inherently harmful due to lack of awareness of the impacts. Positive ratings on tourism websites of harmful interactive activities such as captive tiger camps are examples of this (Moorhouse et al. 2017), as are popular activities such as dolphin bow riding, feeding, or touching. In situations where wildlife watching incentives are primarily economic, animal welfare may become subject to market forces, and tourists' experiences are often the arbiters of decisions (Moorhouse et al. 2017). Tour operators may feel pressure to bend or break ethical wildlife viewing guidelines to provide expected experiences to customers in exchange for positive reviews. For instance, guaranteeing that customers will see wildlife can lead to multiple tour operators crowding around animals, especially if there are few in the area. The pressure to provide these experiences at the cost of ethical practices may be particularly high for small businesses that have no economic buffer against market fluctuations.

The predictability of wildlife sightings is important for creating reliable visitor experiences and reliable incomes, which may lead to bad behaviors like artificial feeding. For example, in the Colca Canyon, in Arequipa, Peru, local tour operators engage in artificial feeding to attract birds to the area to make them more viewable, which leads to higher tips for the guides (pers. observations). This may alter the birds' natural foraging patterns and bring species together in higher densities than usual, which can further change behaviors and interactions between the birds and potentially foster the spread of disease.

Guidelines and enforcement

While ecotourism regulations and guidelines may be established at various levels by the government and organizations/operators, adherence can be difficult to monitor and enforce due to the spatial extent of the wildlife watching activities. Many areas are difficult to monitor, especially in developing countries, and visitors and tour operators are expected to self-regulate their behaviors and adhere to rules. Although feeding animals

is prohibited, capuchin monkeys in the Manuel Brenes Reserve in Costa Rica are continually fed by tourists, despite signs warning them not to do so. Habituated animals associate tourists and their backpacks with food, and some will open backpacks, even if attended, to find snacks (pers. observations). In the Grand Canyon, USA, the squirrels at water sites are bold and persistent, and will even climb onto people to find their snacks (pers. observations). The food provided may lack proper nutrients for these animals, and the introduction of additional food resources may lead to populations becoming dependent on humans for survival.

Habituated animals may exhibit bold or aggressive behaviors towards humans and begin spending disproportionate amounts of time in human-inhabited areas due to associating them with food or other resources. Boldness and aggression can lead to negative interactions such as biting, and can lead to two-way effects such as disease transfer between humans and animals. The old adage “a fed bear is a dead bear” refers to the consequences of the artificial feeding of black bears who then become habituated to humans, and consequently are subject to lethal control whenever they injure a visitor.

Policies limiting the distance and speed at which tour operators approach wildlife are also often difficult to monitor and enforce, especially in remote and rugged environments. The global nature of the ecotourism industry provides opportunities for a variety of operators at a wide range of scales. However, this can make it difficult to standardize ecotourism guidelines and provide adaptable, equitable approaches that address the needs and interests of local communities and include them in the decisionmaking sphere. Differences in ethical guidelines and enforcement capacities among different countries and regions may result in the promotion of unethical wildlife viewing activities, and the persistence of these practices can continue to normalize them in the wider industry and create expectations among tourists that can only be met by engaging in these unethical practices.

Wildlife as stakeholders?

Despite often being considered “non-consumptive,” a foundational premise of wildlife viewing is that wildlife will be present for human *visual* consumption. Wildlife is often averse to people, making viewability in a given area unpredictable (Knight 2009). Viewing wildlife necessarily involves locating animals and sharing their location with others—people who, in the case of the ecotourism industry, are paying customers (Knight 2009). Animals are unable to provide or withhold their consent to these encounters. What might it mean to consider consent,

or more broadly animal rights, when photographing, approaching, or otherwise engaging in “low-impact” activities such as wildlife viewing? While answering these questions merits significantly deeper discussion than can be achieved here, we open space for the emergence of critical conversations surrounding low-impact activities within national parks and protected areas. A 2016 US court case, *Naruto v. Slater*, provides a great entry point into such difficult interrogations.

In 2011, David Slater set up a camera and tripod within the jungles of Indonesia, and proceeded to walk away, allowing for a Sulawesi crested macaque to engage in what has famously been dubbed the “Monkey Selfie.” Slater’s publication of this photograph garnered much attention and prompted numerous philosophical, ethical, and legal questions. The animal rights group, People for the Ethical Treatment of Animals, brought suit on behalf of the macaque, whom it named Naruto, claiming that the animal should hold the copyright to the photo (Hakimi 2017). Indeed, *Naruto v. Slater* brought forth numerous questions regarding animal rights, particularly within the realm of copyright law and constitutional standing. For example, the extent of animal intentionality and free will were both addressed throughout the case. Was Naruto aware he was taking a selfie? Did he *want* to take the photo and have control over the act itself? (Hakimi 2017). Although such legal matters are outside of the purview of this forum, the “Monkey Selfie” provides an opening to engage topics of animal consent and agency within the context of wildlife watching and conservation valuation.

How can humans better understand an animal’s intent in entering or staying in a space? Tourists may interpret an animal presence as its desire for or indifference to human interaction, but there are numerous other factors at work, including hunger, curiosity, and eco-spatial preferences (e.g. sunlight exposure), among others. Moreover, what implicit values are being entrenched in monetizing animal viewing and facilitating the pathways to mass visual consumption? For example, viewers can come to *expect* animals in particular locations and may be dismayed when anticipated wildlife remains unseen. This places immense pressure on organizations to better facilitate these interactions, leading some, as noted above, to establish money-back guarantees (Kubo et al. 2019). Furthermore, as wildlife viewing is predominantly perceived as a means for education and fostering environmental connections, it merits asking: What is physically and/or mentally (e.g., affectual exchanges, intellectual stimulation, etc.) occurring within this relationship between the viewer and the viewed? Recognizing the growing demands for and benefits of wildlife viewing, these questions are not meant to suggest wildlife viewing should be done

away with. Rather, they serve to highlight and reflect on the assumptions that undergird wildlife viewing as a leading conservation-driving activity. Thus, we conclude with one final question: What possibilities exist for re-imagining wildlife viewing in national parks and protected areas, and what do we stand to gain or lose in such re-configurations?

Conclusions and management recommendations

The deleterious effects of wildlife watching are sometimes ignored or minimized by proponents of ecotourism who argue that the benefits strongly outweigh the risks, deny that the activity poses risks, or defend the activity by a whataboutism of the more significant effects of habitat destruction or other major drivers. Given the provocations presented in this paper, we offer a few recommendations intended to catalyze conversations regarding wildlife watching activities and best practices in conservation.

Preserve the benefits while minimizing negative impacts to wildlife. Organizations that seek to mitigate the negative impacts of wildlife viewing must also keep those who economically rely on these activities in mind. Small ecotourism operations (that are found to be low-impact, or even protective of wildlife and their habitats) should be prioritized as they have the potential to generate positive impacts by facilitating awareness and fostering meaningful connections between people and wildlife. The involvement of local stakeholders (such as these small-scale ecotourism operators) in conservation could help to mitigate the potential impacts of wildlife watching while still keeping these businesses afloat. That said, it is crucial that these operations abide by regulations related to wildlife viewing. These regulations should be scientifically informed and evaluated, and updated as more is learned about potential impacts. Only businesses that meet certain ethical standards should be allowed to operate in sensitive environments. Encouraging the growth of ethics training programs and certifications could be another important step to encouraging economic growth while still protecting wildlife.

Considerations must be site- and species-specific. With such a variety of species and habitats in which wildlife viewing activities take place, there is no way that one set of regulations or considerations could apply to all cases. Specific risks of recreating near certain species or in certain places must be considered. It is vital to incorporate wildlife impact awareness into education and interpretation activities to counter the misperception of specific passive activities as having no negative effects. The importance of the cumulative effects of individual low-impact activities also needs to be considered.

Effective management strategies are context- and species-specific, and their replication in other situations does not guarantee their success. Effective management requires adaptive approaches that aim to understand the consequences for the focal species observed, the stimuli producing a response reaction, and the results of wildlife's tolerance for humans.

Acknowledge uncertainty and limited scientific knowledge.

The fact that it is impossible to be aware of all of the impacts that occur as a result of wildlife viewing and ecotourism is important to consider. As both grow in popularity, it will be necessary to continue studying their impacts in order to gain a richer understanding of what sorts of activities are least harmful to the environment.

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