Generational knowledge and learning in the productive practices of traditional coastal communities, Brazilian Amazon

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Abstract

The present study took place in traditional coastal communities located around and within the Marine Extractive Reserves (RESEX-Mar) of Tracuateua and Araí-Peroba, Northeast of Pará, Brazilian Amazon, in the period between 2019 and 2020, involving thirty families, whose self-sustaining activities depend on family farming, artisanal fishing and crab fishing. The aimed objectives were to investigate the generational knowledges and how descendants learn about them, considering the environmental productive practices of such traditional communities, as well as to reflect on the ways the transmission processes occur to the following generations. The employed method involved a qualitative approach, with field observation and interview techniques. In data collection, the following instruments were used: a script with semi-structured questions to conduct the interviews and field notes taken during observation periods. Data analysis was based on the organization, tabulation and treatment of the linguistic terms collected from the interviews with the support of graphics generated by the IRAMUTEQ Software. Subsequently,

content analysis was applied. The results showed there are riches constituted from the existing traditional knowledge, mainly in family farming and artisanal fishing (fish and crab), which are taught and transmitted by families to new generations. Conclusively, the research reveals that in the relationship between human beings and nature there are feelings of belonging perceived from the interviewees' identities, adding symbols and meanings, which are experienced and respected by all.

Keywords: knowledge and generation; traditional coastal communities; Amazon

1. Introduction

In the Brazilian Amazon, the relationships established and developed between members of traditional coastal communities and their environments allow members of these communities to apprehend a variety of knowledge types transmitted by/for several generations. Furthermore, we remark the emergent awareness resulting from the 'interrelationships between society and its natural environment', which is very likely to promote an ecological balance between them. Underlying this equilibrium is the feeling of belonging, as it brings consciousness about conservation and environmental preservation in the heart of people's actions (DIEGUES, 2000; OLIVEIRA, VIEIRA & JÚNIOR, 2017). It is also important to emphasize that the relationships connecting knowledge, principles and precepts are elaborated and transformed over time (BRANDÃO, 2015)[1].

Appropriate environmental resources used by members of traditional communities, according to Ostrom & Cole (2012), are due to the concept of ownership of the common good and interest they preserve regarding natural resources, considered as belonging to "all". It means to say that in addition to the use of common resources, communities start to develop a direct relationship with nature, thus conquering "identity and territorial rights" (BRANDÃO, 2015, p. 62).

In traditional communities, the appropriation and use of natural resources are understood as 'common environment' (HARDIN, 1968), with special emphasis on schools of fish, rivers, forests and the air (OSTROM, GARDNER & WALKER, 1994 and BLANKART, 1994). Therefore, the concept of the environmental commons is closely related to the principle of reciprocity, which, "[...] corresponds, therefore, to a reflexive act between subjects and not just a simple exchange of goods or objects" (SABOURIN, 2017, p. 37). In traditional coastal communities there are relationships of knowledge, memories and learning exchanges among subjects and nature and these relationships allow the use of the environmental common good, making it a right and duty of all.

This study deals with the existing knowledges in environmental productive practices, the forms of apprehending such knowledges and transmitting them throughout generations in Ponta da Areia, Cantina, Flexeira, Apicum, Santo André, Icaraú and Mimim traditional coastal communities, located in the surroundings of the Marine Extractive Reserve (RESEX-Mar) of Tracuateua, and Ilha das Pedras, Ponta do Urumajó and Perimirim communities, located within the RESEX-Mar Araí-Peroba, located in the municipalities of Tracuateua and Augusto Corrêa, respectively, northeast of Pará, Brazilian Amazon coast .

Based on the different types of ecosystems existing in these communities, a research question is

[1] All quotes from Brazilian authors and from official documents used in this paper were translated by the authors of this research

considered: *to what extent is the traditional and inherent knowledge in these practices transmitted and maintained throughout generations?* In this sense, the study hypothesis was based on the fact that knowledge is transmitted through generational relationships that occur from daily empiricism and are fueled by the feeling of belonging and symbolic meanings observed in the main productive practices developed by families, with emphasis on family farming (cultivation of cassava, tobacco, beans and corn) and artisanal fishing and crab fishing.

2. Traditional Coastal Communities

Traditional communities and peoples, legally supported by Decree No. 6040/2007, Art. 3, are defined as:

> I - [...] culturally differentiated groups that recognize themselves as such, that have their own forms of social organization, that occupy and use territories and natural resources as a condition for their cultural, social, religious, ancestral and economic reproduction, using knowledge , innovations and practices generated and transmitted by tradition [...] (BRASIL, 2007).

By defining traditional peoples and communities as culturally differentiated groups, whether they are riverine, indigenous, quilombola or coastal, among others (BRASIL, 2007; BRANDÃO & BORGES, 2014), the characteristics of dependence rely on the "use of natural resources essential to life" (DIEGUES, 2000, p. 8), as they live directly from nature, have cultural, identity, food, religion, memories, mystical knowledge about nature and environmental productive practices, systems which are acquired, transmitted and transformed by generations, and that have great social, cultural and environmental value, adding diversity to Brazilian society (ARRUDA, 1997; DIEGUES, 2000; BRANDÃO & BORGES, 2014).

Traditional communities also define 'territory'. This concept goes beyond the geographical logic, and encompasses the political, social, cultural knowledges and identity domains. It regards the ways of life, that is, "the territory is perceived, in fact, as subordinate to a much more comprehensive one, that is, spatial organization. The territory is the space committed to the political, affective or both dimensions" (CORRÊA,1998, p. 251).

The definition of the territory of traditional communities is ensured in Decree No. 6040/2007 and specified in Article 3:

> II - Traditional Territories: the spaces necessary for the cultural, social and economic reproduction of traditional peoples and communities, whether they are used permanently or temporarily, with regard to indigenous peoples and quilombolas, respectively, [....] and other regulations (BRASIL, 2007).

Thus, territories are conceived as spaces of political and social rights, shared by the social agents who define them. Therefore, "[...] knowing the territory is, primarily, knowing oneself, in parts and as a whole. Second, knowing the territory is knowing the Other" (SILVA, 1998, p. 259).

So that the concept of territory is realized in its real scope, it is necessary to qualify the territorialities

in force among people, as a "[...] set of practices and their material and symbolic expressions capable of ensuring the appropriation [and] permanence of a given territory by a particular social agent, the State, different social groups and companies" (CORRÊA, 1998, p. 251-252).

In addition, 'territorialities' in traditional coastal communities are defined as "the subjective quality of a social group or of an individual that allows them, based on images, representations and projects, to become aware of their living space [...]" (CARA , 1998, p. 262). Territorialities are visible in the relationships connecting social agents to biodiversity, knowledge, and culture, among other aspects, causing these spaces, fully experienced by these communities, to generate new meanings of identity, political-social and cultural belonging.

That said, one must understand the concepts of territory and territorialities refer to the issues of local space and the uses of natural resources, as the statement below points out:

> [...] a model of space occupation and use of natural resources aimed mainly at subsistence, with weak articulation with the market, based on intensive use of family labor, low impact technologies derived from heritage knowledge and, via as a rule, on a sustainable basis. [...] (ARRUDA, 1997, p. 1).

Therefore, the occupation of spaces and the use of natural resources are perceived, in these communities, by the social, cultural and historical relationship of belonging. Natural resources, in turn, are seen as collective heritage and must be governed by those who use them (OSTROM, GARDNER, & WALKER, 1994).

By observation, it is noticeable that the management of natural resources, as pointed out above, is usually controlled by the community and the regulation of reciprocity is incorporated. These practices reveal that "[...] collaborative conceived devices ensure the sustainability of production, environment and the permanence or modernization of social structures and institutions [...]" (SABOURIN, 2010, p. 151).

It is also noteworthy that the traditional coastal communities of the Reserves in focus, considering the concepts of territory and territoriality, as well as the use of natural resources, are interconnected with the knowledge existing in productive practices in these environments, which helps build the identity of these peoples.

2.1 Environmental productive practices and knowledge in traditional coastal communities

Environmental productive practices are those in which human beings depend solely on nature, such as family farming, artisanal fishing, crab fishing, among others. Consequently, these dynamics obey natural cycles and traditional knowledge, understood as types of work developed by families in traditional coastal communities, inherent to these practices, are the result of symbolic, cultural and identity relations (CASTRO, 1997).

It is noteworthy that in traditional communities, work is envisaged as a vital human activity, as it creates and recreates the livelihoods, knowledges, symbols and cultures of human beings and society. It should also be noted that 'work' in these communities happens and evolves directly in nature and obeys the timing of natural rhythms (THOMPSON, 1998) including the timing of the waters (PACHECO, 2009).

Furthermore, Castro (1997) advocated that work in traditional communities presents modes, techniques and symbols attained over many years which guide peoples' activities.

The environmental productive practices in the traditional coastal communities of the Brazilian Amazon coast are numerous, and among the most common ones are those arising from natural resources and extractivism and those that depend on the soil.

Among the productive practices arising from natural resources stand out the artisanal fishing (for fish caught in the sea, in rivers and in natural fields, popularly known in the region studied as freshwater rivers); capture of the mangrove crab (Ucides cordatus, [L]), shrimp (Farfantepenaeus subtilis Litopenaeus schmitti), crab (Callinectes sapidus Calinectes sp), turu (Teredo sp), among others; the collection of fruits such as: açaí (Euterpe oleracea), cupuaçu (Theobroma grandiflorum), bacuri (Platonia insignis), buriti (Mauritia flexuosa) and others (OLIVEIRA, VIEIRA & JUNIOR, 2017).

As for productive practices of animal origin, small-scale livestock farming in a zoning system, captive fish farming (fish) and beekeeping with honey production stand out.

There are also productive practices that depend exclusively on the land to be carried out, such as family farming – the type of practice developed in rural areas, relying on the family's own work force. The family income is, accordingly, the result of economic activities of the rural property (BRASIL, 2006), in which the planting of cassava, beans, corn, tobacco, watermelon, pumpkin deserve to be highlighted among others. Agriculture, in some traditional coastal communities, is seen as the main productive practice, with emphasis to "the planting of cassava for the production of flour [...]" (SOUSA et. al. 2020, p. 3694). It is considered as the main economic source of the family nucleus.

It is imperative to emphasize that these environmental productive practices are filled with cultural riches, and memories. All this constitutes the local culture conceptualized as "[...] an accumulative process, resulting from the entire historical experience of previous generations" (LARAIA, 2001, p. 48). Besides, "culture determines man's behavior and justifies his actions" (MACHADO, 2002, p. 24).

Another crucial aspect to highlight is that "cultural heritage" (LARAIA, 2001) is rooted in the formation of people, transmitted from one generation to the other, and is still present in traditional communities. This heritage becomes evident in peoples' 'being' and 'doing', and results in the way how the individual sees the world. His vision, in turn, varies according to the cultural environment in which he is inserted.

Although the cultural heritage is rooted in the constitution of people, it is clear that society has gone through several transformations and culture also follows this process. Dynamic Culture is, "[...] every cultural system that is always changing. Understanding it is important to mitigate the shock between generations and to avoid prejudiced behavior" (LARAIA, 2001, p.101). This shock may be partially explained by the fact that when you employ new techniques or take hold of modern technologies, used to improve the forms of production, these innovations are mistrusted by older generations, that is, cultural transformations are slow and time-consuming.

It is important to emphasize that traditional coastal communities also accompany these cultural changes, as in many cases they are greatly pressured by capitalist societies, especially with regard to the stigmas and/or prejudices they suffer, as they are seen by some as a place of backwardness (with no development), where poverty prevails. It is also believed that this stigmatization happens because they

differ from the commercialization standards of the "developed" capitalist society. It also happens with the local culture as the traditional knowledge brings amazement and causes distrust to those who do not share the same reality or fully understand it. However, it can be said that this vision is disproportionate to the cultural, environmental and economic wealth existing in these communities.

In light of this, one can assure the environmental and cultural diversity existing in these communities is immense and surpasses all negative labels. These stigmas tend to be modified when society starts to rethink how significant the knowledges existing in these productive practices are and considering they happen by way of relationship with nature (land and sea), mythology, biodiversity, and are evidenced in the daily experiences of traditional coastal communities.

3. Method

3.1 Sample

This research was carried out at RESEX's-Mar from Tracuateua and Araí-Peroba. It sought to explore the contact with traditional coastal communities located within and/or around these two Reserves, in order to understand the types of environmental production practices adopted, the relationships among families, the knowledges of generations among other relevant aspects emerged across the study.

After identifying the communities, the *Unidades Básicas de Saúde* [Basic Health Units] (UBS) were searched through its *Agentes Comunitários de Saúde* (ACS) [Community Health Agents] in order to provide information about these communities, such as: number of inhabitants, families, beneficiaries of INSS [National Institute of Social Security] and of government social programs, namely, Bolsa Família[2], and specific types of productive practices each family developed.

With the purpose of selecting the families of the two researched RESEX-Mar, we referred to Decree No. 45, of October 6, 2015 that approved the Profile of the Beneficiary Family of Tracuateua Marine Extractive Reserve and by means of which it was possible to elaborate the following criteria of illegibility that consists in: (i) the family must use natural resources; (ii) the informant family member must be at least 18 years old; (iii) the family must be residing in the community for more than 10 years; (iv) the family must be a user of the RESEX-Mar territory. Using these selection criteria, 03 (three) families were listed by communities, to be interviewed about their environmental production practices.

Data were collected in 2019 and 2020, involving 21 (twenty-one) families from RESEX-Mar of Tracuateua and 9 (nine) families from RESEX-Mar Araí-Peroba, making a total of 30 (thirty) families.

For the identification of the families, codes were used in order to preserve their identity in confidential basis. The codes were attributed as follows: F = family, numerical identification from 1 to 3 for each family and the initial letter of the names of the communities, such as: A = Apicum, F = Flexeira, I = Icaraú, S/A = Santo André, M = Mimim, P/A = Ponta da Areia, C = Cantina, P = Perimirim, P/U = Ponta do Urumajó and I/P = Ilha das Pedras.

[2] Bolsa Familia (PBF) is a social Project that consists in conditional cash transfer program (CCT) focused on health and education that has been implemented by the federal government of Brazil since 2003.

3.2 Instrument

The present study followed a qualitative approach "involving descriptive data, obtained from the researcher's direct contact with the situation studied, emphasizing the process more than the product and being concerned with portraying the perspective of the participants" (LUDKE & ANDRÉ, 1986, p. 13). In addition, participatory research was used with "participation of researchers in practical activities, thus implementing the habit of facing themes, ordering their treatment, arguing solidly and drawing coherent and consistent conclusions" (DEMO, 1985, p. 51). In terms of techniques and instruments employed, field observation was used, as it allows the researcher to observe the research participants in their daily lives, in addition to enabling perceptions about the relationships between practices and traditional knowledges. This technique allows:

> [...] the observer gets closer to the 'subject's perspective', an important target in qualitative approaches. As the observer follows the subjects' daily experiences in loco, they can try to apprehend their worldview, that is, the meaning they attribute to the reality that surrounds them and their own actions (LUDKE & ANDRÉ, 1986, p 26).

Through field observation, it becomes clear that only via direct contact and experience in these communities may the meanings of experiences and actions on their productive practices, full of knowledge and symbolism, be satisfactorily understood. Field observation is not just about 'watching' and 'listening', but also about examining the phenomena and facts found in the communities (MARCONI & LAKATOS, 2011). Thus, to perform this technique, the use of field notes was a useful instrument to keep records of visits at the research locus. By contacting people, impressions of what was observed in the communities were registered. Field notes are intended to "[...] record everything that the researcher has witnessed and experienced during his contact with the involved subjects" (MEKSENAS, 2010, p. 122).

Along the investigation, families in the execution of the environmental productive practices were monitored, with special emphasis to the handling modes, gestures, speeches, environment, clothes/outfits, used tools and also the relationships carried out with each other along the process. The records were classified by families, considering the RESEX-Mar of Tracuateua and Araí-Peroba.

Interviews with the families were also useful, as "the interactions must take place through spontaneous dialogues, however deep, open and careful [...]" (MARCONI & LAKATOS, 2011, p. 273). The interview script was chosen as a controlled instrument. Regarding its formulation [...] it depended on the definition of the type of interview to be adopted" (GIL, 2008, p. 115). The script was elaborated with open and closed questions and interviews were conducted in the homes and/or workplaces of the participants. For the recording of the narratives, a voice recorder, brand Sony Stereo IC Recorder, model ICD-PX470 was used. It should be emphasized that these audio recordings were used with the permission of the investigated subjects (MEKSENAS, 2010).

After recording the interviews with the families, the information was manually transcribed, supported by the technique of graphematic transcription, which, according to Lucchesi (2009), seeks to transpose the speech into writing as faithfully as possible, enabling better text preview. The Garmin GPS, model GPSmap 60 CSx, was also used in field observation. This instrument was necessary to demarcate the longitudes and latitudes of the communities for the construction of the map presented in this study.

Data analysis was carried out based on field observation, complemented by interviews, which took into account the conceptions of the families' discourse. Content analysis, which pursues the "building of analysis unit networks to represent knowledge not only by elements, but regarding the relations they involve (BAUER, 2015, p. 194), was also an employed technique. It means to say that contents were treated with the objective of understanding the point of view of the families about the traditional knowledge acquired in their daily routine of environmental productive practices and about the ways of learning and transmission to further generations.

Additionally, the IRAMUTEQ Software (R Interface pour les Analyzes Multidimensionnelles de Textes et de Questionnaires) 0.6 alpha was used, as "it is a free computer program, anchored in the R Software and allows different forms of statistical analysis on textual corpus and on tables fed by words (CAMARGO & JUSTO, 2013, p. 513).

In order for the graphics to be generated by the IRAMUTEC Software, the following categories were selected: (i) *knowledge* and (ii) *generations*. From the defined categories, the 'Similitude analysis' was generated, considering the RESEX-Mar, the frequency of words in each graph and the relationships between the categories.

Similitude Analysis represents the link between words in the textual corpus, in which it is possible to understand the structure of the text's construction and the themes of relative importance, distinguishing common parts and specificities, in addition to verifying them according to the existing descriptive variables (SALVIATI, 2017).

Drawing on the approach, techniques, instruments and analysis of the data used during the research, contributed to the geographical and contextualized characterization of the study area. The results obtained are shown in the next session of this paper.

3.3 Study area

The traditional coastal communities approached in this study are associated to the RESEX's-Mar of Tracuateua and Araí-Peroba, either because of their geographic definition or because of the use of natural resources existing in these units. It should be noted that the RESEX's-Mar are part of Unidades de Conservação (UC) de Uso Sustentável [Sustainable Use Conservation Units], characterized as areas intended to bring together the conservation and preservation of ecosystems, allowing traditional peoples to make the sustainable use of natural resources in a rational way , and providing communities located around and/or within the UC, with the development of sustainable economic activities, thus complying with the special rules and regulations they have (BRASIL, 2000).

In the UCs there are several categories, which are specified in Art. 14, such as: "environmental protection area, area of relevant ecological interest, national forest, extractive reserve, fauna reserve, sustainable development reserve and private heritage reserve cultural" (BRASIL, 2000). Among the UCs, stand out those reserves, which, according to Art. 18, have the purpose of "protecting the livelihoods and culture of these populations, and ensuring the sustainable use of the unit's natural resources" (BRASIL, 2000).

We are aligned with the idea that the RESEX's-Mar are essential for environmental conservation and preservation, and undertake the fact that the study areas, although located in the same ecosystem

(Figure 1), have specific characteristics diversified environments, with their own ecosystem peculiar features, and particular modes of appropriation and use based on their relationships with the environment.

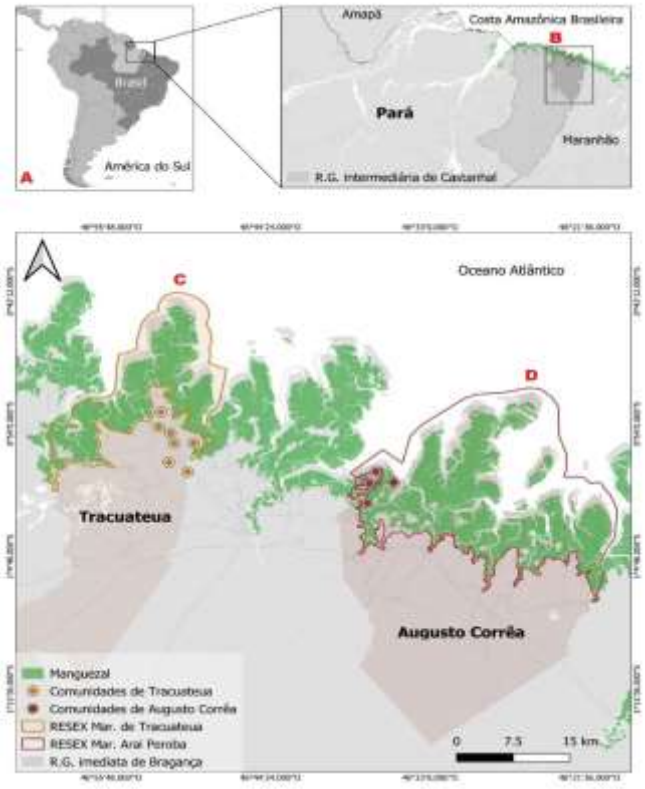

Figure 1. Location Map of the study areas in South America (A), Brazilian Amazon coastal area, with emphasis on the State of Pará in the intermediate geographic region of Castanhal (B), Tracuateua Municipality with emphasis on the Tracuateua Marine Extractive Reserve and communities (C), Municipality of Augusto Corrêa, with emphasis on the Araí-Peroba Marine Extractive Reserve and its respective communities (D). Source: Elaborated by the authors with Software QGis, 2021.

The Tracuateua RESEX-Mar is located in the municipality with the same name, in the Northeast region of the state of Pará (Figure 1). According to IBGE data (2019), Tracuateua municipality has a territorial area of 862,025 km² and, according to the last census of 2010, its population corresponds to 27,455 inhabitants. Of this total, 26.4% live in the urban area and 73.6% live in the rural area, so it can be considered an eminently rural location. Currently, its estimated population is 30,959 inhabitants (IBGE 2019). The place exhibits diversified and peculiar ecosystems: natural fields, colonies and beaches, according to Nascimento & Nascimento (2020).

The Tracuateua RESEX-Mar was created by Decree n/n[3], published on May 20, 2005, and is located in the coastal region of the municipality of Tracuateua, covering the mangrove ecosystem, with an area of 27,864.08 hectares, according to information provided by the Chico Mendes Institute of Biodiversity (BRASIL, 2020), and also highlighted by Costa (2014) and Rodrigues (2017).

In the municipality, "there are 55 (fifty-five) communities, 01 (one) within the limits [of Tracuateua

[3] The indication n/n stans for “no number” . That is, the decree presents no identification number

RESEX-Mar] and the others (fifty-four) in the surrounding areas" (SOUSA, et. al. 2020, p. 4). Among the communities around RESEX-Mar de Tracuateua, the study focused on 7 (seven) of them, namely: *Flexeira, Apicum, Santo André, Icaraú, Mimim, Cantina* and *Ponta da Areia*.

The Araí-Peroba RESEX-Mar is located in the municipality of Augusto Corrêa, also located in the Northeast of the state of Pará (Figure 1). The municipality has a territorial area of 1,099,619 km², and, according to the last census of 2010, its population corresponds to 40,497 inhabitants. Currently, the estimated population in the municipality is 45,998 inhabitants (IBGE 2019).

The Araí-Peroba RESEX-Mar was also created through Decree n/n, published on May 20, 2005, and expanded by another Decree n/n, published on October 10, 2014. It is located in the coastal region of the municipality of Augusto Corrêa and has a coverage area of 11,549.73 hectares, with diversified ecosystems including areas of forests and mangroves (BRASIL, 2020).

RESEX-Mar Araí-Peroba is made up of 38 (thirty-eight) communities, all of them are located within the boundaries of the Conservation Unit in focus. Among these communities, the study focused on 4 (four) traditional coastal communities: *Ilha das Pedras, Malhado, Ponta do Urumajó* and *Perimirim*. It is important to remark that in Malhado community it was not possible to interview the families due to the New Coronavirus pandemic, therefore, it had to be excluded from the research scope in what concerns the qualitative data.

4 Results and Discussion

In this subsection, the results and discussion are presented, considering the knowledges imprinted in productive practices, prioritizing the chronological time in which the learnings took place and how they were transmitted to the next generations.

4.1 The chronology of productive practices within families

Initially, the families were asked since when they had been carrying out these types of practices and, in view of the different answers, the average age in each family was calculated, which was around 11 years (Figure 2).

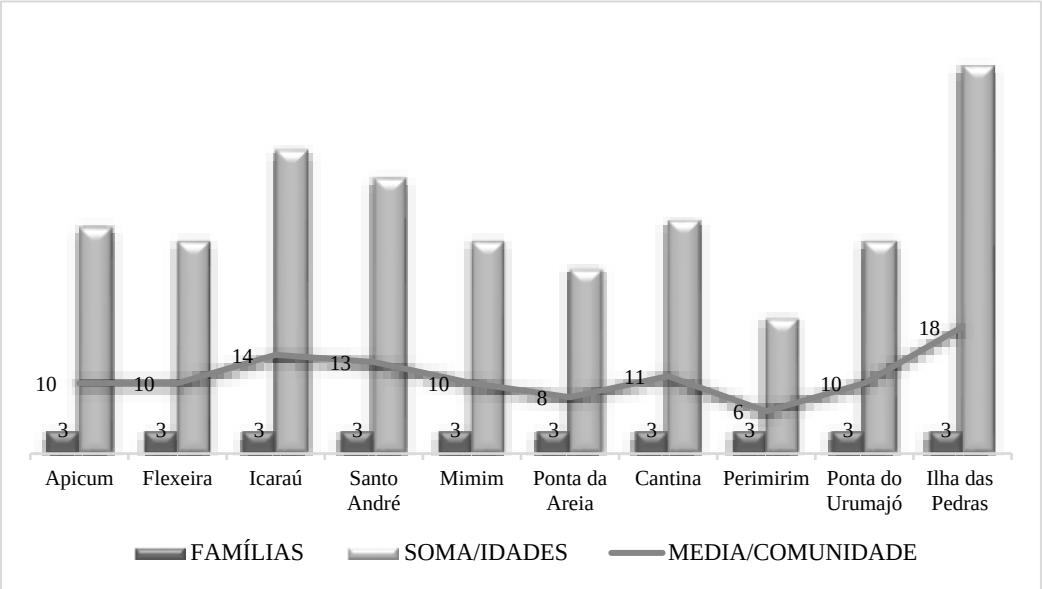

Figure 2. Number of Families and average age at which production practices began in the communities of the Tracuateua and Araí-Peroba Marine Extractive Reserves, Northeast of Pará.

Figure 2 demonstrates that the *Ilha das Pedras* community has the highest average age per family and that family members started production activities at the age of eighteen, while the *Perimirim* community shows the lowest average and activities starting at age six.

Based on the average age, It can be concluded that the families begin to learn the environmental production practices still in their childhood, for nutritional reasons, focusing on family survival and self-support, and that there is "the participation of the entire family group. Women and even children participate in fishing and farming activities along with other family members" (ALBUQUERQUE, et. al, 2016, p. 148).

Corroborating this idea, "the daily routine of men and women, as well as adults and sub-adults (children and adolescents) [...] have more significant roles in local food systems [...]" (MURIETA, 1998, p. 115). It is necessary to point out that each family group has its own dynamics regarding the cultivation and capture of food.

It is also noteworthy that in traditional coastal communities, it is the responsibility of family groups to teach from childhood their ways of life, as well as what the community has learned from lived experiences, thus characterizing "social reproduction" (ALBUQUERQUE, et. al, 2016, p. 147).

The time when members began to develop farming, artisanal fishing and crab fishing varies according to each family, as well as to each community. Therefore, it can be said that these practices are learned in these communities from childhood.

4.2 Learning and the transmission of productive practices throughout generations

While in contact with families from the RESEX's-Mar of Tracuateua and Araí-Peroba about the knowledges and the traditional coastal communities' generations, the following questions were asked: *how did you learn these practices?* and *how do you pass on the knowledge learned in daily experiences?*

The answers were collected, and the researchers decided to represent the content of these dialogues

taking into account the frequency of the words enunciated and the strength of the relationship between them, considering the Similitude Analysis proposed by the Iramuteq Software (Figure 3):

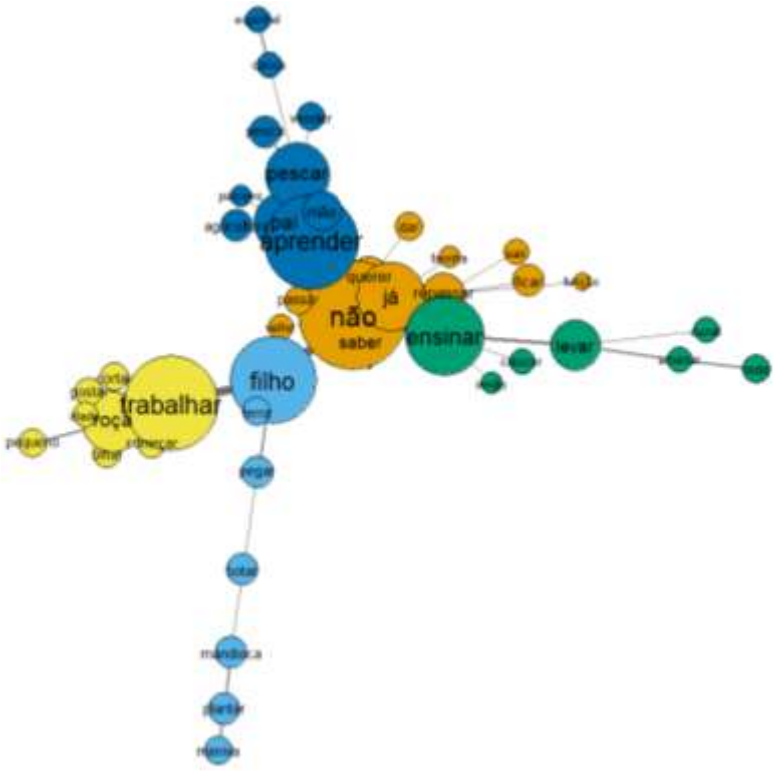

Figure 3[4]. Similitude Analysis of learning and the transmission of knowledges in traditional coastal communities in the Tracuateua and Araí-Peroba Marine Extractive Reserves.

Figure 3 highlights the frequency of the words: “no” (41), “learn” (35), “father” (30), “work” (29), “son” (24) and “teach” (23), these words delimitate the content of the discourses of families about the process of learning and transmission of knowledge, that is, they are correlated terms that integrate a discourse context.

Figure 3 is also composed of a central nucleus, from which some branches emerge. The central nucleus is represented by the word “no”, from which other branches descend. The branches that present greater degrees of connectivity with the core are divided into “learning” and “teaching”. In the "learning" branch, the terms "father", "mother", "agriculture" and "fishing" were found, and in the "teaching" branch, the terms "take", "brother", "grow", "corral" and “network” were detected. This means they are related terms within a discourse about learning involving both those who taught and those who they teach.

Two other branches are equally relevant: “son” and “work”. In the branch “son”, several terms were found, such as: “earth”, “pick”, “put”, “cassava”, “plant” and “maniva”. In the branch “work”, the terms “swidden”, “cut” and “small” appeared. These terms have related audiences in the sense of productive practices, as they are connected to the teaching of land handling and planting culture.

Drawing on the Similitude Analysis, the term "learning" is portraying the learning of knowledges, in which the family plays a fundamental role. The responsibility over the teaching of knowledges is

[4] As the interviews were held in Portuguese, the collected words in the graphic were maintained in the original language, however, the text that follows it brings the analysis with the words and terms translated into English

centered in the figures of the "mother" and "father", as shown in the following lines:

> I think my mother, since I was little, used to take me to the farm, sometimes my father... (F01-A).
> I learned from my father and my mother... (F01-I).
> With my dad. (F03-P/A).

The term “teaching” is also related to the learning of knowledges and their transmission to generations, therefore both learning and the transmission of knowledges occur mainly in the family environment, as portrayed in the lines below:

> I learned with my brothers, right, Dad spent more time in Maranhão, I grew up with my brothers and sisters by teaching me (F03-I/P).
> I learned from my father that he taught me... ah since... I started working like this since the age of 12, [it was] when I started to do things like this... (F01-S/A).

By analyzing the narratives, it might be concluded that informants have learned the various types of knowledges related to practices within the family environment, and this fact leads us to understand that such knowledges are acquired, primarily through daily contact, observation and ‘learning by doing’, whether in the family context it happens, either with someone who has a degree of kinship, as "[...] kinship is a fundamental organizational principle and central element of reproduction [...]" (VIEIRA, et. al, 2015, p. 236).

Knowledges are part of this organizational and cultural process of traditional coastal communities, since "[...] they are part of a dialogical network where people learn in family groups and/or other groups they attend [...]" (TUCHINSKI, et. al, 2016, p. 2).

It was also noticed that there is a diversity of knowledges if they are faced as “organized systems and effectively a part of everyday life" (CASTRO, 2018, p. 27). In addition, and based on the relationships that exist in everyday life, this knowledges concerning the practices in traditional communities are passed on both by oral transmission and observation to generations, allowing new meanings to be built by the descendants, thus instituting the transgenerationality of family knowledges, which “[...] is carried out through oral transmission [...] combined with the cultural practices of a certain people" (RIBEIRO, 2017, p. 32). It means to say "knowledges are in everyday life and are part of the world of life. Knowledges have the emotions and beliefs as crucial elements that are constructed by transgenerational knowledges [...]” (TUCHINSKI, et. al, 2016, p. 1).

Transgenerationality is observed to be present in the Similitude Analysis, represented by the terms "father", "mother", "son", "brother", "neighbor", and correlated to the ‘know-how’ represented by the terms: "work", " teach”, “learn”, “pass on” and “take”. These elements found in the narratives make clear that these families still resist to adversities and keep on passing on traditional knowledges to their descendants since very young age, as stated in the speeches below[5]:

> [...] Since we were little, we used to go to the fields with her... she liked to work there, she

[5] Narratives collected from the family interviews (in Portuguese language) present a typical way of speaking of the communities.

> was a farm worker, there was nothing else... it was the way we work in the fields... (F03-P).
>
> [...] these days we went to the corral, to the farm [...] we did it and they saw how we were doing, you know... (F03-I).

It is important to emphasize that although transmission occurs at early ages, it can neither be seen as child exploitation, nor as usurpation of rights, but as a teaching and learning process that takes place through practical actions during the transmission of traditional knowledges. It is necessary to remember that the interviewees reported their memories with actions that happened many years ago and may or may not be applied in the present situation.

Regarding the transmission of knowledges, the term "son" leads us to perceive the strength of the relationship with the words "land", "plant" and "*maniva*" [6] - terms that are also related to the environmental productive practices developed by the families

> We have to teach everything we know for our children, we are already teaching everything... (F02-M).
>
> For my children [...] Ah, I would go to the farm, I would take them there, I would teach them how to do it... (F03-P/A).

By stating that the transmission of knowledges occurs in the family domain, the informants reaffirm the conviction that "[...] this form of transmission of knowledges is permeated, perpetuated and dialogically assumed within the family between different generations " (RIBEIRO, 2017, p. 14) .

Similar results were found in studies carried out by Vieira (2015) in a traditional coastal community in the Northeastern Pará, in which artisanal fishing is understood as "the game of teaching and learning (transmission of knowledges), sometimes systematic, sometimes spontaneous, through the observation of the 'other'. It confirms the practice of different activities from an early age, involving fishing by men and women of different ages" (VIEIRA, 2015, p. 94). Furthermore, Vieira (2015) argues that kinship relationships are essential in the formation of those who are starting the fishing activity, which occurs vertically between parents and children and horizontally between cousins, uncles, godparents, grandparents, and others. Similar results related to family farming, fish and crab fishing have also been observed in the present study.

Attention is drawn to the fact that the study conducted by Vieira (2015) differs from this one, as the former focused only on the practice of artisanal fishing, while the latter covered various types of practices existing in the traditional coastal communities of RESEX's Mar of Tracuateua and Araí-Peroba. Another difference between the two studies is that in this one, issues related to youth and male and/or female genders are not addressed in what concerns the practices developed by families, unlike Vieira's investigation (2015).

The word "no", presented in the Similitude Analysis, is also related to families who are not able to transmit these knowledges, either because their children do not feel like learning such practices or because they have turned to another type of productive practice, as shown in the following reports:

[6] Grounded leaves of manioc plant used to produce recipes of indigenous origins

> I... I taught my son how to fish, but he didn't like fishing. He said that he was not going to get involved in agriculture because he was going to do another job (F01-P/A).
> [...] my children don't, they don't work with me. They'll soon go to another occupation and... just me... until now… I haven't passed it on to anyone... (F01-A).
> I passed it on to the stepson, but the stepson didn't want this occupation and went into fishing (F01-I).

Based on the statements, it becomes clear that the families were committed to transmitting their knowledges regardless of whether the children adopted or not the environmental productive practices, because "[...] the transmission of these knowledges always evolve within environments that imply intense relationship among relatives and which end up forming a broad net of relationships that prioritize the transmission of the cultural knowledges received" (RIBEIRO, 2017, p. 38).

Based on the family reports, it is hypothesized that the lack of interest of young people in this type of learning happens, because it is a type of work historically stratified, specifically the "family farming, [...] which did not find commercial value outside the family unit [...]. It is constituted by men and women in their productive life stage [...]" (ABRAMOVAY, 1999, p. 8).

Thus, based on the collected information, it is possible to conclude that these traditional knowledges are changing over time, as a result of the rupture provoked by family descendants who do not feel connected with the traditional family practices or because they decide to follow another type of productive practice. This rupture is likely to bring consequences to the practices in traditional coastal communities, such as: scarcity in production or even the fall into oblivion.

Besides the awareness about transmission of knowledges taking place in various ways and being acquired through experiences and observation (INGOLD, 2012), that is, concerning "object and things", either for people who belong to the same family context or outsiders, it falls into place these traditional knowledges are different from scientific knowledge (CUNHA, 2007).

In an attempt to extend our perceptions, we inquired: *Who helps you in your productive practices?*

Some answers are represented in the narratives below:

> I... here at home it's more, my children, when I go there it's always with them. Sometimes, some neighbors go with us too... (F01-P/U).
> Here, is the wife, the children, you know... now my children are all far away, not so close to me, but then we do it with other people, we pay to do it because no one is doing UNINT[7], spinal problems, things like that and nobody is... able to do it, but we pay to do it, you know... (F01-M).

The practices developed by the families as well as the transmission of knowledges, considering the help of children and wives, especially in family farming, are organized "both hierarchically, with parents controlling their children's work as much as possible, and horizontally, regarding relationships between

[7] Unintelligible

peers (cousins, godparents and neighbors)" (HARRIS, 2006, p. 92).

5 Conclusion

In the present study, it was possible to observe that the knowledges existing in these practices and family generations involve three dimensions: age, learning and transfer (transmission). In respect to the age, family members started learning these practices around 11 years old, and they acquired them through their parents, uncles, grandparents and other actors, horizontally and vertically, thus generating transgenerationality.

As for the transfer (transmission) of the knowledges underlying these practices, it was noted that it happens from parents to children and grandchildren, that is, to subsequent generations. Some families reported that although their children learned these practices and knowledges, they did not continue, and decided to go into other types of work instead.

It is noteworthy that both the environmental productive practices developed by the families and the knowledges existing in them could possibly undergo transformations, therefore, family farming, fishing and crab fishing resulting from these traditional practices are likely to suffer a decrease and even scarcity of products, noting that currently, these practices are seen by families as a source of self-support, and children, wives and grandchildren are their main source of production.

Considering these findings and the projected economic, social and cultural consequences we highlight the importance of this study for traditional coastal communities of RESEX's-Mar of Tracuateua and Araí-Peroba, as it points out to the countless existing knowledges in the environmental productive practices that are developed by the families, both in learning and transmission perspectives, thus raising awareness about relationships established between these families and nature, relationships that are essential both for the development and maintenance of these practices and which, consequently, result in a feeling of belonging, adding symbols and rich meanings to be observed and respected.

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