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THE RPPN AS A SUSTAINABLE SOCIO-ENVIRONMENTAL ENTERPRISE: AN ANALYSIS OF THE PALEODUNE AREA OF THE ISLAND OF ANDORINHAS IN SENTO SÉ/BA

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Reinaldo Pacheco dos Santos[1], Márcia Bento Moreira[2], Alvany Maria dos Santos Santiago[3], Clecia Simone Gonçalves Rosa Pacheco[4], Vivianni Marques Leite dos Santos[5] and Lúcia Marisy Souza Ribeiro de Oliveira[6]

ABSTRACT

Private Natural Heritage Reserves are privately managed conservation units that aim to conserve biodiversity in perpetuity through a declaration signed with registration in the Public Real Estate Registry. In the Rural Community of Andorinhas, municipality of Sento Sé/BA, there are several paleodune fields, located on the banks of the São Francisco River, in the Lago de Sobradinho Environmental Protection Area, located on private lands resulting from relocation after the implementation of the Sobradinho Dam. According to environmental legislation, it is possible to transform the area into an RPPN. The first requirement is for the owner to understand the richness of the geoenvironmental heritage, the existing ecotourism potential and the different possibilities of making their property a

[1] Doctorate student in Agroecology and Territorial Development (PPGADT)
Federal University of Vale do São Francisco (Univasf)
Scholarship holder of the Foundation for Research Support of the State of Bahia (FAPESB)
E-mail: reinaldo.pacheco@discente.univasf.edu.br
Lattes: http://lattes.cnpq.br/9147174509760048
Orcid: https://orcid.org/0000-0002-5300-5986
[2] Dr. in Surgery and Experimentation (Unifesp)
Full Professor at the Federal University of Vale do São Francisco (Univasf)
E-mail: marcia.moreira@univasf.edu.br
Lattes: http://lattes.cnpq.br/2800851428205548
Orcid: https://orcid.org/0000-0002-4149-097X
[3] Dr. in Psychology (UFES)
Associate Professor at the Federal University of Vale do São Francisco (Univasf)
E-mail: alvany.santiago@univasf.edu.br
Lattes: http://lattes.cnpq.br/4898966518413662
Orcid: https://orcid.org/0000-0002-5869-4848
[4] Dr. in Agroecology and Territorial Development (PPGADT/Univasf)
Effective Professor at the Federal Institute of Sertão Pernambucano (IFSertãoPE)
E-mail: clecia.pacheco@ifsertao-pe.edu.br
Lattes: http://lattes.cnpq.br/6358715394273386
Orcid: https://orcid.org/0000-0002-7621-0536
[5] Dr. in Chemistry (UFPE)
Full Professor at the Federal University of Vale do São Francisco (Univasf)
E-mail: vivianni.santos@univasf.edu.br
Lattes: http://lattes.cnpq.br/3040638073236492
Orcid: https://orcid.org/0000-0001-8741-8888
[6] Dr. in Sustainable Development of the Humid Tropics (UFPA)
Full Professor at the Federal University of Vale do São Francisco (Univasf)
E-mail: lucia.oliveira@univasf.edu.br
Lattes: http://lattes.cnpq.br/9814539262982598
Orcid: https://orcid.org/0000-0002-0588-1797

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sustainable social enterprise. In this sense, this article aims to analyze the advantages and (dis)advantages of converting private areas into RPPNs, and to understand its relevance as a sustainable social enterprise, focusing on the paleodune complex of Andorinhas, in Sento Sé/BA. Based on this, two problem questions were listed: What are the advantages and (dis)advantages that a landowner in natural heritage areas will have in totally or partially transforming his property into RPPN? What is the relevance of the RPPN as a sustainable socioeconomic enterprise? Based on this assumption, this will be a qualitative, bibliographic, documentary and field research, and the object of study, the locus of the research and the target audience will be intentional and accessible. It is reiterated that social entrepreneurship needs to be innovative, accessible and self-sufficient, in addition to involving various people and social sectors, including the communities served, promoting social impact and producing results capable of being measurable. The results found indicated that among the advantages of implementing an RPPN, the conservation of the natural heritage, the exemption from the Rural Land Tax (ITR) on the reserve area, the priority of analysis in rural credit applications in official banks and the analysis for projects presented to the National Environment Fund (FNMA) stand out. In addition, the implementation of an RPPN allows for fundraising from public sources and participation in Public Notices for Payment for Environmental Services (Ecosystem Services).

Keywords: Natural Areas. Paleoecosystems. Social Entrepreneurship. Bahia.

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INTRODUCTION

Private Natural Heritage Reserves (RPPNs) are privately managed conservation units that aim to conserve biodiversity in perpetuity through a declaration of commitment signed with registration at the Public Real Estate Registry. These can only be constituted in areas of private property, and instituted by organizations that are part of the National System of Conservation Units – SNUC. At the federal level, they will be engendered according to the regulations of the Brazilian Institute of the Environment and Renewable Natural Resources – IBAMA.

According to ICMBio (2020), there are currently 1,567 Private Natural Heritage Reserves in Brazil, of which 698 are federal reserves, which together account for a total area of almost 890 thousand hectares. The states with the most protected areas of this type are Minas Gerais (350), Paraná (282) and Bahia (157), followed by Rio de Janeiro (152), São Paulo (99) and Santa Catarina (84). The biome with the most units is the Atlantic Forest, followed by the Cerrado and the Caatinga. RPPNs are created voluntarily at the initiative of rural landowners, with the main objective of preserving biodiversity and ensuring its long-term conservation.

Owners who are interested in converting their property in whole or in part into RPPN, may request, under the terms of Decree No. 5,746, of April 5, 2006, which regulates Article 21 of Law No. 9,985, of July 18, 2000, which provides for the National System of Conservation Units (SNUC), in Brazil, and such a claim must be directed to the Brazilian Institute of the Environment (IBAMA), at the federal level, or to state or municipal agencies, if the property is in these jurisprudences (Brasil, 2000).

In this aspect, this study has as its *locus* of investigation the Rural Community of Andorinhas, located in the Municipality of Sento Sé/BA, where there are several paleodune fields (fluvial dunes), located on the banks of the São Francisco River, but specifically, in the Environmental Protection Area (APA) Lago de Sobradinho, however, located on private lands resulting from relocation after the implementation of the Sobradinho Dam.

This natural heritage (paleoenvironment) has suffered, over the years, countless natural and anthropogenic environmental impacts, although the owner of the area has been developing, in a rough way, its partial conservation. However, according to current environmental legislation, it is possible to transform the area into an RPPN, and the owner only needs to understand the richness of the geoenvironmental heritage, the ecotourism potential that exists there and the multiple possibilities of making his property a

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sustainable, economically viable, socially fair and environmentally sustainable social enterprise, through the implementation of the RPPN.

In this sense, this article aims to analyze the advantages and (dis)advantages of converting private areas into RPPNs, and to understand its relevance as a sustainable social enterprise, focusing on the paleodune complex of Andorinhas, in Sento Sé/BA. The following specific objectives were listed: a) to define RPPNs, paleodunes and social entrepreneurship; b) describe advantages and (dis)advantages of implementing RPPNs; c) to point out suggestions for the implementation of sustainable social enterprise.

Based on this, the following problem-questions were listed: What are the advantages and (dis)advantages that a landowner in natural heritage areas will have in totally or partially transforming his property into RPPN? What is the relevance of the RPPN as a sustainable socioeconomic enterprise? Based on these assumptions, this will be a qualitative, bibliographic, documentary, and field research, and the object of study, the *locus* of the research, and the target audience was intentional and accessible (Bardin, 2016).

In relation to social entrepreneurship, Schumpeter (1985) highlighted that it is relevant to innovate to the point of creating conditions for a radical transformation of a given sector, or branch of activity, or territory, where the entrepreneur will operate, capable of instituting a new cycle of growth, of promoting a rupture in the continuous economic flow, which can occur without causing changes in the channels of economic routine.

In this author's conception, the entrepreneur is the one who implements new arrangements of the means of production, able to provide economic development, which are: "introduction of a new good; introduction of a new production method; opening a new market; conquest of a new source of supply of raw materials or semi-manufactured goods; constitution or fragmentation of a monopoly position" (Schumpeter, 1985, p. 49). In the current context, it is important to emphasize that socioeconomic entrepreneurship is configured as an entrepreneurial approach that aims at both profit and social, cultural, and environmental impact, in order to seek solutions to multifaceted problems. Thus, every social enterprise needs to be innovative, accessible and self-sufficient, in addition to involving various people and social sectors, including the communities served, promoting social impact and producing measurable results.

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THEORETICAL FRAMEWORK

RIVER PALEODUNES AND THEIR ECOTOURISM POTENTIAL

In given territories of the middle São Francisco River there are numerous paleodune fields following the course of the river. The existing paleodune fields in Sento Sé, Bahia (figure 1), are inserted in Permanent Protection Areas (APPs), and within the Environmental Protection Area (APA) Lago de Sobradinho, which was created by Decree No. 9,957 of March 30, 2006. In the areas belonging to the APAs, the decision to create them was made because they considered the uniqueness of the geological formations of paleodunes as a unique occurrence in the Brazilian Northeast, being generally surrounded by the Sertaneja Depression (Santos, 2022).

Figure 1 – Paleodunes of Ilha de Andorinhas – Sento Sé/BA

Source: Santos (2023)

In the view of Barreto (1996), the aforementioned features (paleodune fields) come from the paleoclimatic and paleoenvironmental variations that occurred in the Quaternary period, of the Cenozoic Era, and their sands come from the depositional process elaborated by the São Francisco River and transported by southeast and east winds. In view of this, the chronography of the paleodune complex is influenced by climatic fluctuations of the late Quaternary, associated with the sedimentary contribution of the São Francisco River. Cabral (2014) advocates that over geological time such features have been polished, elaborated and reworked by erosion or by the sedimentary material that

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covers them and, in this dynamic, the appropriate records are preserved to elucidate how the disparate landscapes evolved and what were the processes entrusted by this evolution.

Schobbenhaus et al. (1984, p. 242) pointed out that the paleodune fields of the middle São Francisco River were the "only example of dune formations of a Quaternary desert environment in Brazil", classifying these as "Pleistocene aeolian deposits" of the São Francisco craton.

In short, in the view of Ferreira, Corrêa and Barreto (2013), the paleoclimatic conditions of the São Francisco Valley allowed the development of river dune fields in the states of Bahia and Pernambuco, and the main source of the sands is the São Francisco River itself, which drains relevant sources of sandy substances, such as the steep slopes of the Serra da Canastra (MG); the western edge of Chapada Diamantina and; the São Francisco Sedimentary Basin (BA), in addition to the southeastern edge of the Parnaíba Sedimentary Basin (PI).

In this sense, natural resources should be used to promote sustainable development and maintain environmental balance, therefore, potentially degrading or resource-using activities should be evaluated One of the instruments that analyze the intensity of environmental impacts is the Environmental Impact Assessment (EIA) regulated by CONAMA Resolution 001/86 as one of the instruments of the National Environmental Policy (Brasil, 1986).

In 1991, Bertrand proposed the tripolar GTP system, which includes the Geosystem (as a source), the Territory (as a resource) and the Landscape (as an identity) (Bertrand; Bertrand, 2007). Succinctly, the essence of the new theoretical model listed seeks to understand the environment through the concepts of Geosystem, Territory and Landscape, understanding the relationship established between society and nature, thus transcending the dichotomous studies of geography (Neves, 2017).

Rethinking development paradigms in the current context, where we are experiencing an environmental and civilizational crisis, and where there is a loss of the productive capacity of economic systems, is something that cannot be postponed. From this perspective, in order to reanalyze the society-nature interactions, it is implacable to understand sustainability as a paradigm capable of implementing environmental and socio-territorial planning and management processes. However, "this requires the applicability of solid theoretical and methodological foundations, supported by holistic, integrative and systemic visions of natural and social environmental units" (Rodriguez; Silva, 2002, p.95).

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Based on this, paleodune areas are understood as areas with immense ecotourism potential, and not only that, but also areas that enhance conservation and promotion of employment, income, social justice, viable economy, and a sustainable natural and socio-environmental environment, through the implementation of a private reserve of natural heritage available at the local level. Therefore, with regard to tourism and ecotourism, the municipality of Sente Sé took the lead, as it was the first city in the Tourist Zone of the São Francisco Valley qualified and organized to implement the Tourism Regionalization Program (PRT), certifying that the municipality was part of the Brazilian Tourism Map (2019-2021) (Municipality of Sento Sé, 2022).

THE RPPNS AND THEIR POTENTIAL FOR CONSERVATION OF PRIVATE NATURAL AREAS

The Private Natural Heritage Reserves (RPPN) were created in 19901[7], as a strategy to promote nature conservation through protected areas through the initiative of private owners. As can be seen in the table below (figure 2), the RPPN is part of the category of Conservation Units (UC) of the National System of Conservation Units (SNUC), comprising the group of sustainable use units.

Figure 2 – Table of Categories of CUs

Categories of SNUC Conservation Units		
Groups	Categories	Objectives
Integral Protection Units	National Park (PARNA) Ecological Station Biological Reserve (REBIO) Monumento Natural (MONA) Wildlife Refuge	Preserve nature, with only the indirect use of its natural resources being allowed, except in cases provided for by law
Sustainable Use Units	Integral Protection Area (APA) Area of Relevant Ecological Interest (ARIE) National Forest (FLONA) Extractivist Reserve (RESEX) Fauna Reserve (REFAU) Sustainable Development Reserve (RDS) Reserva Particular do Patrimonio Natural (RPPN)	Conserving nature with the sustainable use of part of natural resources

Source: Brazil/Federal Law No. 9,985/2000.

According to Article 1 of Law No. 9,985, of July 18, 2000, which provides for the National System of Conservation Units (SNUC), the Private Natural Heritage Reserve (RPPN) is a conservation unit of private domain, with the objective of conserving biological

[7] The RPPNs were created by Decree No. 98,914, which was replaced in 1996 by Decree No. 1,922.

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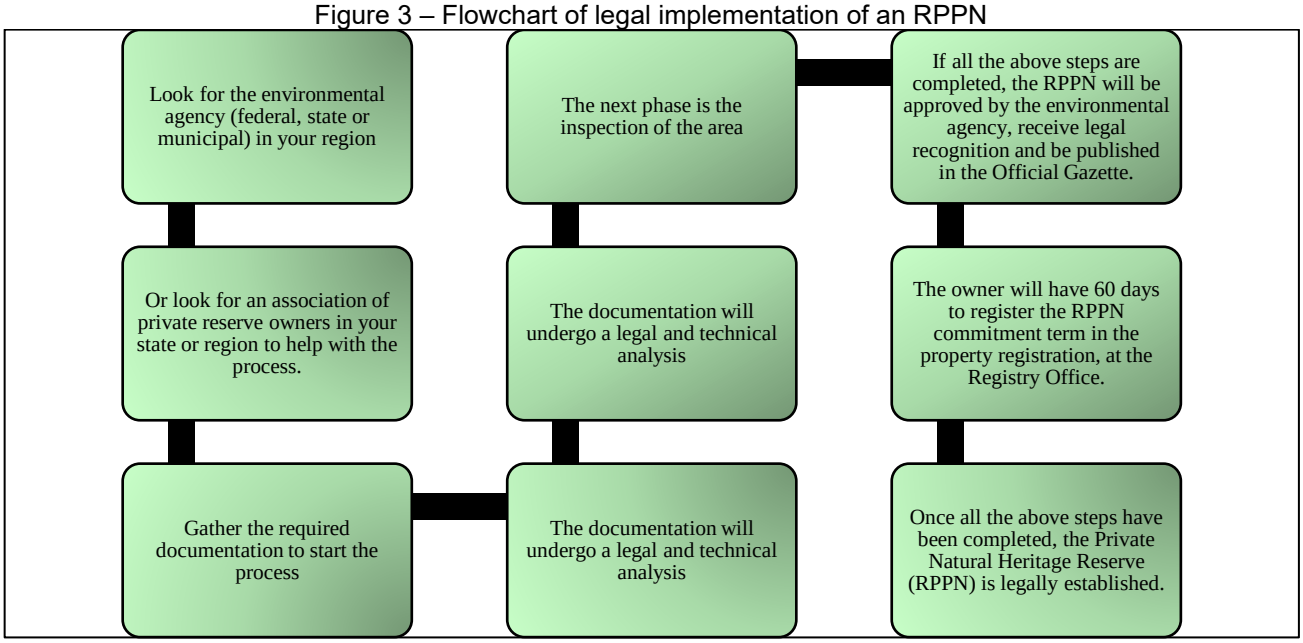
diversity, recorded in perpetuity, through a Term of Commitment registered in the margin of the registration in the Public Registry of Real Estate. The *sole paragraph* of the same Law points out that RPPNs will only be created in areas of private possession and domain. Article 2, on the other hand, states that RPPNs may be created by the bodies that are part of the SNUC, and that, at the federal level, they will be declared instituted by ordinance of the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA).

According to the *Guide for creating and implementing Private Natural Heritage Reserves* (2006), to convert a private area into an RPPN, it will be necessary to carry out the following route (figure 3):

Figure 3 – Flowchart of legal implementation of an RPPN



Source: REPAMS Owners Association (2006)

In this way, the creation of a reserve guarantees advantages not only to the landowner, but also to the municipality where the RPPN is located. According to the National Confederation of Private Natural Heritage Reserves (CNRPPN), which is the supreme representation of RPPNs, in Brazil there are more than 1,853 protected areas, which together represent almost 900 thousand hectares of natural areas and biodiversity that are preserved voluntarily and perpetually (see figure 4).

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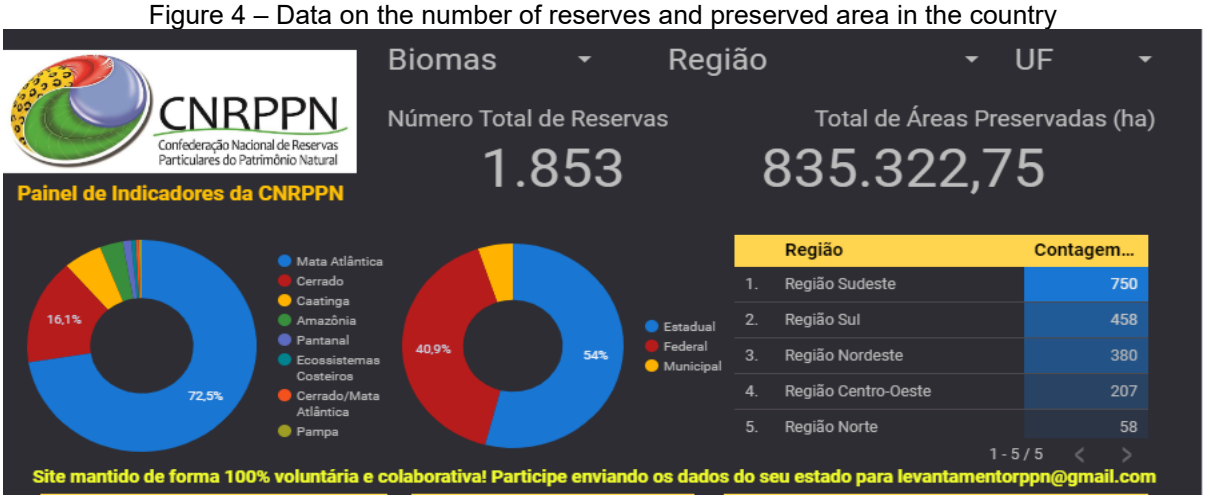
Figure 4 – Data on the number of reserves and preserved area in the country



Source: CNRPPN Indicator Panel (2023)

Data from the Indicator Panel of the National Confederation of RPPNs indicate the number of RPPNs by Brazilian regions, distributed as follows: a) Southeast Region with 750 units; b) South Region with 458; c) Northeast Region with 380 units; Midwest Region with 207; and d) North Region with 58 reserves. Of this total, 1001 are state, 757 are federal and 95 are municipal. In relation to biomes and ecosystems, there are: a) 1342 are in the Atlantic Forest; b) 299 in the Cerrado; c) 101 in the caatinga (5.5%); d) 60 in the Amazon (3.2%); e) 22 in the Pantanal (1.2%); f) 12 in coastal ecosystems (0.6%); g) 8 in the Cerrado/Atlantic Forest transition strip (0.4%); and, h) 8 in the pampa (0.4%).

It is important to highlight that the CNRPPN plays the role of collaborating with state/regional associations and articulators of Private Natural Heritage Reserves in the joint effort to contribute to the coordination and integration of RPPN owners and to the continuous improvement of public policies related to this relevant category of conservation organization (CNRPPN, 2023). Data from the National Confederation Indicator Panel (PICN) of RPPN, show (figure 5) the quantity of reserves in the caatinga ecosystem.

Figure 5 – Data on the number of reserves and preserved area in the Caatinga

Source: CNRPPN Indicator Panel (2023)

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Within the caatinga ecosystem, it can be seen that there are 100 reserves within the Northeast region and 01 within the Southeast region, totaling 111 RPPNs and 80,298.50 hectares of preserved areas. The number of RPPNs in the state of Bahia is also noteworthy, as shown below (Figure 6).

Figure 6 – Data on the number of reserves and preserved area

Source: CNRPPN Indicator Panel (2023)

The indicators indicate that within the caatinga, in the Northeast region and in the state of Bahia, there are a total of 38 RPPNs, totaling 22,429.47 hectares of preserved areas. Of these 38 reserves, 17 are federal, representing 44.7% and 21 are state, corresponding to 55.3%, all of which are 100% within the caatingas domain (CNRPPN, 2023).

Therefore, according to the legislation, within the RPPNs three activities are allowed: research, ecotourism and environmental education, as long as there is potential for this and such activities are adequate with the protection of resources and requirements that enabled their validation as Conservation Units. Only landowners, whether individuals, legal entities, civil or religious entities, can request total or partial recognition of their properties as RPPN, with no limitation on their extension (Brasil, 2006). In addition, it is possible to implement various ways to generate income with the implementation of RPPNs and other conservation areas.

SOCIO-ENVIRONMENTAL ENTREPRENEURSHIP AND THE ECONOMIC POTENTIAL OF THE RPPN

After reading the theoretical frameworks, it was evident that there is still much to be researched and understood about social entrepreneurship, including questions about the reasons why it is not taken seriously. It is considered that a clearer definition of *social entrepreneurship* will contribute to the development of this field, and the social

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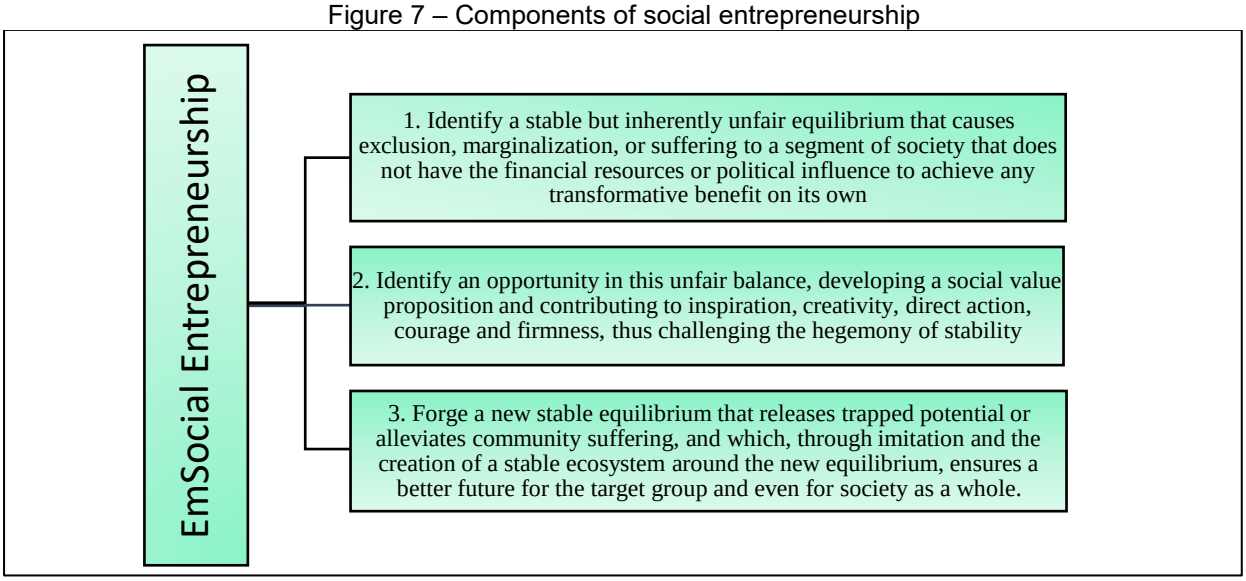
entrepreneur should be understood as a subject who strives to stabilize himself, even if unfavorably. Thus, it is relevant to have someone to contribute to the improvement through inspiration, direct action and creativity, courage and determination, influencing the establishment of a new stable equilibrium that guarantees lasting benefits for the target group and for society in general (Martin; Osberg, 2022).

Social *entrepreneurship* does not expect or aim for large financial returns for its investors (mainly charities and governments). Instead, the focus is on value as large-scale transformative benefits that accrue in parts of society or society as a whole. Unlike business value propositions that envision markets that can pay for innovation and provide significant returns to investors, social entrepreneur value propositions focus on disadvantaged, disenfranchised, or highly disadvantaged populations that lack financial resources or influence, through innovative benefits. This does not mean that social entrepreneurs should, in principle, avoid lucrative value propositions. In this sense, *social entrepreneurship* is defined Martins and Osberg (2022) based on three elements, as shown in figure 7:

Figure 7 – Components of social entrepreneurship



Source: Adapted from Martin and Osberg (2022)

All the components described in the figure above contribute positively to strengthening the economic potential of the RPPN. However, it is important to have a Business Plan (PN) that structures the activities that will be developed. Thus, for the preparation of the Business Plan (figure 8) it is necessary to use tools for construction, visualization, definition and evaluation of the desired business scenario, and the *Canvas*

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and the *Swot Matrix* that will allow the construction and visualization of the scenarios with the functions and uses allowed for the RPPNs.

The *Canvas* modulates the business you want to plan into nine blocks, answering four fundamental questions: "*What*?" (value proposition), "*For whom*? (customer relationship, customer segment and channels), "*How*?" (partners, activities, and core resources) and "*How much*?" (cost structure and sources of revenue). The *Swot Matrix*, on the other hand , is always made in equal quadrants, and in each square positive and negative factors are recorded for the implementation of the business. The main task is to raise as many items as possible for each area (Strengths, Opportunities, Weaknesses and Threats), and the more in-depth this survey is, the more accurate the analysis will be and the better the chances of developing effective solutions (WWF/Sebrae, 2019).

Figure 8 – Table with the necessary instruments for the preparation of a Business Plan

BUSINESS PLAN	
Characterization of the Business Plan	▪ Owner data ▪ Property details ▪ RPPN's mission and the business ▪ Definition of the activities to be implemented ▪ Legal and tax form to fit ▪ Raising share capital ▪ Source of available funds and borrowing power
Market Analysis	▪ Identification of customers ▪ Identification of competitors ▪ Identification of suppliers
Marketing *Plan*	▪ Description of the main products and/or services ▪ Pricing ▪ Definition of marketing and promotional tools
Operational Plan	▪ Promotional infrastructure ▪ Productive, commercial and/or service provision capacity ▪ Operational processes ▪ Needs of direct and indirect employees
Financial Flow	▪ Estimation of fixed investments ▪ Working capital ▪ Pre-operational investments ▪ Total investments ▪ Revenue Estimate ▪ Unit cost estimation of required resources ▪ Estimation of marketing costs ▪ Estimating labor costs ▪ Estimating the cost of depreciation ▪ Estimation of monthly operating fixed costs ▪ Income statement ▪ Feasibility indicators

Source: Adapted from REPAMS Owners Association (2006)

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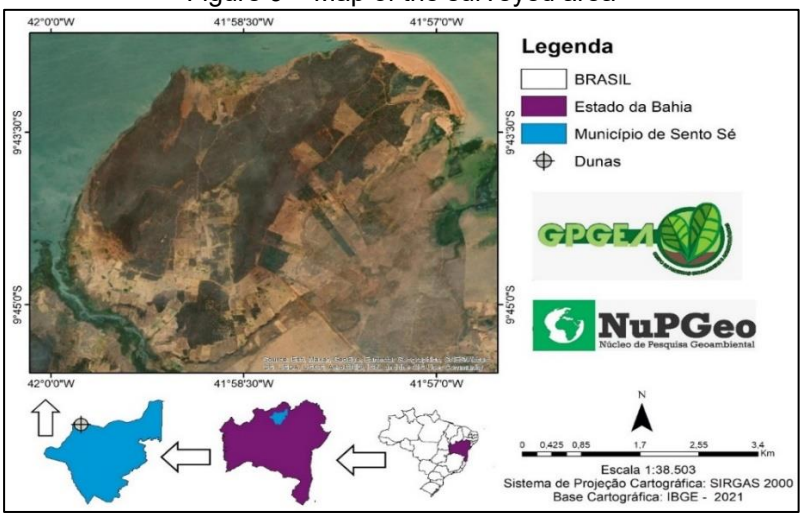
Therefore, a business plan is an ideal tool to faithfully outline the market, the product, and the step-by-step process that an entrepreneur must follow when starting a business (Sebrae, 2019).

METHODOLOGY

GEOGRAPHIC LOCATION OF THE RESEARCH

The surveyed area (figure 9) is located between latitudes 9º45'39" S; 9º47'36" S; 9º36'34" S and 9º48'19" S, and longitudes 41º32'21" W; 41º32"8" W; 41º35'06" W and 41º34'43" W, on the banks of the São Francisco River, and located within the APA Lago de Sobradinho (Pacheco, *et al*., 2020).

Figure 9 – Map of the surveyed area



Source: Survey Data (2023)

In the Rural Community of Andorinhas, but specifically, on the Island of Andorinhas located in the Municipality of Sento Sé/BA, there are several paleodune fields, some of which are located on private lands resulting from relocation after the implementation of the Sobradinho Dam.

TYPOLOGY AND STAGES OF THE RESEARCH

The methods used in the research were the hypothetical-deductive, based on the formulation of questions and hypotheses, and the dialectical widely used in qualitative research, as it considers that facts cannot be considered outside a social context (Gil, 2019). Data collection was carried out by bibliographic, documentary and field means. The analysis of the collected data was carried out through the Theory of Content Analysis

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(Bardin, 2016) and the GTP Theory – Geosystem – Territory – Landscape (Bertrand; Bertrand, 2007). Considering the research approach, it is classified as qualitative since there is a relationship between the world and the subject that could not be translated into numbers, and thus, the data were analyzed inductively.

The collection of bibliographic data occurred through articles, books, *e-books*, book chapters and the documentary collection occurred in the consultation of laws, decrees, resolutions, ordinances, reports, manuals, guides. The search was carried out in search engines, such as Capes Platform, *SciELO* and *Google Scholar*, using the following descriptors: *"RPPNs", "paleodunes" and "social entrepreneurship".* To this end, a time frame from 1990 – 2023 was made and inclusion and exclusion criteria were used. As inclusion criteria, bibliographic and documentary references that meet the objective and respond to the research problem were used, and as exclusion criteria, published materials and legal documents that do not meet the research objective and do not respond to the research problem listed.

Regarding data collection in the field, the visits took place in October and November of the current year, totaling 04 (four) visits of an observatory, registration and mapping nature through the technique of aerial photogrammetry, through Remotely Piloted Aircraft (RPA) and digitized photography.

RESEARCH MATRIX

The table below (figure 10) shows the design of the survey matrix with problem-questions, general and specific objectives, methods and techniques for data collection and data analysis. It also describes the descriptors, search engines, inclusion and exclusion criteria, and the time frame.

Figure 10 – Table with the methodological matrix

RESEARCH PROBLEM		
Q1: What are the advantages and (dis)advantages that a landowner in natural heritage areas will have in totally or partially transforming his property into RPPN?	Q2: What is the relevance of the RPPN as a sustainable socioeconomic enterprise?	
GENERAL OBJECTIVE		
To analyze the advantages and (dis)advantages of converting private areas into RPPNs, and to understand its relevance as a sustainable social enterprise, focusing on the paleodune complex of Andorinhas, in Sento Sé/BA.		
SPECIFIC OBJECTIVES	METHODS AND TECHNIQUES	DATA ANALYSIS
i. Define RPPNs, paleodunes, and social entrepreneurship	a) Hypothetical-deductive and dialectical method.	a) Content Analysis Theory (Bardin, 2016)

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	b) Collection of bibliographic and documentary data.	
ii.Describe advantages and (dis)advantages of implementing RPPNs	a) Hypothetical-deductive and dialectical method. b) Collection of bibliographic, documentary and field data (aerial photogrammetry and digital photography).	a) Content Analysis Theory (Bardin, 2016) b) GTP Theory – Geosystem – Territory and Landscape (Bertrand; Bertrand, 2010)
iii.Point out suggestions for the implementation of sustainable social enterprise through a SWOT matrix	a) Hypothetical-deductive and dialectical method. b) Collection of bibliographic and documentary data.	a) Content Analysis Theory (Bardin, 2016) b) Teoria de Albert S. Humphrey (1960) (Andrade et al., 2008)
DESCRIPTORS		
"RPPN"	“Paleodunas”	"Social entrepreneurship"
SEEKERS		
SciELO	*Capes Platform*	*Google Scholar*
BIBLIOGRAPHIC AND DOCUMENTARY CRITERIA		
INCLUSION	EXCLUSION	
a) works that answer the guiding questions; b) works that contribute to the achievement of the listed objective; c) works whose publication is within the delimited time period; d) news and data published on institutional and reliable websites.	a) published in a foreign language; b) outside the time frame outlined; c) that do not answer the guiding questions; d) news and data published on non-institutional and unreliable websites.	
Time cut from 1990 – 2023		

Source: Elaboration by the author (2023)

The methodological matrix presents the synthesis of procedures, techniques, instruments and ways of approaching and treating the investigated object, aiming to develop responses to the proposed objective and the problem listed. In this aspect, the results will present the analysis of the functional dynamics of the area from a *SWOT Matrix*.

RESULTS AND DISCUSSION

ADVANTAGES AND (DIS)ADVANTAGES OF IMPLEMENTING RPPN

In order to meet the objectives listed and to respond to the research problem, the following table (figure 11) describes the advantages and (dis)advantages of converting a private area into an RPPN. However, it is understood that the (dis)advantages are only obligations that the owner needs to have, but that it does not constitute something negative or feasible.

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Figure 11 – Table of advantages and (dis)advantages of implementing an RPPN

ADVANTAGES	(DES)WAITING
Conservation of natural heritage.	It will be up to the property owner to ensure the environmental maintenance of the RPPN.
Exemption from the Rural Land Tax (ITR) on the RPPN area.	It will be up to the owner to signal his limits, warning third parties about the prohibition of deforestation and fires.
Priority analysis in applications for rural credit in official banks and analysis for projects submitted to the National Environment Fund (FNMA).	It is the responsibility of the owner of the RPPN to prohibit hunting, fishing, harvesting, capturing animals and any other acts that affect or may affect the integrity of the conservation unit.
Fundraising from public sources.	It is the owner's responsibility to submit the management plan of the conservation unit for approval, in accordance with the provisions of article 27 of Federal Law No. 9,985, of 2000.
Participation in Public Notices for Payment for Environmental Services (Ecosystem Services).	It will be up to the owner to submit, annually and whenever requested, a report on the situation of the RPPN and the activities developed.

Source: Brazil (2000; 2006)

Therefore, in the current context there is an understanding of the indispensability of protecting biodiversity, water resources, the management of natural resources, the development of scientific research, the conservation of geoenvironmental and climatobotanical systems, the promotion of sustainable development, the maintenance of geomorphological, speleological, archaeological, paleontological heritage, among others, which are essential tools for the survival of living beings. especially of the human species.

RELEVANCE OF THE RPPN AS A SUSTAINABLE SOCIAL ENTERPRISE

The National System of Nature Conservation Units (SNUC) based on Law No. 9,985/2000, is defined as a group of Conservation Units (UCs) at the federal, state and municipal levels, consisting of 12 categories of UCs with different specific objectives in terms of protection and permitted use, that is, having the categories that require better management due to their vulnerability and specificity, and those that can be used sustainably and at the same time conserved (Brasil, 2000).

In this sense, among the 12 categories of CUs, the number 10 (REFAU) is not used. Thus, there are 11 categories, with the RPPN being the most abundant. APAs are the category with the largest extension according to the Ministry of Environment and Climate Change. Therefore, the extension of land in the RPPN category UCs can be used to implement a sustainable social or socioeconomic enterprise, considering its potential and weaknesses, based on the preparation of a Business Plan, which enables income generation through sustainable socioeconomic activities (Ipe, 2022).

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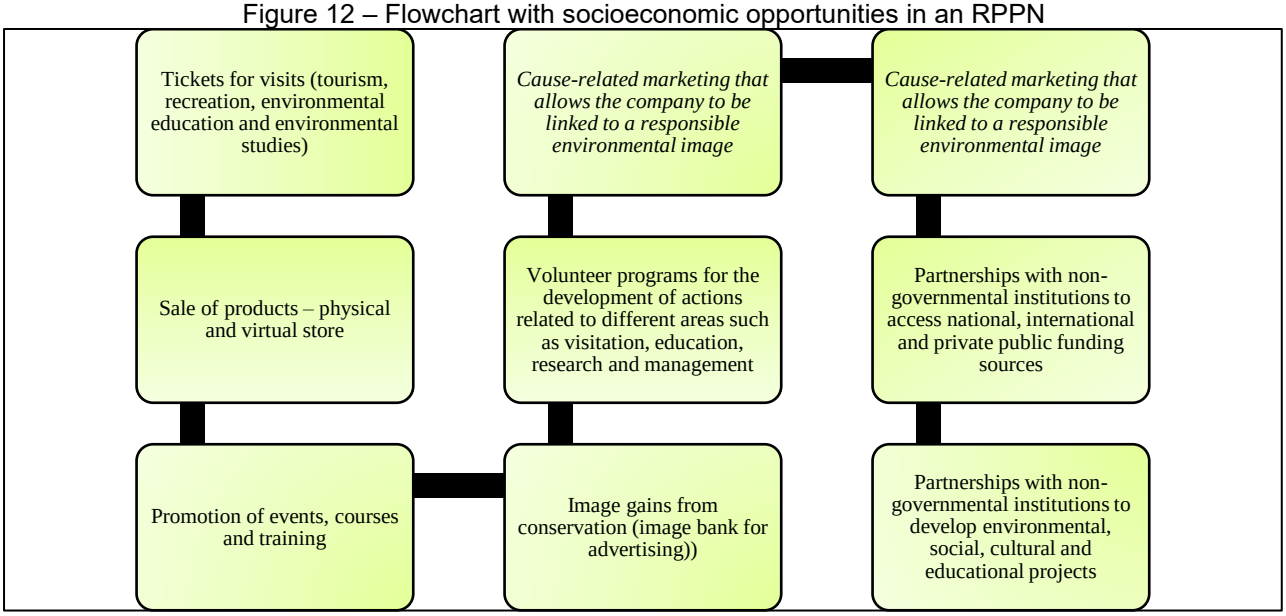
According to the Institute for Ecological Research (2022) there are countless opportunities and actions for protection and sustainable business for RPPNs. According to this source, the owner will be able to promote activities with the potential to promote knowledge, environmental awareness and income generation, such as scientific research, environmental education, ecotourism and recreation activities in contact with nature, which may offer the following opportunities as shown in figure 12.

Figure 12 – Flowchart with socioeconomic opportunities in an RPPN



Source: Author's elaboration based on Institute for Ecological Research (2022)

In this aspect, in addition to the possibilities mentioned in the flowchart, there are others that vary according to the biodiverse potential of the natural heritage, as well as the local physical-environmental and edaphoclimatic characteristics. For this reason, it is essential that the owner has some responsibility, in order to ensure the conservation of the area, as well as to maintain the environmental attributes and sustainable activities, as established in the Management Plan for the area, and the appreciation of payment for ecosystem services.

THE POSSIBILITY OF IMPLEMENTING THE RPPN OF THE PALEODUNE COMPLEX OF THE ISLAND OF ANDORINHAS

Ilha de Andorinhas is located in the Community (rural village) of Andorinhas (as shown in figure 13), located in the municipality of Sento Sé, north of Bahia. The area is rich in faunal and floristic biodiversity, as well as geoecological and geoenvironmental. The

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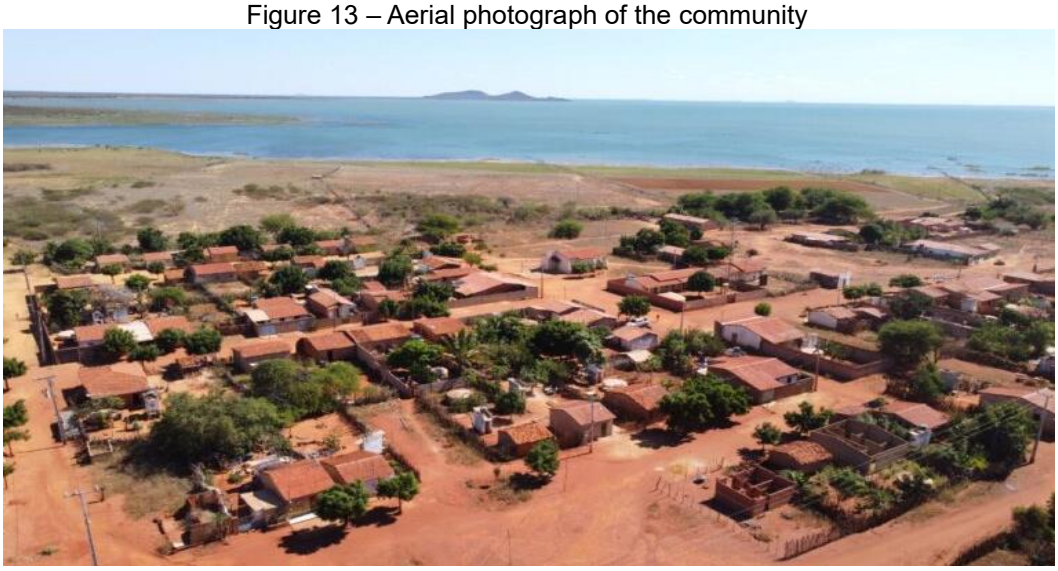
village is bathed by the São Francisco River, located in the APA Lago de Sobradinho, with several paleodune fields in its surroundings, some of which are in the Permanent Protection Area (APP) of the São Francisco.

Figure 13 – Aerial photograph of the community



Source: Survey data (2023)

The paleodune complex of Ilha de Andorinhas has fields covered, in part, by native vegetation – caatinga, flanked by the São Francisco River, spilled by mountains and *inselbergs*, as well as springs, waterfalls, among other attributes. From the perspective of the protected natural wealth, the creation of an RPPN for the area is proposed, since the paleodunes are in a private area, however, nothing prevents that, in addition to the implementation of the RPPN, it can generate income through activities aimed at sustainable social entrepreneurship.

In this sense, a SWOT Matrix was elaborated (figure 14) based on the reality of the area studied, summarizing its strengths (*Strengths*), Weaknesses (*Weaknesses*), Opportunities (Opportunities) and Threats (*Threats*). The matrix includes elements that consolidate both the previously debated aspects and more precise aspects related to these four dimensions, which are divided between the internal and external environment of the territory.

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Figure 14 – SWOT Matrix table with aspects involving the studied area

	Positive factors	Negative factors
	Forces	**Weaknesses**
Internal factors	▪ Extensive areas that represent a natural heritage ▪ Natural resources of great value ▪ Scenic beauty ▪ Water leisure (river beach, waterfalls, springs, lagoons, etc.) ▪ Nature trails ▪ Proximity to PARNA and APA Boqueirão da Onça ▪ Partnership with the Force and Combat Brigade (fires and incidents)	▪ Lack of adequate infrastructure ▪ Reduced staff ▪ Lack of adequate facilities for visitors and tourists ▪ Lack of river and territorial signage (warnings, prohibitions) ▪ Absence of guides and training for this purpose ▪ Absence of environmental inspectors
	Opportunities	**Threats**
External factors	▪ Closer ties with the municipal and state public authorities ▪ Partnership with SEMATur ▪ Partnership with private companies ▪ Partnering with local schools ▪ Creation of green spot ▪ Creation of an ecological corridor ▪ Creation of a sustainable tourism area	▪ Predatory hunting ▪ Extensive livestock farming ▪ Fire ▪ Extractivism ▪ Real estate specualization ▪ The absence of environmental public policy ▪ (Un)sustainable tourism

Source: Survey data (2023)

Although there are limitations, the main purpose of the area is the survival of the owning family, and in the background it focuses on offering leisure to the population and also supporting scientific research, however, there is a significant precariousness in the development of initiatives related to environmental education and environmental public policies, which endangers the preservation of the natural wealth existing in the area.

The following is a table (figure 15) containing some activities that are already developed in the area of the paleodune complex of Ilha de Andorinhas, and points out what can be done, in addition to the implementation of the RPPN, which should come before all the activities exemplified.

Figure 15 – Table with activities performed in the area and activities that can be carried out

WHAT IS ALREADY DONE	WHAT YOU CAN DO
Toll collection for access to the property for fruit picking (umbu)	Opening of a restaurant to sell food to visitors
Toll collection for access to the "prainha" and the paleodune area	Opening of a bar for commercial service to visitors
Toll collection for access to the spring at the top of the mountain	Creation of a boating area or kayaks on the São Francisco River

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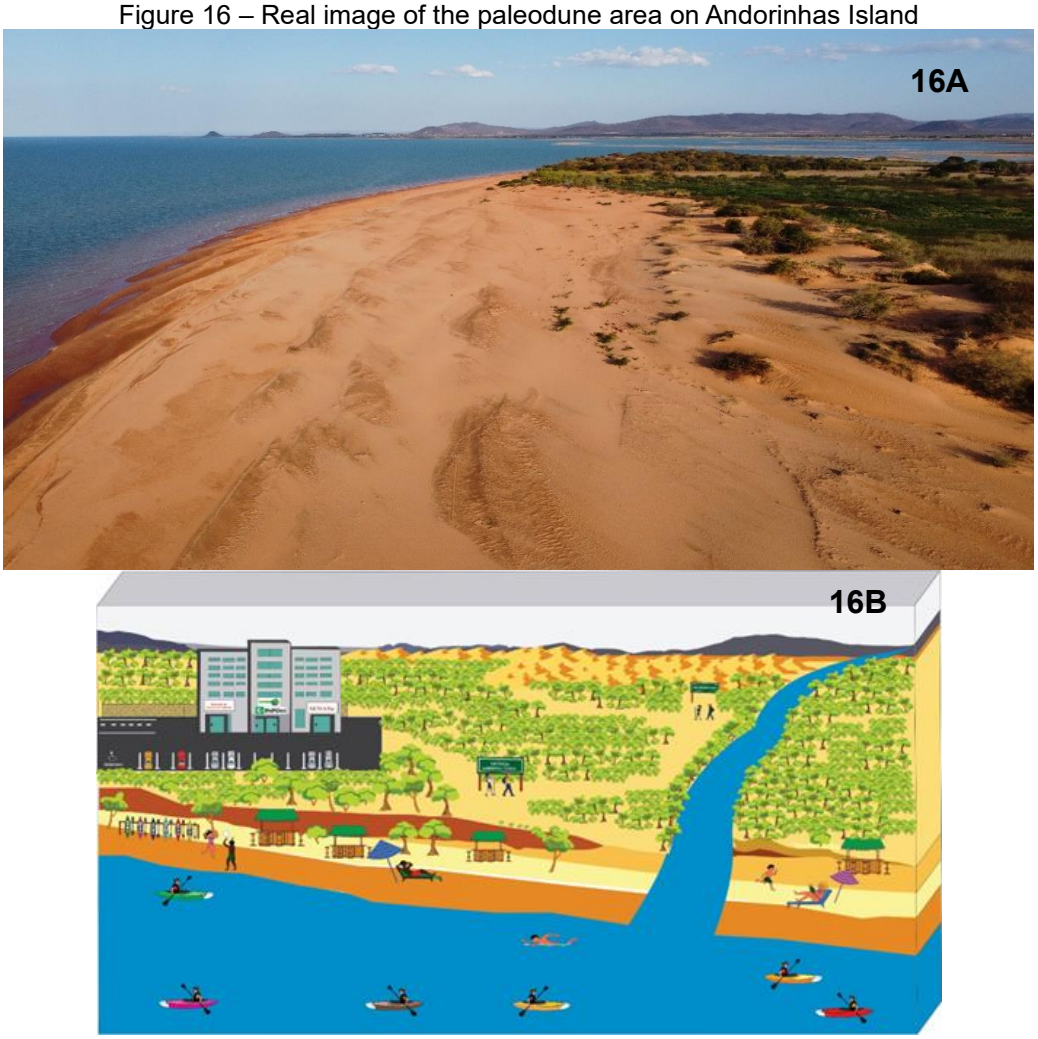
Availability of transportation for those who enter the environment and cannot drive on the return because they have consumed alcohol	Creating a beach soccer or volleyball area
Partnership with the Force and Combat Brigade (Sento Sé) for any incidents and emergencies	Creation of an area for small daytime events, meetings, celebrations, etc.
Performs solid waste management work left on site by visitors	Creation of an Environmental Education guided tour with students and teachers from local schools
Performs the work of managing waste from domesticated and wild animals	Creation of a green environmental license (payment for scientific services) for researchers
Timidly carries out the recovery of the degraded area within the property.	Enable a partnership with the municipality via SEMATur for the environmental inspection of the area.

Source: Prepared by the author based on field research (2023)

Based on this, we sought to elaborate a *Sketch* (figure 16B) from a *real image* (figure 16A) made by means of aerial photogrammetry, containing some of the potential activities to be developed in the area.

Figure 16 – Real image of the paleodune area on Andorinhas Island



Source: Survey data (2023)

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As can be seen, in the *Sketch* (figure 16B) it was intended to visually demonstrate the possibility of implementing in the area of the paleodune complex of Ilha de Andorinhas, an RPPN and a variety of entrepreneurial activities based on sustainable practices, which in addition to generating income for the owner, is also contributing to the conservation of the natural heritage.

Therefore, the benefits of creating RPPNs include the protection of local biodiversity, the guarantee of the survival of endangered species and ecosystems, and the preservation of natural areas that are important to the country's paleonatural heritage. In addition, to promote sustainable development through ecotourism projects, organic farming and other activities compatible with the conservation of biodiversity. In addition, it also promotes education and research, training new specialists and improving scientific knowledge, allowing a deeper understanding of biodiversity and its importance for the environment and society. In addition, they provide significant increases in the values of adjacent properties, since conservation areas are considered significant assets.

FINAL CONSIDERATIONS

It is reiterated that the implementation of a Private Natural Heritage Reserve (RPPM) brings benefits such as the increase in officially protected natural areas; the maintenance of faunal and floristic diversity, ensuring gene flow between species; the conservation of soils and water resources, surface and groundwater; protection of scenic and landscape attributes; the contribution to the formation of ecological corridors; the generation and increase of scientific knowledge; the development of ecotourism, practical environmental education activities and sustainable socioeconomic entrepreneurship.

Likewise, from the implementation of the RPPN by the owner of private land with potential for sustainable exploitation, it will guarantee the generation of employment and income, the maintenance of family sustenance and strategic planning, pointed out in the Management Plan and in the Business Plan for the area.

With regard to the advantages of creating an RPPN, the preservation of natural heritage, exemption from ITR for the respective area, priority in the analysis of rural credit applications in banking institutions, privileged evaluation for projects submitted to the FNMA, access to resources from public sources and the possibility of participating in public notices for remuneration for ecosystem services stand out.

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Disadvantages may be the responsibility of the property owner to ensure the environmental preservation of the RPPN, to delimit its boundaries and to alert third parties about the prohibition of deforestation and fires. It is also up to the owner to prohibit hunting, fishing, collecting and capturing animals, as well as any other action that may compromise the integrity of the conservation unit. It is the owner's responsibility to submit the management plan of the conservation unit for approval, and it is also his duty to send annually and whenever requested a report on the situation of the RPPN and the activities that are being carried out.

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