


## Traditional wooden boat building future in the middle and lower course of Xingu river, Pará, Brazil

### O futuro da construção naval tradicional do médio e baixo Xingu, Pará

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#### ABSTRACT

The art of building wooden boats is a secular cultural heritage of the Amazonian peoples, which has lost importance over the last few decades, resulting in a loss of knowledge about the cultural practice of building wooden boats. Thus, our aim was to know the craft shipbuilding carried out in the municipalities of Porto de Moz and Altamira. As a methodology, we used a semi-structured interview, direct and indirect observation and the use of a camera. We found a predominance of men, with a mean age of 43.2 years. Most traditional marine carpenters have little education. Generally, labor begins in childhood or adolescence. Seventeen tree species were cited for building boats, but the Itaúba and Piquiá species are the most versatile and sought after by carpenters. The scarcity of certified wood, professional devaluation and competition with industrially manufactured boats are limiting factors for the commercialization of artisanal wooden boats, contributing to the loss of knowledge about the art of know-how in the activity in the region. Besides, the decrease in activity causes a set of economic, social and cultural impacts observed in the municipalities of Altamira and Porto de Moz.

#### RESUMO

A arte de construir barcos de madeira é um patrimônio cultural secular dos povos amazônicos. Contudo, perdeu a importância ao longo das últimas décadas, como resultado, perda de conhecimento sobre a prática cultural da construção de embarcações de madeira. Assim, o objetivo do presente estudo foi conhecer a construção naval artesanal realizada nos municípios de Porto de Moz e Altamira. Para isso, empregou-se a entrevista semiestruturada, observação direta e indireta e emprego da máquina fotográfica. De acordo com os resultados encontrados, nota-se a predominância do sexo masculino, com idade média de 43,2 anos. A maioria dos carpinteiros navais tradicionais tem baixa escolaridade. Geralmente, o trabalho começa na infância ou na adolescência. Dezesete espécies foram citadas, itaúba e piquiá são as espécies mais versáteis e cobiçadas por carpinteiros para a construção de barcos. A comercialização das embarcações é limitada por fatores como a escassez de madeira certificada, desvalorização profissional e pela competição com embarcações fabricadas industrialmente. Estes fatores contribuem para a perda de conhecimento sobre a arte do saber-fazer da atividade de construção de barcos de madeira na região. Além disso, a diminuição da atividade provoca um amplo conjunto de impactos econômicos, sociais e culturais observados nos municípios de Altamira e Porto de Moz.

#### INTRODUCTION

Canoes and wooden boats of different sizes and models play a fundamental role in the economic, social and cultural structure of the Amazonian peoples. Most of these wooden artifacts are produced in craft yards located on the banks of rivers. The builder of wooden boats is usually a member of the riverside community and has knowledge about the activity of producing or repairing regional boats. In recent decades, however, some factors have strongly contributed to the decline of this activity in the Amazon region, such as the competition

with industrial boats (SIVA; SCHERER, 2018), professional social devaluation and lack of raw materials (WALTER et al., 2017). Despite the tendency to get lost, the maintenance of knowledge and craftsmanship resists by the craftsmen, and it is, therefore, needed to record these experiences as a cultural practice.,

Studies focus on the importance of traditional shipbuilding in Amazon are scarce, and most studies focus on reporting the art of know-how of naval workers in traditional Amazonian shipyards (BOTELHO et al., 2011; CORRÊA, 2014; SILVA; SCHERER, 2018). Some focus on boat

construction techniques and safety (ANDRADE; SANTOS, 2017; SOARES; VIDAL FILHO, 2014). However, traditional shipbuilding is part of the daily life of traditional populations such as riverside, 'quilombolas' and indigenous community, enabling different forms of approaches as it is a theme linked to regional development. In this sense, research with different approaches and scientific perspectives are important, without discarding research problems already addressed in different places in the Amazon.

In the municipalities of Altamira and Porto de Moz, wooden boats play an important role in transporting people and selling products derived from family farming. In addition, the symbolic interactions that take place in the traditional shipbuilding space expand its meaning beyond a place of commerce and work, but also of sociability. In view of this, it is necessary to deepen the analyzes on traditional shipbuilding, and the aspects related to it, since there is a shortage of works in the area, which makes the theme a strong potential for use in organizational studies, in addition to contributing to expansion of scientific studies on craft shipbuilding in the state of Pará.

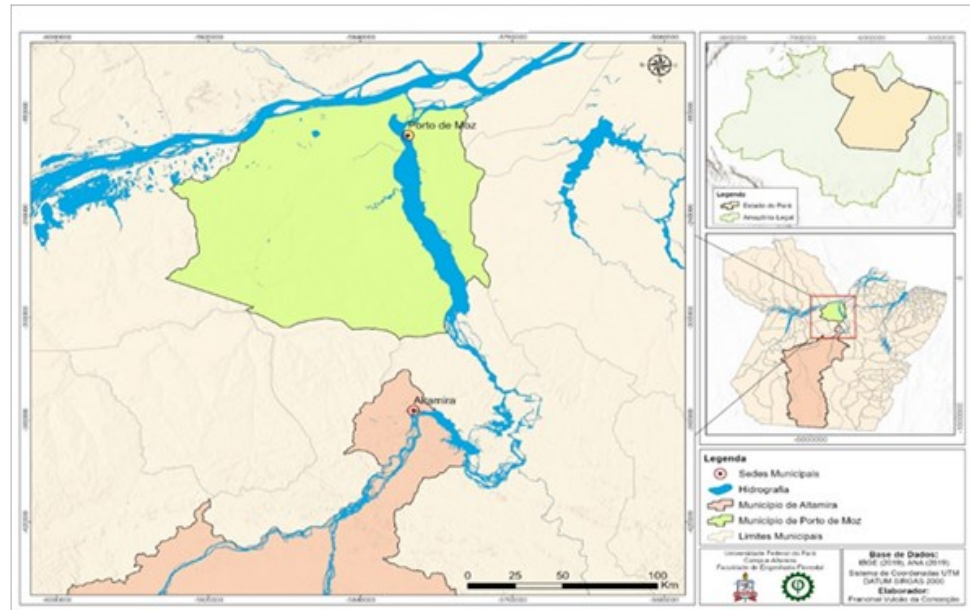
Our aim was to analyze aspects related to traditional shipbuilding carried out in the municipalities of Altamira and Porto de Moz. To achieve this, three specific objectives were proposed: 1) to characterize the socioeconomic profile of carpenters; 2) identify the forest species used by carpenters; and, 3) describe the main factors that restrict the modus operandi of traditional shipbuilding in the municipalities of Altamira and Porto de Moz.

## MATERIAL AND METHODS

### Study area

The municipality of Altamira is located in the southwestern mesoregion of Pará (Figure 1). According to the Brazilian Institute of Geography and Statistics (IBGE, 2020) has an area of 159,533.328 km<sup>2</sup> and an estimated population of 114,594 inhabitants. The climate is equatorial type Am and Aw, according to the Köppen classification, with average temperatures of 26 °C and rainfall of 1,700 mm/year (ALVAREZ et al., 2013). The natural landscape is predominantly Equatorial Broadleaved Forest. In the state of Pará, 74% of soils are represented by Oxisols and Ultisol (SOUZA et al., 2018).

The main economic activities of the municipality are provision of services, industry and agriculture. Agriculture is related to the extraction of rubber and Brazil nuts, the cultivation of cassava, raising cattle and pigs and fishing (IBGE, 2020). Currently, economic activity of great growth is tourism, whose attractions are beaches, lakes and ecological excursions in the forest.



**Figure 1.** Location of the municipalities of Altamira and Porto de Moz, Pará, Brazil.

Porto de Moz municipality belongs to the mesoregion of the lower Amazon, at the microregion of Almeirim in the State of Pará (Figure 1), with an estimated population of 41,135 inhabitants and an area of 17,423.017 km<sup>2</sup> (IBGE, 2020). The climate is equatorial type Am, according to the Köppen classification, with average temperatures of 26 °C and rainfall of 2000 mm/year (WATRIN; OLIVEIRA, 2009). The natural landscape features a predominance of dense rainforest. The dominant soils are classified as Oxisols and Ultisols (WATRIN; OLIVEIRA, 2009).

The main economic activities of the municipality are agriculture and services. Agriculture is related to the extraction of wood, the cultivation of cassava, corn, rice, watermelon and pineapple raising cattle and buffaloes and fishing (IBGE, 2020). Another rapidly growing economic activity is tourism, whose attractions include beaches, spas, lakes and ecological excursions in the forest.

### Methodological procedures

The research was qualitative using a descriptive and exploratory approach for data analysis. All people who participated in the research signed the Free and Informed Consent Form (IC) guaranteeing the anonymity of the information. Criteria for the primary sample included: age  $\geq$  20 years, residing in the municipality and being exclusively a boatbuilder for  $\geq$  10 years. A total of 10 artisanal naval carpenters were selected, five from each of the municipalities. Sampling was non-probabilistic and intentional, due to the reduced number of constituent elements of the studied universe (ALBUQUERQUE et al., 2010).

We carried out the study from January to March 2020. Initially, we held meetings with the carpenters through on-site visits, explaining the purpose of the research and signing the IC. The interviews took place in the workplace, with an average duration of two hours. The interviews were semi-structured, with direct and indirect observation and the use of a camera, using a standardized form with open and closed questions. The questions focused on the individual experiences of each participant, the choice of raw material used in the construction of canoes and boats, the world of work and the participant's social world, being considered important for

understanding the perception or knowledge of people in a similar situation.

We grouped the questions into the following topics: i) data from the informant's profile, ii) data on the plant species used and iii) the carpenters' perceptions of craft shipbuilding in the municipalities. To outline the informant's profile, we asked about place of birth, gender, age, education, length of service and average salary. The questions about the plant species used consisted of popular name, place of wood collection and where it is used on the boat. As for the perception of shipbuilding, we asked how they acquired traditional knowledge about shipbuilding and if they transmit the knowledge. We also asked which wood used is at extinction risk in the region.

We compared the information obtained about the species with information from the specialized literature to verify correspondences regarding the nomenclature (LORENZI, 2016). The spelling of scientific names was checked using the Tropicos database. To list the taxa, we followed the Angiosperm Phylogeny Group IV (APG, 2016).

We used the database with the information obtained in the interviews for the descriptive statistics as our data analysis.

## RESULTS AND DISCUSSION

### Workspace characterization of traditional shipbuilding carpenters

Craft shipbuilding makes up the income of a small group of rural workers residing in the municipalities of Altamira and Porto de Moz. Craft shipbuilding is the main or only source of income that guarantees the sustenance of the family. A significant part of the economy of these municipalities is carried out through the waters that interconnect several communities and localities, as well as interconnect to other municipalities. The waterway network in these municipalities is very extensive due to the Xingu River dimension favoring navigation mainly through wooden vessels built locally in different types of traditional shipyards at the riverbanks (Figure 2).



**Figure 2.** Areas for building/repairing wooden boats near riverbanks in the municipalities of Altamira and Porto de Moz, Pará, Brazil. Open construction area (A) and construction area protected from the sun (B and C).

**Table 1.** Socioeconomic profile of carpenters dos municípios de Altamira e Porto de Moz, Pará, Brasil.

Carpenter	Sex	Birthplace	Age (years)	Schooling	OT (years)	MWR (m.w.)
1	M	Altamira	41	IES	30	1.5 m.w.
2	M	Gurupá	44	Un	20	1.5 m.w.
3	M	Altamira	50	IES	40	1.5 m.w.
4	M	Altamira	32	IHS	17	1.5 m.w.
5	M	Altamira	53	Un	20	1.5 m.w.
6	M	P. Moz	32	ES	20	2.0 m.w.
7	M	P. Moz	33	HS	15	2.0 m.w.
8	M	P. Moz	30	IES	20	2.0 m.w.
9	M	P. Moz	62	ES	45	2.0 m.w.
10	M	Gurupá	55	ES	18	2.0 m.w.
Média geral			43,2		24,5	1,75

OT: Occupancy Time; MWR: Minimum Wage Range; M: Masculine; F: Feminine; IES: Incomplete Elementary School; ES: Complete Elementary School; IHS: Incomplete High School; HS: Complete High School; Un: Unlettered.

### Socioeconomic characterization of traditional shipbuilding carpenters

Traditional shipbuilding is carried out predominantly by males, with an average age of 43.2 years (Table 1). The male predominance in the activity was observed by other studies, such as Walter et al. (2017), who also indicate that the female role was restricted to care and administrative activities, usually by wives or daughters of bosses. In other activities of rural areas, male predominance was also observed (COSTA et al., 2013; OROFINO et al., 2018). According to Anjos and Caldas (2005), the countryside becomes masculinized simultaneously with the masculinization of agriculture, leading to female expulsion from the agrarian sphere and the reaffirmation of patriarchy. Such condition favors the female rural exodus, in search of better economic and social opportunities in urban centers (COSTA et al., 2015).

The carpenters had a low level of education (Table 1), a fact also found in several shipbuilding yards on the Brazilian coast (WALTER et al., 2017). However, the formal education of these carpenters seems to have been replaced by the knowledge of knowledge - specific actions acquired in their daily work and in their knowledge of their environment. This knowledge results from experience and is validated by it, incorporated into individual and collective experience as habit and skills, know-how and be.

The average occupancy time of the carpenters interviewed was 24.5 years. According to Botelho et al. (2011), the average time in activity of traditional shipbuilders was 22 years at Resex Caeté Taperaçu, in the municipality of Bragança/PA. The time they carry out the activity is long, therefore, they reached professional maturity, as they present knowledge obtained during the experiences and achievements in the traditional shipbuilding environment.

The average monthly income obtained by carpenters was below the expected average monthly wage of 1.9 and 2.1 minimum wages, respectively, for Altamira and Porto de Moz (IBGE, 2020). This amount is not enough for the financial maintenance of their families, being necessary to complement it through income transfer programs of the Federal Government.

### Species used in boats construction

The carpenters cited 17 species used for building boats. The species belong to 12 botanical families and 16 genera (Table 2). The most representative families were Fabaceae, Lauraceae and Lecythidaceae. These three families represent 47% of local richness, suggesting that plant diversity is concentrated in a few botanical families, a result also found by another study in the region (LEÃO et al., 2018). The species with the highest relative frequencies (Fr) were: Piquiá, Itaúba, Quaruba-Cedro, Cumaru and Sapucaia, comprising 68% of all individuals sampled (Table 2).

According to the carpenters, the type of wood chosen must meet some general criteria applied to each boat component. The criteria are, generally, natural durability, impermeability, easy to shape, diameter and length suitable for use and resistance to attacks by wood-destroying organisms, especially marine animals. The empirical knowledge of the carpenter is sufficient to define which types of wood will be suitable for each specific boat area (ANDRADE; SANTOS, 2017). The results show that carpenters are more likely to choose solid and durable wood so that boats will last for a long period of time. Therefore, woods that meet these requirements are prioritized for use.

Field observations show that there are seven types of wood generally used by carpenters for shipbuilding in Altamira and Porto de Moz. These types of wood are used to make ship hulls, superstructures and rudders. We will limit our discussion

to the species most cited by carpenters, that is, species with a relative frequency  $\geq 5\%$  (Table 2). The species Itaúba and Piquiá were the most cited with 41.6% of the total. These species are considered versatile due to the amount of use attributed to them in the construction of vessels. As a result, these woods are high valued in the market, as well as the most coveted by carpenters in the municipalities of Altamira and Porto de Moz. They can be used, for example, in the frame, skimmer, keel, among other components (Table 3).

The wood of *M. itauba* species has a great demand to build the hull and deck of the boats, despite the high commercial value (Table 3). According to the carpenters, the hull and deck are made up of parts that ensure the shape of the boat, especially the parts that are partially or completely submerged. The hull is the floating structure that supports the boat and consumes the largest volume of wood used in boats construction. The deck is the second structural element that most consumes wood and corresponds to the upper part that closes the hull. Therefore, these structures must be built from heavy, hard woods with high natural durability. Itaúba wood meets these requirements, as it is heavy and hard, has a high density ( $1.14 \text{ g.cm}^{-3}$ ) and high natural resistance to attack by xylophagous organisms (GARCIA et al., 2012), and, therefore, itaúba wood is preferred for the structure of boats in the Amazon.

*C. villosum* wood is used to build the hull and deck, but also for practically all components of the boat being quite versatile (Table 3). Piquiá wood has high quality, is compact, heavy and hard, with high density ( $1.17 \text{ g.cm}^{-3}$ ), showing high natural resistance to attack by xylophagous organisms (NISGOSKI et al., 1998). It is an easy wood to work with as it accepts a good finish. The intertwined fibers of wood provide great resistance and is of great importance for framing the internal bottom of vessels (SHANLEY; MEDINA, 2010). The fibers formed by elongated and intertwined cells of piquiá wood provide greater resistance to breakage, and, as a result of this resistance is the most used by carpenters in Altamira. In Altamira, located in the Middle Xingu, the presence of rapids and stretches with rocks and little depth is very common, especially in the dry period of the year. On the other hand, the rivers of the Low Xingu do not have rapids and the use of itaúba is higher.

**Table 2.** Scientific name, family name and common name of the species used for wooden boat building in the municipalities of Altamira and Porto de Moz, Pará, Brazil.

Botanic Species/Family	Common name	Relative Frequency (%)
<i>Handroanthus serratifolius</i> (Vahl) S.O. Grose/Bignoniaceae	Ipê-amarelo	1,9
<i>Caryocar villosum</i> (Aubl.) Pers./Caryocaraceae	Piquiá	20,8
<i>Terminalia amazonia</i> (J.F.Gmel.) Exell./Combretaceae	Cuiarana	3,8
<i>Dinizia excelsa</i> Ducke/Fabaceae	Angelim-vermelho	5,7
<i>Bowdichia nitida</i> Spruce ex Benth/Fabaceae	Sucupira	1,9
<i>Dipteryx odorata</i> [Aubl.] Willd./Fabaceae	Cumaru	7,5
<i>Mezilaurus itauba</i> (Meisn.) Taub. Ex Mez/Lauraceae	Itaúba	20,8
<i>Nectandra cuspidata</i> Nees & Mart./Lauraceae	Louro-preto	1,9
<i>Ocotea cymbarum</i> Kunth/Lauraceae	Louro-abacate	1,9
<i>Lecythis pisonis</i> Cambess./Lecythidaceae	Sapucaia	7,5
<i>Lecythis lurida</i> (Miers) S.A.Mori/Lecythidaceae	Jarana	1,9
<i>Cedrela fissilis</i> Vell./Meliaceae	Cedro-vermelho	1,9
<i>Bagassa guianensis</i> Aubl./Moraceae	Tatajuba	1,9
<i>Calycophyllum spruceanum</i> (Benth.) Hook.f. ex K.Schum./Rubiaceae	Pau mulato	1,9
<i>Manilkara huberi</i> (Ducke) A. Chev./Sapotaceae	Maçaranduba	1,9
<i>Simarouba amara</i> Aubl./Samaroubaceae	Marupá	5,7
<i>Vochysia maxima</i> Ducke/Vochysiaceae	Quaruba-cedro	11,3

**Table 3.** Wood species, structural parts and basic components that make up a ship produced in the municipalities of Altamira and Porto de Moz, Pará, Brazil.

Species	Structural parts	Boat components
Piquiá	Hull and Deck	Main frame, Keel, Keelson, Hull Planking, Deck Baluster
Angelim vermelho	Ship's awning	Wall Planking
Cumaru	Hull and Deck	Keel
Itaúba	Hull and Deck	Hull Planking, Edge, Deck Baluster, Wall Planking, Keel
Louro preto	Ship's awning	Wall Planking
Sapucaia	Hull and Deck	Keel, Keelson
Jarana	Hull	Keelson
Pau mulato	Ship's awning	Ceiling Planking
Marupá	Ship's awning	Ceiling Planking
Quaruba cedro	Ship's awning	Ceiling Planking

Conservation of Nature (IUCN) (EBERT et al., 2017; BRANDES et al., 2020). Similarly, *C. villosum* is listed as vulnerable on the list of endangered species drawn up by the Biota Project, coordinated by the Museum Paraense Emilio Goeldi, Conservation International (CI) and the Executive Secretariat for Science, Technology and the Environment of the State of Pará (SECTAM). In rural areas, the pequi tree is the preferred tree for making canoes and fences because of its resistance to attack by insects and rotting fungi. The good qualities presented by the wood lead to the felling of matrices and consequently the reduction of the plant population, lowering the

*Dipteryx odorata* has high natural resistance to rotting fungi, a characteristic related to the high basic density ( $0.93 \text{ g.cm}^{-3}$ ), as well as the high content of extractives (9.2%) (STANGERLIN et al., 2013). Cumaru wood is used in civil and naval construction, besides being widely used in the timber industry (PINTO et al., 2008).

*Lecythis pisonis* has heavy to very heavy wood and a density of  $0.80\text{-}0.98 \text{ g.cm}^{-3}$  (SOUZA et al., 2014). *L. pisonis* presents high resistance to the attack of xylophagous organisms. It is used in civil and naval construction, furniture, decorative household items, toys, musical instruments and others.

*Vochysia maxima* wood has basic density of  $0.54 \text{ g.cm}^{-3}$ , regarded as light wood, with moderate resistance to termite and fungal attacks (RIBEIRO et al., 2019). *V. maxima* has characteristics like the cedar (*Cedrella odorata*), and is used in civil and naval construction, carpentry, crates, boards, slats, linings and interior parts of furniture (VALENTE et al., 2011).

*Simarouba amara* can be used in light civil and naval construction because has easy workability and good finishing (AZEVEDO et al., 2010). The wood is light, the density varies between  $0.45$  to  $0.55 \text{ g.cm}^{-3}$ , and light in color (FREITAS et al., 2016). However, *S. amara* wood has low natural resistance to attacks by rotting fungi (STANGERLIN et al., 2013). The low density and extractive content is the main explanation for the lower natural resistance of marupá wood (MARCONDES et al., 2013).

*Dinizia excelsa* has a heavy wood, with a density of  $0.92 \text{ g.cm}^{-3}$  (RIBEIRO et al., 2019). The wood of *D. excelsa* is highly resistance to attack by fungi and termites and good resistance to dry wood insects. Wood of *D. excelsa* is used in civil and naval construction, carpentry, sleepers, stakes, struts, crosspieces, posts, in the manufacture of agricultural implements (PAULA et al., 2016).

According to the carpenters, wood species that were widely used in the past are now hard to obtain in the region. This fact is a good indicator of the commercial extinction of these species. Piquiá and itaúba woods are good examples of low availability, factor that partly explains their high market value. *M. itaúba* is one of the most exploited species in the Amazon region and its wood is widely used in external and internal constructions (GARCIA et al., 2012). Due to the excellent technical characteristics presented by itaúba wood, it is listed as endangered by the International Union for

density. The reduction in density is harmful because the pequi tree needs different individuals, as it is a cross-fertilization species. Therefore, the greater pressure on the remaining population of these species increases the risk of extinction.

#### Factors influencing the modus operandi of traditional shipbuilding

The replacement of wooden by aluminum or iron, according to carpenters, is the main factor impacting shipbuilding in the region. Industrially manufactured boats offer greater safety, simplicity and functionality. Thus, with the modernization of the Brazilian naval sector, wooden boats are seemed as inadequate to the needs of the new market economy. As a result, these market transformations directly influence the ordering of artisanal boats, the workforce in the shipyards, the training of new naval carpenters, threatening the transfer of knowledge to the new generations (SILVA; LOPES, 2022).

The growing concern with the advance of illegal deforestation of native forests has increased inspection by environmental agencies. Forest certification, which aims to guarantee the legal origin of the wood, is yet another reinforcement (BRAGA et al., 2018). For carpenters, these measures are excessive as they make it difficult to obtain small volumes of wood, mainly legalized, restricting artisanal naval activity in the surveyed areas. However, illegal logging in the Amazon is widespread, requiring more energetic measures on the extraction and commercialization of wood. Besides, in the studied area there are few certified forest management areas, making it even more difficult to obtain certified wood. Furthermore, the extracted wood is used for civil construction and is processed in larger quantities and in formats that meet the requirements of this market (ANDRADE; SANTOS, 2017; BRAGA et al., 2018). Together, these limitations affect directly the traditional local shipbuilding as an economic activity, increasing the social vulnerability of carpenters of the region.

Factors such as low wages, the profession's informality and precarious working conditions reinforce the devaluation of the carpentry profession in the researched area. Low pay is the main reason for changing professions to more profitable ones. However, opportunities to change professions are limited by factors such as the low level of education among carpenters, advancing age and lack of professional qualification.

The interviewees also reported the young people's lack of interest in the profession of ship carpenter, which is a result of the profession devaluation. Therefore, the lack of prospects for the profession and the search for more profitable ones are the main factors that keep young people away from the naval activity (ANDRÈS, 2008; SILVA; SCHERER, 2018). As a result, in the medium term, the profession may become increasingly scarce, and with a greater probability of loss in the transmission of knowledge to future generations.

According to carpenters' reports, they started in the world of work in childhood or adolescence influenced by a family member (father or grandfather). Due to their humble origins, they were led from childhood or adolescence to contribute to the household budget or, sometimes, to ensure their own subsistence. The early start in the carpentry profession within the family is widely reported in the literature (SILVA; SCHERER, 2018; WALTER et al., 2017). Carvalho (2008) warns that the premature transformation of children into adults and the early introduction into the world of work denies the right to an educational and professional training that provides better opportunities for insertion in society. However, from the 1988 Constitution and the Statute of the Child and Adolescent (ECA), child labor is prohibited and mechanisms were created that prevent the incorporation of children into the world of work (MARIN et al., 2013). Thus, rural families are encouraging their children to seek educational and professional training in the city, and this search for better opportunities for future insertion promotes the rural exodus of young people (SOUSA et al., 2017).

The professional devaluation, the change in the market for the use of aluminum or iron, and the great advance of deforestation, making many species of trees used for the extraction of wood endangered, limiting the use by traditional carpenters, has contributed to the loss of knowledge about the art of know-how of building wooden boats in the region. Despite this, carpenters report great pleasure and admiration on shipbuilding. Pleasure stems both from delivering the product to the consumer and from appreciating the aesthetic shape acquired by the boats. Through the wooden boats, the carpenter produces meanings and transmits cultural values manifested in his daily life, in social behavior and in physical and immaterial productions.

## CONCLUSION

The carpenters profile is characterized by a predominance of males, with an average age of 43.2 years, low education, with an average time in the trade of 24.5 years, and low salary from the activity of building wooden boats.

The certified wood scarcity, professional devaluation and the replacement of wood by other materials are the main obstacles to the continuity of artisanal naval activity in the municipalities of Altamira and Porto de Moz. These factors contribute to the loss of knowledge about the art of the know-how of building wooden boats in the area.

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