

# SERRA DA CAPIVARA/PI NATIONAL PARK AND THE PRACTICE OF ECOTOURIST ACTIVITY

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## Abstract

Ecotourism faces the challenge of balancing environmental and cultural preservation with sustainable development and local income generation. Since the Stockholm Conference in 1972, environmental conservation has gained relevance on government schedule. The establishment of Conservation Units (CUs) has led to the implementation of administrative and political mechanisms to safeguard specific ecosystems. These spaces not only protect the environment but also enable indirect use through tourism, with an emphasis on ecotourism. This study aims to evaluate whether the ecotourism practices adopted in the Serra da Capivara National Park (PNSC), located in Piauí, align with the theoretical framework that underpins this tourism segment. Using a Case Study methodology, which includes visits to PNSC, literature review, and photographic documentation, it was found that this Integral Conservation Unit is in line with the guidelines advocated by ecotourism.

**Keywords:** Conservation Unit; Serra da Capivara National Park; Ecotourism.

## Resumo / Resumen

### PARQUE NACIONAL DA SERRA DA CAPIVARA/PI E A PRÁXIS DA ATIVIDADE ECOTURÍSTICA

O Ecoturismo enfrenta o desafio de equilibrar a preservação ambiental e cultural com o desenvolvimento sustentável e a geração de renda local. Desde a Conferência de Estocolmo em 1972, a conservação ambiental tem ganhado relevância nas agendas governamentais. A criação de Unidades de Conservação (UCs) levou à implementação de mecanismos administrativos e políticos para resguardar ecossistemas específicos. Esses espaços não apenas protegem o ambiente, mas também viabilizam um uso indireto por meio do turismo, com ênfase no ecoturismo. Este estudo busca avaliar se as práticas ecoturísticas adotadas no Parque Nacional da Serra da Capivara (PNSC), localizado no Piauí, estão em consonância com o arcabouço teórico que fundamenta esse segmento turístico. Utilizando a metodologia de Estudo de Caso, combinando visitas ao PNSC, levantamento bibliográfico e registro fotográfico, verificou-se que essa Unidade de Conservação Integral está alinhada com as diretrizes preconizadas pelo ecoturismo.

**Palavras-chave:** Unidade de Conservação; Parque Nacional da Serra da Capivara; Ecoturismo.

### PARQUE NACIONAL SERRA DA CAPIVARA/PI Y LA PRÁCTICA DE LA ACTIVIDAD ECOTURÍSTICA

El ecoturismo enfrenta el desafío de equilibrar la preservación ambiental y cultural con el desarrollo sostenible y la generación de ingresos locales. Desde la Conferencia de Estocolmo en 1972, la conservación del medio ambiente ha ganado relevancia en las agendas gubernamentales. La creación de Unidades de Conservación (UC) llevó a la implementación de mecanismos administrativos y políticos para proteger ecosistemas específicos. Estos espacios no solo protegen el medio ambiente, sino que también permiten el uso indirecto a través del turismo, con énfasis en el ecoturismo. Este estudio busca evaluar si las prácticas de ecoturismo adoptadas en el Parque Nacional Serra da Capivara (PNSC), ubicado en Piauí, están en línea con el marco teórico que subyace a este segmento turístico. Utilizando la metodología de Estudio de Caso, combinando visitas al PNSC, levantamiento bibliográfico y registro fotográfico, se encontró que esta Unidad de Conservación Integral se encuentra en línea con los lineamientos recomendados por el ecoturismo.

**Palabras-clave:** Palabras clave: Unidad de Conservación; Parque Nacional Serra da Capivara; Ecoturismo



## INTRODUCTION

Tourism, as we know it today, had its origins in the Industrial Revolution, although it had been practiced before that. It was from industrialization that technological advances allowed the development of mass tourism, in addition to the creation of a middle class, as pointed out by Barretto (2003) and Santos (2014), and the concept of leisure as we know it (DUMAZEDIER, 2008). Spatial transformations are also the result of political-economic ones, which directly impact on tourism activity. Tourism, following a market logic, is segmented to serve different niches, such as cultural, hedonistic, rural, nature, mass, ecotourism, among others.

In Brazil, sun and beach tourism developed the most, due to the country's extensive coastline, featuring beaches of incomparable scenic beauty. However, the inadequate exploitation of this segment resulted in issues like sexual exploitation, as discussed by Kajihara (2010), who points out the way in which postcards, especially from the 1990s, objectified the body of Brazilian women.

Despite this, Brazil, as a continental country with several distinct landscapes, is able to diversify the touristic product, meeting needs beyond mass tourism, in which sun and beach tourism fits. In this sense, and in response to a growing demand for a more diversified exploitation of Brazilian tourism, as well as to disassociate the country's image from sexual tourism, nature tourism, especially ecotourism, is beginning to acquire relevance.

Ecotourism is based on environmental and cultural conservation, income generation and environmental education, as pointed out by Neil and Wearing (2001), Rodrigues (2003) and Furlan (2003). Beni (2001) makes a distinction between nature tourism and ecotourism, with the first focusing on observation and interaction with nature, while the second has a proposition that goes beyond observation, with rules to be followed and distinct infrastructure, in addition to opportunities for environmental education. In this context, Conservation Units (CUs) gain even more relevance, as they offer environmental protection and income generation for local populations through the use of ecotourism.

A case study methodology has been adopted for this work, in order to analyze the complexity of the phenomenon in question, which is the ecotourism activity in the full protection Conservation Unit Serra da Capivara National Park, located in the state of Piauí, Brazil. Furthermore, a bibliographic and statistical survey has been carried out to describe and assess the ecotourism activity in the region, with primary data being collected through field research and photographic records, in addition to data collection on official websites. The goal of the study was to evaluate whether the Serra da Capivara National Park offers favorable conditions for the development of ecotourism activities, as the literature points out, and whether it can induce economic growth in nearby municipalities.

## ECOTOURISM: A PATHWAY TOWARDS THE SUSTAINABLE USE OF NATURAL ELEMENTS

Ecotourism is a segment of tourism with low environmental impact, which “is oriented towards areas of significant natural and cultural value, which through recreational and educational activities contributes to the conservation of biodiversity” (RODRIGUES, 2003, p. 29). In addition to contributions to safeguarding natural and cultural elements, this segment also contributes economically to the livelihood of the local population, through their engagement. Wearing and Neil (2001) establish fundamental elements so that tourism activity can have an eco-label: firstly, the trip activities are to be done in relatively protected natural areas, according to context of the visited area's natural environment of the area to be visited; secondly, the activity needs to promote environmental protection; and, finally, it needs to feature an educational role.

In the book *Ecotourism: basic guidelines*, ecotourism is conceptualized as

[...] a segment of touristic activity that uses, in a sustainable way, natural and cultural heritage, encourages its conservation and seeks to form an environmental awareness through the interpretation of the environment, promoting the well-being of populations. (BRASIL, 2010, p. 17).

As complex as the definition of ecotourism is, as it adopts the ideas of environmental ethics, behavior analysis, environmental education and income generation, there is a convergence of elements between authors such as Furlan (2000), Rodrigues (2003), Rodrigues (2003), Wearing and Neil (2001), Aranha and Guerra (2014), among others, which are environmental and cultural protection, environmental education, and income generation for the local population.

It is worth highlighting that the interest in developing ecotourism activity arises from a global narrative of environmental conservation, which has been consolidating since the United Nations Conference on Human Development and Environment, held in Stockholm, Sweden, in the year 1972. From this movement, many others took place with the aim of drawing attention to anthropic actions on natural elements, as was the case of the United Nations Conference on Environment and Development, held in 1992, in Rio de Janeiro, known as such as Eco-92 or Rio-92, and several others that followed.

In the growing demand for natural protection, tourism used this resource to diversify its segments, creating some of those segments linked to nature, among them: Nature Tourism, Rural Tourism and Ecotourism, the latter being more complex, as stated by Martins and Silva (2018). Beni (2001) points out that ecotourism has a greater scope than other tourism forms linked to the nature segment.

Ecotourism is seen and linked to Low Impact tourism, promoting minor damage to nature and local culture, in addition to being seen as a vehicle that can increase perception and understanding in relation to environmental values (WEARING; NEIL, 2001). Ecotourism activity, of Low Impact, is a segment that goes in the opposite direction of mass tourism, this latter pointed out by Barretto (2003) as one in which the tourist does not want to experience local experiences and also wants the elements of the place visited to be similar to the elements in their place of origin. Krippendorf (2001, p. 50) also outlines some characteristics about this tourism, which are in line with those presented by other authors: “the trip is motivated much more by the desire to leave something than by the desire to go somewhere; the fact of escaping from the ordinary daily life plays a more important role than the genuine interest on the regions and populations visited”. The mass tourist is often seen as someone who wants to

[...] abandon themselves, have fun, be spoiled and, perhaps, even take on the role of a character that they cannot play on a day-to-day basis, behaving like a “king guest” during a short moment and be treated as such; in short, have the feeling of being someone important. (KRIPPENDORF, 2001, p. 51).

Therefore, in ecotourism, there is an attempt, often exaggerated, to promote a change in the perception of the view in relation to the natural environment, trying to attribute to this point of view a criticality that, for Debord (1997), becomes difficult, given that we increasingly live in what we can call a society of the spectacle, where there is no longer room for 'being', nor for 'having', but rather for 'appearing to be'. It is a society anchored in the fluidity of experimentation, where the notion of leisure differs from that of Dumazedier (2008 p. 95), according to which

[...] it is not fundamentally subject to any profitable purpose, such as professional work, to any utilitarian purpose, such as household obligations, to any ideological or proselytizing purpose, such as political or spiritual duties. In leisure, enjoying, physical, artistic, intellectual or social activities are not in the service of a material or social purpose.

Both Debord (1997) and Dumazedier (2008), when problematizing elements that permeate ecotourism activity, make it more difficult to materialize what is expected from ecotourism in relation to ecotourism, even more so as tourism and its segments are experienced differently by part of individuals (PANOSSO NETTO, 2005). Therefore, an analysis of ecotourism from the (eco) tourist's point of view becomes difficult and, therefore, the basis for observing the practice of ecotourism must be the space where it develops, and not the subject who experiences this space.

## CONSERVATION UNIT AND THE PRAXIS OF ECOTOURISM

With the growing increase in awareness regarding environmental issues, mainly from the 1970s onwards (CASTRO JÚNIOR; COUTINHO; FREITAS, 2012; PUREZA; PELLIN; PADUA, 2015), driven by international conferences – such as Eco-92 and Rio+10 –, ideas and measures for environmental conservation gained more relevance. In this context, demarcated areas with the aim of preserving natural elements began to receive more prominence and more robust legal-administrative support.

It is in this context in which a fundamental legal instrument emerges, that is complementary to other existing ones, for the conservation efforts of certain areas: the National System of Conservation Units (Snuc), regulated by Law No. 9.985/2000, which establishes criteria and guidelines for the creation, implementation and management of conservation units nationwide.

The conception of the first National Parks in the United States, with Yellowstone National Park being the first to be created in 1872, influenced the creation of protected areas in Brazil. From the preservationist and conservationist movement towards the creation of areas to protect the natural environment, different positions later emerged in terms of thinking about environmental protection areas.<sup>i</sup>

The process of creating Snuc, as pointed out by Castro Júnior, Coutinho and Freitas (2012, p. 45), was “marked by eight years of clashes between landowners, productive sectors and environmentalists, in addition to intense debates between preservationists and conservationists”. These divergences arose mainly in relation to the demarcation and use of protected areas. One of the central points of these clashes concerns the difference between the approaches known as “deep ecology” and “shallow ecology”.

As observed by Lourenço (2019), the disagreements between both standpoints are anchored in the view that a shallow ecology group would be mainly concerned with a specific aspect of environmental problems, while deep ecology argued that there were more complex and profound issues to be debated.

The shallow ecology group tends to emphasize specific solutions, often related to immediate and short-term problems, without addressing the deeper roots of environmental challenges. On the other hand, the deep ecology group seeks a more comprehensive and integrated understanding of environmental problems, considering the interconnections between natural systems and related social and economic issues.

It is important to highlight that both perspectives contribute significantly to environmental conservation. While shallow ecology can offer practical and quickly implemented solutions, deep ecology draws attention to the need to address the underlying causes of environmental problems, taking into account issues such as social justice, sustainability and respect for ecological limits. However, conceptual divergences end up slowing the pace of changes in relation to environmental protection.

In addition to conceptual issues, in the economic field there was a partnership between the “Brazilian government and the Inter-American Development Bank (IDB)” (PUREZA; PELLIN; PADUA, 2015, p. 50), through which protected areas began to receive more highlight, with the main objective being to strengthen public institutions and environmental bodies that aimed to implement and manage environmental protection areas. It is important to point out that environmental issues, especially regarding the formation of territory, become a political issue. In this sense, Castro Júnior, Coutinho and Freitas (2012, p. 47-48) state that

[a] discussion about nature protection is eminently political and, as such, involves disputes between specific and often conflicting interests, especially with regard to land use. In the Brazilian case, this political aspect becomes strongly present.

Souza (2019, p. 198) also point to political aspects when referring to environmental issues, including explaining that

[...] an additional aspect to be taken into account when analyzing conflicts and environmental impacts are the spatial practices of the agents involved. A spatial practice is a social practice whose spatiality is strong and direct; a “politics of scales” is an example of spatial practice.

Considering the political-economic interferences, it is necessary to create legal-administrative mechanisms to keep them under control. Some of those interferences deem environmental conservation as an antagonistic thought to economic growth. These control mechanisms help and expand Snuc's capacity to "enhance the role of UCs, so that they are planned and managed in an integrated manner, in a way through which significant and ecologically viable samples of different populations of species, habitats and ecosystems are adequately represented in the national territory and in jurisdictional waters" (BRASIL, 2022). Among the mechanisms we can mention Decree No. 5.758/2006 (establishes the National Strategic Plan for Protected Areas – Pnap), Decree No. 9.334/2018 (establishes the National Plan for Strengthening Extractive and Riverine Communities – Planafe) and Decree No. 6.040/2007 (establishes the National Policy for the Sustainable Development of Traditional Peoples and Communities).

The entire legal-administrative apparatus created to reinforce the SNUC means that the Conservation Units, if well managed, can be essential for the development of ecotourism, with the UCs being divided as shown in Table 1:

Table 1 – Group and categories of Conservation Units

Full protection	Sustainable use
<p>These are Conservation Units whose basic objective is to preserve nature, freeing it, as much as possible, from human interference; with them, as a rule, only the indirect use of natural resources is allowed, i.e., the one which does not involve consumption, collection, damage or destruction, excepting the cases provided for in the Law of the National System of Conservation Units (Snuc).</p> <p><b>Categories: Ecological Station (Esec), Biological Reserve (Rebio), National Park (Parna), Natural Monument (MN) and Wildlife Refuge (Revis).</b></p>	<p>These are Conservation Units whose basic goal is to make nature conservation compatible with the sustainable use of part of its natural resources. They aim to reconcile the exploitation of the environment with ensuring the perpetuity of renewable natural resources, considering ecological processes, in a socially fair and economically viable way.</p> <p><b>Categories: Environmental Protection Area (APA), Area of Relevant Ecological Interest (Arie), National Forest (Flona), Extractive Reserve (Resex), Fauna Reserve (Refau), Sustainable Development Reserve (RDS) and Private Heritage Natural Reserve (RPPN).</b></p>

Source: ICMBio (2020).

It can be seen that, in the Full Protection Conservation Unit (PI), even though there is a more restricted use, the use of natural resources is still allowed indirectly. It is at this point that ecotourism adds value to the UC, as it can, at the same time, generate income for the local population and provide environmental and cultural conservation (AGUIAR JUNIOR; BARROS, 2023).

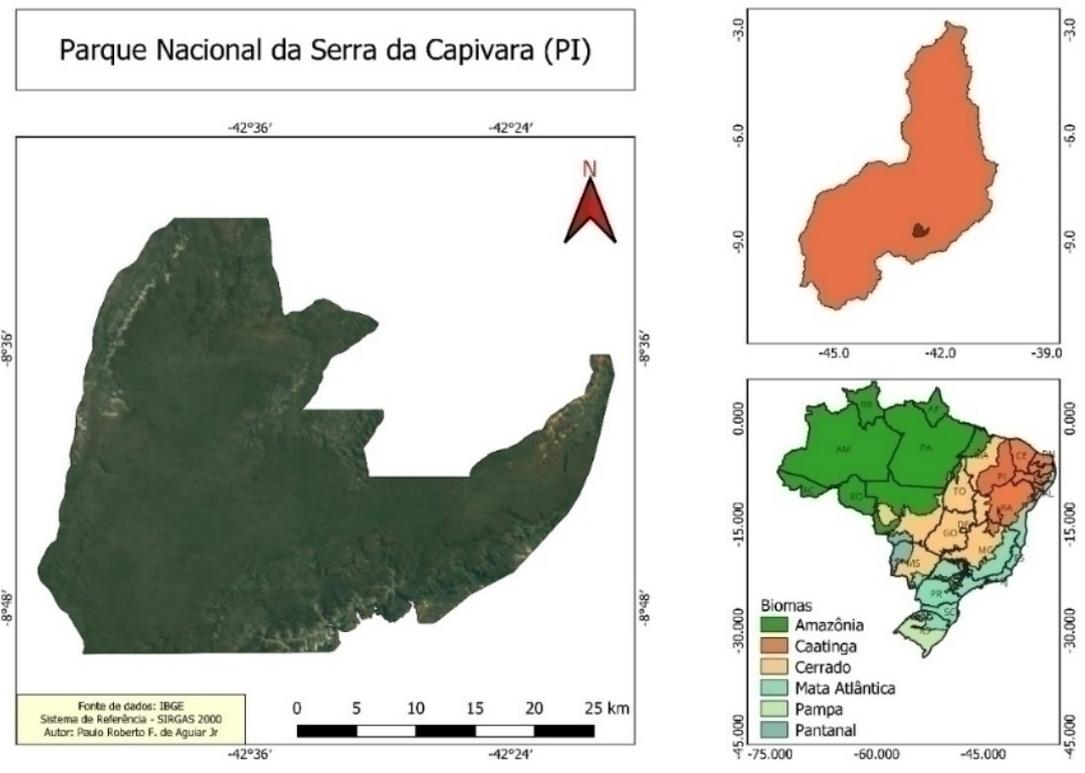
While the territorial management of Conservation Units equalizes tensions, especially land tensions, UCs are able to materialize the theoretical framework of ecotourism, even in the face of the existing paradoxes in this praxis. This, however, does not obscure the importance of this segment for sustainable development, which is what Sachs (2004) proclaimed, that is, an inclusive development that can provide decent work for everyone.

## FULL PROTECTION AREA: SERRA DA CAPIVARA NATIONAL PARK AND ECOTOURISM ACTIVITY

The Serra da Capivara National Park (PNSC) (Figure 1), created by Decree No. 8.548/1979, is located in the southeast of the state of Piauí, in the Caatinga biome, with the municipalities of João Costa, Coronel José Dias, São Raimundo Nonato and Brejo do Piauí. The surface area of the PNSC is 129,140 ha and its perimeter is 214 km (BUCO, 2013). The park is in the Full Protection group of

conservation units and has the largest concentration of cave paintings in the world (BUCO, 2013), which is why it was listed by the United Nations Educational, Scientific and Cultural Organization (Unesco) as a world heritage site in 1991, and also by the National Historical and Artistic Heritage Institute (Iphan), in 1993.

Figure 1 – Location of Serra da Capivara National Park



Preparation: authors (2023).

It is important to highlight that the PNSC is located in the caatinga biome, as this “is considered, among the main biomes in Brazil, the only exclusively Brazilian one, which means that a large part of the biological heritage of this region is not found elsewhere” (BUCO, 2013, p. 1). The biome is known for having a semi-arid climate, according to the Köppen classification,

[...] features many extreme characteristics, among which are: the highest solar radiation, low cloudiness, the highest average annual temperature, the lowest relative humidity rates, high rates of potential evapotranspiration and, above all, low levels rainfall and scarcity of water supply. (MOURA, 2021).

In general, little rainfall in the semi-arid region occurs from September to March, with totals that do not usually exceed 800 mm. Associated with this irregularity in the rainfall regime, the large amount of solar radiation results in increased evaporation rates, which, in turn, impact the development of local species (MOURA, 2021).

The climatic characteristics and attributes resulting from the climate make this region one of the most difficult places to live, as Ab'Saber (2003) points out, in addition to the fact that traditional indigenous practices, such as burning natural areas for agriculture, invasion of lands and illegal hunting are in use. Added to this is the historical neglect that the Northeast region has suffered from public authorities since the formation of the Brazilian territory.

The PNSC is located where the Maranhão-Piauí sedimentary basin meets the São Francisco River

depression, which “created the jagged plateau forming deep canyons, ruiniform patterns, clusters of pebbles and rocky outcrops that served as shelter for pre-historical men and for fauna” (ICMBio, 2019). The ruiniform patterns caught the attention of geographer Aziz Ab'Saber (2003), according to whom ruiniform landscape sites in the country have already been discovered by tourism, giving the example of the Sete Cidades National Park, also located in Piauí.

According to the complexity of environments, the PNSC protects a high biodiversity, made up of species threatened with extinction, such as the “gato-do-mato-pequeno” (*Leopardus tigrinus*), the giant anteater “tamandua-bandeira” (*Myrmecophaga trydactyla*), the armadillo “tatu-bola” (*Tolypeutes tricinctus*), the jaguar “onça-pintada” (*Panthera onca*)” (ICMBio, 2019, p. 15) among others. Therefore, the park has an essential function not only in relation to rupestrian records, but also in relation to fauna, fulfilling the UCs objective of protecting ecological and cultural heritage.

## DISCUSSIONS AND RESULTS

Conservation Units are under strong pressure, mainly due to the advancement of agricultural and mineral activities, which promotes deforestation even in legally protected areas, as pointed out in the Environmental Deforestation Report (RAD, 2021), stating that, “of the total of 2,181 Units Federal and state terrestrial Conservation Units (CUs) registered in the National Register of Conservation Units (CNUC), 252 UCs (11.6%) had at least one deforestation event” (RAD, 2021, p. 58). Such events are distributed as shown in Table 2:

Table 2 – Deforested Area by UC in Brazil

Deforested area (hectares) by type of Conservation Unit in Brazil in 2019, 2020 and 2021			
TYPE OF CONSERVATION UNIT (PI)	2019 (ha)	2020 (ha)	2021 (ha)
Ecological Station	3,472	1,516	5,115
Natural Monument	31		0
National Park	2011	2,510	2,491
State Park	1,205	1,293	4,182
Biological Reserve	1,649	2,720	921
Wildlife Refuge	7	8	252

Source: Adapted from RAD (2021).

The developments regarding the discussion on Conservation Units indicate that, despite having a robust legal-administrative framework, UCs suffer from environmental degradation. In addition to the problems coming from the developments in monoculture and mining, there is also the problem of funding to these parks. Abujamra (2023, p. 223) points out that the PNSC “had 28 guardhouses, with two women workers at each watch post. With the constant lack of funds, most of them have been deactivated.” The author also states that, “in 2017, hunters invaded one of the forbidden areas, closed to visitors, and shot three watch guards. One of them died” (ABUJAMRA, 2023, p. 223). The lack of funding from the federal and state governments makes many of the attractions, such as the one shown in Figure 02, to be at risk of being left without maintenance and monitoring, being vulnerable to deterioration.

Figure 2 - Toca do Boqueirão da Pedra Furada



Photo: Aguiar Junior, 2020.

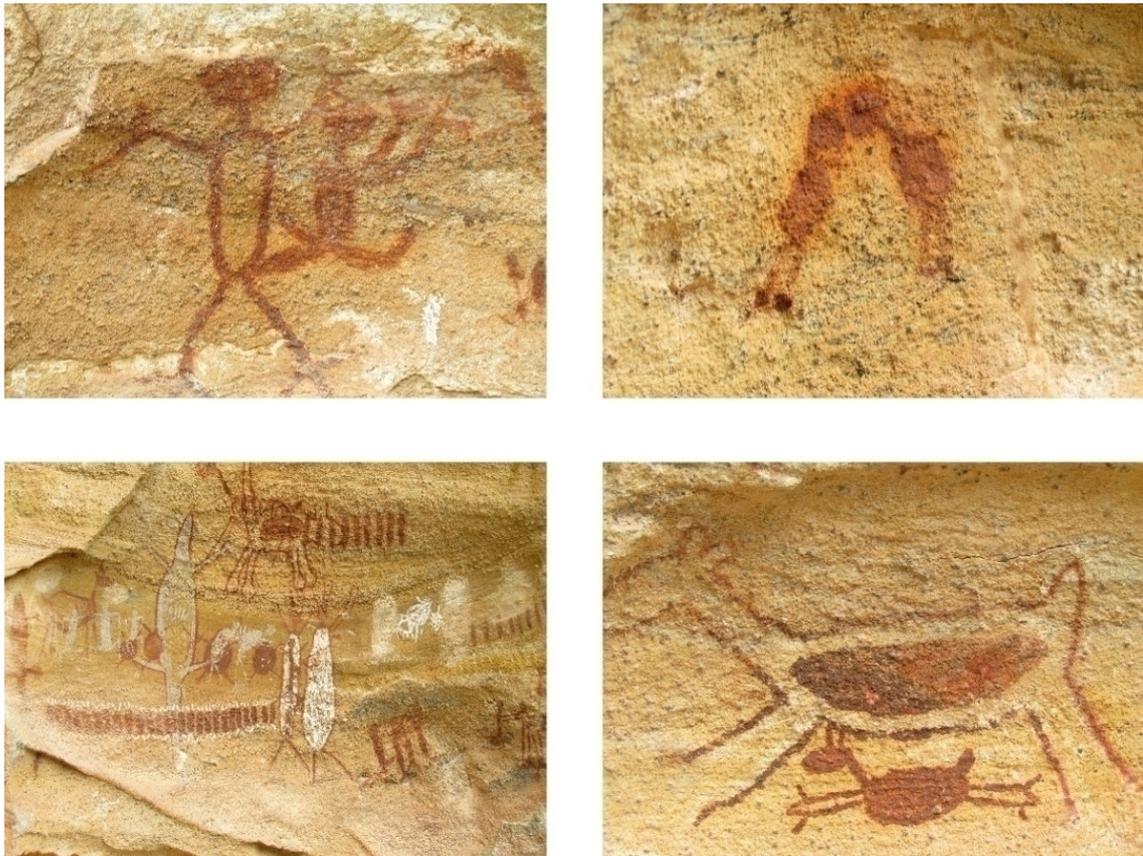
As Carvalho (2015) points out, the Brazilian state plays a fundamental role in encouraging tourism in the country. However, with regard to the creation of the Serra da Capivara National Park (PNSC), the credit can go to Niède Guidon, a leading figure in this field of work. As well as being the creator of the park, she is also the founder of the Museum of the American Man Foundation (FUMDHAM) and a renowned researcher who revolutionized the world of archaeology by questioning the "Clovis First" model of occupation, which until then had explained the occupation of the American continent.

Guidon's research and discoveries called this theory into question, leading to a new understanding of the age of human presence in the Americas. In 2008, Niède even stated that there was evidence of human occupation in Piauí 100,000 years ago, a significant milestone in the country's archaeological history (ABUJAMRA, 2023).

The development of tourism in the region received support from the Inter-American Development Bank (IDB), which, after carrying out various studies, recognized that investment in tourism would be the best option for growth and development in the area. In this context, the creation of the Serra da Capivara National Park (PNSC), even though it took place before the establishment of the Conservation Units (UC), is aligned with the objectives of ecotourism and environmental conservation.

The preservation of the PNSC is extremely important for the conservation of the region's fauna and flora, as well as for the preservation of the rupestrian records found there. The park is home to a wide range of archaeological records depicting activities such as hunting, celebrations, social life, dances and other cultural aspects, as illustrated in Figure 3:

Figure 3 - Rupestrian figures in the Toca do Boqueirão da Pedra Furada



Photos: Aguiar Junior, 2020.

In addition to the importance of safeguarding cultural and ecological heritage, there is also a structure in the park that caters for visitors and converges with another element of ecotourism, which "are the signs, the information panels of the sites", information that helps in the development of tourism in the PNSC (OLIVEIRA et al., 2022, p. 71). In this way, we can see that the Serra da Capivara National Park converges all the elements that are present in the understanding of what ecotourism is.

In the book Niède Guidon, an archaeologist in the "sertão" (the semi-arid countryside), the researcher and creator of the Park expressed her concern about the insufficient number of visitors received by the Serra da Capivara National Park (PNSC) each year, when compared to other parks in Brazil and around the world. Determined to solve this challenge, Guidon proposed the construction of an airport, but the idea was initially met with criticism and, once accepted, the construction took decades to complete. For a long time, the airport was unable to receive flights due to low demand from airlines.

The closest airports to the park, with flights to major Brazilian cities, are located in Petrolina-PE, 302 km from São Raimundo Nonato, and Teresina, 526 km away. This seems to discourage tourists from other countries and even from other states in Brazil from visiting the PNSC, since, according to Oliveira Filho and Monteiro (2009), 50.82% of the tourists who visit the Park are from Piauí. It's worth remembering, however, that distance can't be the only factor to consider, since the National Parks in the Northeast region linked to sun and beach tourism - such as Jericoacoara, Lençóis Maranhenses and Fernando de Noronha - are also far from the major centers in the South and Southeast and are difficult to access, but receive a large number of tourists.

Recently, however, there has been a change that could be positive in this scenario. The airline Azul started offering flights connecting São Raimundo Nonato to Petrolina and Recife, in Pernambuco (GLOBO, 2022). The new flights are a significant milestone for the region, facilitating access to the

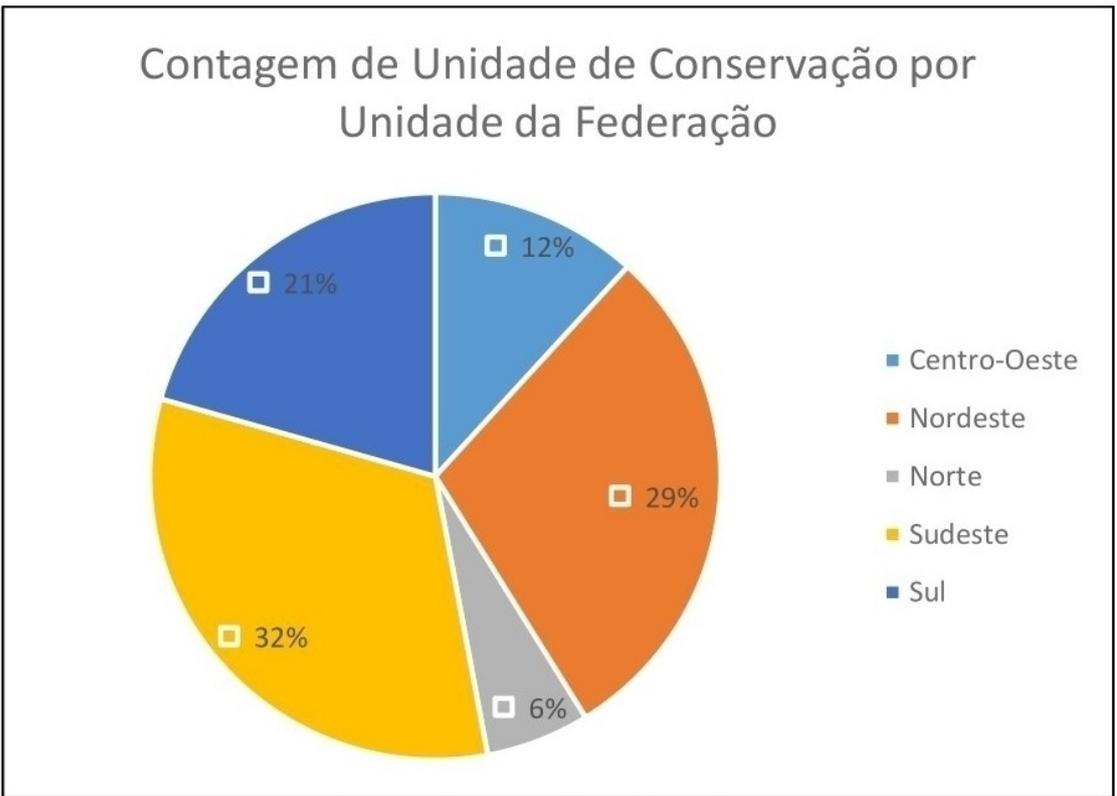
PNSC for tourists and archaeology enthusiasts. In addition, the airline's initiative represents recognition of the park's tourist and historical potential, which is home to important archaeological sites and priceless cave paintings.

Niède's thoughts coincide with the findings of the study entitled "Contributions of tourism in Conservation Units to the Brazilian economy: effects of visitor spending in 2018", carried out by the Ministry of the Environment (MMA) and the Chico Mendes Institute for Biodiversity Conservation (ICMBio). This study presents the economic contributions of tourism by Conservation Unit, and the PNSC ranks 34th on this list. Finally, of the 33 PAs that are ahead of the PNSC, 32% of them are located in the Southeast region, as shown in the graph in Figure 4.

It's important to note that the Northeast region took second place (29%) in this ranking, thanks to the Conservation Units associated with sun and beach tourism, such as the Jericoacoara National Park, the Fernando de Noronha Environmental Protection Area, the Fernando de Noronha National Marine Park, the Lençóis Maranhenses National Park and the Delta do Parnaíba Environmental Protection Area.

This information reinforces the importance of valuing and promoting tourism in conservation areas such as the PNSC. With appropriate publicity, infrastructure and transportation strategies, it is possible to attract more visitors and stimulate sustainable economic development in the region, leveraging the natural and cultural riches offered by the park.

Figure 4 - Count of CUs by Federative Unit



Source: Prepared by the authors.

Sun and beach tourism continues to be the main driver of tourism in the northeast, especially when it comes to protected areas such as Conservation Units (CUs). However, amid the global narrative around natural areas and the possibility of diversifying investments, it is essential to prioritize other areas for nature tourism. This involves investments in marketing, as well as the allocation of federal and state resources.

The economic gains from tourism in Conservation Units are remarkable, as shown in Table 03. It is therefore crucial to exploit the potential of these areas and promote their tourism in a sustainable way. Diversifying tourism options in Conservation Units beyond sun and beach tourism can attract visitors with different interests, thus increasing the flow of tourists and providing economic benefits for the region.

Table 3 - Economic contributions of tourism by conservation unit

Name	No. of visitors	Total visitor spending	Contribution of visitor spending				
			Total Sales	Total Remuneration	Total Added Value	Total Employment	Total Taxes
(1st) Tijuca National Park	2,655,556	BRL 416,062,325.10	BRL 1,464,518,271.89	BRL 384,641,370.47	BRL 547,338,739.72	13,109	BRL 206,111,384.83
(2nd) Iguaçú National Park	1,895,628	BRL 294,516,006.06	BRL 808,753,854.05	BRL 216,365,704.3	BRL 323,703,727.09	7,833	BRL 160,578,752.54
(3rd) Arraial do Cabo Marine Extractive Reserve	1,156,698	BRL 179,711,459.83	BRL 493,495,541.04	BRL 132,024,731.34	BRL 197,521,588.48	4,779	BRL 97,983,951.44
(4th) Jericoacoara National Park	1,091,829	BRL 158,909,517.53	BRL 432,207,318.78	BRL 117,876,231.98	BRL 167,007,104.36	4,616	BRL 92,668,388.91
Name	No. of visitors	Total visitor spending	Contribution of visitor spending				
			Total Sales	Total Remuneration	Total Added Value	Total Employment	Total Taxes
(5th) Serra da Bocaina National Park	700,915	BRL 108,898,310.42	BRL 299,039,530.76	BRL 80,001,966.43	BRL 119,690,571.08	2,896	BRL 59,374,548.35
(34th) Serra da Capivara National Park	20,872	BRL 2,586,200.29	BRL 6,257,386.55	BRL 1,661,025.42	BRL 2,334,668.69	76	BRL 1,711,936.65

Source: Adapted from Souza and Simões (2019).

The challenges faced by the Serra da Capivara National Park (PNSC) in its early stages, such as the removal of the local population, caused great anger and even threats against Niède Guidon, as reported by Abujamra (2023). However, these problems have apparently been overcome by the benefits resulting from the tourist activity promoted by the PNSC.

A quantitative study carried out by Oliveira Filho and Monteiro (2009) revealed that the majority of the local population, living in São Raimundo Nonato and Coronel José Dias, recognizes the PNSC as a source of income, as well as being a space for preserving nature and spreading the culture. The local community's positive perception of the park is an important indication of the socio-economic and cultural benefits provided by tourism in the PNSC. As well as boosting the region's economy, tourism also contributes to the preservation of nature and the dissemination of the rich culture present in the park.

The work of protecting and conserving the archaeological heritage found in the region in question requires manpower for the most diverse activities, from the most basic to the most specialized, and much of this work is carried out by the local population. In addition, the Park needs inspectors, drivers, attendants and other staff, whose labor also comes from the region itself.

The creation of Conservation Units has been the subject of intense debate and research, as evidenced by studies such as those by Pureza, Pellin and Padua (2015), Castro Júnior, Coutinho and Freitas (2012), Coelho, Cunha and Monteiro (2012), Diegues (2008) and Almeida (2014). These studies highlight the fierce disputes over land rights that arise with the implementation of these units.

However, as Conservation Units are established and the state provides support for their structuring, the local population begins to understand the importance of these protected areas. In addition, they begin to benefit both directly and indirectly from these initiatives.

As a result, the local population's perception of Conservation Units improves considerably. This change in perspective results in a positive perception, which can stimulate income generation and environmental and cultural conservation.

Data presented by Souza and Simões (2019) shows that there is a financial return from

Conservation Units, as well as protection for fauna and flora, especially in relation to endangered animals, as Aguiar Junior and Barros (2023) show. As already explained, Conservation Units have great potential for safeguarding biological and cultural heritage, along with boosting local growth. This theory can be materialized in the municipality of São Raimundo Nonato/PI.

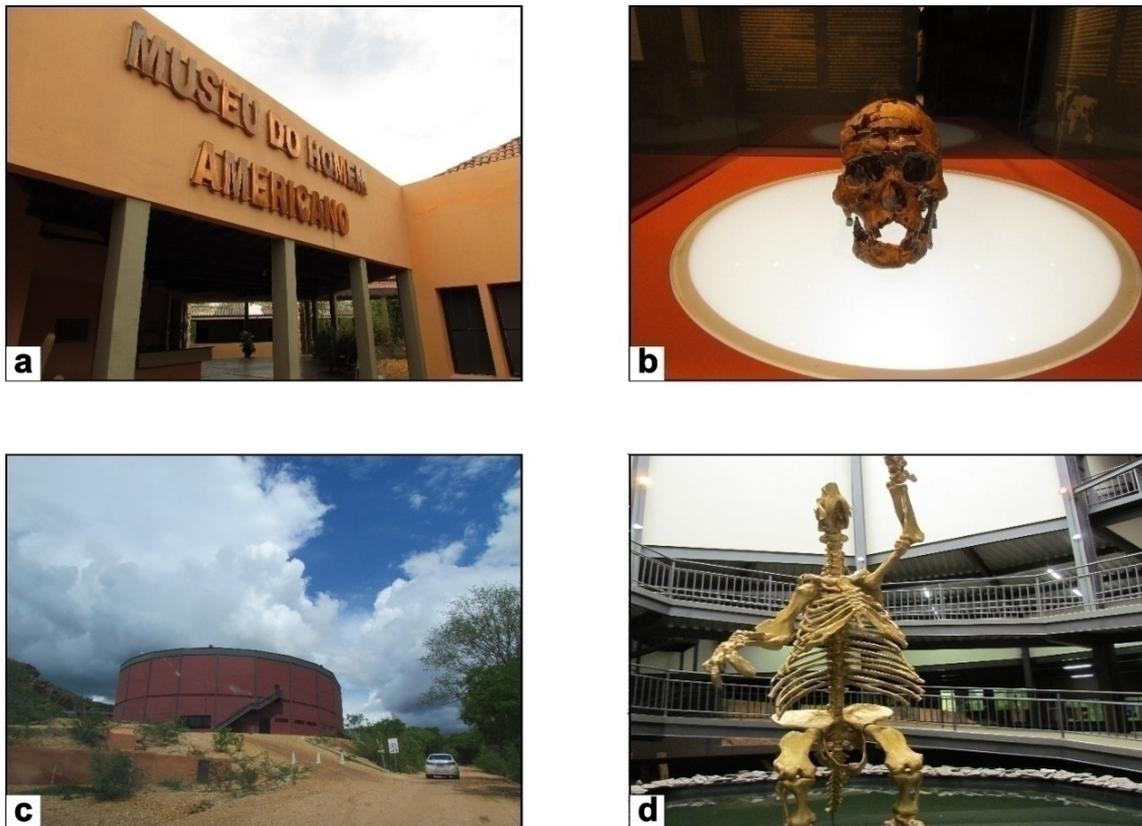
According to IBGE data from 2010, the population of São Raimundo Nonato was 32,327, which placed it 14th in the ranking of the most populous municipalities in the state of Piauí. This position highlights its importance among the municipalities in the surroundings. However, according to the most recent IBGE data, in 2021 the city's population is expected to exceed 35,000 inhabitants. Although this number could be considered "small", according to Maia (2010), Ribeiro (2015) argues that few municipalities in the country have a population of between 30 and 35 thousand inhabitants, which characterizes São Raimundo Nonato as a "medium-sized" municipality. This characterization is supported by the presence of an adequate number of public facilities in relation to the size of the municipality.

The existence of these public facilities in São Raimundo Nonato is fundamental to the organization, support and livelihood of the surrounding municipalities, which places the city as a polarizing center for services in the region (RIBEIRO, 2015, p. 87). This available public infrastructure helps to guarantee an environment conducive to the development of activities and the provision of essential services to the population not only of São Raimundo Nonato, but also of neighboring municipalities.

The growth of the municipality of São Raimundo Nonato/PI can mainly be credited to the creation of the Serra da Capivara National Park and the projects linked to the existence of the archaeological heritage, since the tourism and research activities that take place as a result of the UC end up fostering various actions that have repercussions on income generation and qualifications for the population, such as the emergence of inns, hotels, bars and restaurants, as well as the implementation of public technical and higher education institutions.

The creation of the Museum of the American Man Foundation (FUMDHAM) in 1986 helped foster a series of projects in the region, such as the Museum of the American Man, located at the FUMDHAM headquarters in São Raimundo Nonato, and more recently, in 2019, the Museum of Nature, located in the rural area of Coronel José Dias (Figure 5).

Figure 5 - Images of the Museum of the American Man and the Museum of Nature



(a) Museum of American Man, (b) Zuzu's skull (c) Foundation Museum of American Man (d) Sloth ("bicho-preguiça) skeleton found in the region.

Photos: Aguiar Junior and Barros, 2021.

In addition to tourists, the museums receive groups of students, both from schools and universities, and thus directly employ instructors, attendants, researchers and maintenance teams; it should be noted that the Nature Museum has a larger structure and even a snack bar. At both you can buy books and souvenirs that refer to the park. In the surroundings of the Nature Museum, there is a restaurant, a hostel, a T-shirt factory and the Serra da Capivara ceramics factory.

Cerâmica Serra da Capivara was founded in 1992 by Niéde Guidon and is currently under the management of Rede Artesol - the National Solidarity Crafts Network. The Serra da Capivara Handmade Ceramics Group employs around 30 artisans who live around the park. The project seeks to combine income generation, social inclusion and environmental preservation, focusing on the qualification of the artisans and the passing on of knowledge to future generations, as well as on conscious management practices (the clay is removed from silted-up clay pits, helping to remove silts, and the pieces are fired in a gas kiln instead of a wood-fired kiln). Serra da Capivara ceramics can be found and purchased in various places in Brazil and even abroad.

In order to guarantee the sustainability of the activities carried out in and around the PNSC, FUMDHAM also develops socio-cultural projects in the communities there, such as horticulture, heritage education, environmental education, handicraft and ceramics workshops, the Little Archaeologist project and dance and arts workshops in general.

Since 2017, with the exception of 2020 and 2021, the Serra da Capivara Opera has been held in the Pedra Furada amphitheater, located inside the park (Figure 6). This is a large-scale performance, featuring artists from Piauí and other regions, which seeks to enhance the heritage of Serra da Capivara

and the local ancestral culture.

The show, which has attracted audiences from all over Brazil and abroad, helps to further highlight the social and economic importance of the rich natural and cultural heritage present there, since, in addition to promoting the Park and the culture of the region, its execution prioritizes the hiring of local labor, "from carpentry, to locksmiths; in transportation, in feeding the staff; in reception, the ballet, the artists and more," as the opera's general director Sadia Castro explains (G1, 2023).

Figure 6 - Pedra Furada amphitheater



Photos: Aguiar Junior and Barros, 2021.

These projects help to keep the community in the region, bringing prospects to the children and young people who live there, who already grow up understanding the importance of conserving this heritage and knowing that it is possible to earn an income without having to degrade it.

In addition, São Raimundo Nonato is also home to the campuses of the State University of Piauí (UESPI), the Federal Institute of Piauí (IFPI) and the University of the São Francisco Valley (UNIVASF), which offer courses in Anthropology, Chemistry, Natural Sciences and the oldest ongoing Archaeology course in Brazil at a public university (UNIVERSIDADE..., 2016). Initially, from 2004, the activities of the Archaeology and Heritage Preservation course were carried out in temporary facilities provided by the American Man Museum Foundation (FUMDHAM) and it was only in 2008, when the Serra da Capivara Campus civil works were completed, that they began to operate in their own premises.

At Uespi, degree courses are offered and at the Federal Institute, in addition to degree courses, there are technical and technological courses, especially those in Administration, Gastronomy, Restaurant and Bar, IT, Cookery and Touristic Guide, which clearly aim to meet the demand for this type of labor in the region.

In view of the above, it is clear that ecotourism is an activity that has great potential for combining environmental and heritage conservation with income generation for the populations that can benefit from this activity.

## CONCLUSION

Ecotourism is widely recognized as a form of tourism with a low environmental and cultural impact, bringing significant benefits in terms of income generation and contributing to the growth and development of local communities. Ecotourism, based on principles of ecological and cultural sustainability, finds a suitable environment for its practice in Conservation Units, whether they are Full Protection or Sustainable Use Conservation Units. Various studies have shown the direct and indirect benefits of ecotourism developed in Conservation Units (CUs) not only for local communities, but also for neighboring municipalities.

The Caatinga biome is characterized by low rainfall and water scarcity, which makes many economic activities unviable in this region. However, it is in this biome that one of the largest archaeological sites in the world is found, located in the Serra da Capivara National Park, a Full Protection Conservation Unit. The Professor Dr. Niède Guidon, in the 1960s, recognized the importance of this space and the need to preserve it, in addition to looking for ways to generate income for the local population through the exploitation of the park with ecotourism activities, rich in culture and with low environmental impact.

Facing similar challenges to the creation of PAs in Brazil, such as the need to expropriate the local population's land and the corresponding compensation, Niède realized that, without adequate infrastructure, it would be difficult to attract tourists to the region. In this sense, she envisioned the construction of a hotel in the inside limits of the park, as well as the construction of an airport. In addition, in partnership with institutions such as the Chico Mendes Institute (ICMBio), she promoted courses to qualify the local workforce, recognizing that tourism would not develop in the region without the proper capacity building.

Despite the efforts to promote ecotourism in the Serra da Capivara National Park, which continues to face financial difficulties due to the lack of resources at national and state level, as well as the low number of tourists it receives compared to other UCs, the PNSC manages to meet the idealization about ecotourism in practice. During the course of its consolidation as a Full Protection Conservation Unit, Serra da Capivara National Park has seen an evolution in infrastructure, such as the construction of a hotel in the inside limits of the park, the construction of the Museum of American Man and the Museum of Nature, and the consolidation of the Serra da Capivara Artisanal Ceramics Group, which employs around 30 artisans. In addition to the information boards throughout the PNSC, as well as the continued training of park guides.

In conclusion, studies and facts show that ecotourism is an important economic activity that is aligned with environmental conservation and income generation. This applies directly to Conservation Units, and even facing many difficulties, it can be attested that ecotourism does indeed take place. The tripod that sustains ecotourism: generating local income, environmental conservation and culture and environmental education is carried out and provided by the PNSC. The Serra da Capivara National Park has enabled municipalities such as São Raimundo Nonato (PI) to experience economic growth, which in turn has had a direct impact on the local population, which may imply a lower rate of migration to other municipalities or even regions because they see the possibility of economic gains. In addition to the income generation point of view, they also have the chance to get an academic education at the State University of Piauí (Uespi), the Federal Institute of Piauí (IFPI) and the University of the São Francisco Valley (Univasf), which offers courses in Anthropology, Archaeology and Heritage Preservation, Chemistry and Natural Sciences.

In this way, it is undeniable that the theory behind the concept of ecotourism finds its concrete example in the Serra da Capivara National Park (PNSC). However, in order to further solidify the ecotourism sector, especially within Conservation Units (CUs), it is imperative to intensify efforts to attract a growing flow of visitors. Only through this increase in the number of visits the nature-based tourism sector will be able to fully assert itself at national level, presenting itself as a solid and attractive

alternative to conventional segments such as beach and sun tourism.

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## NOTAS

i - “Some sources list Hot Springs in Arkansas as the first national park. Set aside in 1832, forty years before Yellowstone was established in 1872, it was actually the nation’s oldest national reservation, set aside to preserve and distribute a utilitarian resource (hot water), much like our present national forests. In 1921, an act of Congress established Hot Springs as a national park.” Disponível em <https://www.nps.gov/yell/learn/historyculture/yellowstoneestablishment.htm>. Accessed on: 2 June. 2023.

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