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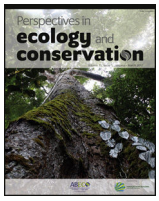

Policy Forums

Advances and barriers to the development of jaguar-tourism in the Brazilian Pantanal

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ABSTRACT

Wildlife tourism has grown in recent years and in many countries represents a major economic activity. The observation of wildlife in Brazil, despite its great biodiversity potential, is underexploited. Here we discuss the importance of jaguar-tourism as an economic and ecological activity, contributing to the jaguar conservation in the Pantanal, a region with abundant fauna and recognized as an important ecotourism destination in Brazil. We argue that the absence of management plans for protected areas in the Pantanal are impeding the development of this activity.

Tourism based on natural areas, or ecotourism, is an industry with social, economic and environmental consequences (Buckley, 2010) and is growing rapidly in many parts of the world (Gossling, 1999; Kepe, 2001). This activity is an important source of revenue for many countries, such as Kenya, where approximately 10% of its territory has been set aside for wildlife conservation and promotion of nature-based tourism (Akama, 1996). In Latin America, ecotourism is an activity that is on the increase. The importance of ecotourism on a given country's economy varies a lot, but an example of how ecotourism can be important to a country's economy is Costa Rica, where the number of tourists increased from 435 thousand in 1987 to 1.1 million in 2000. In this country, the travel & tourism industry accounted for 7.9% of the gross domestic product (GDP) (Gouvea, 2004). Nature-based tourism is mainly associated with protected areas such as national parks (Levin et al., 2015). On a global scale, the protected areas received 8 billion tourists a year, the majority being in Europe and North America (80%) (Balmford et al., 2015). In South America, there are good examples, such as the Galapagos National Park in Ecuador, which in 1992 generated a total revenue of U$ 32,000 from tourism and in 1997 received 62,800 visitors (Chardonnet et al., 2002). Another example is the Monteverde Cloud Forest Reserve in Costa Rica, a protected area of 10,000 hectares, which in 1994 received 49,793 visitors (Aylward et al., 1996). In Brazil, the average of the annual visitor rate from 1998 to 2007 ranged from 100 visitors in Serra do Divisor National Park to 737,039 visitors in Tijuca National Park (Balmford et al., 2015). Within all of the possibilities of attraction in ecotourism, wildlife-focused tourism has a great potential for conservation, because in several cases it is focused on charismatic species (Skibins et al., 2013) such as large predators, among which are sharks (Gallagher et al., 2015), African big cats (Mossaz et al., 2015) and tigers (Karanth et al., 2012). As predators need large home range, there is a consequent demand for large areas for their conservation.

Brazil is considered megadiverse in relation to its fauna and flora (Mittermeier and Werner, 1990) but wildlife-tourism is under explored and under developed. One reason may be the absence of a so-called charismatic mega fauna such as the African savannas (Lindsey et al., 2007), but it can be suggested that the lack of specific laws and government incentives (Gouvea, 2004) is an important factor discouraging wildlife-tourism. From the 53 National Parks in Brazil, only 20 are open to the public to visit (Silva, 2005). A region with abundant wildlife and ecotourism potential in Brazil is the Pantanal, the largest continental wetland in the world (Chardonnet et al., 2002; Harris et al., 2005). This biome harbours one National Park, three State Parks, one Ecological Station, two Road Parks and several private reserves. The Transpantaneira Road Park is situated in a global hotspot of recreational visitation (Levin et al., 2015) and two of these protected areas: Encontro das Águas State Park and the SESC Pantanal Private Natural Heritage Reserve are situated around this hotspot of recreational visitation (Levin et al., 2015; Tortato and Izzo, 2016). Among the public protected areas of the Pantanal, only the Pantanal Matogrossense National Park has a management plan, which establishes the rules for public use (IBAMA, 2003).

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Ecotourism is an activity that began more than 30 years ago in the Pantanal (Alho et al., 1988). Wildlife observation represents one of the main attractions, especially birdwatching. In this essay, we discussed the activity of observing jaguars (*Panthera onca*) in nature in the Pantanal. We call this activity as jaguar-tourism and discuss the advances and barriers to its development. Jaguar-tourism is an activity which is on the rise in the Pantanal (Hoogesteijn et al., 2016) and occurs in two distinct regions. In the northern region it consists of searching for jaguars in rivers and streams, with outboard boats, without involving the partnership of cattle ranches and jaguars are usually observed on the riverbanks and beaches formed in the dry season (June–November). In the southern Pantanal, jaguar-tourism is generally developed in cattle ranches associated with hotels (Hoogesteijn et al., 2016) and the search for jaguars occurs with the use of adapted trucks, similar to those used in safaris in Africa and in some ranches with outboard boats in internal streams. As in northern Pantanal, the jaguars are usually observed during the dry season.

Jaguar-tourism is a recent activity if compared to the tourism involving big cats in Africa. There, this activity occurs in many countries and represents an important tool for big cats conservation, that contributes for example to habitat protection, mitigates human–cat conflicts through jobs, education and compensation of losses provoked by these species on the livestock (Mossaz et al., 2015). The development of jaguar-tourism in the Pantanal needs to use de African examples to transform this economic activity in a conservation tool.

The partnership between cattle ranching and jaguar-tourism on the same property in the Pantanal creates an ambiguous situation. The jaguar can represent economic losses by predating the herd (e.g. Tortato et al., 2015) but represents a profit for being one of the main attractions for ecotourism. Many ranchers already see the jaguar as a source of income (Harris et al., 2005). Fazenda San Francisco in the municipally of Miranda, southern Pantanal, is a great example, where the profits from the jaguar-tourism can be 25 times greater than the losses caused by this species on their herd (Concone and Azevedo, 2012). With the majority of protected areas located in the northern Pantanal (Harris et al., 2005) the cattle ranches of the southern region, where the jaguar represents a source of income, can be considered private refuges and an advancement for jaguar conservation.

In addition to private areas, jaguar-tourism also occurs in two protected areas in the state of Mato Grosso: the Taiamã Ecological Station in the Municipality of Cáceres and the Encontro das Águas State Park in the municipalities of Barão de Melgaço and Poconé. These protected areas do not have management plans to regulate their public use. Despite the lack of management plans for protected areas, the jaguar-tourism activity is regulated in the Pantanal. In the State of Mato Grosso this activity is regulated through CONSEMA, resolution – 85/11 (Diário Oficial de Mato Grosso, 19 de Agosto de 2011) which established rules for the observation of big cats by tourists. This vanguard resolution is a keystone advance to regulating wildlife tourism activity in Brazil and served as an example for the establishment of rules for wildlife tourism in other states, such as the neighbouring state of Mato Grosso do Sul (Diário Oficial n. 8912. SEMADE Resolution n. 08 of April 28, 2015).

The CONSEMA resolution – 85/11 features 11 articles, which establish rules for the observation of big cats in the wild, such as the maximum observation time, the number of boats and minimum distance between the tourists and the observed animal. However, after five years of existence, some articles of this resolution continue to generate conflict between managing agencies such as the State Department of the Environment (SEMA-MT) and tourism operators, including Article 8, which prohibits the tourism activity inside or in buffer zones of protected areas (e.g. Encontro das Águas State Park), requiring the regulation of the activity through the management plan or by the agency responsible for the administration of the protected area. The Encontro das Águas State Park does not have a management plan; even so, in 2015 more than 4800 foreign tourists (Tortato, unpublished data) visited this protected area. Based on Article 8 of CONSEMA resolution – 85/11 we can consider that all activity developed in this protected area is illegal. The Encontro das Águas State Park was created in 2004 through Decree. N° 4881 and its Article 3 establishes the maximum period of five years to prepare its management plan, under the responsibility of SEMA. Regarding Taiamã Ecological Station, which was created in 1981 (Decree N°. 86061), only in 2015 did it start the preparation of its management plan. Thus, the absence of management plans of protected areas is a clear barrier to the development of the jaguar-tourism in the Pantanal. Most jaguar-tourism activities in the northern part of the Pantanal are around or near protected areas, and with it, though regulating the activity, CONSEMA resolution – 85/11 has little effectiveness.

Another problem involving wildlife tourism in Pantanal is the act of feeding the jaguars. It is a practice prohibited by CONSEMA resolution – 85/11 and SEMADE Resolution n. 08. The act of feeding wildlife has become a popular way for tourists to have a guaranteed contact with the target species in nature, but can represent negative impacts on the species observed, such as changing the natural behaviour, aggression and habituation to humans, increases risk of disease and making them more vulnerable to predators (Orams, 2002). The consequences of feeding wild animals can be fatal for humans, as the death of a tourist in the Fraser Islands, Australia, caused by dingo (*Canis lupus dingo*) attacks (Burns and Howard, 2003). Habituate jaguars with humans through feeding them is a serious risk to tourists and according to Neto et al. (2011) has been linked to attacks on humans near Taiamã Ecological Station. Besides the jaguar, there are feeding cases of other species in the Pantanal for tourism purposes, such as caiman (*Caiman yacare*), ocelot (*Leopardus pardalis*), crab-eating-fox (*Cerdocyon thous*), maned wolf (*Chrysocyon brachyurus*), giant otter (*Pteronura brasiliensis*), capuchin monkey (*Cebus cay*) and tapir (*Tapirus terrestris*). The act of feeding wildlife in Brazil represents a conflict with some aspects of environmental legislation, ecotourism concepts and functions of Protected Areas (Alves et al., 2013). We can say that, nowadays, the jaguar feeding activity is currently avoided by the majority of the tour operators in northern Pantanal, but in the past, this activity was used to increase the chances of tourists observing jaguars in nature. The fact that the tour operators do not feed jaguars is not due to the action of SEMA agents, but to their own initiative and self-regulation. This self-regulation was induced by the awareness of the problem and if one tour operator feeds the jaguars, the others will immediately rebuke him because this attitude can discredit the entire local tourist trade. On the other hand, in the southern Pantanal the rules against feeding jaguars are more recent (SEMADE Resolution n. 08, 2015). In this region, there are recent records of jaguars being fed by fishing tourists (e.g. http://g1.globo.com/bom-dia-brasil/noticia/2014/10/turistas-ignoram-risco-de-ataque-e-alimentam-oncas-no-pantanal.html). Therefore, the implementation of resolutions and state surveillance measures and education of tour guides can help create a self-regulatory condition, as noted in the northern part of the Pantanal.

We conclude that despite the potential, the Pantanal needs actions to expedite the implementation of a management plan process in its protected areas, enabling its public use and the creation of specific legislation at the federal level that regulates the activity of wildlife tourism and thus assisting in the development of wildlife tourism in Brazil. The Pantanal represents a good example of how this economic activity can contribute to the valuation of wildlife and therefore its conservation. With these measures,

the Pantanal can increase its global representation on this specific economic activity that integrates man with nature.

Conflict of interest

The authors declare no conflict of interest.

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