LUMEN ET VIRTUS

Feline watching tourism in South America: Conservation, sustainability and impacts in the Pantanal and Patagonia

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Reinaldo Dias[1]

ABSTRACT

Tourism for the observation of large cats, such as the jaguar in the Brazilian Pantanal and the puma in Chilean Patagonia, has emerged as a powerful tool to promote biodiversity conservation and sustainable economic development. This article explores the opportunities and challenges associated with this form of tourism, highlighting best practices and strategies for maximizing benefits and mitigating negative impacts. The analysis reveals that big cat tourism can provide significant economic benefits to local communities, creating livelihoods and raising living standards. However, it is crucial to maintain a balance between economic benefits and ecological sustainability. Implementing capacity limits, strict regulations, and sustainable tourism practices are essential to prevent the degradation of natural habitats and animal stress. Tourism education plays a vital role in promoting responsible behaviors among visitors. Orientation programs and the presence of experienced guides help ensure that wildlife interactions are safe and informative. Additionally, collaborating with academic institutions to monitor and research the impact of tourism on feline populations and their habitats is critical for making informed decisions. The involvement of local communities is another critical aspect. Initiatives that ensure communities directly benefit from tourism strengthen local support for conservation efforts and create sustainable income streams. Habitat restoration projects and anti-poaching units, funded by tourism revenue, can promote ecological recovery and reduce threats to wildlife. Diversification of tourism activities is also recommended to distribute pressure on wildlife habitats and extend the stay of tourists. In addition to feline watching, cultural visits, ecological trails and other activities can promote conservation and environmental education. Jaguar and cougar sighting tourism presents a valuable opportunity to promote conservation and economic development. Adopting sustainable tourism practices, education, and community engagement are essential to ensure that this form of tourism continues to thrive, benefiting both wildlife and local communities.

Keywords: Wildlife tourism, Jaguar, Puma, Conservation, Sustainability.

[1] Doctor in Social Sciences -Unicamp
Associate Researcher at the CPDI of IBRACHINA/IBRAWORK
Unicamp Technology Park - Campinas – Brazil
reinaldias@gmail.com

INTRODUCTION

Wildlife tourism has become one of the most popular forms of sustainable tourism, promoting biodiversity conservation and offering significant economic benefits to local communities (BUCKLEY, 2010). In South America, two of the most emblematic large cats, the jaguar (Panthera onca) and the puma (Puma concolor), have attracted increasing tourist interest, particularly in the Brazilian Pantanal and the Chilean Patagonia, respectively. Not only do these predators play crucial roles in the ecosystems they inhabit, but they are also important cultural and natural symbols for the region (FRANKLIN ET AL., 2009).

The jaguar, the largest cat in the Americas, is a keystone species in the Pantanal, one of the largest wetland systems in the world (MORATO ET AL., 2018). Jaguar viewing tourism has grown significantly in recent years, driven by the high demand for authentic wildlife experiences and the need for more effective conservation strategies (TORTATO & IZZO, 2017). This type of tourism has the potential to generate vital revenue for local communities while also promoting the preservation of the jaguar's habitat.

On the other hand, the puma, also known as the mountain lion, is widely distributed in South America, with Chilean Patagonia being one of its main habitats (FRANKLIN ET AL., 2009). The region has seen an increase in cougar-watching tourism, especially in Torres del Paine National Park, where these felines are most often sighted. This increase in tourism not only contributes to the local economy but also sensitizes visitors to the importance of conserving the species (ELBROCH ET AL., 2017).

Observing predators in their natural habitats has always captured the human imagination, and in recent years, this fascination has significantly impacted the tourism industry. Large predatory animals, often considered the top of the food chain, offer a unique and exciting experience for tourists. Animal-watching tourism, particularly focused on these top predators, has emerged as a prominent segment of wildlife tourism, greatly influencing biodiversity conservation, sustainable development, and economic opportunities in protected areas. The allure of experiencing such majestic creatures in the wild has increased over the past two decades, driving economic development and biodiversity conservation efforts in several regions (NEWSOME ET AL., 2012). However, alongside its numerous benefits, this unique intersection of humans, wildlife, and the ecosystems they inhabit brings with it a set of ecological and social challenges that deserve close scrutiny.

Protected areas, encompassing national parks and wildlife reserves, have historically stood out as bastions of ecological stability and champions of biodiversity conservation. These sanctuaries, over time, have evolved into top-tier tourist spots, introducing travelers to the unparalleled beauty of raw nature, especially the dominant predators at the top of the food chain (BALMFORD ET AL.,

2009). This mix of conservation and tourism agendas, when harmoniously aligned, brings socio-economic benefits, particularly benefiting local communities. Krüger (2005) discerned that the financial influx of tourism in these regions can be channeled back into reinforcing conservation initiatives, thereby promoting a sustainable feedback loop. In addition, the educational and inspiring value of witnessing top predators in action, when responsibly guided, can catalyze a global push for biodiversity conservation and champion the prospect of sustainable tourism (BALLANTYNE, PACKER, SUTHERLAND, 2011).

However, large cat tourism presents considerable challenges. Tourist pressure can lead to behavioral changes in animals, habitat degradation, and human-wildlife conflicts (George & Crooks, 2006). Thus, it is crucial to develop and implement sustainable tourism practices that minimize negative impacts and maximize benefits for conservation and local communities (NEWSOME, MOORE & DOWLING, 2012).

Given the delicate balance between the benefits and challenges presented by predatory animal observation tourism in protected habitats, this research seeks to unravel its multifaceted dimensions. Focusing on emblematic instances of a spectrum of landscapes – whether observing pumas in the Andean ecosystem of Chilean Patagonia or following jaguar hunts in Brazilian wetlands – this article aims to provide a holistic examination of the problems, perspectives, and best practices fundamental to this tourism niche. With this, it is expected to provide stakeholders with insights, strategies, and knowledge to improve the tourist experience, support local communities, and prioritize the welfare and conservation of wildlife in protected areas, in particular the predatory felines at the top of the food chain. Through a comparative analysis of these two regions, it seeks to understand the economic, ecological and social impacts of this type of tourism, as well as to identify effective strategies for its sustainable management.

This article, therefore, aims to explore large feline tourism in South America, with a specific focus on the jaguar in the Pantanal and the puma in Chilean Patagonia. By analyzing the benefits and challenges of large predator observation tourism, it is hoped to offer a comprehensive understanding of this phenomenon, promoting sustainable tourism practices that can be implemented in diverse regions around the world, benefiting both endangered species and human communities that share their habitats.

BACKGROUND

Nature-based tourism is one of the fastest-growing segments worldwide, driven by interest in environmental issues. This type of leisure is preferred for several reasons: greater awareness about the preservation of natural resources, psychological need to escape urban centers, desire for a simpler life, and search for a better quality of life through interaction with nature. As a result, destinations

with great natural diversity can obtain a comparative advantage if they adopt strategies focused on a certain audience. Brazil, however, despite its biodiversity, has not attracted many international tourists due to problems such as poor infrastructure, lack of training, inadequate signage, absence of safety measures, lack of investment, and insufficient promotion. Growing environmental awareness strengthens nature tourism, attracting tourists interested in idyllic places, wildlife viewing, and the feeling of contributing to preservation. The fact that biodiversity has economic value in its natural environment, without the need for transformation, allows it to become an ideal tool for its own conservation (DIAS, 2011).

One sign of this increased interest in nature-based tourism is the fact that the literature on wildlife tourism has grown significantly in recent decades, reflecting the growing importance of this sector for both conservation and the economic development of local communities (BUCKLEY, 2010). This phenomenon is widely recognized for its potential to promote biodiversity conservation, generate economic revenues, and raise public awareness of the importance of environmental preservation (BALLANTYNE, PACKER, & FALK, 2011). Ecotourism, as an expression of the human desire to reconnect with nature, has found a niche in an increasingly urbanized and globalized world. One of its most popular strands is wildlife viewing tourism, which has attracted a global crowd of enthusiasts, eager to witness the beauty and majesty of nature firsthand (DYBSAND & FREDMAN, 2021). However, while the potential for economic and ecological benefits is significant, it is also accompanied by challenges associated with wildlife management and conservation.

Unlike hunting and fishing practices, wildlife observation tourism is predominantly a passive activity, focused on observing animals in their natural habitats. This segment has experienced a remarkable rise, with several tourism companies offering personalized experiences in this area or incorporating it into their tour packages (TAPPER, 2006). In fact, the attraction is not limited to large mammals or exotic habitats; it ranges from watching wild horses in the U.S. to watching polar bears in the Arctic (DYBSAND & FREDMAN, 2021).

Countries such as Kenya, in particular, have a rich tradition of wildlife tourism, attracting visitors to witness the majesty of iconic species such as the African lion and elephant (ESTIFANOS ET AL., 2021). This strand of ecotourism not only helps fund parks and reserves, but also raises awareness about the importance of biodiversity conservation. Tourism focused on large cats, such as the jaguar in the Pantanal and the puma in Chilean Patagonia, is an emerging subfield within this context, offering an interesting case study on the impacts and opportunities of this type of tourism.

Conservation tourism, as defined by BUCKLEY (2010), is a conservation tool that contributes positively to the preservation of biological diversity. This type of tourism goes beyond ecotourism, focusing on the effective contribution to conservation. While the growth of commercial conservation tourism businesses is relatively new, they have the potential to play a significant role in

conserving specific areas and species. Biodiversity is fundamental not only in itself, but as the basis of human economic activity and survival (BUCKLEY, 2010). Biodiversity is under threat globally, with the economic cost of biodiversity loss estimated at trillions of dollars annually. Threats include encroachment on nature, resource consumption, pollution, and climate change. Conservation can contribute to climate change mitigation efficiently and cost-effectively, with forest loss and deforestation accounting for about one-fifth of global greenhouse gas emissions (BUCKLEY, 2010).

Wildlife tourism is widely recognized for its potential to promote biodiversity conservation, generate economic revenue, and raise public awareness of the importance of environmental preservation (BALLANTYNE, PACKER, & FALK, 2011). Studies show that, when well managed, wildlife tourism can provide financial incentives for conservation and provide sustainable livelihoods for local communities (RODGER, MOORE, & NEWSOME, 2007). However, the impacts of wildlife tourism can vary widely depending on the specific context and management practices adopted. Wildlife-centric tourism has proven to be a powerful force on the global stage, reflecting a growing trend of interest in the planet's natural wonders. This aspect of tourism moves huge sums of money and holds the potential to positively impact the conservation of species and habitats, as well as offering substantial economic benefits to the regions involved.

Globally, this market is expanding rapidly, attracting millions of visitors annually and generating billions in revenue. Specific sightings, such as shark-related, attract about 600,000 tourists annually, while birdwatching in the United States generates a staggering $107 billion in revenue. Diving tourism in Southeast Asia moves more than 150 million dollars, and whale watching employs more than 13,000 people around the world (FERNÁNDEZ-LLAMAZARES ET AL., 2020).

In addition, the economic impact of this segment is significant, with wildlife-related tourism accounting for 3.9% of global GDP, a figure equivalent to the total GDP of nations such as South Africa or Hong Kong. In 2018, the sector's contribution to global GDP was US$120.1 billion, and its total economic contribution amounted to a remarkable US$343.6 billion, supporting 21.8 million jobs internationally (WTTC, 2019). In this context, the relevance of this type of tourism for Africa stands out, where more than a third of tourism revenues are derived from animal observation (WTTC, 2019). Concrete examples, such as the project in Madagascar, demonstrate that tourism can play a crucial role in conservation, directly benefiting at-risk species such as lemurs (FERNÁNDEZ-LLAMAZARES ET AL., 2020). In Mexico, the protection of the monarch butterfly's hibernation areas and the subsequent influx of tourists reaffirm the importance of tourism as a conservation tool (WTTC, 2019).

Despite the evident benefits, wildlife tourism can bring negative impacts to fauna, such as behavioral changes and population imbalances (FERNÁNDEZ-LLAMAZARES ET AL., 2020). These challenges reinforce the need for responsible and informed management. The emerging use of

technologies, such as social media, promises to be a valuable tool for understanding and catering to visitor preferences, ensuring a more sustainable future for the industry (WTTC, 2019). Wildlife tourism offers a delicate balance between economic benefits and conservation challenges. Its potential to fund conservation and combat threats such as poaching is undeniable (FERNÁNDEZ-LLAMAZARES ET AL., 2020). The key to maximizing its positive impact lies in conscious management, equitable inclusion of local communities, and continuous adaptation to new technologies and information.

The growing interest in observing predators in the wild has led to the debate on the integration between tourism and wildlife conservation. Aquatic and terrestrial predators, such as sharks, crocodiles, and big cats, have peculiarities that deserve special attention when exposed to human contact (MACDONALD ET AL., 2017). These animals are vulnerable to human interference, often being displaced to marginal habitats due to human proximity. Top predators, such as large carnivorous mammals, play a crucial role in maintaining the ecological balance of ecosystems. Unfortunately, many of these predators are threatened with extinction due to conflicts with humans, habitat loss, and the decline of their prey (WILLIAMS ET AL., 2017). Human-induced mortality, often motivated by retaliation by cattle ranchers, contributes to the reduction of populations of these carnivores (OHRENS ET AL., 2021).

However, observing these animals in their natural habitat has the potential to change the way they are perceived. Many of these predators are aesthetically appreciated for their beauty, attracting tourists interested in natural experiences (LOPES-FERNANDES ET AL., 2022). More than a mere aesthetic experience, ecotourism focused on top predators can foster environmental education, sensitizing tourists to the need for conservation of these species and contributing to a more positive perception of these animals (MACDONALD ET AL., 2017). In addition, traditional practices in rural areas are being reviewed in light of the growth of wildlife tourism. There is a current trend to reconsider hunting as a source of revenue, particularly when natural superpredators such as lynx are reintroduced into their habitats, reducing the need for active management of prey populations through hunting. Movements against the killing of animals are gaining momentum, and traditional practices, such as the display of hunting trophies, are being replaced by nature photographs (LOPES-FERNANDES ET AL., 2022).

To maximize the benefits of predator tourism and mitigate its potential negative impacts, effective management that ensures wildlife resilience, engages local communities, and promotes responsible behaviors is essential (MACDONALD ET AL., 2017). Strategies that highlight the economic benefits of predators to local communities, educate about their ecological importance, and develop protective measures for livestock are key in this process (OHRENS ET AL., 2021).

Large-cat tourism can generate significant economic and ecological impacts. Economically, this type of tourism can provide an important source of income for local communities and encourage the preservation of natural habitats (Karanth & Defries, 2011). Ecologically, well-managed wildlife tourism can promote species conservation and reduce human-wildlife conflicts (NEWSOME, MOORE, & DOWLING, 2012). However, it is essential to implement sustainable tourism practices to minimize negative impacts, such as habitat disturbance and animal stress (GEORGE & CROOKS, 2006). Wildlife viewing tourism, when managed well, has the potential to play a vital role in conserving biodiversity and benefiting local communities. But it is essential to balance economic and conservation interests, ensuring that tourism practices are sustainable in the long term (DYBSAND & FREDMAN, 2021; KORIR, MUCHIRI, & KAMWEA, 2013).

Challenges in big cat tourism include the need for effective management to prevent habitat degradation, animal behavioural disruption and conflicts between tourists and wildlife. On the other hand, opportunities include promoting biodiversity conservation, generating sustainable economic revenues, and raising public awareness of the importance of environmental preservation (TREMBLAY, 2001). Large cats in South America, such as the jaguar and the puma, have attracted significant tourist interest due to their majesty and ecological importance. However, managing tourism around these animals requires special attention to ensure the conservation of species and the well-being of local communities.

The jaguar (Panthera onca) is an emblematic species in South America and plays a crucial role in the ecosystems where it lives. In the Pantanal, one of the most important habitats for jaguar conservation, jaguar watching tourism has developed significantly in recent decades (TORTATO & IZZO, 2017). This type of tourism has been promoted as a strategy for the conservation of the species, while providing economic benefits to the region. Studies indicate that jaguar tourism in the Pantanal can help reduce human-jaguar conflicts by providing economic alternatives for local communities who might otherwise see the jaguar as a threat to livestock. In addition, the presence of tourists can act as a deterrent to poaching (CAVALCANTI ET AL., 2010). However, it is crucial to ensure that tourism is managed sustainably to avoid disturbance of natural habitats and animal stress (MORATO ET AL., 2018).

The Patagonian cougar (Puma concolor puma), a more robust subspecies of the Brazilian cougar, also known as the mountain lion, is another large feline that has attracted tourist interest, especially in Chilean Patagonia. Patagonia, with its stunning landscapes and rich biodiversity, is a popular destination for ecotourism, and cougar watching in Torres del Paine National Park has become an increasingly popular tourist activity (FRANKLIN ET AL., 2009). Research suggests that cougar sighting tourism can have significant benefits for the conservation of the species and the local economy (Walker & Novaro 2009). However, the management of this type of tourism presents

challenges, such as the need to balance tourist access with the protection of habitats and the minimization of negative impacts on cougars (ELBROCH ET AL., 2016).

Wildlife tourism, especially that focused on big cats, presents both significant challenges and opportunities. When managed well, it can be a powerful tool for biodiversity conservation and sustainable economic development. However, it is crucial that sustainable tourism practices are implemented to minimize negative impacts and maximize benefits for wildlife and local communities. Effective management, the involvement of local communities, and continuous adaptation to new technologies and information are essential for the long-term success of this type of tourism.

METHODOLOGY

This study adopts a dual methodological approach, combining a systematic review of the literature with the analysis of secondary data. The systematic review aims to identify and synthesize existing research on jaguar observation tourism in the Pantanal and pumas in Chilean Patagonia, with a focus on economic, ecological, and social impacts. To this end, inclusion criteria were defined that cover studies published between 2000 and 2023, peer-reviewed articles that specifically address the two species of felines and their regions of occurrence, and research that analyzes their impacts on several dimensions. This review facilitated the identification of themes, gaps, and trends prevalent in existing research.

The search was carried out in academic databases such as Web of Science, Scopus, Google Scholar, ResearcheGate and Academia.edu, using keywords related to the theme. The review process consisted of an initial search, followed by the screening of titles and abstracts, full-text evaluation of the selected articles, and extraction of relevant data, such as objectives, results, and conclusions of the studies. The qualitative analysis of the extracted data allowed the identification of recurrent themes and patterns, as well as gaps in the literature, resulting in recommendations for future research.

The secondary data were analyzed using descriptive and inferential statistical analysis techniques, allowing the comparison of trends over time and the evaluation of the economic and ecological impacts of large feline tourism. Data collection covered information on visitor numbers, revenues generated by cat-watching tourism, demographic and economic data of local communities, distribution and conservation status of jaguars and cougars, and ecological impact measures and conservation initiatives.

By integrating both the qualitative insights from the systematic review and the quantitative patterns from the secondary data analysis, this methodology ensured a holistic examination of the complex interplay between top predators and tourism in protected areas.

Limitations of the study include the reliance on available secondary data and the potential lack of specific studies on certain aspects of big cat tourism. This dual methodological approach provides a solid foundation for exploring the impacts and opportunities of jaguar and pumas observation tourism, contributing to the formulation of sustainable tourism policies and practices.

CASE STUDIES

For the case studies, two top predatory felines in South America were selected: jaguars in the Brazilian Pantanal and pumas in Chilean Patagonia, based on multiple criteria. Firstly, each of these animals plays an essential role as a top predator in their respective ecosystems, regulating prey populations and maintaining an ecological balance. In addition, each of these predators is emblematic and has a rich set of cultural, historical, and spiritual meanings in their regions, making them natural focuses of tourist interest. The choice also reflects the geographical diversity, encompassing two very different ecosystems, which allows for a broader and more comparative analysis of the challenges and opportunities associated with tourism aimed at top predators in varied contexts. Finally, the choice of these animals highlights regions where the balance between conservation and tourism is particularly precarious and vital, requiring attention and specialized strategies.

OBSERVATION OF JAGUARS IN BRAZILIAN WETLANDS

Brazilian wetlands, particularly the Pantanal, are home to one of the most captivating and elusive big cats in the world: the jaguar (Panthera onca). This biome, with its mosaic of aquatic and terrestrial habitats, offers an exceptional environment for the jaguar. Watching these majestic big cats in the wild wetlands has become an increasingly popular wildlife tourism activity. The Pantanal, the largest tropical wetland in the world, offers ideal conditions for jaguar sightings, especially during the dry season, when the water recedes and prey concentrates around the remaining water bodies (TORTATO ET AL., 2015). The jaguar occupies a significant place in Brazilian and South American indigenous cultures. For tourists, the experience offers a connection not only to nature, but also to the cultural history and folklore associated with this magnificent creature (JÁCOMO ET AL., 2004).

The Pantanal is home to a significant population of jaguars. Adapting to this unique floodplain ecosystem, these jaguars have developed behaviors that set them apart from their Amazonian or forest-dwelling counterparts. They often hunt in broad daylight, take down larger prey such as alligators, and have become good swimmers, taking advantage of the water-rich environment (TORTATO ET AL., 2015). These specific adaptations not only highlight the jaguar's versatility as a top predator, but also its ability to thrive in varied habitats.

Jaguar watching tourism is quickly becoming one of the main sources of income for local communities in the Pantanal, shifting their reliance on traditional farming and livestock practices. It

is estimated that, in some parts of the Pantanal, revenue from jaguar tourism has surpassed traditional cattle ranching as the main source of income. This jaguar observation tourism, called "jaguar tourism", has grown in the Pantanal, concentrating in two regions. In the North, observation is made in rivers using boats, especially during the dry season. In the South, it is common to use adapted vehicles on cattle ranches associated with hotels, and in some places, boats in streams. These jaguars, although they can affect the herd, have become a significant source of revenue for ecotourism. For example, the São Francisco Farm, in the south of the Pantanal, profits 25 times more from jaguar tourism than it loses from jaguar attacks on cattle. In addition to the farms, jaguar tourism also takes place in conservation units, such as the Taiamã Ecological Station and the Encontro das Águas State Park, although these areas lack specific management plans (TORTATO & IZZO, 2017). In the Pantanal, four-fifths of the region is private farms without fences, where cattle and jaguars coexist. This coexistence leads jaguars to have cattle as a third of their diet, resulting in economic losses for farmers and potential retaliation against the felines. However, many cattle ranchers see value in jaguars due to tourism. Tourism has changed the local perspective on the feline: a live jaguar is more profitable than a dead one. It benefits several sectors, including hotels and guides. Ecotourism in the Pantanal is crucial. Jaguar tourism alone generated US$ 6.8 million annually in the northern Pantanal, while cattle losses totaled US$ 121,500. Thus, jaguars represent a tourist value 56 times greater than the damage caused to cattle. To distribute the benefits of tourism, a fee is charged to tourists, which is passed on to farmers affected by jaguar attacks. In six months, this fee not only covered the losses at Pousada Piuval, but also generated a profit 1.5 times greater than the losses. This model ensures that the gains from ecotourism benefit the local community (BROWN, 2023).

Recognizing the ecological and economic value of the jaguar, several conservation initiatives have been initiated. Non-governmental organizations and local actors have collaborated in the development of conservation units, wildlife corridors and anti-hunting measures (CONDE ET AL., 2010). These initiatives are particularly crucial given the threats that jaguars face, ranging from habitat loss to retaliatory killings due to cattle predation. Intertwining conservation with sustainable tourism practices is increasingly seen as the way forward to ensure the protection of jaguars while benefiting local communities. Revenue from jaguar tourism provides a substantial incentive for local landowners and the government to invest in the conservation of the species and its habitat. This form of ecotourism plays a vital role in protecting the jaguar from threats such as deforestation and poaching (DE AZEVEDO AND CONFORTI, 2008). However, a worrying practice is to feed jaguars to ensure contact with tourists. This can alter the natural behavior of animals, making them aggressive, habituated to humans, and vulnerable. This habituation has been linked to human attacks, posing significant risks to tourists and animals (TORTATO & IZZO, 2017).

Like other wildlife tourism enterprises, the observation of the jaguar in the Pantanal is not without challenges. Increased boat and vehicle traffic can be a source of disturbance for jaguars and their prey, affecting their natural behaviors and causing potential stress (CAVALCANTI & GESE, 2009). There is an increase in the occurrence of conflicts between jaguars and tourists/human settlements, increasing the possibility of problems. The jaguar preying on cattle can provoke retaliatory actions by local residents (CAVALCANTI ET AL., 2010). The influx of tourists, if not properly managed, can lead to environmental degradation, impacting the fragile wetland ecosystem and the species it supports. Sustainable practices and guidelines need to be established to ensure that jaguar viewing remains a source of wonder without becoming a problem for the very creatures it purports to celebrate.

PUMA TOURISM IN PATAGONIA: A LOOK AT THE CONSERVATION OF A LARGE PREDATOR

Cougar tourism in Patagonia has emerged as an important strategy for conservation and economic development in the region. This phenomenon not only assists in the protection of a vital subspecies, the Puma concolor puma, but also brings economic benefits to local communities. This case study explores the impact of puma tourism in Patagonia, focusing on ecological, social, and economic aspects, and analyzing how this practice can be an effective tool for sustainable conservation.

The Puma concolor puma, also known as the southern puma or mountain lion, is the subspecies of cougar that inhabits the southernmost regions of South America, including the Andes Mountains and the Chilean Pacific coast (LEICHTLE ET AL., 2016). This subspecies adapts to a wide range of habitats, from deserts to dense forests, but prefers areas with dense vegetation, mountain ranges, and rocky ravines. With a weight that can reach 120 kg and a total length of 2.7 meters, it is the largest subspecies of puma in South America. The puma plays a crucial role in the Patagonian ecosystem, regulating populations of herbivores such as guanacos and hares, and providing carrion for other carnivores and birds of prey (EXPLORA, 2024). The ecological role of the cougar is of utmost importance. As a top predator, it helps maintain the balance of its prey populations, preventing overpopulation and subsequent habitat degradation. In addition, cougars are suppliers of carcasses that benefit a wide range of scavengers, such as Andean condors and foxes (REWILDING CHILE, 2024). The conservation of the puma, therefore, has positive effects on the entire food chain and contributes to the overall health of the Patagonian ecosystem.

Cougar tourism in Patagonia has begun to develop significantly over the past decade, with a special focus on the Torres del Paine National Park and surrounding areas. The creation of the Cerro Guido Conservation Foundation, with a focus on farms around the park, is an example of how local

initiatives can promote conservation through sustainable tourism (LAGOS ET AL., 2023). This project aims not only to protect the pumas, but also to include local communities, such as gauchos and rural workers, in the conservation effort. This holistic approach is key to ensuring long-term sustainability. In Torres del Paine National Park, the presence of cougars has been valued as a tourist resource, attracting thousands of visitors annually (OHRENS ET AL., 2021). This increase in visitation has brought significant economic benefits to the region, but it also raises questions about the proper management of tourism's impacts on wildlife and local communities.

Wildlife tourism, including cougar tourism, generates significant economic incentives for conservation. This type of tourism can financially support local communities by providing jobs that depend on the preservation of local fauna, rather than their extraction (CIFUENTES-IBARRA ET AL., 2023). In places such as Torres del Paine National Park, increased cougar tourism has improved farmers' attitudes towards cougars, encouraging conservation practices and reducing poaching (BILLER, 2022). In addition to the economic benefits, cougar tourism has a positive impact on environmental education and awareness. Wildlife viewing experiences increase people's appreciation of nature and awareness of the importance of conservation (MEGHJI, 2023). The presence of tourists interested in seeing live cougars in their natural habitat creates economic and social pressure for the protection of these animals, which come to be seen as a valuable resource rather than a threat.

Despite the benefits, cougar tourism is not without its challenges. Increased human presence and intense observation can lead to behavioral changes in cougars, such as greater shyness or aggressiveness, as well as increased stress in the animals (CIFUENTES-IBARRA ET AL., 2023). Additionally, tourism can exacerbate conflicts between cattle ranchers and cougars, especially when cougars attack domestic herds, resulting in significant financial losses for farmers (CATCHPOLE, 2022). Sustainable coexistence requires the implementation of management practices that minimize negative impacts on both fauna and human communities. The conflict between cougars and cattle ranchers is a historical problem in the region. For decades, cougars have been hunted for threatening livestock, especially sheep (OHRENS ET AL., 2021). This conflict is exacerbated by the perception that cougars represent a direct economic loss. However, initiatives such as that of the Cerro Guido Conservation Foundation have shown that it is possible to develop management strategies that reduce these conflicts, such as the use of guard dogs to protect the herd, among other measures (CATCHPOLE, 2022).

To mitigate the negative impacts and maximize the benefits of cougar tourism, several strategies have been implemented. The installation of GPS collars to monitor cougars and the use of camera traps help to better understand the movement patterns and behavior of the animals, allowing the creation of tourist itineraries that minimize stress for cougars (EXPLORA, 2024). In addition, initiatives such as hiring local guides and forming communities to act as wildlife protectors are

essential to promote harmonious coexistence (MCPHERSON, 2022). The Cerro Guido Conservation Foundation, for example, has been working to educate cattle ranchers about the importance of coexistence with cougars and implement practices that reduce cattle predation. One of these practices includes the installation of LED lights around grazing areas to deter cougars (DURÁN, 2023). In addition, the diversification of economic activities, such as the introduction of ecotourism, has been shown to be effective in reducing poaching and increasing tolerance to cougars.

The expansion of puma tourism in Patagonia requires a balanced approach that considers both biodiversity conservation and the sustainable development of local communities. Education and awareness programs are crucial to increasing the acceptance of cougars among cattle ranchers and other local residents. Diversifying economic activities, such as developing ecotourism units in areas unsuitable for cattle ranching, can help create a sustainable development model that benefits everyone (BERG, 2023). In the long term, it is essential that cougar tourism is managed sustainably to ensure that ecological, economic, and social benefits are maintained. This includes implementing stricter regulations for tour guides in order to ensure that sighting practices do not harm cougars (CATCHPOLE, 2022). Additionally, it is important to continue investing in research to monitor the effects of tourism on the cougar population and adjust management strategies as needed.

In short, puma tourism in Patagonia represents a unique opportunity to promote the conservation of a crucial species while boosting local economic development. The key to the success of this model lies in the careful management and implementation of sustainable practices that balance ecological needs with human interests. By continuing to invest in research, monitoring, and education, Patagonia can serve as a global model for how predator tourism can be an effective tool for conservation and sustainability. The harmonious coexistence between cougars and humans in Patagonia depends on an ongoing and collaborative effort between conservationists, local communities, and governments. Through innovative management practices and the economic valorization of the puma as a tourist resource, it is possible to create a future in which biodiversity conservation and sustainable development go hand in hand.

COMPARATIVE ANALYSIS

The comparative analysis between jaguar observation tourism in the Brazilian Pantanal and pumas in Chilean Patagonia reveals both similarities and significant differences in economic, ecological and social impacts. Both regions offer unique opportunities for big cat watching, attracting tourists from all over the world and contributing to the local economy. However, management strategies, challenges faced, and environmental impacts differ between the two locations.

In both the Pantanal and Patagonia, large feline tourism has proven to be an important source of income for local communities. In the Pantanal, jaguar watching attracts thousands of tourists

annually, generating significant revenues through lodging, food, and tourist activities (TORTATO & IZZO, 2017). Similarly, in Chilean Patagonia, the growing popularity of cougar watching, especially in Torres del Paine National Park, has boosted the local economy, benefiting tour guides, hotels, and restaurants (FRANKLIN ET AL., 2021). In both regions, wildlife tourism contributes to the conservation of natural habitats. The presence of tourists can act as a deterrent to poaching and other harmful activities (CAVALCANTI ET AL., 2012). In addition, the income generated by tourism can be reinvested in conservation programs, species monitoring, and environmental education (Karanth & Defries, 2011).

The challenges faced by large feline tourism are similar in both regions. Tourist pressure can cause behavioral disturbances in animals and habitat degradation, requiring careful management to ensure sustainability (GEORGE & CROOKS, 2006). The need to balance tourism development with environmental conservation is a constant challenge in both the Pantanal and Patagonia. The ecological and biogeographic differences between the Pantanal and Patagonia influence the way tourism is managed and the resulting impacts. The Pantanal, one of the largest wetlands in the world, offers a dense and biodiverse habitat, where the jaguar plays a crucial role as a top predator (MORATO ET AL., 2018). Chilean Patagonia, with its vast open landscapes and cooler climate, provides a distinct environment for the puma, which adapts to a wide range of altitudes and climatic conditions (FRANKLIN ET AL., 2021).

Management strategies differ significantly between the two regions. In the Pantanal, conservation efforts often involve collaborating with private landowners and implementing measures to reduce conflicts between jaguars and cattle ranchers (ZIMMERMANN, WALPOLE, & LEADER-WILLIAMS, 2005). In Patagonia, cougar tourism management is often centered in national parks and protected reserves, where regulations are stricter and monitoring is more intense (ELBROCH ET AL., 2016). The level of community involvement also varies between regions. In the Pantanal, ecotourism initiatives often directly involve local communities, providing them with alternative sources of income and encouraging active participation in conservation. These initiatives have been shown to be effective in reducing human-jaguar conflicts, as well as improving communities' attitudes towards conservation (TORTATO & IZZO, 2017). In Patagonia, while there is a growing recognition of the importance of community involvement, the structure of tourism is often more centered around tour operators and national parks. However, efforts have been made to increase the participation of local communities, as seen in conservation programs that promote coexistence between cougars and ranchers through economic incentives and education (Walker & Novaro 2010).

The effectiveness of conservation strategies can be assessed based on indicators such as the stability of cat populations, habitat quality, and levels of human-wildlife conflict. In the Pantanal, conservation programs that combine jaguar watching tourism with environmental education and

financial compensation for cattle ranchers have shown promising results in reducing conflicts and preserving the jaguar (CAVALCANTI ET AL., 2012). In Patagonia, the implementation of protected zones and the continuous monitoring of pumas have contributed to the maintenance of stable populations, although challenges persist due to increasing tourism and environmental pressures (WALKER & NOVARO, 2010).

To maximize the benefits of large feline tourism and mitigate its negative impacts, it is recommended to adopt sustainable tourism practices. This includes implementing environmental education programs that inform tourists and local communities about the importance of conserving felines and their habitats. Additionally, it is crucial to develop sustainable infrastructure by investing in tourism facilities that minimize environmental impact. Community engagement is equally important, encouraging the participation of local communities in tourism management and conservation. Finally, ongoing monitoring and research are essential to assess the impacts of tourism and adjust management practices as needed.

In summary, although jaguar observation tourism in the Pantanal and pumas in Chilean Patagonia share several similarities in terms of economic benefits and conservation challenges, the ecological differences and management strategies between regions offer valuable lessons for the development of sustainable tourism practices. A balanced approach that considers local specificities and promotes community engagement is essential to ensure the long-term conservation of these majestic cats and their habitats.

DISCUSSION

Watching big cats, as a form of nature tourism, generates income in a variety of ways, including entrance fees, payment to guides, and lodging expenses. In addition, it stimulates other local economic sectors, attracting tourists to different activities in the country, such as cultural visits, which prolongs their stay and increases their spending. Tourism is vital for many developing countries, and in 2000 it was one of the top three export sectors for most of these nations. The gains, coming especially from protected areas rich in wildlife, directly benefit local economies, tourism companies and governments. To sustain this ecosystem, it is critical to adequately fund wildlife conservation and tourism. In this way, local communities are benefited, finding job opportunities in the sector. Ensuring a steady flow of resources for conservation and community development is essential to the continued success of this industry, promoting a virtuous cycle of economic and ecological benefits (TAPPER, 2006).

While the economic benefits of predator tourism are evident, they raise significant ethical questions. Is it justifiable to explore the allure of these majestic creatures, especially when their habitats are dwindling and their behaviors may be altered by human presence? Studies with African

lions, for example, show that excessive vehicle traffic can hinder hunting success and disrupt nocturnal behaviors. This presents us with an ethical dilemma: where do we draw the line between nonintrusive observation and harmful interference? Ethical issues also involve the potential 'zooification' of wild habitats, where animals are conditioned or baited to enhance tourist experiences, compromising the authenticity of wild encounters (MOORHOUSE ET AL., 2015). To address this dilemma, it is crucial that economic aspirations are aligned with ethical obligations, ensuring that the pursuit of monetary benefits does not compromise the well-being of these magnificent creatures and their habitats.

Considering that each top predator offers unique tourism opportunities and challenges, patterns emerge in human-animal relationships, safety considerations, and conservation outcomes. Acknowledging these shared narratives can help formulate universally applicable best practices, while respecting regional particularities. While each area presents its unique wildlife tourism narrative, there are underlying patterns of economic growth, conservation challenges, cultural interactions, regulatory needs, and conflict management strategies. It is essential to learn from the successes and challenges of each region to create a holistic and sustainable global model of wildlife tourism (DIAS, 2023).

The intersection of big cat tourism with its economic, ethical, and ecological implications is a multifaceted area, fraught with challenges and opportunities. Protecting species such as the jaguar in the Pantanal and the puma in Chilean Patagonia goes beyond the preservation of individuals; It involves the sustainability of entire ecosystems. As these top predators regulate prey populations and maintain the health of their habitats, their protection transforms into broader ecological stability (RIPPLE ET AL., 2014). However, tourism presents both threats and supports to this balance. On the one hand, well-managed tourism can fund conservation initiatives, raise awareness, and foster global partnerships. On the other hand, poorly regulated tourism can exacerbate habitat disturbances, increase human-wildlife conflicts, and facilitate the spread of disease (PLOWRIGHT ET AL., 2011).

Ensuring sustainable and ethical feline tourism requires a comprehensive approach. Stricter regulations on the number of tourists, schedules and activities allowed in sensitive habitats are essential, as seen in some tiger reserves in India. Combining this with community-based conservation initiatives, such as in African lion habitats, ensures that local communities are stakeholders in conservation, aligning their interests with those of top predators (WESTERN ET AL., 2009). Regularly updating guidelines, fostering research collaborations, and promoting ecotourism rather than mere wildlife tourism can further align economic motivations with ecological and ethical imperatives.

The proliferation of cat-watching tourism in protected areas presents unique challenges and unparalleled opportunities for conservationists, local communities, and policymakers. Considering

the case studies examined, specific themes and considerations emerge such as economic viability versus environmental sustainability. In almost all the regions studied, there is a clear nexus between wildlife tourism and local economic upliftment. Whether in the Pantanal or Patagonia, local communities experience economic benefits from the influx of tourists. However, the very appeal of these regions – pristine environments and the thrill of watching wildlife in their natural habitats – may be at risk if tourism is not managed sustainably. The challenge is to strike a balance between short-term economic benefits and long-term ecological imperatives.

One of the significant benefits of wildlife tourism is the education and awareness it brings. Tourists, when exposed to the majesty of creatures such as jaguars and cougars and the fragility of their ecosystems, often become advocates for conservation. The creation of interpretive centers, the hiring of experienced guides, and the integration of indigenous wisdom can amplify this effect, serving both conservation and cultural preservation purposes (BALLANTYNE ET AL., 2011).

The integration of local communities into wildlife tourism strategies is crucial. When villagers see tangible benefits from wildlife conservation, they are more likely to become its protectors. On the other hand, if they perceive wildlife as a threat to their livelihood or security, conflicts can arise, undermining conservation efforts. Incentive structures, employment opportunities, and community-based tourism models can fill this gap (RODGER ET AL., 2007).

The comparative analysis underscored the importance of robust regulatory mechanisms. Regions with established guidelines, such as certain U.S. parks, seem to do better at managing tourism pressures. There is an opportunity for newer or less regulated regions to learn from these models and adapt them to local contexts (NEWSOME ET AL., 2012).

Wildlife tourism cannot be approached in isolation – it intersects with domains such as anthropology, economics, ecology and even political science. Collaborative approaches, based on interdisciplinary culture, can achieve more holistic strategies, considering cultural nuances, economic models, and ecological imperatives together (George & Crooks, 2006). Future research could explore the effectiveness of community-based tourism models, the role of technology in improving wildlife viewing experiences without disturbing natural habitats, and the potential of global collaborative networks in sharing best practices and resources. The use of advanced technologies, such as drones and remote cameras, can improve the observation of large cats without causing stress or disturbance, increasing the quality of the tourist experience and the safety of the animals (KARANTH & DEFRIES, 2011).

Collaboration between conservation organizations, local communities, governments, and the private sector is key to developing and implementing sustainable tourism practices. Community conservation programs, such as those implemented in the Pantanal, have shown that it is possible to combine the preservation of biodiversity with local economic development (CAVALCANTI ET AL.,

2010). Such programs not only help in the conservation of jaguars, but also provide an alternative source of income for local communities, reducing human-wildlife conflicts.

In Chilean Patagonia, the creation of protection zones and the continuous monitoring of pumas have been essential for the conservation of the species. However, the growth of tourism requires an adaptive approach to management, where practices are continually adjusted based on stakeholder feedback and direct observation of impacts (FRANKLIN ET AL., 2009). Education and awareness are critical components of this strategy, as well-informed tourists are more likely to respect conservation guidelines and support protection initiatives.

In summary, jaguar observation tourism in the Pantanal and pumas in Chilean Patagonia presents a unique opportunity to promote biodiversity conservation and sustainable economic development. However, for these opportunities to be fully realized, an ongoing commitment to sustainable management, education, and the integration of local communities is needed. By approaching big cat tourism responsibly and innovatively, it is possible to ensure that these majestic predators continue to thrive in their natural habitats, benefiting both nature and local communities.

RECOMMENDATIONS

Taking advantage of the economic and social benefits of jaguar watching tourism in the Pantanal and pumas in Chilean Patagonia, while ensuring the safety and well-being of wildlife and tourists, requires careful strategies. Based on the results of the analysis, several recommendations are presented to develop and improve the tourism of large felines.

To minimize habitat disturbance, it is crucial to regulate the number of visitors and establish calm zones, especially during mating or birth seasons. Implementing capacity limits can reduce the negative impact of tourism on wildlife and their natural habitats (KRÜGER, 2005). Additionally, ensuring that all interactions with jaguars and cougars are supervised by experienced guides is essential to limit direct human-animal conflict and provide accurate information to tourists. Well-trained guides can help educate visitors about appropriate behaviors and the importance of conservation (NEWSOME ET AL., 2012).

Offering mandatory orientation sessions prior to any wildlife encounters ensures that tourists are aware of behavioral guidelines and the importance of those rules. Tourism education programs can raise awareness of conservation needs and promote more responsible tourism (BALLANTYNE ET AL., 2011). Additionally, collaborating with academic institutions to conduct ongoing research on the impact of tourism on jaguars and cougars and their habitats is essential. This monitoring allows the collection of essential data for informed decision-making and adjustments in management practices (HIGHAM & LUSSEAU, 2007).

Involving local communities in decision-making processes ensures that they directly benefit from tourism and become custodians of conservation. Community participation can strengthen local support for conservation efforts and create sustainable sources of income for residents (SPENCELEY & GOODWIN, 2007). Establishing clear protocols for unexpected encounters or dangerous situations is key to ensuring the safety of tourists and minimizing harm to animals. Well-defined emergency protocols can help to deal with critical situations effectively and safely (FENNELL & DOWLING, 2003). Dedicating a fraction of tourism revenue to habitat restoration projects and anti-poaching units is crucial to ensuring long-term sustainability. Investing in habitat improvement can promote ecological recovery and reduce threats to wildlife (BOLEY & GREEN, 2016). Introducing feedback systems for tourists to share their experiences and suggestions can be extremely valuable. Listening to what tourists say allows managers to continuously improve visitor experiences and the management of protected areas.

To increase economic sustainability, it is recommended to diversify the tourist activities offered. In addition to feline watching, tour operators may include cultural visits, nature trails, and other activities that promote conservation and environmental education. This not only prolongs the stay of tourists, but also distributes the pressure on wildlife habitats (BUCKLEY, 2010). Partnering with conservation NGOs and the private sector can help secure additional resources for conservation and community development projects. These partnerships can bring expertise, funding, and innovation, strengthening conservation efforts (RODGER ET AL., 2007).

Encouraging public policies that support sustainable tourism and wildlife conservation is essential. Governments can provide tax incentives for companies that adopt sustainable practices, as well as invest in infrastructure that supports eco-tourism (NEWSOME ET AL., 2012). Developing tourism infrastructure that minimizes environmental impact, such as nature trails and sustainable lodges, can help preserve natural habitats. Low-impact infrastructure must be designed to integrate harmoniously with the environment, reducing the ecological footprint (KRÜGER, 2005).

Promoting the use of sustainable transportation, such as electric or solar-powered vehicles, for wildlife-watching excursions can reduce carbon emissions and environmental impact. Encouraging the use of bicycles and walking can also be a viable and ecological alternative (BOLEY & GREEN, 2016). Implementing awareness-raising programs in local schools can create a future generation that is more aware of the importance of conservation. School visits to protected areas, lectures, and hands-on activities can engage young people in wildlife protection (BALLANTYNE ET AL., 2011). Utilizing media campaigns to raise awareness of the importance of jaguar and cougar conservation can mobilize public support. Documentaries, social networks and community events are effective tools to educate and engage the general population (BUCKLEY, 2010).

By carefully implementing these recommendations, regions can achieve a harmonious balance between tourism aspirations and conservation objectives, ensuring that jaguar watching in the Pantanal and cougars in Chilean Patagonia continues to thrive in a sustainable and beneficial way for all involved.

CONCLUSION

Big-cat sighting tourism, specifically the jaguar in the Brazilian Pantanal and the puma in Chilean Patagonia, has emerged as a powerful tool for conservationists, local communities, and policymakers. Its impact extends beyond the boundaries of tourism and economics, extending into the realms of conservation, cultural preservation, education, and global collaboration.

The economic ramifications of wildlife tourism are evident and significant. Regions that adopt this form of tourism have witnessed a local economic revitalization, creating livelihoods and raising living standards. However, maintaining the balance between economic benefits and ecological sustainability remains a delicate task. Excessive commercialization or inadequate regulations can threaten the ecosystems that these developments aim to preserve.

The power of wildlife tourism to turn visitors into nature advocates cannot be underestimated. Tourists, touched by the beauty of the natural landscape, often become defenders of these regions and their inhabitants. This potential is twofold: a call for regions to invest in visitor education and an invitation for visitors to take the lessons learned into their everyday lives.

Local communities are the core of this discourse. Their involvement, empowerment, and education are essential. As immediate guardians of these ecosystems, their perceptions, conflicts, and collaborations with wildlife have direct consequences for conservation outcomes. Big cat tourism can be a sustainable source of income that strengthens local support for conservation efforts.

From a regulatory perspective, the need for robust, adaptive, and context-specific frameworks is clear. Systems that have evolved over decades in places such as the North American, African and Indian parks can offer valuable insights for emerging areas. The confluence of traditions, regulations, and modern best practices can forge a path forward that is beneficial for both conservation and tourism.

As you reflect on the vast array of wildlife-viewing experiences around the world, a singular truth emerges: the interconnectedness of all life. The jaguar in the wetlands of Brazil and the puma in the plains of Patagonia are essential for the maintenance of the ecosystems in which they live, regulating prey populations and maintaining ecological balance.

The way forward is clear: collaboration, education, sustainable practices, and an unwavering commitment to conservation. There is a global trend to follow this path; The direction to be taken is a collective decision. The contributions of this article aim to catalyze conversations, inspire action, and

above all, promote a deep respect for wilderness and its enormous significance for the continuity of life on the planet.

In essence, the history of big cat watching tourism is not just about observing animals; It's about introspection, understanding the place of humans in nature, and making choices that contribute to biodiversity conservation. The path is challenging, but the rewards, seen and unforeseen, promise a world where humans and nature coexist in harmony.

By carefully implementing the recommendations outlined, regions can achieve a harmonious balance between tourism aspirations and conservation objectives. Spotting jaguars in the Pantanal and cougars in Chilean Patagonia can continue to thrive in a sustainable way, benefiting wildlife and local communities. The journey is complex, but with collaboration and commitment, it is possible to ensure that these majestic predators and their habitats are preserved for future generations, promoting a lasting legacy of conservation and respect for nature.

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