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LOCAIS NA ATIVIDADE EXTRATIVISTA NO ESTADO  
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## EXTRATIVISMO DO BABAÇU: ANÁLISE DOS ATORES LOCAIS NA ATIVIDADE EXTRATIVISTA NO ESTADO DO TOCANTINS

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### ABSTRACT

This paper aimed to analyze the importance and the challenges of the extractivist activity of babassu palm in the Tocantins State, considering the analysis of local stakeholders. It is qualitative research by exploratory and descriptive approach and content analysis technique with social representations and free words association. The data was collected interviewing twenty-four local stakeholders from November/2023 to February/2024. An inducing term was used, "When you hear the phrase: 'Babassu extractivism in the Tocantins State'", what are the first five words that come to your mind? Research data were analyzed by IRaMuTeQ software, which processed the following analyses: (a) lemmatization of the content matrices; (b) similarity analysis by graphs; and (c) prototypical analysis. The results showed that the predominant evocations pointed out the terms (a) "family livelihood" (f=18 and AOE=2.6); (b) "sustainable utilization" (f=14 and AOE=2.6); (c) "resistance" (f=10 and AOE=2.8); (d) "preservation" (f=8 and AOE=2.8); (e) "extractivism" (f=8 and AOE=2.2); (f) "supplementary income" (f=13 and AOE=3.5); (g) "meet need" (f=13 and AOE=3.3); (h) "sustainable product" (f=10 and AOE=3.3); (i) "no access" (f=5 and AOE=4.2); and (j) "free babassu" (f=3 and AOE=2.0) in the analysis of the word frequency (f) and in the Average Order of Evocation (AOE). Babassu extractivism indicates family livelihood, but with resistance to conflicts over free access and the preservation of babassu palm trees. It is concluded that babassu extraction provides sustenance and income, but there are challenges such as prohibitions on access to babassu plantations and the lack of palm trees preservation.

**Key words:** Babassu extractivism. Extractivist Reserve (RESEX, Brazilian acronym) in the far north of Tocantins. Family livelihood. Free babassu. Tocantins State.

## RESUMO

O objetivo deste estudo foi analisar a importância e os desafios da atividade extrativista do babaçu no estado do Tocantins, considerando a análise dos atores locais. Foi caracterizado como pesquisa qualitativa, com abordagem exploratória, descritiva e técnica de análise de conteúdo, usando representações sociais e associação livre de palavras. Os dados foram coletados através de entrevistas aplicadas a 24 atores locais, no período de novembro/2023 a fevereiro/2024. Foi utilizado um termo indutor: Quando você ouve a frase: “Extrativismo do babaçu no estado do Tocantins”, quais são as primeiras cinco palavras que veem à sua mente? Os dados da pesquisa foram analisados pelo *software* IRaMuTeQ, que processou as seguintes análises: a) lematização das matrizes de conteúdo; b) análise de similitude, utilizando grafos; c) análise prototípica. Os resultados evidenciaram que, na análise da frequência de palavras ( $f$ ) e da Ordem Média de Evocação (OME), que as evocações predominantemente foram os termos: “sustento familiar” ( $f=18$  e  $OME=2,6$ ), “aproveitamento sustentável” ( $f=14$  e  $OME=2,6$ ), “resistência” ( $f=10$  e  $OME=2,8$ ), “preservação” ( $f=8$  e  $OME=2,8$ ), “extrativismo” ( $f=8$  e  $OME=2,2$ ), “renda complementar” ( $f=13$  e  $OME=3,5$ ), “suprir necessidade” ( $f=13$  e  $OME=3,3$ ), “produto sustentável” ( $f=10$  e  $OME=3,3$ ), “sem acesso” ( $f=5$  e  $OME=4,2$ ) e “babaçu livre” ( $f=3$  e  $OME=2,0$ ). O extrativismo do babaçu representa o sustento familiar, mas a resistência dos conflitos ao acesso livre e a preservação das palmeiras de babaçu. Conclui-se que, o extrativismo do babaçu proporciona sustento e renda, mas têm os desafios como as proibições ao acesso aos babaçuais e a falta de preservação das palmeiras.

**Palavras-chave:** Extrativismo do babaçu. RESEX do Extremo Norte do Tocantins. Estado do Tocantins. Sustento familiar. Babaçu livre.

## 1. INTRODUCTION

Extractivism is an activity performing to obtain resources, influencing social, economic, and ecological aspects. Extractivism has been undergoing transformations, being recognized not only as employment and income source, but also as essential for environmental preservation (Siena, Müller, Fachinello, 2012). According to Campelo Filho et al. (2018), extractivism is associated with promoting economic development and the preservation of environmental resources, influencing socioeconomic aspects.

In the Brazilian context, extractivism performed a role in economic and social formation throughout the country's history (Castro, Campos, 2015). In this sense, its important extractive products were responsible for modifying the socioeconomic and political structure of the Amazon region in Brazil (Homma, 2012). Extractivism portrays a way of organizing the Amazon territory practiced by caboclos (mixed race of white and indigenous), indigenous people and other peoples of the forest (Gonçalves, 2012). Thus, it is worth highlighting that the Tocantins State is part of the Amazon region and stands out in the plant extraction scenario.



Extractive activities in the Tocantins State were caused by the search for natural resources, as it lies in a geographical transition zone between the cerrado (Brazilian savannah) and the Amazon rainforest. There is a diversity of plants, especially the native babassu palm tree. Babassu forests mean not only commercial, but also social, environmental, and heritage value for the Tocantins State.

In this sense, the babassu coconut extraction activity is a traditional and fundamental practice for traditional communities in the Tocantins State (Sousa, Silva, 2017). It is an activity (collection and breaking) normally carried out by women who take it up as a profession, called coconut breakers (Carrazza, Ávila, Silva, 2012).

In view of this, the following research question arises: “What are the implications of the babassu extractive activity from the perspective of local stakeholders?”. To answer this question, this paper aimed to analyze the importance and challenges of the babassu extractive activity in the Tocantins State, considering the perspective of the local stakeholders. This paper is justified by the relevance of babassu extraction, taking into account socioeconomic and environmental changes, considering the participation of the local stakeholders and the potential development. In this sense, this research shows the representativeness of babassu.

## **2. EXTRACTION OF BABASSU PALM IN THE TOCANTINS STATE**

The extraction of the babassu palm (*Attalea speciosa* Mart. ex Spreng) is an activity that has been practiced by local communities, affecting their way of life. According to Porro (2019), Babassu is one of the main products of plant extraction with representation in Brazilian sociobiodiversity.

The babassu extractive production conquered the market, but lost space due to the competitive offer of oil from soybean, palm, corn, among others. These similar products reduced the demand for babassu oil, closing the market for babassu industries (Gouveia, 2015; Gouveia, Angelo, 2017; Porro, Sousa, 2023). From 1960 to 1980, the babassu economy was an important milestone (Gouveia, 2015), being the second largest production volume among extractive products in Brazil until 2011 (CONAB, 2022).



Many questions are raised about the difficulties in the babassu extractive economy, such as lack of government support and restrictions on access to natural resources, in addition to access to social and compensatory policies (Rural Retirement and Bolsa Família Program) (Porro, 2019; 2022). For this author, these policies brought income for people who live from babassu extraction, a time-consuming activity with low economic returns.

The babassu exploitation has direct implications for the families who have been dependent on this economy for generations. They use babassu under different ways: (a) straw to cover houses; (b) palm hearts in food; (c) oil extracted from the almond; and (d) fruit shells for using in charcoal production (MIQCB, 2023). These resources are used both for the family's own consumption and for marketing. The Interstate Movement of Babaçu Coconut Breakers (MIQCB, Brazilian acronym) estimates that the babassu extractivist population has around 400,000 people supporting the babassu extractive economy in the country. The babassu palm is found in many Brazilian states (Carrazza, Ávila, Silva, 2012), with the largest production volumes recorded in states of Maranhão, Tocantins, and Piauí (IBGE, 2023).

The State of Tocantins is characterized by great plant diversity and is the second largest national producer of babassu (IBGE, 2023), including the native palm tree, with emphasis on its commercial and cultural value. Babassu is part of the socioeconomic formation of Tocantins.

The occupation movement of the Tocantins State was marked by agrarian conflicts, mainly in the area that is now known as the Bico do Papagaio microregion (Giraldin, 2017; Sousa, Oliveira, 2017). According to these authors, the government released the land intending to populate the less populated region of this state. The occupation dynamics of Bico do Papagaio were due to the existence of vacant lands that were to be used for agricultural and extractive exploration (Sousa, Silva, 2017). These authors highlighted the participation of Father Josimo Moraes Tavares, who was a symbol of resistance and fought alongside rural workers in the region for better conditions, as well as standing out the contribution of political groups, social movements, and organized civil society to this struggle (Celestino, 2016). The social and environmental dynamics in the Bico do Papagaio region are different due to the presence of an agricultural frontier and a dense babassu palm forest towards the Amazon (Rocha, 2011).

To alleviate agrarian conflicts in the Bico do Papagaio region, which is dominated by large landowners with property rights and rights over natural resources, including babassu, the region was awarded the Extractive Reserve of the far north of Tocantins, created by Decree No. 535 on May 20, 1992 (Brazil, 1992). However, the creation of this reserve did not promote the expected transformations, mainly in relation to land and the freedom to explore natural resources by benefiting the community.

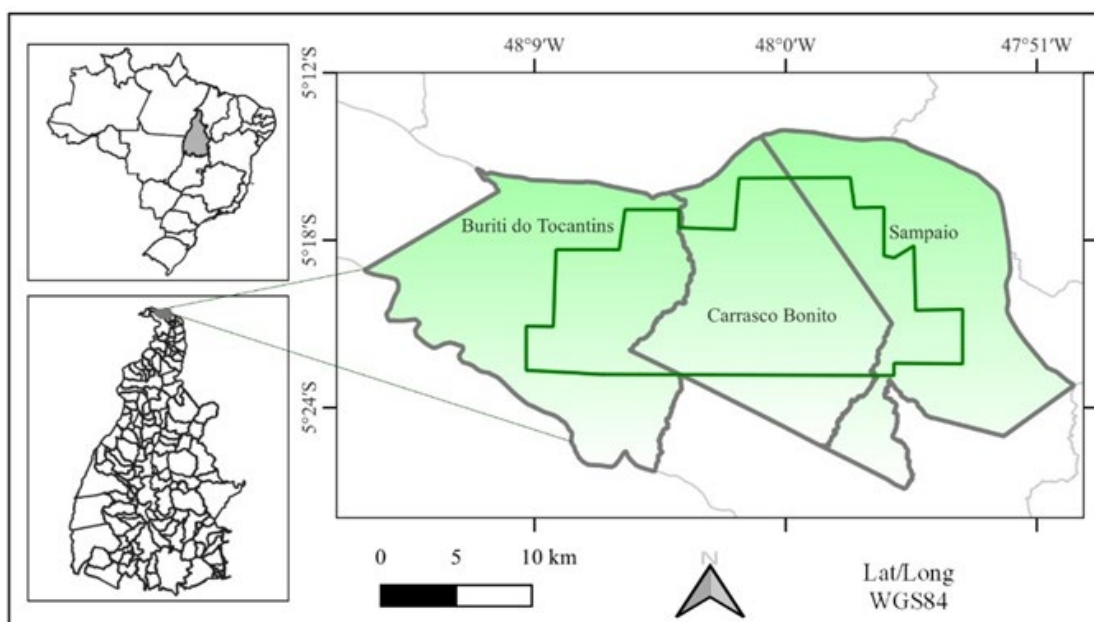
The struggle of women coconut breakers for land rights and for the sustainability of babassu palm plantations is clear. In this context, the role of Mrs. Raimunda Gomes da Silva, known as “Dona Raimunda Quebradeira de Coco” stands out as representative of this struggle (Sousa, Oliveira, 2017). Many factors have influenced the reduction of babassu exploitation in the Tocantins State, such as (a) conflicts over the dispute over babassu coconut; (b) the felling of babassu plantations; (c) the expansion of the agricultural frontier in the Amazon; and (d) the actions of private companies (Sousa, Silva, 2017).

### **3. METHODOLOGICAL ASPECTS**

#### **3.1 TOCANTINS EXTREME NORTH EXTRACTIVIST RESERVE IN THE TOCANTINS STATE (RESEX, BRAZILIAN ACRONYM)**

This research was carried out in the RESEX of the far north of Tocantins, located in the Bico do Papagaio microregion, in the Tocantins State. RESEX was established by Decree No. 535/1992, covering 9,280 ha for social and ecological purposes (Brazil, 1992). This RESEX promotes the conservation of natural resources and the promotion of the socioeconomic development of traditional communities (Figure 1).

**Figure 1** | Location of the Tocantins Far North Extractivist Reserve



Source: Prepared by the authors (2024).

In 2022, the census population of the municipalities belonging to the RESEX of the far north of Tocantins was 17,840 inhabitants (IBGE, 2022a; 2022b; 2022c), being (a) Buriti do Tocantins, with 10,307 inhabitants; (b) Carrasco Bonito with 3,318 inhabitants; and (c) Sampaio with 4,215 inhabitants. In these municipalities, the exploration and commercialization of babassu nuts are activities carried out by women (Teixeira; Moreira; Silva, 2018).

### 3.2 RESEARCH CHARACTERISTICS AND APPROACHES

According to Gil (2019), this paper followed a qualitative approach to understand the phenomena studied. It was classified as exploratory research to expand knowledge about these phenomena (Palagi et al., 2017) and is a descriptive research to describe and interpret the found event (Osorio; Lobato; Castillo, 2009) on the babassu extraction aiming at the development the Tocantins State.

Field research was carried out in the RESEX of the far north of Tocantins. According to Vergara (2016), this type of research is linked to the studding site, seeking to understand the reality of babassu extraction.



Local stakeholders (social, economic, and political) were selected and invited to participate in the research, according to their relationship with babassu extraction in the RESEX municipalities. Data collection by semi-structured interviews was carried out face to face from November/2023 to February/2024, involving twenty-four local stakeholders related to babassu extraction. The interviews were recorded, transcribed, and coded; the data were subsequently synthesized and analyzed.

### **3.3 ETHICAL ASPECT**

As this research involves human beings, it was submitted to the Research Ethics Committee of the Federal University of Tocantins/Palmas Campus with CAAE Registration under No. 70394423.0.0000.5519 and received a favorable opinion for its accomplishment.

### **3.4 SOCIAL REPRESENTATIONS THEORY AND FREE WORD ASSOCIATION TECHNIQUE**

The Social Representation Theory (SRT) gave rise to the field of social representation, characterized as a grouping of values, conceptions, practices, and customs of a group with the purpose to standardize world and indicate its behavior (Moscovici, 2004; 2015). According to this author, SRT symbolizes that the individual is part of the social reality elaboration actively participating in its construction and not just reproducing it passively.

Social representations generate instruments that enable to explore the content of an element (Jodelet, 2013), being possible to define the identity of local stakeholders involved in babassu extraction in the Tocantins State, and extract elements that help in the collective investigation.

These social representations guide and organize actions and communications, affecting knowledge dissemination and assimilation processes, individual and collective development, definition of personal and social identities, expression of groups, and social transformations (Guerra et al., 2011). These social representations are disclosed by the construction method and the Free Word Association Technique (FWAT).

Tavares et al. (2014) state that, through FWAT, it is possible to search for inductions and verbal and non-verbal stimuli, factors, identities and qualities of the stakeholders, due to the inducing object. The words are distributed and organized to allow to understand the keywords. The inducing term is





an instrument for collecting data.

In this paper, the inducing term was, “When you hear the phrase ‘Babassu extraction in the Tocantins State’, what are the first five words that come to your mind?”. This inductive term was applied to local stakeholders linked to babassu extraction.

### 3.5 TEXTUAL ANALYSES OF FREQUENCY, SIMILARITY, AND PROTOTYPING

The analysis of multiple frequencies highlights the most frequently evoked words, showing their importance in order and proportion of evocations (Justo; Camargo, 2014). In similarity analysis, connections among terms of a social representation are showed, illustrated by graphs such as trees in communities (Donato et al., 2017). This analysis allows us to identify the importance of words and predominant themes in the representation, considering their size and evocations.

According to Donato et al. (2017), frequency criteria and evocations order are used in prototypical analysis to examine the social representations structure, highlighting the quadrants (central core, first periphery, second periphery, and the contrast zone). The average order of evocation (AOE) and the words frequency are fundamental to classify the terms in the quadrants and understand the importance of each element in the social representation. Correia and Joia (2014) describe the calculation of AOE in Equation (1).

$$AOE = \frac{\sum_{i=1}^p (h_i f_i)}{\sum_{i=1}^p f_i} \quad (1)$$

In which, the acronym AOE represents the average evocation order;  $h$  is the hierarchy (evocation position) in the order in which the evocations were assigned as 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> word (Table 1);  $f$  corresponds to the frequency in the position; and  $\sum f$  is the total of frequencies evoked for a given term.

### 3.6 DATA ANALYSIS

The keywords, called terms or evocations, were collected by Free Word Association Technique (FWAT) questionnaire and analyzed by the IRaMuTeQ software, including: (a) multiple frequency of words occurrence; (b) similarity analysis diagrams; and (c) construction of a prototypical matrix.

The data achieved from the answers to the guiding question on “Babassu extraction in the Tocantins State” were categorized to identify similar aspects in the social representations and word associations. This procedure aims to confirm the results in FWAT, supported by the social and economic development theory. The contents of the free questions with the results of the textual analyses of frequency, similarity, and prototypicality were used to enrich the dialogue, providing a detailed understanding of the terms evoked in the research.

### 3.7 SOCIAL STAKEHOLDERS’ RESPONSE MATRICES

The response matrix was prepared and lemmatized to ensure consistency and semantic similarity of the terms mentioned by the participants. The adjusted matrix in Table 1 presents data from twenty-four local stakeholders. The terms were standardized in the singular and masculine form, using a data dictionary to align homonymous terms with the same root.

**Table 1** | Actors’ responses regarding the inducing term on Babaçu extractivism in the Tocantins State

Word 1	Word 2	Word 3	Word 4	Word 5
Resistance	Electric fence	Private propriety	Conflicts	No access
Family livelihood	Sustainable product	Sustainable reuse	Meet need	Supplementary income
Sustainable utilization	Meet need	Utilize the straw	Sustainable product	Kill the palm
Supplementary income	Meet need	Sustainable product	Family livelihood	Meet need
Family livelihood	Meet need	Sustainable product	Source of livelihood	Supplementary income
Resistance	Extractivism	Sustainable utilization	Preservation	Traditional communities



Sustainable utilization	Sustainable product	Private propriety	Resistance	No access
Family livelihood	Extractivism	Meet need	Sustainable product	Sustainable utilization
Sustainable utilization	Family livelihood	Supplementary income	Meet need	Sustainable product
Family livelihood	Supplementary income	Meet need	Sustainable product	Resistance
Sustainable utilization	Family livelihood	Supplementary income	Meet need	Sustainable product
Family livelihood	Meet need	Resistance	Supplementary income	Sustainable utilization
Resistance	Extractivism	Family livelihood	Sustainable utilization	Preservation
Sustainable product	Family livelihood	Free babassu	No access	Supplementary income
Family livelihood	Extractivism	Resistance	Supplementary income	Source of livelihood
Undervalued	Meet need	Sustainable utilization	Family livelihood	Supplementary income
Sustainable utilization	Free babassu	Kill the palm	Private propriety	Preservation
Sustainable utilization	Resistance	Extractivism	Supplementary income	Family livelihood
Preservation	Source of livelihood	Supplementary income	Family livelihood	Meet need
Preservation	Undervalued	Sustainable utilization	Family livelihood	Meet need
Preservation	Family livelihood	Sustainable utilization	Kill the palm	No access
Supplementary income	Extractivism	Resistance	Source of livelihood	Family livelihood
Preservation	Extractivism	Family livelihood	Kill the palm	Sustainable utilization
Free babassu	No access	Extractivism	Preservation	Resistance

Source: Prepared by the authors (2024).



## 4. RESULTS AND DISCUSSION

Table 1 was constructed basing on the data set of twenty-four local stakeholders (social, economic, and political), generating one hundred and twenty evocations. A total of nineteen different evocations were achieved in the process of grouping similar evocations, in which multiple frequency, similarity, and prototypical analyses were performed. Table 2 exhibits the multiple frequency, showing the sum of all evocations in order of strength and the graphical representation.

In Table 2, the words are recorded in order of frequency and according to the interviewees' recollection, such as (a) "Family livelihood" with the greatest representation of 15.00%; (b) "Sustainable utilization" (11.67%); (c) "Supplementary income" and "Meet need", both with 10.83%; and (d) "Sustainable product" and "Resistance", totaling 16.66%. These words stood out as the most important, regardless of the hierarchical evocation order, indicating what local stakeholders have in their minds about babassu extraction in the Tocantins State.

**Table 2** | Multiple frequency analysis and graphical representation of the babassu extractive stakeholders in the RESEX of the far north of Tocantins

Word	Frequency	% Total Total	nº Gross	% Gross	Graphic representation
Family livelihood	18	15,00	18	75,00	
Sustainable utilization sustentável	14	11,67	14	58,33	
Supplementary income	13	10,83	13	54,17	
Meet need	13	10,83	12	50,00	
Sustainable product	10	8,33	10	41,67	
Resistance	10	8,33	10	41,67	
Preservation	8	6,67	8	33,33	
extractivism	8	6,67	8	33,33	
No access	5	4,17	5	20,83	
Kill the palm	4	3,33	4	16,67	
Source of livelihood	4	3,33	4	16,67	
Private propriety	3	2,50	3	12,50	
Free babassu	3	2,50	3	12,50	
Undervalued	2	1,67	2	8,33	
Electric fence	1	0,83	1	4,17	
Utilize the straw	1	0,83	1	4,17	
Sustainable reuse	1	0,83	1	4,17	
Traditional communities	1	0,83	1	4,17	
Conflicts	1	0,83	1	4,17	

Source: Prepared by the authors (2024).



In this context, the representation of babassu in Tocantins State is not only centered on the expression “Family livelihood” as the main source of income, but also on “Sustainable utilization”, in the sense of exploring the extractive product in a sustainable way, and on “Supplementary income”, followed by the element “Meet needs”. These last two expressions represent the contribution of babassu extraction to the sustenance of the involved communities as well as the local economy.

Babassu assumes importance for the involved community, considering the “Family livelihood” term under the perspective of local stakeholders, providing them with the means to support their families by means of the corresponding work. According to MIQCB (2023), many families have been living from the babassu economy for generations. This fact proves the long history and importance of babassu for the sustenance of traditional communities, as stated:

“I created six children by breaking coconuts to feed them”. Extr.t\_2.

“I live from babassu; when I sell the oil, I buy food for my family to eat”. Extr.t\_4.

Considering the importance of babassu for local communities, it can be concluded that it is not only an income source, but also a resistance symbol and cultural and economic sustenance for generations of families who depend on it for their subsistence.

The economic activity of this region for these traditional communities is still the extraction and commercialization of babassu (Saraiva et al, 2019; Teixeira; Moreira; Silva, N., 2018). The extraction of natural resources and the exploration of minerals were the main economic bases in Tocantins State, mainly in the Bico do Papagaio region, since it is a region on the Amazon border (Santos; Vieira, 2018). According to Giralдин (2017), these characteristics contributed to the strengthening agriculture and intensified the babassu crop.

Thus, the expression “Family livelihood” is not only related to extractive activity as work but is also linked to culture and the maintenance of traditional communities. The value of babassu for women awakens care and establishes a bond with the palm tree (Shiraishi Neto, 2017). It is not just a job, but it represents people’s connection with the place; even if they do not make a living directly from this work, they do not stop doing it for their identity and cultural connection.

Through the expression “Sustainable utilization”, it is stated that all parts of the babassu plant are used, from the stem to the fruit, and it has considerable utility in generating energy, human and animal food, handicraft manufacturing and religious items, construction, cosmetic, and medicinal uses (Campos et al., 2015). Babassu has an influence on many economy segments, supplying the world market and its inputs, and continuing to be directed to many sectors (Maciel et al., 2022; Silva, E. et al., 2021). The importance of babassu extraction is highlighted not only in the local economy, but also in environmental sustainability and in the livelihood of local communities, showing its economic and social relevance.

For local stakeholders, the expressions “Supplementary income” and “Meet needs” represent a scenario in which many of the coconut breakers, although retired, continue to work in this task to supplement their income and meet their immediate needs. This research found that the majority of those interviewed were retired, like these statements.

“I’m retired, but I always break coconut when I want to buy something”. Extr.t-5.

“Before retiring, **my only income was babassu**, [...]” (our emphasis). Extr.t-10.

“I have my retirement, but, **when I need extra money, I break a coconut**” (our emphasis). Extr.t-11.

The coconut breaking, even for retired women of the research participants, is an essential activity to supplement income and meet basic needs, highlighting the importance of babassu for maintaining the livelihood.

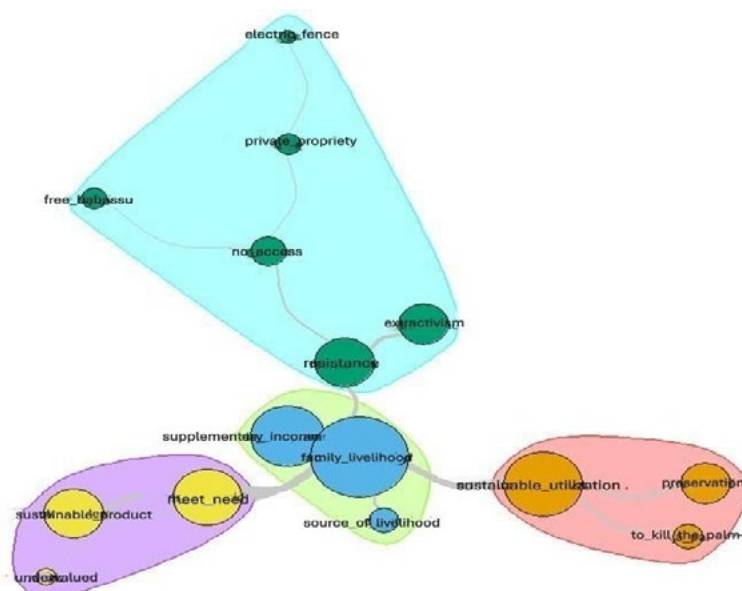
Table 1 displays many terms that did not have high frequencies but have implications for understanding the dynamics and importance of this ecosystem for traditional communities. The “Resistance” of communities in preserving babassu and guaranteeing their subsistence and the fight for “Free babassu” represent the constant battle for babassu plantations, even in the face of challenges such as “Private property”, “No access”, “Electric fence”, territorial “Conflicts”, and “Undervalued” products. This resilience not only reflects the cultural, economic, social, and ecological importance of babassu, but also highlights its relevance for the sustainability of local “Traditional communities” that depend on its exploitation.

Other terms, such as “Sustainable reuse” and “Use straw” for craft activities, among others, are integrations of responsible babassu management practices. The diversification of derived products and their use for other purposes strengthens the production chain, ensuring sustainable development for “Traditional communities”.

Figure 2 displays the similarity analysis with four clusters, which resulted in the elements “Family livelihood”, “Sustainable utilization”, “Meet needs”, and “Resistance”, which are essential for understanding the reality faced by research participants in the communities. These elements show a greater interconnection, pointing out that extractivism is not only related to economic and social issues, but also to environmental ones, highlighting its relevance and complexity among the aspects involved in the practice of babassu extractivism in the RESEX of the far north of Tocantins.

In the green cluster, the term “Family livelihood” has a greater degree of connection with “Supplementary income” and “Source of livelihood”; and these terms are linked to babassu extraction, as they describe how this activity can positively impact families, providing subsistence, income, and economic support. In the context of babassu extraction, it is possible to highlight that this activity has benefited families by providing support for basic needs and stability in financial security with the income achieved from the exploitation of babassu, despite obstacles such as “No access”, “Private property”, and “Electric fence”. According to Melo (2022), babassu in this context is a source of income for traditional communities that use its natural resources to live, occupying a large area of the northern and northeastern states of Brazil.

**Figure 2** | Similarity analysis of the babassu extractive stakeholders' evocations in the RESEX of the far north of Tocantins



Source: Prepared by the authors (2024).

The purple cluster brought the term “Meet needs” originated from the expression “Family livelihood” (green cluster) that can be understood as the effort to provide basic support and the necessary conditions for the family stability and well-being. This term has a direct connection with “Sustainable product”, as the babassu responsible exploitation not only guarantees the livelihood of the communities that depend on this activity but also contributes to environmental preservation and the local economy.

Babassu extractivism, despite being “Undervalued” in its sustainable products (related to the term “Sustainable product”), has the potential to “Meet needs” of extractive families. In the purple cluster, these terms represent the economic and social opportunities with this extractive exploration.

The babassu exploitation especially by coconut breakers has overcome barriers (blue cluster), which are the challenges faced in the context of this activity. According to Melo (2022), coconut breakers establish themselves as extractive communities because this natural resource is a source of their livelihood, in addition to preserving the babassu palm tree.

The following terms stand out in the salmon cluster: (a) “Sustainable utilization”; (b) “Preservation”; and (c) “Kill the palm”, reflecting the complexity and challenges faced in the sustainable management of



this resource source. These issues are related to the sustainability of babassu forests and the increase in deforestation, especially the felling of babassu palm trees and the application of poisons to kill them, fact that has been occurring in the extreme north of the Tocantins extractive reserve.

When specifying the relationship of “Sustainable utilization” with the stakeholders, it is found that the ways of life of traditional communities are careful when using natural resources. The “Preservation” and “Kill the palm” show a concern of the stakeholders involved with extractivism, the deforestation of adult babassu palm trees, and killing of the younger ones, being favored by the lack of regulation and inspection. The people say:

**“[...] when they don’t cut down the palm tree with a chainsaw, [...], they drill holes in the palm tree and apply poison [...]”** (our emphasis). Extr.t-18.

Deforestation leads to the concentration of income for farmers under the purpose to expand agriculture but fails to benefit families who live from the babassu extractivism (Teixeira; Moreira; Silva, N., 2018). This factor results in reduced supply of the extractive product, depriving extractivists and causing socio-environmental impacts. However, the neglect of the babassu plantations by the stakeholders of the RESEX of the far north of Tocantins is ratified by Melo (2022), who states that there is a lack of effective public policies and inefficient inspections for these extractivist communities.

The blue cluster stands out for the challenges: (a) “Resistance”; (b) “Extractivism”; (c) “No access”; (d) “Private property”; (e) “Free babassu”; and (f) “Electric fence”; these terms are related to the struggle and persistence of the actors involved in babassu extraction. To understand the dynamics and difficulties faced by communities, the challenges highlighted by local stakeholders include access to land and the guaranteed right to use resources in a sustainable manner, as well as the use of spaces by extractivist families, especially by coconut breakers.

Despite thirty-two years since the creation of the RESEX of the far north of Tocantins (Brazil, 1992), the lands have not yet been expropriated. The lack of regularization of these areas forces coconut breakers to collect and break coconuts on private properties that are part of the RESEX, often facing electric fences and prohibitions on access to the babassu plantations. The issue of land regularization is still a challenge to be overcome in RESEX (Oliveira; Sousa, 2016).

The term “Free babassu” is related to the legislation for the exploration and preservation of babassu plantations. The prohibition by the owners of “Private property” on the exploitation of babassu by coconut breakers participants of this research represents a historic struggle by the communities of the RESEX of the far north of Tocantins to guarantee free access to the babassu plantations. Coconut breakers are still prevented from having access to babassu palms.

In this context, this fact has been happening even with the Free Babassu Law No. 9,159/2008 (Tocantins, 2008) and the creation of this RESEX (Brazil, 1992). It cannot fail to highlight the role of social organizations as the Interstate Movement of Coconut Breakers (MIQCB, Brazilian acronym), the Association of the Extreme North Extractive Reserve (ARENT, Brazilian acronym) and the Union of Rural Workers of Carrasco Bonito (STTR-CB, Brazilian acronym), which have been fighting to ensure that these rights are fulfilled and that coconut breakers have their work space and assured the preservation of palm trees.

In Table 3, the prototypical analysis with the four quadrants displays the main terms and their respective importance of evocation regarding babassu extraction.

**Table 3** | Prototypical analysis of babassu extractive stakeholders in the RESEX of the far north of Tocantins

Average Order of Evocation <3,0			Average Order of Evocation >=3,0		
Central Nucleus			First Periphery		
Word	Frequency	AOE	Word	Frequency	AOE
Family livelihood	18	2,6	Supplementary income	13	3,5
Sustainable utilization	14	2,6	Meet need	13	3,3
Resistance	10	2,8	Sustainable product	10	3,3
Preservation	8	2,8			
Extractivism	8	2,2			

Frequency >= 6,32



Frequency < = 6,32	Contrast Zone			Second Periphery		
	Word	Frequency	AOE	Word	Frequency	AOE
	Free babassu	3	2,0	No access	5	4,2
	Undervalued	2	1,5	Kill the palm	4	4,0
	Electric fence	1	2,0	Source of livelihood	4	3,8
	Utilize the straw	1	3,0	Private propriety	3	3,3
	Sustainable reuse	1	3,0	Traditional communities	3	5,0
				Conflicts	1	5,0

Source: Prepared by the authors (2024).

In the prototypical analysis, the terms that stood out, according to Table 3, were: (a) Central Nucleus with “Family livelihood”, “Sustainable utilization”, and “Resistance”; (b) First Periphery with “Supplementary income”, “Meet needs”, and “Sustainable product”; (c) Contrast Zone with “Free babassu”, “Undervalued”, “Electric fence”, and “Use straw”; (d) Second Periphery with “No access”, “Kill the palm”, “Source of livelihood”, and “Private property”. It can be concluded that the evocations are related to the challenges faced by local stakeholders about the sustenance of basic needs, the access to land, the guaranteed right to the sustainable utilization of resources, and the free spaces for extractivist families.

In the Central Nucleus (Table 3), the evocations “Family livelihood” (f=18 and AOE=2.6) and “Sustainable utilization” (f=14 and AOE=2.6) represent that the exploitation of babassu is related to basic needs of the participants as a means of living to maintain sustenance. Still in this quadrant, “Resistance”, “Preservation”, and “Extractivism” refer to resilience in the face of challenges amidst unsustainable exploitation in this RESEX. The first two terms show the strength of the community in defending its way of life and values, while “Extractivism” highlights the concern with preserving babassu palm trees to generate income and sustenance.

In relation to the First Periphery quadrant (Table 3), “Supplementary income” (f=13 and AOE=3.5), “Meet needs” (f=13 and AOE=3.3), and “Sustainable product” (f=10 and AOE=3.3) display a concern with social and environmental sustainability, combined with the search for income to support the family.



The evocations of the Contrast Zone with “Free babassu” (f=3 and AOE=2.0) and “Electric fence” (f=1 and AOE=2.0) show the divergence regarding freedom of access imposed by the owner, who does not respect the Free Babassu Law (Tocantins, 2008), and the lands that have not yet been expropriated. The evocations “Undervalued” (f=2 and AOE=1.5), “Use straw”, and “Sustainable reuse” establish the connection with the babassu exploitation, highlighting the importance of valuing and consciously using natural resources and their multiple sustainable applications.

In the Second Periphery (Table 3), “No access” (f=5 and AOE=4.2), “Kill the palm” (f=4 and AOE=4.0), “Private property” (f=3 and AOE=3.3), and “Conflicts” display the research participants’ restlessness and concern with the challenges arising from socio-environmental conflicts, associated with these family livelihood practices, related to the “Source of livelihood” (f=4 and AOE=3.8), which display the “Traditional communities” (f=3 and AOE=3.3).

In the similarity and prototypical analysis, terms were identified that display the local stakeholders’ perceptions and their concerns about the babassu exploitation, as in the speech of Extr.t\_24, who expressed fears about the possibility of the babassu extinction by saying “the babassu will end”.

According to this analysis, it was clear that the extraction of babassu corresponds to the maintenance of basic needs, displayed by the term “Family livelihood”, being the word most evoked by eighteen participants (f) when asked about the inducing term. This research also showed that, according to local stakeholders, many factors have occurred with the babassu coconut exploitation, such as the product devaluation and the lack of infrastructure to transport the coconut in natura to a suitable place for breaking, aggravated by the prohibition of owners who do not accept extracting the almonds at the collection site. Furthermore, the lack of incentives through public policies, among others, contribute to these factors.

## 5. FINAL CONSIDERATIONS

This paper aimed to analyze the relevance of babassu extraction, mainly in maintaining basic sustenance for families in traditional communities in the RESEX of the far north of Tocantins, in addition to highlighting the challenges faced by extractivists, such as the access prohibition to babassu plantations.



It was found that babassu extraction has cultural, economic, symbolic, and environmental value for the Tocantins State. The importance of babassu exploration as an economic activity drove the defense of this territory. The involvement of local stakeholders promoted the conservation and preservation of babassu plantations, benefiting not only those who directly depend on this activity, but also those who are indirectly impacted by this activity.

The evocations that stood out the most were “Family livelihood”, “Sustainable utilization”, “Supplementary income”, “Meet needs”, “Sustainable product”, “Resistance”, “Preservation”, and “Extractivism”. These terms express the importance of babassu extraction as a source of family support and income to meet their needs, but also as a form of resistance to conflicts, as free access and preservation of babassu plantations.

The babassu extraction activity is exploited as work, resulting in sustainable products and generating struggle, persistence, social organizations, preservation, and culture. Therefore, this extraction activity plays a role in the local economy, producing income and promoting the autonomy of the traditional communities that depend on it, in addition to the recognition and respect for local traditions related to babassu, which are fundamental to guarantee the continuity of this activity, as sustenance, income, and preservation.

The lack of regularization of the RESEX in the far north of Tocantins is a problem for babassu extraction in the Tocantins State. The expropriation of land will benefit traditional extractive communities, ensuring economic stability and security for these communities, which are currently located in its surroundings.

It is important to emphasize that the concern of local stakeholders is centered on the preservation of babassu palm trees, manifesting itself in struggles that show resistance and in the concern with the lack of environmental land regularization and with reduction of deforestation of these palm trees. Therefore, more attention is required from state and municipal public authorities in the implementation and maintenance of public policies in the communities of the reserve in focus, especially in access to “Free babassu”.

## REFERÊNCIAS

- BRASIL. **Decreto n. 535, de 20 de maio de 1992.** Cria a Reserva Extrativista do Extremo Norte do Estado do Tocantins. Brasília, 1992. D.O.U. 21/05/1992, p.63151. Disponível em: <[https://www.planalto.gov.br/ccivil\\_03/decreto/1990-1994/D0535.htm](https://www.planalto.gov.br/ccivil_03/decreto/1990-1994/D0535.htm)>. Acesso em 17/abr/2025.
- CAMPELO FILHO, E.; ROSA, A. G. F.; LOPES JÚNIOR, R. DE M.; CASELLI, F. DE T. R. Economia solidária: a realidade das quebradeira de coco babaçu no interior do Brasil. **Revista em Agronegócio e Meio Ambiente**, v. 11, n. 4, p. 1239–1257, 2018. Disponível em: < <https://periodicos.unicesumar.edu.br/index.php/rama/article/view/5905>>. Acesso em 17/abr/2025.
- CAMPOS, J. L. A.; SILVA, T. L. L.; ALBUQUERQUE, U. P.; PERONI, N.; ARAÚJO, E. L. Knowledge, use, and management of the Babassu palm (*Attalea speciosa* Mart. ex Spreng) in the Araripe region (Northeastern Brazil). **Economic Botany**, v. 69, n. 3, p. 240–250, 1 set. 2015. Disponível em: <[https://www.researchgate.net/publication/281111060\\_Knowledge\\_Use\\_and\\_Management\\_of\\_the\\_Babassu\\_Palm\\_Attalea\\_speciosa\\_Mart\\_ex\\_Spreng\\_in\\_the\\_Araripe\\_Region\\_Northeastern\\_Brazil](https://www.researchgate.net/publication/281111060_Knowledge_Use_and_Management_of_the_Babassu_Palm_Attalea_speciosa_Mart_ex_Spreng_in_the_Araripe_Region_Northeastern_Brazil)>. Acesso em 17/abr/2025.
- CARRAZZA, L. R.; CRUZ, J. C.; SILVA, M. L. **Manual tecnológico de aproveitamento integral do fruto do Babaçu.** 2. ed. Brasília: Instituto Sociedade, População e Natureza (ISPN), 2012. Disponível em: <<https://ispn.org.br/babacu-manual-tecnologico-de-aproveitamento-integral/>>. Acesso em 16/abr/2025.
- CASTRO, E. R.; CAMPOS, Í. Formação profissional em serviço social: considerações sobre o estado do Tocantins. *In*: CASTRO, E. R.; CAMPOS, Í. (Eds.). **Coleção Formação regional da Amazônia.** Belém: NAEA, 2015. Disponível em: <<https://periodicos.ufpa.br/index.php/ncn/article/view/4171>>. Acesso em: 17/abr/2025.
- CELESTINO, S. Formação profissional em serviço social: considerações sobre o estado do Tocantins. **Temporalis**, v. 16, n. 32, p. 205–230, 2016. Disponível em: <<https://doi.org/10.22422/2238-1856.2016v16n32p205-230>>. Acesso em: 15/abr/2025.
- CONAB - COMPANHIA NACIONAL DE ABASTECIMENTO. **Boletim da Sociobiodiversidade.** Brasília: Conab, 2022. Disponível em: <<https://www.conab.gov.br/info-agro/analises-do-mercado-agropecuário-e-extrativista/boletim-da-sociobiodiversidade>>. Acesso em: 15/abr/2025.
- CORREIA, J. C.; JOIA, L. A. **A Representação Social das Competências Essenciais aos CIOs sob a Perspectiva dos Profissionais de TI.** Encontro da ANPAD - EnANPAD. **Anais...** Rio de Janeiro: 2014. Disponível em: <[https://arquivo.anpad.org.br/diversos/down\\_zips/73/2014\\_EnANPAD\\_ADI486.pdf](https://arquivo.anpad.org.br/diversos/down_zips/73/2014_EnANPAD_ADI486.pdf)>. Acesso em: 16/abr/2025.
- DONATO, S. P.; ENS, R. T.; FAVORETO, D. E. A.; PULLIN, E. M. P. M. Da análise de similitude ao grupo focal: estratégias para estudos na abordagem estrutural das representações sociais. **Revista Educação e Cultura Contemporânea**, v. 14, n. 37, p. 367–394, 2017. Disponível em: <<https://mestradoedoutoradoestacio.periodicoscientificos.com.br/index.php/reeduc/article/view/3786>>. Acesso em: 16/abr/2025.
- GIL, A. C. **Métodos e Técnicas de Pesquisa Social.** São Paulo: Altas. v. 7, 2019.
- GIRALDIN, O. “Árvore da providência”; “refrigério da pobreza”. O universo cultural do babaçu no Bico do Papagaio. *IN*: SANTOS, A. M.; MUNIZ, C. P. L. (Eds.). **Universo da cultura da palmeira do babaçu.** Palmas: Instituto do Patrimônio Histórico e Artístico Nacional - IPHAN, 2017. Disponível em: <[http://portal.iphan.gov.br/uploads/publicacao/universo\\_cultural\\_da\\_palmeira\\_babacu.pdf](http://portal.iphan.gov.br/uploads/publicacao/universo_cultural_da_palmeira_babacu.pdf)>. Acesso em 17/abr/2025.
- GONÇALVES, C. W. P. **Amazônia: Amazônias.** 3. ed. São Paulo: Contexto, 2012.
- GOUVEIA, V. M. **O mercado de amêndoas de babaçu no estado do Maranhão.** Brasília: Universidade de Brasília, 2015. <Disponível em: <https://www.alice.cnptia.embrapa.br/alice/bitstream/doc/1034566/1/VMGDSUnB2015FINAL.pdf>>. Acesso em: 15/abr/2025.



GOUVEIA, V. M.; ANGELO, H. **Tendência do mercado de amêndoas de babaçu no Maranhão** XII Encontro Nacional da Sociedade Brasileira de Economia Ecológica. Economia ecológica e institucionalidade ambiental em tempos de crise: anais. Rio de Janeiro, RJ: Sociedade Brasileira de Economia Ecológica, **Anais...**2017. 20p. Disponível em: <<https://www.alice.cnptia.embrapa.br/alice/handle/doc/1080139>>. Acesso em: 15/abr/2025.

GUERRA, G. C. M.; SHINZAKI, K.; ICHIKAWA, E. Y.; SACHUK, M. I. A representação social da profissão de contador na perspectiva dos profissionais da contabilidade. **Revista de Contabilidade e Organizações**, v. 5, n. 12, p. 157–171, 2011. Disponível em: <<https://www.redalyc.org/pdf/2352/235221531009.pdf>>. Acesso em: 13/abr/2025.

HOMMA, A. K. O. Extrativismo vegetal ou plantio: qual a opção para a Amazônia? **Estudos Avançados**, v. 26, p. 167–187, 2012. Disponível em: <<https://doi.org/10.1590/S0103-40142012000100012>>. Acesso em: 14/abr/2025.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. **População**. 2022a. Disponível em: <<https://cidades.ibge.gov.br/brasil/to/buriti-do-tocantins/panorama>>. Acesso em: 23/mar/2024.

IBGE – INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. **Variável quantidade produzida na extração vegetal - Babaçu**. Disponível em: <<https://sidra.ibge.gov.br/Tabela/289#resultado>>. Acesso em: 2/mar/2023.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. **População**. 2022b. Disponível em: <<https://cidades.ibge.gov.br/brasil/to/sampaio/panorama>>. Acesso em: 23/mar/ 2024.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. **População**. 2022c. Disponível em: <<https://cidades.ibge.gov.br/brasil/to/carrasco-bonito/panorama>>. Acesso em: 23/mar/2024.

JODELET, D. Interconnections between social representations and intervention. *In*: ROUTLEDGE (Ed.). **Social Representations in the “Social Arena”**. New York: Rosa, Annamaria Silvana, 2013.

JUSTO, A. M.; CAMARGO, B. V. Estudos qualitativos e o uso de softwares para análises lexicais. *In*: NOVIKOFF, C.; SANTOS, S. R. M.; MITHIDIERI, O. B. (Ogs). **Caderno de artigos: X SIAT & II Serpro**. Duque de Caxias. 2014. p. 37–54. Disponível em: <<https://lages.wordpress.com/>>. Acesso em 16/abr/2025.

MACIEL, D. L.; VARGAS, J. A. C.; MEZZOMO, R.; GAMA, M. A. S.; LEITE, L. C.; RODRIGUES, Í. R. C.; OLIVEIRA, L. R. S.; FARIAS, M. L. F.; LUZ, W. B. S.; ALVES, K. S. Physicochemical, nutritional, and sensory attributes of Minas frescal cheese from grazing cows fed a supplement containing different levels of babassu coconut (*Orbignya speciosa*). **International Dairy Journal**, v. 127, 1 abr. 2022.

MELO, A. S. **As quebradeiras de coco babaçu e os desafios do uso sustentável da floresta: a luta pela terra pós democratização do Brasil e desenvolvimento econômico**. 2022. Dissertação (Mestrado em História). Programa de Pós-Graduação em História das Populações Amazônicas (PPGHISPAAM). Universidade Federal do Tocantins. Porto Nacional - TO, 2022. Disponível em: <https://repositorio.uft.edu.br/handle/11612/5476>>. Acesso em 16/mar/2025.

MIQCB-MOVIMENTO INTERESTADUAL DAS QUEBRADEIRAS DE COCO BABAÇU. **Sobre nós**. Disponível em: <<https://www.miqcb.org/sobre-nos>>. Acesso em: 24/nov/2023.

MOSCOVICI, S. **La psychanalyse, son image et son public**. 1. Ed., France: Presses Universitaires de France, 2004. 512 p.

MOSCOVICI, S. **Representações sociais: Investigações em psicologia social**. 1.ed., São Paulo: Vozes, 11.ed., 2015. 408.

OLIVEIRA, M. R.; SOUSA, D. N. A luta pela regularização fundiária da reserva extrativista do Extremo Norte do Estado do Tocantins. **ACTA Geográfica**, p. 111–129, 2016. Disponível em: <<chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://extensao-rural.ufv.br/wp-content/uploads/2018/02/Regularizacao-fundiaria-resex.pdf>>. Acesso em 19/mar/2025.

OSORIO, L. A. R.; LOBATO, M. O.; CASTILLO, X. A. DEL. An epistemology for sustainability science: a proposal for the study of the health/disease phenomenon. **International Journal of Sustainable Development and World Ecology**, v. 16, n. 1, p. 48–60, fev. 2009. Disponível em: <<https://doi.org/10.1080/13504500902760571>>. Acesso em 12/mar/2025.





PALAGI, E.; GANDON, F.; TRONCY, R.; GIBOIN, A. **A survey of definitions & models of exploratory search** ESIDA 2017 - Proceedings of the 2017 ACM Workshop on Exploratory Search and Interactive Data Analytics, co-located with IUI 2017. **Anais...** Association for Computing Machinery, Inc, 13 mar. 2017. Disponível em: <<https://inria.hal.science/hal-01496557/document>>. Acesso em: 15/abr/2025.

PORRO, R. A economia invisível do babaçu e sua importância para meios de vida em comunidades agroextrativistas. **Bol. Mus. Para. Emílio Goeldi. Cienc. Hum**, n. 1, p. 169–188, 2019. Disponível: <<https://doi.org/10.1590/1981.81222019000100011>>. Acesso: 15/mar/2025.

PORRO, R. Dimensões diferenciadas do engajamento camponês no extrativismo do babaçu. **Estudos Sociedade e Agricultura**, v. 30, n. 2, p. e2230204, 6 out. 2022. Disponível em: < <https://orcid.org/0000-0003-4133-0068>>. Acesso em: 15/mar/2025.

PORRO, R.; SOUSA, R. C. Anatomy of babassu-nut value chain for policy guidance in support of traditional agroextractive communities in the Mearim Valley, Maranhão, Brazil. **Revista de Economia e Sociologia Rural**, v. 61, n. 4, 2023. Disponível em: <<https://doi.org/10.1590/1806-9479.2022.263743>>. Acesso: 20/mar/2025.

ROCHA, M. R. T. **A rede sociotécnica do babaçu no Bico do Papagaio-TO**: dinâmicas da relação sociedade natureza e estratégias de reprodução social agroextrativista. 2011. 252p. Tese (Doutorado em Desenvolvimento Rural) - Universidade Federal do Rio Grande do Sul, Faculdade de Ciências Econômicas, Porto Alegre, 2011. Disponível em: <<https://lume.ufrgs.br/handle/10183/79117>>. Acesso em: 20/mar/2025.

SANTOS, M. A. DA R.; VIEIRA, F. P. Percepções sobre sustentabilidade na educação ambiental. **Revista Desafios**, v. 5, 2018. Disponível em: <<https://sistemas.uft.edu.br/periodicos/index.php/desafios/article/download/5780/14393/28815>>. Acesso em: 20/abr/2025.

SARAIVA, A. F. S.; OLIVEIRA, N. M.; FILHO, M. X. P.; LOPES, W. S. Cadeia produtiva do babaçu em Cidelândia-MA: uma análise a partir da abordagem de cadeia global de valor. **Revista Brasileira de Gestão e Desenvolvimento Regional**, v. 15, n. 2, 2019. Disponível em: <<https://www.rbhdr.net/revista/index.php/rbhdr/article/view/4444/758>>. Acesso em: 20/abr/2025.

SHIRAISHINETO, J. Quebradeiras de coco: “Babaçulivre” e reservas extrativistas. **Veredas do Direito**, v. 14, n. 28, p. 147–166, 1 jan. 2017. Disponível em: < [https://www.oasisbr.ibict.br/vufind/Record/STJ-1\\_e8999dab8336c52de1c5c370b9f8bba1](https://www.oasisbr.ibict.br/vufind/Record/STJ-1_e8999dab8336c52de1c5c370b9f8bba1)>. Acesso em: 13/abr/2025.

SIENA, O.; MÜLLER, C. A. D. S.; FACHINELLO, D. T. Visões de sustentabilidade dos atores da cadeia produtiva dos produtos florestais não-madeiráveis. **Revista de Gestão Social e Ambiental**, v. 6, n. 1, 13 ago. 2012. Disponível em: < <https://doi.org/10.24857/rgsa.v6i1.427>>. Acesso em: 20/abr/2025.

SILVA, E. S.; MENDONÇA, G. R.; PINTO, R. A.; LEMOS, T. DE O.; ABREU, V. K. G.; PEREIRA, A. L. F. Beverage made from babassu nut kernels and grape fruit: physicochemical properties and sensory acceptance. **British Food Journal**, v. 123, n. 6, p. 2139–2151, 2021. Disponível em: [https://www.researchgate.net/publication/349135484\\_Beverage\\_made\\_from\\_babassu\\_nut\\_kernels\\_and\\_grape\\_fruit\\_physicochemical\\_properties\\_and\\_sensory\\_acceptance](https://www.researchgate.net/publication/349135484_Beverage_made_from_babassu_nut_kernels_and_grape_fruit_physicochemical_properties_and_sensory_acceptance)>. Acesso em: 20/abr/2025.

SOUSA, D. R. N.; OLIVEIRA, M. L. R. Conflitos e Desafios de populações tradicionais na Amazônia brasileira: o caso da Reserva Extrativista do Extremo Norte do Estado do Tocantins. **Mundo Agrário**, v. 18, n. 38, 1 ago. 2017. Disponível em: <<https://doi.org/10.24215/15155994e062>>. Acesso em: 20/abr/2025.

SOUSA, V. N. G.; SILVA, E. As quebradeiras de coco babaçu da microrregião do Bico do Papagaio do Extremo Norte tocaninense. **Revista Tocantinense de Geografia**, v. 11, n. 6, p. 114–124, 2017. Disponível em: < <https://doi.org/10.20873/rtg.v6n11p114-124>>. Acesso em: 21/abr/2025.





TAVARES, D. W. DA S.; BRITO, R. C.; CÓRDULA, A. C. C.; SILVA, J. T.; NEVES, D. A. DE B. Protocolo verbal e teste de associação livre de palavras: perspectivas de instrumentos de pesquisa introspectiva e projetiva na ciência da informação. **Ponto de Acesso**, v. 8, n. 3, p. 64–79, 2014. Disponível em: < <https://periodicos.ufba.br/index.php/revistaici/article/view/12917>>. Acesso em: 20/abr/2025.

TEIXEIRA, H. T.; MOREIRA, D. C.; SILVA, N. T. C. Territórios, populações tradicionais e conflito: a realidade da Reserva Extrativista Extremo Norte do Tocantins, Brasil. **SÉMATA**, v. 30, p. 359–376, 2018.

TOCANTINS. **Lei nº 1959, de 14 de agosto de 2008**. Dispõe sobre a proibição da queima, derrubada e do uso predatório das palmeiras do coco de babaçu e adota outras providências. Assembleia Legislativa do Estado do Tocantins, 2008. Diário Oficial nº 2713. Disponível em: <<https://central3.to.gov.br/arquivo/345116/>>. Acesso em 20/abr/2025.

VERGARA, S. C. **Projetos e relatórios de pesquisa em administração**. 16. ed. São Paulo: Atlas, 2016.



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