INDIGENOUS ETHNOKNOWLEDGE ABOUT STINGLESS BEES (APIDAE: MELIPONINI) IN THE BRAZILIAN TERRITORY: BIBLIOMETRICS

BIBLIOMETRIC REVIEW

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ABSTRACT

This study aimed to analyze the characteristics of scientific productions that address the knowledge of indigenous peoples about stingless bees in different ethnicities, in the Brazilian territory, through bibliometric analysis. Thus, we sought to answer the following question: what are the characteristics of scientific publications with the theme in question found in the databases in the research tools? As descriptors, the following keywords were used: "Brazilian Indigenous Knowledge and Stingless Bees", in the databases of Google Scholar and Scopus, totaling 18 (eighteen) scientific productions, in Spanish, English and Portuguese, with no year limit, and the survey was conducted in October and November 2022. As a result, we obtained: 10 (ten) (56%) scientific articles, 2 (two) (11%) master's dissertations, 2 (two) (11%) doctoral thesis and 4 (four) (22%) scientific papers published in annals of events, covering the period from 1982 to 2020, notifying the representativeness of the unconventional literature in this research. The study evidenced the contribution of Higher Education Institutions - federal public HEIs and the little performance of state HEIs with research on the subject, in addition to large gaps with regard to: the time and evolution of publications, the periodicity of journals and, especially, the geographical scenario with the presence of indigenous ethnicities in their relations

with stingless bees in the Brazilian territory. The importance of greater openness of databases to the dissemination of knowledge of traditional peoples and communities is highlighted.

Keywords: Native bees, Bibliometric analysis, Indigenous ethnicities, Brazil.

1. INTRODUCTION

Traditional peoples and communities are societies that live in direct association with their natural habitats for centuries or millennia, becoming holders of extensive experience in the use and conservation of natural resources arising from Brazilian mega biodiversity, exercising a logic of reciprocity with the land, with its territory and with other forms of life (POSEY, 1983; SPAMER, 2017).

Traditional knowledge and practices are elements of study linked to Ethnosciences, whose term emerged in the scientific scenario as a field of knowledge interactions and has evolved through a dialogue between the Natural Sciences and the Human and Social Sciences, seeking meanings and meanings of the cultural existence of the individual in relation to his ethnic group and nature (MARQUES, 2002; WINDWEIGHT; WIECZORKOWKI and TECHIO, 2019). This is important knowledge because it generates basic information and enables future strategies for the conservation and management of natural resources used to improve the quality of life (IDOHOU *et al.,* 2014). However, it is extremely important to rescue and record this knowledge, since the role of traditional ethnic culture is often forgotten and underestimated (XU, 2015).

Thus, knowing the relationships of traditional populations, especially indigenous peoples, with the local ethnofauna, taking into account the social, economic and cultural aspects of the region, is a necessary approach when it comes to the conservation and sustainability of these resources. Notably, in view of the historical changes experienced by local/rural populations still absent in the Brazilian ethnobiological literature, (CULLEN JUNIOR; RUDRAN and VALLADARES-

PADUA, 2003; PRADO and MURRIETA, 2015), especially, in the case of native stingless bees in the Brazilian territory, there is notification that the close relationship of these peoples with this group of insects comes from a long time, well before the Americas were conquered (NOGUEIRA-NETO, 1997; GOIS *et al.,* 2013; BARBIERI and FRANCOY, 2020), deserving, above all, the cataloguing and dissemination of this knowledge to millennia produced, portraying the cultural biodiversity of these ethnicities.

In this context, the Meliponini tribe, whose components are popularly known as meliponines, indigenous bees, native or "stingerless", for having the atrophied stinger (vestigial) (OLIVEIRA and RICHERS, 2019), are a group with pantropical geographical distribution, representing an important socioeconomic resource, given its value for environmental conservation (CAMARGO and PEDRO, 2013), mainly through the pollination services they provide to humanity, deserving special attention in this study with indigenous communities.

Although Brazil presents a wide diversity of indigenous peoples (about 1.3 million) (INDIGENOUS PEOPLES IN BRAZIL, 2022) and, an apifauna of Meliponini with 244 species of stingless bees (OLIVEIRA and RICHERS, 2019), studies on the role of these insects in the Amerindian culture are still incipient, requiring more precise research on the knowledge that these peoples have on this theme (SANTOS and ANTONINI, 2008; GOIS *et al.,* 2013).

In this context, bibliometric research is used in the investigation and evolution of bibliographic and scientific data that can help to understand the scenario of these researches, contributing to future studies in this and other areas of knowledge, in addition to signaling strategies for the conservation of indigenous cultural ethnodiversity and biodiversity of native bees.

Thus, given the importance of the theme, this study aims to analyze the characteristics of scientific productions that address indigenous ethnoknowledge

about stingless bees in different ethnicities in the Brazilian territory, through bibliometric analysis. To this end, we sought to answer the following question: what are the characteristics of scientific publications with the theme in question found in the databases in the research tools?

2. MATERIAL AND METHODS

The present study can be characterized as a bibliometric research, of a descriptive nature, seeking to analyze publications attached to the databases on the relationship of indigenous people with stingless bees in the Brazilian territory, namely: Google Scholar, SciELo, Scopus, Scirus and Web of Science. As descriptors, the following keywords were used: "Brazilian Indigenous Knowledge and Stingless Bees", as well as the respective translations in Portuguese and Spanish: "Brazilian indigenous knowledge AND stingless bees"; "*Conocimiento indígena brasileño* y *abejas sin aguijón*". The search was conducted in October and November 2022. After reading the titles and abstracts of the scientific papers analyzed, repeated publications were withdrawn, as well as texts that did not correspond specifically to the object of the study, which caused a high value of the number of disposals. Thus, a total of 18 (eighteen) selected productions were reached, analyzed in full.

The scientific productions found in the research were compared with the inclusion criteria previously defined to determine the relevance and their inclusion in the study, which are: (i) to address indigenous knowledge with stingless bees in the Brazilian territory; (ii) works published in full, free of charge and online; (iii) scientific productions in Portuguese, Spanish and/or English; (iv) no limit of year of publication; and, (vi) not be the product of review articles and simple abstracts. With the exception of the inclusion criteria and, in view of the proposed objective, all other types of publications were considered for the analyses, from which the variables to be analyzed were extracted (Chart 1), namely:

Chart 1. Analysis variables

VARIABLE	WHAT YOU WANT TO ANALYZE
PRODUCTION TYPE ACADEMIC CATEGORY	Representativeness of the types of productions: articles, theses, dissertations and others and, of conventional and unconventionalgray literature, associated;
AUTHORSHIP	Authors and co-authorships by article; number of articles of single authorship and of more than one author, and their respective collaboration index;
YEAR OF PUBLICATION	Distribution and evolution of the number of publications over the years;
SCIENTIFIC PRODUCTIONTHEMATIC	Indigenous ethnicities and their geographical representativeness in the productions in relation to native bees;
INSTITUTIONAFFILIATION	Educational Institutions - HEI and Research - IP, with greater production and their geographical distributions;
MAGAZINE	Magazines that publish the most on "Knowledge of Brazilian Indians and Stingless Bees";
KEYWORDS	Keywords attributed by the authors in the indexed productions, according to their frequency (Word Cloud).

Source: Research data (2022).

The analysis of the data obtained was performed using the Microsoft Excel 2010 software and descriptive statistics. The data were organized and presented in the form of graphs and tables, and the calculation of the collaboration index of the co-authors was based on the studies of Elango and Ajendran (2012) and Koseoglu (2016). To investigate the most frequent keywords in the selected productions, we used the analysis of the IRaMuTeQ software, a free program that is anchored in the R *software*, through the processing of the analysis of words, which are grouped and organized graphically according to their frequency in the Generated Word Cloud, and the text was organized by 7 (seven) topics according to the sequence of the variables mentioned above.

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3. ANALYSIS AND DISCUSSION OF RESULTS

3.1 TYPE OF PRODUCTION

A total of 18 (eighteen) productions were selected, being 2 (two) from the Scopus base (SANTOS and ANTONINI, 2008; ATHAYDE; STEPP and BALLESTER, 2016) and 16 (sixteen) from Google Scholar, presented in Table 1.

Table 1. Scientific productions addressing indigenous ethnoknowledge about stingless bees in Brazil, published in indexed journals between the years 1982 to 2020

N.	AUTHOR	TITLE	ETHNICITY\ STATE	CATEGORY\ PRODUCTION	YEAR\ PUBLICATION
1	POSEY, D.A.	The importance of bees to Kayapo Indians of the Brazilian Amazon.	Kayapó (MT)	Article	1982
2	CAMARGO, J.M.F.; POSEY, D. A.	*O Conhecimento dos Kayapó Sobre as Abelhas Sociais Sem Ferrão (Meliponinae, Apidae, Hymenoptera).*	Kaiapó (MT)	Article	1990
3	COSTA-NETO, E.M.	Folk taxonomy and cultural significance of "abela" (insecta, Hymenoptera) to the Pankarare, northeastern Bahia state, Brazil.	Pankararé (BA)	Article	1998
4	RODRIGUES, A.S.	*Etnoconhecimento sobre abelhas sem ferrão: saberes e práticas dos índios Guarani M'Byá na Mata-Atlântica.*	Guarani Mby'á (SP)	Dissertation	2005
5	RODRIGUES, A.S.	*Até quando o etnoconhecimento sobre as abelhas sem ferrão (Hymenoptera, Apidae,*	Guarani Mby'á (SP)	Article	2006
		Meliponinae) será transmitido entre			

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		gerações pelos índios Guarani M'byá da Aldeia Morro da Saudade, localizada na cidade de São Paulo, Estado de São Paulo, Brasil?			
6	COLLETTO-SILVA, A.	*Implantação da Meliponicultura e Etnobiologia de abelhas sem ferrão (Melipona) no estado da Amazônia.*	Mura, Kokama and Tucuna (AM)	Thesis	
7	BARRETO, L.S.; CASTRO, M.S.	*Conservação do umbuzeiro (Spondias tuberosa) e de seus polinizadores no contexto agroecológico para a agricultura familiar indígena Pankararé no semi-árido.*	Pankararé (BA)	Annals of Congress	2007
8	SANTOS, G.M.; ANTONINI, Y.	The traditional knowledge on stingless bees (Apidae: Meliponina) used by the Enawene-Nawe tribe in western Brazil.	Enawen-Nawê (MT)	Article	2008
9	SAMPAIO, J.O.; CASTRO, M.S.; SMITH, F.O.	*Uso da cera de abelhas pelos índios Pankararé no Raso da Catarina, Bahia, Brasil.*	Pankararé (BA)	Article	2009
10	FERNANDES, R.S.; SMITH, D.E; MACEDO, R. L.	*Experiência de Implantação da Meliponicultura como Componente Agroflorestal em Comunidades Indígenas do Rio Içana – AM.*	Baniwa (AM)	Annals of Congress	
11	NUNES, F.O.; SPINELI, A.C.; NUNES, C.O.; CASTRO, M.S.	*Criação e Manejo Sustentável de Abelhas sem Ferrão no Território Indígena Pankararé (TIP), Raso da Catarina, Bahia, Brasil.*	Pankararé (BA)	Annals of Congress	

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12	FERREIRA, M.N.; BALLESTER, W.C.; DORVAL, A.L; COSTA, R.B.	*Conhecimento tradicional dos Kaiabi sobre abelhas sem ferrão no Parque Indígena do Xingu, Mato Grosso, Brasil.*	Kaiabi (MT)	Article	2010
13	MODERCIN, I.F.	*Rancho do Jatobá do meio do mundo: etnografia da agricultura Pankararé e a relação dos índios com o ambiente.*	Pankararé (BA)	Dissertation	
14	LEO-NETO, N.A.; GRÜNEWALD, R.A.	*"Lá no meu reinado eu só como é mel": dinâmica cosmológica entre os índios Atikum, PE.*	Atikum (PE)	Article	2012
15	SOUZA, K. F.	*Alimentação indígena Sateré-Mawé: um panorama atual apresentando um breve contexto simbólico.*	Sataré-Mawé (AM)	Annals of Congress	2014
16	APODONEPA, L.; BARRETO, M.R.	*Conhecimento etnoentomológico na comunidade indígena Umutina (Mato Grosso, Brasil).*	Umutina (MT)	Article	2015
17	ATHAYDE, S.; RICHARD, J.; STEPP, J. R.; BALLESTER, W.C.	Engaging indigenous and academic knowledge on bees in the Amazon: implications for environmental management and transdisciplinary research.	Kĩsêdjê\Suyá, Ikpeng\Txicão, Kawaiwete\ Kaiabi and Yudjja\Juruna (MT)	Article	2016
18	REZENDE, A.C.C.	*Caracterização das fontes de recursos tróficos para abelhas dos gêneros Melipona e Scaptotrigona nas áreas da comunidade*	Sataré-Mawé (AM)	Thesis	2020

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		indígena Sateré Mawé, Amazonas.			

Source: Research data (2022).

After meeting the pre-established inclusion criteria, the 18 (eighteen) productions were grouped into the following academic categories: 10 (ten) (56%) scientific articles, 2 (two) (11%) master's dissertations, 2 (two) (11%) doctoral thesis and 4 (four) (22%) scientific papers published in annals of events. Covering the period from 1982 to 2020, in an interval of 38 (thirty-eight) years, focusing on the knowledge of indigenous Brazilians about native stingless bees, which forage in their respective villages.

3.1.1 ACADEMIC CATEGORIES OF THE ANALYZED PRODUCTIONS

Of the total number of publications (n = 18), 56% were registered in the form of an article (conventional literature) and 44% in the form of theses, dissertations and publications in annals of events (unconventional or gray literature[5]), which, in a way, becomes worrisome, as this is an indicator that studies on the subject of the relationship of indigenous ethnicities and communities of stingless bees are cataloged in literature of low distribution andor circulation. This, consequently, drastically reduces access to this information, especially when the importance of this knowledge is already known, as well as the dissemination and popularization of information that bring contributions not only to the advancement of science / research, but are consolidated as an important tool in the conservation and socio-environmental management of these groups.

As reported by Población (1992) and Botelho and Oliveira (2015), this unconventional characteristic, of an ill-defined gray color, is not a justification for being maintained as a 'fugitive literature' and consequently, penalized. In this research, these studies brought relevant contributions to the theme.

3.2 AUTHORSHIP OF THE ANALYZED PRODUCTIONS

The total number of authors was 36 (thirty-six), on average 2.0 (two) per publication. 8 (eight) (22%) authors published in documents of single authorship and 28 (twenty-eight) (78%) signed multi-authored productions. The latter with a collaboration index of 2.8 (two point eight). The collaboration index was calculated by dividing the total number of authors in multi-author publications by the total number of publications with multiple authors (ELANGO and RAJENDRAN, 2012; KOSEOGLU, 2016). Thus, the result found in the present study shows that each multi-author publication has approximately 3 (three) authors.

The number of publications with two or more authors, as well as the rate of collaboration may be related to the interdisciplinarity of the theme of this research, which results, according to Salim; Soares and Lopes (2020), in more complex studies and in the quality of these studies. Collaboration between researchers is a practice on the rise in several areas, according to Stallings *et al.* (2013). In addition, this practice reflects the increasing complexity of interdisciplinary research and the improvement in the quantity and quality of the resulting publications.

The vast majority of the productions, made available in the studied database, were signed by authors who did not produce other articles on the subject, in the time frame with the theme in vogue, exceptions to: i) Arnaldo dos Santos Rodrigues in the authorship of 2 (two) publications (2005 and 2006), ii) Posey Darrel as author and co-author, also of 2 (two) productions (1982 and 1990) and iii) Marina Siqueira de Castro, in the co-authorship of 3 (three) documents (2007, 2009 and 2009) (Table 1). The research themes of these authors reveal concerns with the ethnic groups: Guarani Mby'á, Kayapó and Pankararé, respectively. For the first author, the progressive loss in the transmission of ethnoknowledge of these indigenous people between generations, especially with native bees, is worrying. As for the others, the

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focus would be on the ethnobehavior and ethnoconservation of these pollinators and their resources.

3.3 YEAR OF PUBLICATION OF THE ANALYZED PRODUCTIONS

In the 18 (eighteen) productions analyzed, it was verified that the first work was 1 (one) article published in 1982, entitled: "The importance of bees to Kayapo Indians of the Brazilian Amazon", authored by Darrel Posey (POSEY, 1982)). After this record, there was a temporal space of 8 (eight) years until the next publication in 1990, in which Darrel Posey, together with João Maria Franco de Camargo, published another article with the same ethnicity, called: "*O Conhecimento dos Kayapó Sobre as Abelhas Sociais Sem Ferrão (Meliponinae, Apidae, Hymenoptera)*" (CAMARGO and POSEY, 1990). Both are classics in the indigenous literature in the ethnoknowledge of this group of bees, bringing relevant ethnoscientific contributions to the biological and behavioral understanding of these insects.

Still in the 1990s, Eraldo Medeiros Costa-Neto launched the publication of his article: "Folk taxonomy and cultural significance of "abeia" (insecta, Hymenoptera) to the Pankarare, northeastern Bahia state, Brazil", initiating research with the Pankararé ethnic group and the ethnoentomological study, especially with endogenous native bees in the villages of the Pankararé Territory, in the state of Bahia (COSTA-NETO, 1990). Only after seven years (in 2005), a sequence of publications begins, slightly more constant, despite the temporal gaps presented by the years 2011, 2013, 2017, 2018 and 2019 (Table 1), with significant reductions, with 2006, 2009 and 2010 being the years of greatest scientific production, as shown in Figure 1.

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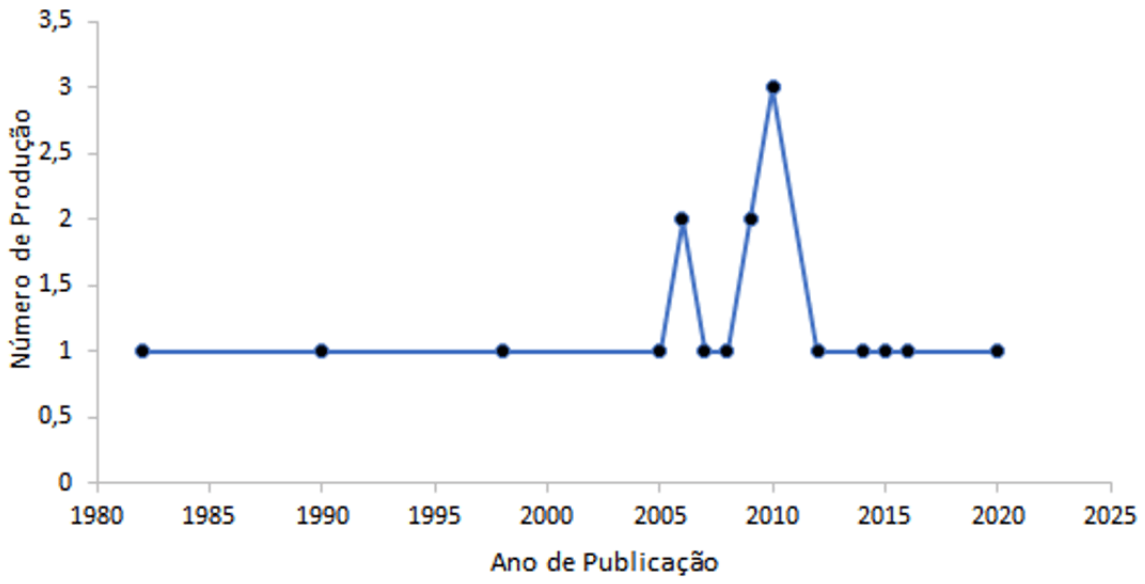
Figure 1. Annual Evolution of Scientific Production in Brazil with the theme “indigenous knowledge about stingless bees”, in the databases analyzed



Source: Research data (2022).

3.4 SCIENTIFIC\THEMATIC PRODUCTION OF THE ANALYZED PRODUCTIONS

It is possible to observe in Table 2, the result of the ethnic groups researched in the consulted databases, namely: Atikum, Baniwa, Enawene-Nawê, Guarani Mby'á, Kawaiwete\Kaiabi, Kayapó, Kokama, Kĩsêdjê\Suyá, Ikpeng\Txicão, Mura, Pankararé, Sataré Mawé, Ticuna, Yudja\Juruna and Umutina.

Table 2. Distribution of analysis variables containing: Ethnicity (n=15); Publications (n=18); Higher Education Institutions - HEI (n=13) and Research Institutions - RI (n=6), according to evaluated bases

REGION	*FU	ETHNICITY	PUBLICATIONS	**HEI	***RI
	PA	Kayapó	2	USP	Museu Paraense Emílio Goeldi\PA
	AM	Baniwa	1	UFLA	IF\AM
		Enawene-Nawê	1	UFOP	-

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North		Kokama, Mura and Ticuna	1	UFAM	INPA\AM
		Sataré-Mawé	2		
	Total	**7 (44%)**	**7 (39%)**	**4 (27%)**	**3 (50%)**
Midwest	MT	Kayabi \Kawaiwete	1	UFMT, FAV\UNB	-
		Kĩsêdjê\Suyá, Ikpeng\Txicão, Kawaiwete\Kaiabi and Yudja\Juruna	1	UF	IF\ES
		Umutina	1	UFMT	-
	Total	**6 (38%)**	**3 (17%)**	**4 (27%)**	**1 (17%)**
North East	BA	Pankararé	5	UEFS, UFBA, UFS, UNB	EBDA\BA INAGEA\BA
	PE	Atikum	1	UFCG	-
	Total	**2 (13%)**	**6 (33%)**	**5 (33%)**	**2 (33%)**
Southeast	SP	Guarani Mby'á	2	ESALQ\USP, USP	-
	Total	**1 (6%)**	**2 (11%)**	**2 (13%)**	**-**

Source: Research data, 2022.

*FU (Federated Unit); ** HEI (Higher Education Institutions) Brazil: ESALQ = *Escola Superior de Agricultura "Luís de Queiroz"\USP* (SP); FAV\UNB = *Faculdade de Agronomia e Medicina Veterinária* (DF); UnB = *Universidade de Brasília* (DF); UEFS = *Universidade Estadual de Feira de Santana* (BA); UFAM = *Universidade Federal da Amazônia* (AM); UFCG = *Universidade Federal de Campina Grande* (RN); UFLA = *Universidade Federal de Lavras* (MG); UFBA = *Universidade Federal da Bahia* (BA); UFMT = *Universidade Federal de Mato Grosso* (MT); UFOP = *Universidade Federal de Ouro Preto* (MG); UFS = *Universidade Federal de Sergipe* (SE); USP = *Universidade de São Paulo* (SP); IES (Instituições de Ensino Superior) Internacional: UF = *University of Florida*. *** RI (Research Institutions) Brazil: EBDA = *Empresa Baiana de Desenvolvimento Agrícola*, INAGEA = *Instituto Natureza,*

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Gente e Arte (BA); IF\AM = *Instituto Federal do Amazonas* (AM); IF\ES =*Instituto Federal do Espírito Santo* (ES); INPA = *Instituto Nacional de Pesquisa da Amazônia* (AM).

Data from Instituto Socioambiental (ISA, 2021) report the presence of 305 indigenous ethnic groups, distributed in the Brazilian states, in this study the result was far below the estimated, only 15 (fifteen) ethnic groups, of these, represented in the publications, the Pankararé people stands out with 5 (33%) productions; Already, Guarani Mby'á, Kawaiwete\Kaiabi, Kayapó and Sataré-Mawé, each represented by 2 (13%) productions; the other ethnicities (Atikum, Baniwa, Enawene-Nawê, Kokama, Kĩsêdjê\Suyá, Ikpeng\Txicão, Mura, Ticuna, Yudja\Juruna and Umutina) were contemplated with only 1 (7%) production each.

This result draws attention to the need to advance in more research with different peoples and thus avoid the erosion of knowledge that could bring answers to many contemporary catastrophes, especially when it comes to the bee fauna and potential extinctions. Including concern shown by the authors who sign the research investigated.

As for scientific production in Brazil, it can be inferred that the North region was the one that most contributed with publications in the researched area 7 (39%), followed by the regions: Northeast 6 (33%), Midwest 3 (17%) and Southeast with only 2 (two) (11%). In the researched databases, the South region was not represented by any scientific production on the subject (see Table 2).

Still under a geographic focus, it is observed, in the North and Midwest regions, the highest concentrations of ethnic groups, 7 (44%) and 6 (38%), respectively, followed by the regions: Northeast 2 (13%) and Southeast, with only 1 (one) (7%) ethnicity. It is possible to observe, despite the underreporting, that this is a trend in the indigenous ethnic distribution by region. According to data from Instituto Socioambiental (ISA, 2021), the North and Midwest regions are the ones that most

concentrate indigenous ethnic groups in Brazil, as shown: North (151), Midwest (60), Northeast (57), South (19) and Southeast (14) ethnic groups.

The data sampled with the scientific production of the theme are considered sub-representations, as they indicate the great scientific gap with indigenous ethnic groups and their interactions with native bees in all macro-regions. Faced with this, it is noted that despite the large Brazilian territorial extension, ethnosabers are not registered to assist in the creation of a responsive and participatory socio-environmental management, in addition to bringing contributions to the management and conservation of the native bee fauna in a regional context. Considering that the systems of conceptualization, classification and knowledge about insect biology are perceived and constructed in different ways in each culture (COSTA-NETO, 1998) and these, in turn, can offer an emic guide to the cultural realities of perception (POSEY, 1993).

3.5 INSTITUTION\AFFILIATION OF ANALYZED PRODUCTIONS

As for the Institutions of affiliation of the researchers in Brazil, this study revealed that Bahia is the Federation Unit (FU), which presented the highest number of partnerships of Higher Education Institutions (HEIs) with publications on the theme of the relationship between ethnic groups and bees without ferrão, being represented by 4 (four) HEIs: *Universidade Estadual de Feira de Santana* (UEFS), *Universidade Federal da Bahia* (UFBA), *Universidade Federal de Sergipe* (UFS), *Universidade de Brasília* (UNB). As for the macro-regions, the Northeast region stood out in number of partner HEIs, 5 (33%). As for the participation in research involving more than one indigenous ethnic group, the following stand out: the *Universidade Federal do Mato Grosso* (UFMT) (Kayabi and Umutina ethnic groups), the *Universidade de Brasília* (UNB) (Kayabi and Pankararé ethnic groups) and the *Universidade de São Paulo* (USP) (Kayapó and Guarani Mby'á ethnic groups). (see Table 2).

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Of the national scientific institutions, the Federal ones stood out with 10 (ten) (77%) units, as opposed to only 2 (two) (15%) State ones (*Universidade Estadual de Feira de Santana* - UEFS and *Universidade de São Paulo* - USP, including ESALQ) and 1 (one) (8%) International Institution (University of Florida – UF\USA) (see Table 2). These data denounce the low representation of HEIs in regional surveys, especially in the Legal Amazon, where the empathetic interaction with millenary knowledge and practices of indigenous relationship with nature is known. In a motion, sent to the Ministry of the Environment (MMA)[6], the Brazilian Society for the Progress of Science (SBPC[7], 2022), through its presidency, pronounces in an emblematic way on the ills of the Amazon region today, by stating that : “The region, which corresponds to 60% of the country's territory and encompasses nine states, systematically suffers from the precariousness of institutions and public policies and from practices of violence against territories, peoples, and traditional communities” (SBPC, 2022, s.p.).

This is not an isolated fact in the Amazon region. Lately, there has been a paralysis of Education and Research Institutions in Brazil due to lack of resources and risks of discontinuities, weakening them to meet political interests, a fact that can justify the absence of scientific productions with the theme, between the years of 2016 to 2020 (see Table 1). The study data also alert to the lack of involvement of State HEIs in all federated states (see Table 2). However, contrary to this potential, currently 22 (twenty-two) of the 26 (twenty-six) Brazilian States maintain this type of Public University, with the state of Paraná being the largest in number in Brazil, maintaining 7 (seven) State Universities, followed by the states of Bahia and São Paulo, each with 4 (four) of these institutions (MEC, n.d.).

However, the contribution to the theme of the Research Institutions (RI) in the States where they operate (in the Amazon, the *Instituto Nacional de Pesquisa da Amazônia* – INPA; in Bahia, the *Empresa Baiana de Desenvolvimento Agrícola* – EBDA (currently extinct) and *Instituto Natureza, Gente e Arte* – INAGEA; and, in Pará, the

Museu Paraense Emílio Goeldi), in addition to the timid presence of the Federal Institutes (FI's) in Espírito Santo and Amazonas, and the only International Institution, in the state of Mato Grosso, in the relevance of partnerships with the subject in vogue (see Table 2).

The results presented indicate that, despite the efforts, the involvement of Brazilian researchers and institutions in fostering research with indigenous ethnicities in regional villages is still insufficient, especially in relation to their knowledge related to native bee fauna, given the long experience accumulated, through the culture of orality, by the original peoples with this group of insects. It is expected that, with the formation of the Ministry of Traditional Peoples and the creation of the Secretariat of Indigenous Communities in the new government, there will be a strengthening in the incentive to research with all the themes that involve the knowledge of these peoples and their practices, as well as a greater incentive to research and the reduction of bureaucracy in access to this knowledge, aiming at the sustainability of the environment.

3.6 SCIENTIFIC JOURNAL OF THE ANALYZED PRODUCTIONS

In this item were identified the journals used for the publication of research by authors with the theme related to indigenous people and stingless bees in Brazilian territory. In this sense, of the 15 (fifteen) journals with the highest number of published articles, the Tellus Journal stands out with 2 (two) (11%) publications (FERREIRA *et al.,* 2010; LEO-NETO and GRÜNEWALD, 2012). This journal focuses on the dissemination of research results and documentation on Brazilian indigenous populations.

Another journal highlighted in the research was the Brazilian Journal of Agroecology, launched by the Brazilian Association of Agroecology (ABA)[8], publishing biennial supplements of the Brazilian Congresses of Agroecology, in the format of Annals. Its relationship with the theme comes from the relevance of studies that portray the

agroecological principles of indigenous ethnoknowledge in the management of native bees. Also, represented by 2 (two) (11%) publications (FERNANDES; SILVA and MACEDO, 2009; NUNES *et al.*, 2009).

It is worth noting, however, the large temporal gap involving such journals in the indexed databases with the subject in question. For Silva (2002), highlighting the main scientific journals of the theme becomes an important indicator, because it provides the source of dissemination of the knowledge most used by researchers, since it is an important channel of scientific communication.

3.7 KEYWORDS USED FROM THE ANALYZED PRODUCTIONS

Of the 44 (forty-four) terms extracted from the keywords attributed by the authors surveyed in the 18 (eighteen) scientific productions analyzed, it was possible to obtain a Word Cloud (WC) based on the incidence matrix of these terms, in which the size is proportional to their occurrence (Figure 2).

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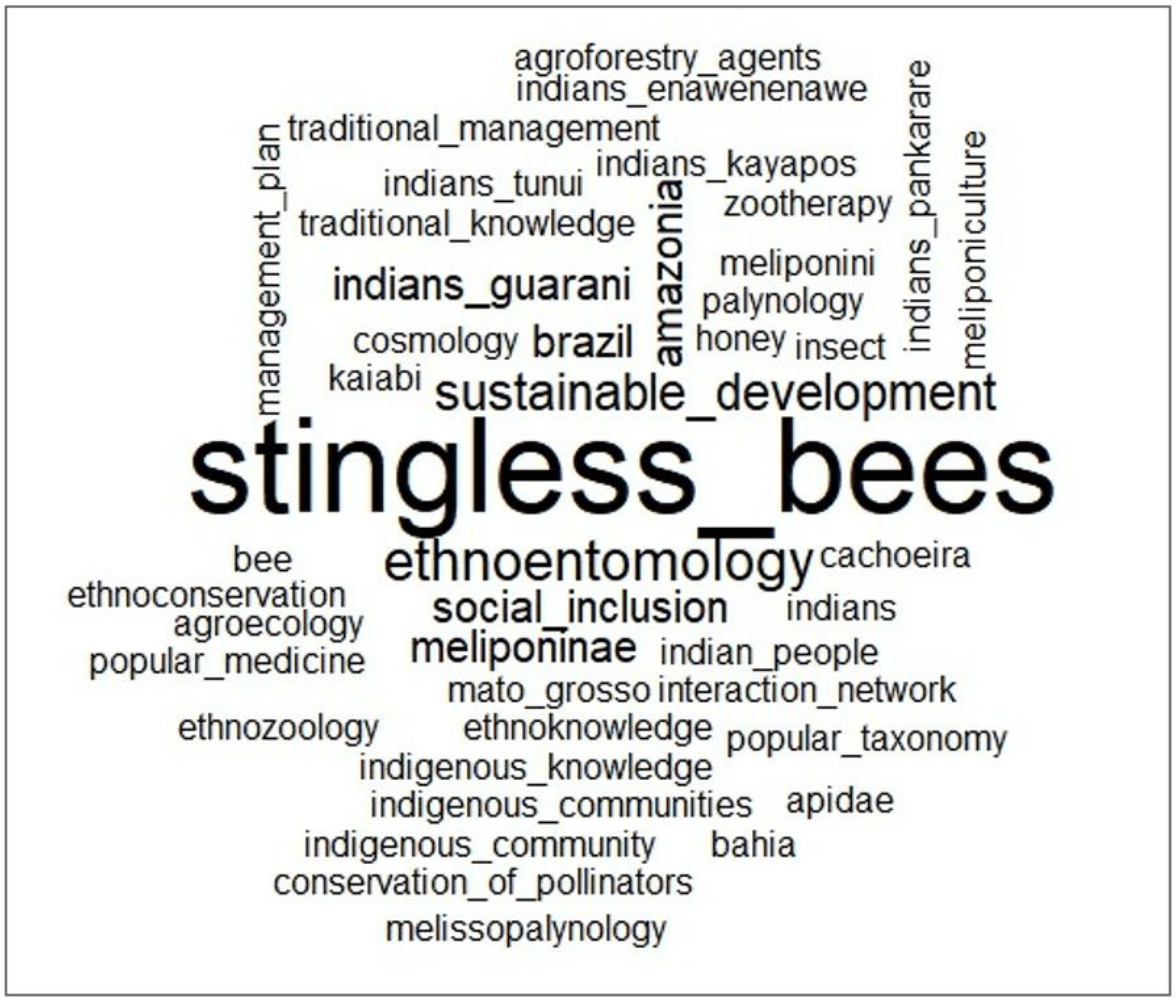
Figure 2. Cloud of words that express the frequency of keywords used in the indexed productions in the databases queried



Source: Research data, 2022.

At a more superficial level of observation, it is evident in the WC presented, the single highlight is the expression "stingless bees" (see Figure 2), indicating that it was the most cited, therefore, the most frequent in the matrix and, therefore, the one that signals the trend and focus of the research, being aligned with the purposes of this study. Already, in a smaller proportion (much less pronounced), forming an intermediate subgroup, the words "sustainable development" and "ethnoentomology" appear, which together complement the profile and prioritization

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of studies. In the other words in the WC, no less important, because they can also provide relevant information, it is possible to observe the formation of two subgroups, one with the words: "social inclusion, Amazon, meliponinae and Brazil", the other, more basal (in which the vast majority is found), indicating the presence of many different words in the matrix, with the same occurrence, therefore, infrequently. Perhaps, this trend is the result of the interdisciplinarity inherent to the theme.

Although, in Table 1 (which deals with the researched scientific productions), the words: “Conhecimento” and “Ethnoconhecimento” (in seven publications) appear in the list of titles of the productions, they are not configured as a highlight in the presented WC (see Figure 2), becoming more at the baseline level of information. That said, it may point to the requirements of scientific journals that prioritize keywords other than the title, which greatly increases the chance of searching for the article in the databases, but decreases their frequencies, influencing the results, especially when dealing with the WC tool.

4. FINAL CONSIDERATIONS

From the analysis of the scientific production referring to the indigenous ethnoknowledge about stingless bees in the Brazilian territory, in the databases evaluated, it is important to survey the main results found. It is worth mentioning that this work explored the databases of Google Scholar and Scopus, since other academic research bases consulted, such as: SciELo, Scirus and the Web of Science, for example, did not present scientific articles with the terms "Brazilian Indigenous Knowledge and Stingless Bees".

In this sense, between 1982 and 2020, it was possible to find 18 (eighteen) scientific productions on the subject in a time span of 38 (thirty-eight) years. However, the growth that occurred can be considered as discreet when compared to the relevance of the question under study. Of the productions analyzed, 44% correspond to an unconventional literature (thesis, dissertation and works published in annals), a

relatively high percentage, which, in a certain way, can compromise the dissemination and popularization of the knowledge in vogue, due to its low circulation in traditional distribution channels.

On average, 2 (two) authors per work sign the published productions, 8 (eight) of these published alone. Of a total of 36 (thirty-six) authors, 3 (three) stood out in the authorships and co-authorships: Posey Darrel, Arnaldo dos Santos Rodrigues and Marina Siqueira de Castro. Revista Tellus and Revista Brasileira de Agroecologia were the journals with the most publications related to the theme analyzed, despite the large spatio-temporal gap in publication.

In the scientific production with the theme, it was observed that only 15 (fifteen) ethnicities are represented in the studies (Atikum, Baniwa, Enawene-Nawê, Guarani Mby'á, KawaiweteKaiabi, Kayapó, Kokama, KĩsêdjêSuyá, IkpengTxicão, Mura, Pankararé, Sataré Mawé, Ticuna, YudjaJuruna and Umutina), being the stingless bee *Tetragonisca angustula* (jataí) the most managed by the Indians. There is emphasis on the Pankararé in the state of Bahia, as the most studied peoples. These, along with the Atikum people (1 production), total 6 (six) of the 18 (eighteen) productions, raising the northeastern ranking to the most representative in number of productions at the national level.

Bahia was the state that presented the most partnerships between Higher Education Institutions - HEIs, namely: the *Universidade Estadual de Feira de Santana* (UEFS), the *Universidade Federal da Bahia* (UFBA), the *Universidade Federal de Sergipe* (UFS) and the *Universidade de Brasília* (UNB). As for the regions, the Midwest and Northeast are equal in number of partner HEIs, with 5 (five) each. The great representation of Public Education and Research Institutions in the study produced is highlighted. However, it is noted the great gap of state HEIs with the theme, represented only by the *Universidade Estadual de Feira de Santana* (UEFS) and *Universidade de São Paulo* (USP).

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Thus, the great importance of indexing scientific productions in databases is highlighted, so that they expand the dissemination of ethnoknowledge generated with traditional peoples and communities in the Brazilian territory, and that non-conventional literatures, the so-called gray, are updated and published to circulate knowledge.

REFERENCES

APODONEPA, Lígia Antônia; BARRETO, Marliton Rocha. Conhecimento etnoentomológico na comunidade indígena Umutina (Mato Grosso, Brasil). **Etnobiologia**, v. 13, n. 3, p. 68-78, 2015. Disponível em: https://revistaetnobiologia.mx/index.php/etno/article/view/159. Acesso em: 10 fev. 2023.

ATHAYDE, Simone; STEPP, John Richard; BALLESTER, Wemerson. Engaging indigenous and academic knowledge on bees in the Amazon: implications for environmental management and transdisciplinary research. **Journal of Ethnobiology and Ethnomedicine**, v. 12, n. 26, p. 1-19, 2016. Disponível em: https://ethnobiomed.biomedcentral.com/articles/10.1186/s13002-016-0093-z. Acesso em: 10 fev. 2023.

BARBIERI, Celso; FRANCOY, Thiago Maurício. Modelo teórico para análise interdisciplinar de atividades humanas: A meliponicultura como atividade promotora da sustentabilidade. **Ambiente & Sociedade,** v. 23, p. 1-22, 2020. Disponível em: https://doi.org/10.1590/1809-4422asoc20190020r2vu2020L4AO. Acesso em: 10 fev. 2023.

BARRETO, Lílian; CASTRO, Marina Siqueira. Conservação do umbuzeiro (*Spondias tuberosa* Arr. Câmara) e de seus polinizadores no contexto agroecológico para a agricultura familiar indígena Pankararé no semi-árido. In: V Congresso Brasileiro De Agroecologia. Revista Brasileira de Agroecologia, v. 4, n. 2, 2009. **ANAIS [...]**. Curitiba, ABA-Associação Brasileira de Agroecologia, p. 1.580-1.583.

BOTELHO, Rafael Guimarães; OLIVEIRA, Cristina da Cruz de. Literaturas branca e cinzenta: uma revisão conceitual. **Ci. Inf**., Brasília, DF, v. 44 n. 3, p. 501-513, 2015. Disponível em: DOI: https://doi.org/10.18225/ci.inf..v44i3.1804. Acesso em: 110 fev. 2023.

CAMARGO, João Maria Franco de.; PEDRO, Silvia Regina de Meneses. Meliponini Lepeletier, 1836. In: MOURE, Jesus Santiago; URBANO, Danúncia

(Orgs.). **Catálogo de Abelhas (Hymenoptera, Apoidea) na Região Neotropical**. Versão online, 2013.

CAMARGO, João Maria Franco de.; POSEY, Darrell Addison. O Conhecimento dos Kayapó Sobre as Abelhas Sociais Sem Ferrão (Meliponinae, Apidae, Hymenoptera). **Boletim Museu Paraense Emílio Goeldi**, série Zoologia, v. 6, n. 1, p. 17-42, 1990. Disponível em: https://repositorio.museu-goeldi.br/bitstream/mgoeldi/761/1/B%20MPEG%20Zoo%206%281%29%201990%20CAMARGO.pdf. Acesso em: 110 fev. 2023.

COLLETO-SILVA, Alexandre. **Implantação da Meliponicultura e Etnobiologia de abelhas sem ferrão (Melipona) no estado da Amazônia.** Tese (Doutorado em Biologia Tropical e Recursos Naturais) – Instituto Nacional de Pesquisa da Amazônia\Universidade Federal do Amazonas. Manaus – AM, 2006. 196 f.

COSTA-NETO, Eraldo Medeiros. Folk taxonomy and cultural significance of “abeia” (Insecta, Hymenoptera) to the Pankarare, northeastern Bahia state, Brazil. **Journal of Ethnobiology**, n. 18, v. 1, p. 1-13, 1998. Disponível em: https://ethnobiology.org/sites/default/files/pdfs/JoE/18-1/Costa-Neto.pdf. Acesso em: 10 out. 2023.

CULLEN JUNIOR, Laury; RUDRAN, Rudy; VALLADARES-PADUA, Claudio. **Métodos de estudos em biologia da conservação e manejo da vida silvestre.** Curitiba: Editora UFPR. 2003.

ELANGO, Bakthavachalam; RAJENDRAN, Periyaswamy. Authorship Trends and Collaboration Pattern in the Marine Sciences Literature : A Scientometric Study. **International Journal of Information Dissemination and Technology**, v. 2, p. 166–169, 2014. Disponível em: https://www.researchgate.net/profile/Elango-B/publication/232763775_Authorship_Trends_and_Collaboration_Pattern_in_the_Marine_Sciences_Literature_A_Scientometric_Study/links/09e4150948bdfd97d8000000/Authorship-Trends-and-Collaboration-Pattern-in-the-Marine-Sciences-Literature-A-Scientometric-Study.pdf. Acesso em: 10 out. 2023.

FERNANDES, Rinaldo Sena; SILVA, Daniel Benjamim; MACEDO, Renato Luís Grisi. Experiência de Implantação da Meliponicultura como Componente Agroflorestal em Comunidades Indígenas do Rio Içana – AM. In: VI Congresso Brasileiro De Agroecologia e II Congresso Latino-Americano De Agroecologia. Revista Brasileira de Agroecologia, v. 4, n. 2, 2009. **ANAIS [...]**. Curitiba, ABA-Associação Brasileira de Agroecologia, p. 649-652.

FERREIRA, Márcio do Nascimento; BALLESTER, Wemerson Chimello; DORVAL Alberto; COSTA, Reginaldo Brito. Conhecimento tradicional dos Kaiabi sobre abelhas sem ferrão no Parque Indígena do Xingu, Mato Grosso, Brasil. Campo

Grande – MS. **Tellus**, v. 10, n. 19, p. 129-144, 2010. Disponível em: DOI: https://doi.org/10.20435/tellus.v0i19.212. Acesso em: 10 out. 2023.

GOIS, Glayciane Costa; RODRIGUES, Adriana Evangelista; LIMA, Cristina Aparecida Barbosa de; SILVA, Luzia Trajano. Composição do mel de Apis mellifera: requisitos de qualidade. **Acta Veterinaria Brasilica**, v. 7, n. 2, p. 137-147, 2013. Disponível em: DOI: https://doi.org/10.21708/avb.2013.7.2.3009. Acesso em: 10 out. 2023.

IDOHOU, Rodrigue; FANDOHAN, Adandé Belarmain; SALAKO, Valère Kolawolé; KASSA, Barthélémy; GBEDOMON, Rodrigue Castro; YEDOMONHAN, Hounnakpon; KAKAÏ, Romain Lucas Glèlè; ASSOGBADJO, Achille Ephrem. Biodiversity conservation in home gardens: traditional knowledge, use patterns and implications for management**. Journal of Biodiversity Science, Ecosystem Services & Management**, v. 10, n. 2, p. 89-100, 2014. Disponível em: DOI:10.1080/21513732.2014.910554. Acesso em: 09 fev. 2023.

KOSEOGLU, Mehmet Ali. Mapping the institutional collaboration network of strategic management research: 1980–2014. **Scientometrics,** v. 109, n. 1, p. 203–226, 2016. Disponível em: https://dl.acm.org/doi/abs/10.1007/s11192-016-1894-5. Acesso em: 09 fev. 2023.

LEO-NETO, Nivaldo Aurélio; GRÜNEWALD, Rodrigo de Azeredo. "Lá no meu reinado eu só como é mel": dinâmica cosmológica entre os índios Atikum, PE. **Tellus**, v. 12, n. 22, p. 49-80, 2012. Disponível em: https://www.tellus.ucdb.br/tellus/article/view/274. Acesso em: 09 fev. 2023.

MARQUES, José Geraldo W. O olhar (des) multiplicado. O papel do interdisciplinar e do qualitativo na pesquisa Etnobiológica e Etnoecológica. In: AMOROZO, Maria Christina de Mello; MING, Lin Chau; SILVA, Sandra Maria Pereira da (Eds.). **Métodos de coleta e análise de dados em etnobiologia, etnoecologia e disciplinas correlatas**. Rio Claro: UNESP/CNPq. 2002. p. 31- 46.

MINISTÉRIO DA EDUCAÇÃO – MEC. Cursos e Instituições. **Ministério da Educação**, s.d. Disponível: http://portal.mec.gov.br/pec-g/cursos-e-instituicoes. Acesso em: 22 nov. 2022.

MODERCIN, Isabel Fróes. **Rancho do Jatobá do meio do mundo: etnografia da agricultura Pankararé e a relação dos índios com o ambiente**. Dissertação (Mestrado em Antropologia) – Universidade Federal da Bahia. Salvador – BA, 2010. 190 f.

NOGUEIRA-NETO, Paulo. **Vida e criação de abelhas indígenas sem ferrão**. São Paulo: Nogueirapis, *1997.*

NUNES, Felipe Oliveira; SPINELI, Amia Carina; NUNES, Camila Oliveira; CASTRO, Marina Siqueira de. Criação e Manejo Sustentável de Abelhas sem Ferrão no Território Indígena Pankararé (TIP), Raso da Catarina, Bahia, Brasil. In: VI Congresso Brasileiro De Agroecologia e II Congresso Latino-Americano De Agroecologia. Revista Brasileira de Agroecologia, v. 4, n. 2, 2009. **ANAIS [...]**. Curitiba, ABA-Associação Brasileira de Agroecologia, p. 3127-3123.

OLIVEIRA, Favízia Freitas de; RICHERS, Bárbara Tadzia Trautman. As abelhas nativas "sem ferrão" (Hymenoptera, Anthophila, Meliponini) e sua importância para a conservação ambiental. In: NASCIMENTO, Ana Claudeise Silva do. *et al*. (Orgs.). **Sociobiodiversidade da Reserva de Desenvolvimento Sustentável Amanã (1998-2018)**: 20 anos de pesquisa. Manaus: IDSM, 2019. p. 352.

PESOVENTO, Adriane; WIECZORKOWKI, Jucinete Soares; TECHIO, Kachia Hedeny. Etnociência: um breve levantamento da producão acadêmica de discentes indígenas do Curso de Educação Intercultural, **Revista Ciências & Ideias**, v. 9, n. 3, p. 153-168, 2019. Disponível em: DOI: https://doi.org/10.22407/2018.v9i3.948. Acesso em: 09 fev. 2023.

POVOS INDÍGENAS NO BRASIL. Quadro geral dos povos. **Povos Indígenas No Brasil,** 2022. Disponível em: http://pib.socioambiental.org/pt/c/quadro-geral. Acesso em: 10 jun. de 2022.

POBLACIÓN, Dinah Aguiar. Literatura cinzenta ou não convencional: um desafio a ser enfrentado. **Ci. Inf**., Brasília, v. 21, n. 3, p. 243-246, set./dez. 1992. Disponível em: https://brapci.inf.br/index.php/res/download/54846. Acesso em: 09 fev. 2023.

POSEY, Darrel. A. The importance of bees to Kayapo Indians of the Brazilian Amazon. **The Florida entomologist**, v. 65, n. 4, p. 452-4581, 1982. Disponível em: https://journals.flvc.org/flaent/article/view/57745. Acesso em: 09 fev. 2023.

POSEY, Darrel. A. Keeping of stingless bees by the Kayapó indians of Brazil. Journal of **Ethnobiology** v. 3, p. 63-73. 1983. Disponível em: DOI:10.4324/9780203220191-20. Acesso em: 09 fev. 2023.

PRADO, Helbert Medeiros; MURRIETA, Rui Sérgio Sereni. A Etnoecologia em perspectiva: origens, interfaces e correntes atuais de um campo em ascensão. **Ambiente & Sociedade**, v. 18, n. 4, p. 140-143, 2015. Disponível em: https://doi.org/10.1590/1809-4422ASOC986V1842015. Acesso em: 09 fev. 2023.

REZENDE, Alinne Costa Cavalcante. **Caracterização das fontes de recursos tróficos para abelhas dos gêneros Melipona e Scaptotrigona nas áreas da**

comunidade indígena Sateré-Mawé, Amazonas. Tese (Doutorado em Botânica) – Instituto de Pesquisa da Amazônia. Manaus – AM, 2020. 106 f.

RODRIGUES, Arnaldo dos Santos. **Etnoconhecimento sobre abelhas sem ferrão**: saberes e práticas dos índios Guarani M'byá na Mata Atlântica. Dissertação (Mestrado em Ecologia de Ecossistemas) – Escola Superior de Agricultura Luiz de Queiroz. Piracicaba – São Paulo, 2005. 236 f.

RODRIGUES, Arnaldo dos Santos. Até quando o etnoconhecimento sobre as abelhas sem ferrão (Hymenoptera, Apidae, Meliponinae) será transmitido entre gerações pelos índios Guarani M'byá da Aldeia Morro da Saudade, localizada na cidade de São Paulo, Estado de São Paulo, Brasil? **Sitientibus** Série Ciências Biológicas, v. 6, n. 4, p. 343-348, 2006.

SALIM, Deborah Regina; SOARES, Bruno Eleres; LOPES, Rosana Conrado. Conhecimentos Populares na Floresta Atlântica do Rio de Janeiro: uma revisão bibliométrica de etnobotânica. **Pesquisas Botânica**, n. 75, 2020. Disponível em: http://www.anchietano.unisinos.br/publicacoes/botanica/volumes/075/75-018.pdf. Acesso em: 10 fev. 2023.

SAMPAIO, Josenilton Alves; CASTRO, Marina Siqueira de; Silva, Fabiana Oliveira da. Uso da cera de abelhas pelos índios Pankararé no Raso da Catarina, Bahia, Brasil. **Arquivos do Museu Nacional**, Rio de Janeiro, v. 67, n. 1-2, p. 3-12, 2009. Disponível em: https://revistas.ufrj.br/index.php/amn/article/download/47490/25598. Acesso em: 10 fev. 2023.

SANTOS, Gilton Mendes dos; ANTONINI, Yasmine. The traditional knowledge on stingless bees (Apidae: Meliponina) used by the Enawene-Nawê tribe in western Brazil. **Journal Etnobiology Etnomedicine**, v. 4, n. 19, 2008. Disponível em: https://ethnobiomed.biomedcentral.com/articles/10.1186/1746-4269-4-19. Acesso em: 10 fev. 2023.

SOCIEDADE BRASILEIRA PARA O PROGRESSO DA CIÊNCIA – SBPC. A Amazônia é o exemplo mais perverso da inexistência de um projeto nacional. Artigos e Manifestos**.** **Monção**, 15/08/2022. Disponível: http://portal.sbpcnet.org.br/noticias/ciencia-e-saberes-tradicionais-por-uma-amazonia-soberana-e-sustentavel/. Acesso: 19 nov. de 2022.

SILVA, S. **Comunicação Organizacional em Empresas de Construção Civil Sob a Ótica do Planejamento Estratégico**. Dissertação (Mestrado em Construção Civil) – Universidade Federal da Bahia. Salvador, 2002. 157 f.

SOUZA, Kalinda Felix Souza. Alimentação indígena Sateré-Mawé: um panorama atual apresentando um breve contexto simbólico. In: Reunião Brasileira De Antropologia, n. 29, 2014, Natal. **ANAIS [...].** p. 18.

SPAMER, Helmar. **Monumento Natural dos Pontões Capixabas: identidade pomerana na luta por direitos e território.** Dissertação. (Mestrado Profissional em Sustentabilidade junto a Povos e Terras Tradicionais – MESPT) – Universidade de Brasília. Brasília – DF, 2017. 106 f.

STALLINGS, Jonathan; VANCE, Eric; YANG, Jiansheng; VANNIER, Michael W.; LIANG, Jimin; PANG, Liaojun; DAI, Liang, YE, Ivan; WANG, Ge. Determining scientific impact using a collaboration index. **Proceedings of the National Academy of Sciences**, v. 110, n. 24, p. 9680–9685, 2013. Disponível em: https://doi.org/10.1073/pnas.1220184110. Acesso em: 10 fev. 2023.

XU, *Zaifu*. Conservation of biodiversity and cultural diversity are two sides of a coin: Xishuangbanna Dai's ecological culture as an example. **Biodiversity Science**, v. 23, n. 1, p. 126-130, 2015. Disponível em: DOI: 10.17520/biods.2014121. Acesso em: 10 fev. 2023.

APPENDIX - REFERENCE FOOTNOTE

5. Gray literature – concerns non-commercial, unconventional, semi-published publications, difficult to be found in traditional distribution channels and that usually require more research for their location and recovery (BOTELHO and OLIVEIRA, 2015).

6. Ministério do Meio Ambiente (MMA).

7. Sociedade Brasileira para o Progresso da Ciência (SBPC).

8. Associação Brasileira de Agroecologia (ABA).

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