

Corral fishing in the Algodual-Maiandeuá Environmental Protection Area (Maracanã, Brazilian Amazon)

Pesca de curral na Área de Proteção Ambiental Algodual-Maiandeuá (Maracanã, Amazônia brasileira)

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Abstract

Corral fishing is one of the most traditional ways of fishing in the coastal zone of Brazilian northern state of Pará. It is a very productive activity, which point out the cultural characteristics, the traditional knowledge and the social profile of the fishermen who perform it. This paper characterizes Corral fishing in the Algodual-Maiandeuá Environmental Protection Area (APA Algodual-Maiandeuá), verifying the geographical positions of the corrals and the situation in which they are (active or inactive), considering the type of corral, the vegetal resources used for its construction, its origins, the assembly, the periodicity of the construction and the harvest. The results were obtained through field trips in order to map and define the area of study; identify corral fishermen and apply semi-structured interviews. Based on field surveys, we show that there are 111 corrals in the area, being in greater numbers in the village of Algodual. The activity is mainly performed by men aged 52 and 85 years. The vegetable resources frequently used for the manufacture of the corrals are bacuri (*Platonia insignis*), caraipé (*Licania sp.*), jarana (*Lecythis lurida*) and buiçu (*Ormosia coutinhoi*). The fish species most captured are Gó (*Macrodon ancylodon*), Piramutaba [Catfish] (*Brachyplatystoma vaillantii*), Dourada (*Brachyplatystoma flavicans*; *Brachyplatystoma rousseauxii*) and Uritinga (*Arius proops*), whereas species considered scarce in the region are the Mero (*Epinephelus itajara*), Tainha (*Mugil spp.*) and Xaréu (*Caranx spp.*). The research results provide support for the improvement of the management plan of the APA Algodual-Maiandeuá, as instrument capable of promoting the community and sustainable management of fisheries resources in the protected area.

Keywords: Small scaling fishing; Corrals; Traditional knowledge; Algodual-Maiandeuá APA; Brazilian Amazon.

Resumo

A pesca de curral é uma das formas mais tradicionais de pesca na zona costeira do estado do Pará, na Região Norte do Brasil. É uma atividade bastante produtiva, que destaca as características culturais, os saberes tradicionais e o perfil social dos pescadores que a realizam. Este artigo caracteriza a pesca de curral na Área de Proteção Ambiental Algodual-Maiandeuá (APA Algodual-Maiandeuá), verificando as posições geográficas dos currais e a situação em que se encontram (ativos ou inativos), considerando o tipo de curral, os recursos vegetais utilizados pela sua construção, as suas origens, a montagem, a periodicidade da construção e a colheita. Os resultados foram obtidos por meio de trabalhos de campo para mapear e definir a área de estudo; identificar pescadores de curral e aplicar entrevistas

semiestruturadas. Com base em levantamentos de campo, identificou-se que existem 111 currais na área, sendo em maior número na vila de Algodual. A atividade é realizada principalmente por homens com idade entre 52 e 85 anos. Os recursos vegetais frequentemente utilizados para a confecção dos currais são o bacuri (*Platonia insignis*), caraipé (*Licania sp.*), jarana (*Lecythis lurida*) e buiuçú (*Ormosia coutinhoi*). As espécies de peixes mais capturadas são Gó (*Macrodon ancylodon*), Piramutaba (*Brachyplatystoma vaillantii*), Dourada (*Brachyplatystoma flavicans*; *Brachyplatystoma rousseauxii*) e Uritinga (*Arius proops*), enquanto as espécies consideradas escassas na região são o Mero (*Epinephelus itajara*), Tainha (*Mugil spp.*) e Xaréu (*Caranx spp.*). Os resultados da pesquisa fornecem subsídios para o aprimoramento do plano de manejo da APA Algodual-Maiandeuá, como instrumento capaz de promover o manejo comunitário e sustentável dos recursos pesqueiros na área protegida.

Palavras-chave: Pesca de pequena escala; Pesca de curral; Conhecimento tradicional; APA Algodual-Maiandeuá; Amazônia brasileira.

Resumen

La pesca de corral es una de las formas más tradicionales de pesca en la zona costera del estado de Pará, en el norte de Brasil. Es una actividad muy productiva, lo que señala las características culturales, los conocimientos tradicionales y el perfil social de los pescadores que la realizan. El trabajo caracteriza la pesca de corral en el Área de Protección Ambiental Algodual-Maiandeuá (APA Algodual-Maiandeuá), verificando las posiciones geográficas de los corrales y la situación en que se encuentran (activos o inactivos), considerando el tipo de corral, los recursos vegetales utilizados por su construcción, sus orígenes, el montaje, la periodicidad de la construcción y la cosecha. Los resultados se obtuvieron a través de trabajos de campo con el fin de mapear y delimitar el área de estudio; identificar a los pescadores de corral y aplicar entrevistas semiestructuradas. Con base en los relevamientos de campo, se ha verificado que existen 111 corrales en el área, estando en mayor número en el corregimiento de Algodual. La actividad es realizada principalmente por hombres de 52 y 85 años. Los recursos vegetales frecuentemente utilizados para la fabricación de los corrales son el bacuri (*Platonia insignis*), el caraipé (*Licania sp.*), la jarana (*Lecythis lurida*) y el buiuçú (*Ormosia coutinhoi*). Las especies de peces más capturadas son Gó (*Macrodon ancylodon*), Piramutaba (*Brachyplatystoma vaillantii*), Dourada (*Brachyplatystoma flavicans*; *Brachyplatystoma rousseauxii*) y Uritinga (*Arius proops*), mientras que las especies consideradas escasas en la región son el Mero (*Epinephelus itajara*), Tainha (*Mugil spp.*) y Xaréu (*Caranx spp.*). Los resultados de la investigación sirven de apoyo para la mejora del plan de gestión de la APA Algodual-Maiandeuá, como instrumento capaz de promover la gestión comunitaria y sostenible de los recursos pesqueros en el área protegida.

Palabras clave: Pesca de pequeña escala; Pesca de corral; Conocimiento tradicional; APA Algodual-Maiandeuá; Amazonia brasileña.

1. Introduction

Brazil's fishing industry is divided into industrial and artisanal, the last one corresponds to 38,7% of Brazilian extraction fishery product (Brasil, 2011). Small-scale fishing stands out when compared to other parts of the country, either in coastal or inland fishing, due to the richness of exploited species, a large number of fish and the relationship of dependence of riverine people with fishing activity (Ruffino et al., 2005).

Small-scale fishing is among activities that most impact the country's economic and social sector because the large coastal dimension and fisheries biodiversity in Brazilian watersheds. Approximately 45% of the total annual production of fish landed in Brazil results from small-scale fishing (Mpa, 2014). In the Amazon region, fishing is practiced in various forms, such as: sports and leisure; ornamental; commercial (industrial or artisanal) and subsistence the last practiced especially by resident households in small communities that use small structures (Freitas; Rivas, 2006).

The Amazon coast is considered to be an area of high biological productivity because of the large amount of sediments and organic matter coming from the mangrove areas and flood plains by Amazonas and Pará rivers (Isaac, 2006). The coastal zone of Pará has extensive mangrove areas with various holes and winding channels, separating the islands along the coast (Lima et al., 2001; Rocha et al., 2018). The production in Pará corresponds to 10.7% of the total volume of fish of estuarine and marine origin in the country (Brasil, 2011). Also, artisanal fishing has been in territorial conflict with industrial fishing for the last 50 years (Lima et al., 2020; Soares et al., 2019).

Fishing activities have been performed in several municipalities in state of Pará, both inland and coastal waters. The Pará artisanal fisheries uses techniques somewhat simple, where the gear used is often produced by the fishermen themselves

or bought locally (Sombra et al., 2018). The nets, nettles, hand line, longlines and matapi are widely used. There is also made use of medium to small vessels which can be moved by means of rowing, sails or low propulsion engines (Santos, 2005; Brito & Viana, 2011).

Small-scale fishing occurs when the fisherman usually works alone and/or uses members of the family for labor, participating directly in the capture and fish landings. Often there is use of simple instruments with low-yield techniques and explores resources close to the coast, allocating its partial production or totally to the market and/or personal use. It is based on knowledge acquired from its ancestors through the older members of the community (Santos et al., 2020). This transmission of knowledge, combined with experiences thereof, gives the artisanal fisherman extensive knowledge, especially on environment, biology of ecosystems and aquatic species and tide conditions (Diegues, 1983).

In the Amazon region, there are strong influence of indigenous techniques in fishing, being corral fishing an example (Maneschy, 1993). Corral fishing is one of the most traditional artisanal fishing methods on the coast of Pará and very productive. Its production represents 10% of the fishing productivity of the northeast of Pará (Santos et al., 2005). Von Brandt (1984) describes fishing corrals as: large fixed traps, used especially in the areas of tides, shores, estuaries and coastal reefs, where traps are built so that the fish cannot escape, just make it difficult to get out. No one knows for sure the origin of these traps, some researchers, however, some researchers says that corrals have indigenous origin (Lima, 2010).

Given its artisanal character, the knowledge necessary for fishing is passed on between generations, with no need for formal education or other means regarding to teaching and making young people able to do this type of fishing, characterizing it as a traditional knowledge of fishing (Moura et al., 2008). By having direct contact with environment, artisanal fishermen have knowledge related to classification, natural history, behavior, biology and use of the region's natural resources. (Diegues, 1995).

Proper management for use of fisheries resources sustainably in coastal regions requires decision makers to support basic knowledge about individuals who explore the environment where the resources to be managed are part of (Dias Neto, 2003). Ethnobiological studies are important to understand small-scale fishing, considering the culture that involves this type of fishing, beyond the perception of the fisherman's way of life and still allow the insertion of factors of ethno-management (user strategies and preservation of available resources, in order to guarantee the social development of the community and the conservation of the forest) (Diegues,1995) in the definition of public policies in the water territory.

Countries with high biodiversity, such as Brazil and other tropical countries, presents a set of characteristics (physical, climate, biological) which support different ecosystems and ways of life. Biodiversity resources are fundamental to the economic, social and cultural development of human societies. Studies involving communities and environments consider these two main elements, interrelated and interdependent: the situations and the way of life of the observed community considering their culture, local tradition and use sustainably the local natural resources. These studies in the communities are important to create awareness about the loss of biodiversity, the importance of Ethnobiology and the importance of sustainable development and conservation for current and future generations (Oliveira,1993).

Ethnobiology is one of the scientific approaches used to analyze the relationship between man and nature. It is an interdisciplinary discipline arising from anthropology and ecology (Begossi,1993). Ethnobiological studies address the knowledge of populations, and able to present research findings that improve the use of natural resources, such as artisanal fishing, where fish form a group that has high biological diversity and is an essential food resource (Begossi et al, 2002). In order for fisheries management measures to have effective findings, both for natural resources and the people who depend on them, it is essential that more detailed information on the characteristics of small-scale fishing, which possibly are still unknown: the exploited types, fishing techniques and the socio-economic reality of fishermen (Begossi, 2004).

The Algodual-Maiandeuá Environmental Protection Area (APA, in its acronym in Portuguese) has its proper

Management Plan, and in view of its demands in well established in section two: Knowledge Generation, which encourages the development of scientific research and academic in the unit providing the generation of knowledge as a form of protection of fauna and flora, including through the environmental monitoring and sustainable development activities of the APA communities; Subsection 2.2– Environmental monitoring, which aims to carry out monitoring of biodiversity and use of natural resources, promoting the strategic development of protective actions and use of resources in a sustainable way; and Strategic Action 6: Perform surveys and monitoring of corrals.

The study aimed to characterize and add knowledge of the corral fishing activity developed in Algodoal-Maiandeuá APA in order to verify the geographical positions of the corrals and the situation in which they are (active or inactive) and characterize the types of corrals present in the area, considering the type of corral, materials used in the assembly and renewal, its periodicity and the harvest.

2. Methodology

Study Area

An APA generally consists of extensive grounds with a certain degree of human occupation, enriched with abiotic, biotic, aesthetic or cultural attributes important to the quality of life and well-being of human populations. Its basic objective is to protect biological diversity, discipline the occupation process and ensure the sustainable use of natural resources (SNUC, 2000). The Algodoal-Maiandeuá APA (created by State Law number 5,621 of November 27, 1990) contains coastal ecosystems and has prominent social and cultural characteristics for the local and regional context. It is located in the northeast coast of Pará State (Fig. 1).

A protected area must be articulated with its Management Plan, a document that covers the area of the unit, buffer zones and ecological corridors, including measures to promote their integration into economic and social life of surrounding communities and must be drawn up within five years from the date of its creation (SNUC, 2000). The unit management plan was developed 12 years after its creation. This document supports the management of the unit in the maintenance and control of natural ecosystems which still exist, enabling the identification, conservation and preservation of flora and fauna and maintenance of surface water bodies and groundwater, internal and surrounding area (SEMA, 2012).

The Algodoal-Maiandeuá APA is placed on the Municipality of Maracanã, managed by IDEFLOR-BIO (Directorate for Management and Monitoring of Conservation Units). Consisting of two islands: Algodoal, where is placed Village of Algodoal, and Maiandeuá, where are the villages of Camboinha, Mocooca and Fortalezinha - that are separated by an intermittent river (Furo Velho), covering an area of 3100.34 ha, including mangroves, salt marshes, dunes, beaches, upland areas, secondary vegetation and flooded field. It is one of the eight state Environmental Protection Areas of the State of Pará, and unique on the northeastern coast of Pará in this category (although there are some municipal APA). Together with Marine Extractive Reserve of Maracanã (30.018ha), the APA is located in the area called PA-22 (AmZc 261), of high biological relevance and extremely high action priority, according to the Map of Priority Areas for Conservation, Sustainable Use and Sharing the Benefits of Brazilian Biodiversity of the Brazilian Ministry of Environment (SEMA, 2012). The APA is located in a shield of conservation units, which constitute a context that articulates environmental protection, land regularization (as it recognizes, for the first time in history), the legitimacy of ancestral possessions of fishermen (Soares, 2021; Rocha et al., 2019).

Figure 1 - MAP-Image from the APA of Algodual-Maiandeuá.



Source: SEMAS, 2014. Adapted by the authors (2017).

Data collection

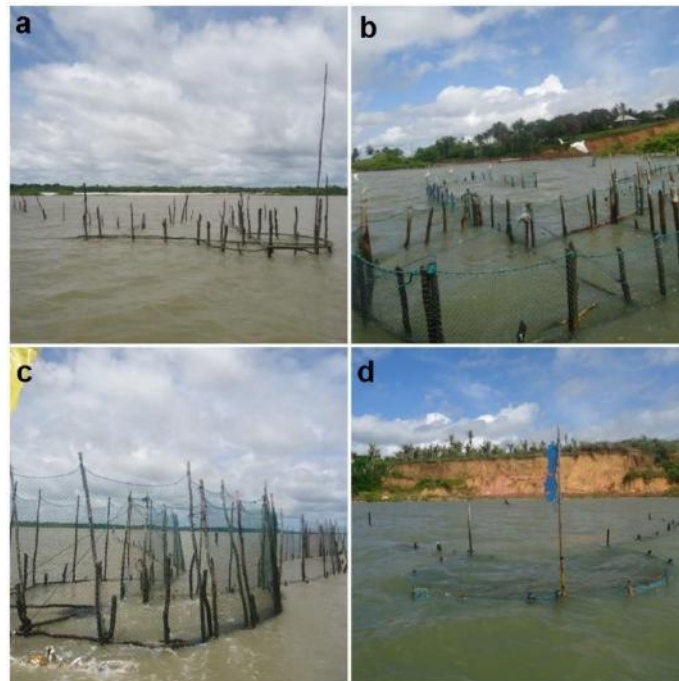
The activities at the APA were divided into two steps. The first step consisted in the design of the study area and its recognition. The second, to understand the corral fishermen and apply semi-structured interviews. Data were collected between the months of May and November 2016. The data obtained in the collections were placed in spreadsheets Microsoft® Office Excel 2010, to conduct descriptive and quantitative assessments. In field research, the object/source is approached in its own environment. Data collection is carried out under the natural conditions in which the phenomena occur, thus being directly observed without intervention and handling by the researcher. It ranges from surveys, which are more descriptive, to more analytical studies (Severino, 2007).

In this research, we follow Nachmias and Nachmias (2000). They argue that field work aims to either falsify, modify or provide support for existing theory. They accomplish this goal deductively by deriving hypothesis from theory and using the data they collect to statistically test the hypotheses. Qualitative field research moves in the opposite direction, using a process called analytics induction. Researchers collect data, formulate hypotheses based on the data, test their hypotheses using the data, and attempt to develop theory. The theory they develop is called ground theory because it arises out of and is directly relevant to the particular under study. According to Nachmias and Nachmias (2000), researchers must approach the field with an open mind to ensure that the ultimate theory is grounded. Because field research is based on observation, preconceived ideas and rigid hypotheses may influence the observations a researcher chooses to record for analysis, which can compromise the resultant theory. Since more researchers do not spend all of their time in the field, they may, however, use very loosely defined hypotheses to decide when and how to make their initial observations. Subsequently, researchers will use observations to refine, reject, and reformulate hypotheses throughout the research process.

3. Results and Discussion

Presently we have 111 corrals, 88 of which are active and 23 inactive (Fig. 2). According to the survey conducted by the State Secretariat for the Environment – SEMA (2007) about 84 corrals were registered at the APA, where most were concentrated in Algodual and Camboinha (55 corrals), for several generations, where some of these belong to individuals who do not live in the UC.

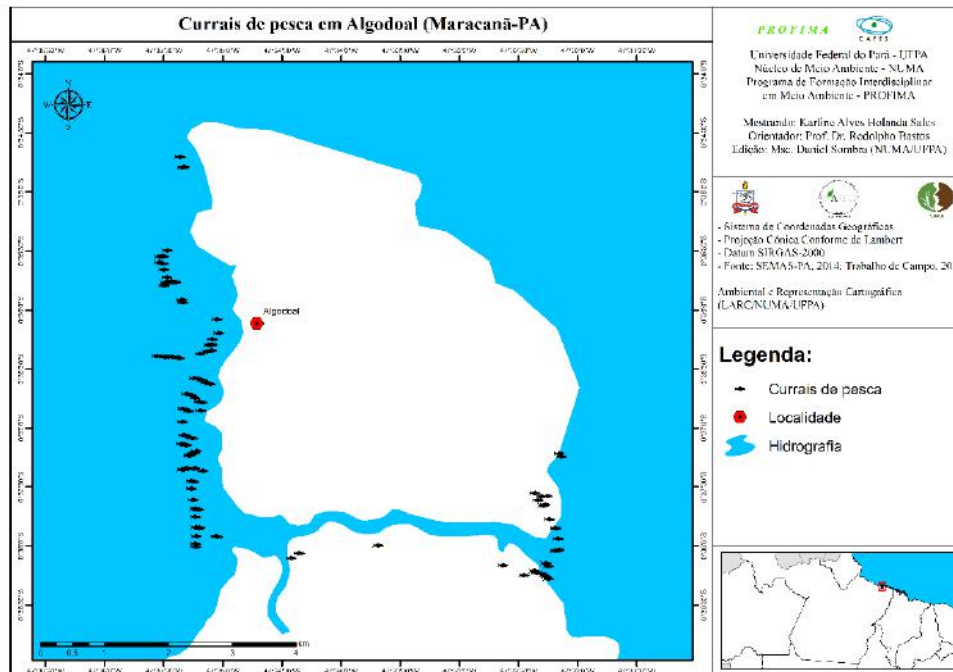
Figura 2 - Fishing corrals at the APA Algodual-Maiandeuá: inactive (a), heart shape (b), camboa (c) and cacoeira (d) (Author).



Source: Authors.

The corrals are distributed as follows: 15 corrals in Fortalezinha (14 active and one inactive); seven in Mocooca (all active); five along the South channel (*Furo da Mocooca*), which separates APA of the Marine Extractive Reserve of Maracanã (four active and one inactive); 63 along the coast of the island to the stream *Igarapé das Lanchas*, in Mamede point (49 active and 14 inactives); 16 on the Mamede point until Ponta do Caldeirão (nine active and seven inactive); and five at the *Praia da Princesinha* [Little Princess Beach] (all active) (Figure 3).

Figura 3 - Points of fishing corrals at the APA Algodual-Maiandeuá.



Source: Fieldwork, Authors (2016).

Eighteen corral fishermen were interviewed, all being men, aged between 52 to 85 years. In a study conducted by SEMA (2012), the fishermen's age varied between 40 and 49 years. This result shows that the corral fishing in APA, currently, does not arouse the interest of young people in continuing this fishing activity. The small-scale fishing practice starts in childhood, where the knowledge on this activity is passed down from generation to generation, from father to son with the objective that their descendants continue their paternal profession. The predominance of adults and/or elderly in small-scale fishing was also found in other studies in other parts of Brazil (Harayashiki et al., 2011; Oliveira et al., 2011). The predominance of men in this activity is common in fishing communities in municipalities such as Soure and Colares, this shows that fishing in the state of Pará is performed mainly by more experienced men, besides presenting a decrease in the renewal of the workforce due to the presence of young fishermen is minimal (Brito & Viana; 2011; Britto et al., 2015).

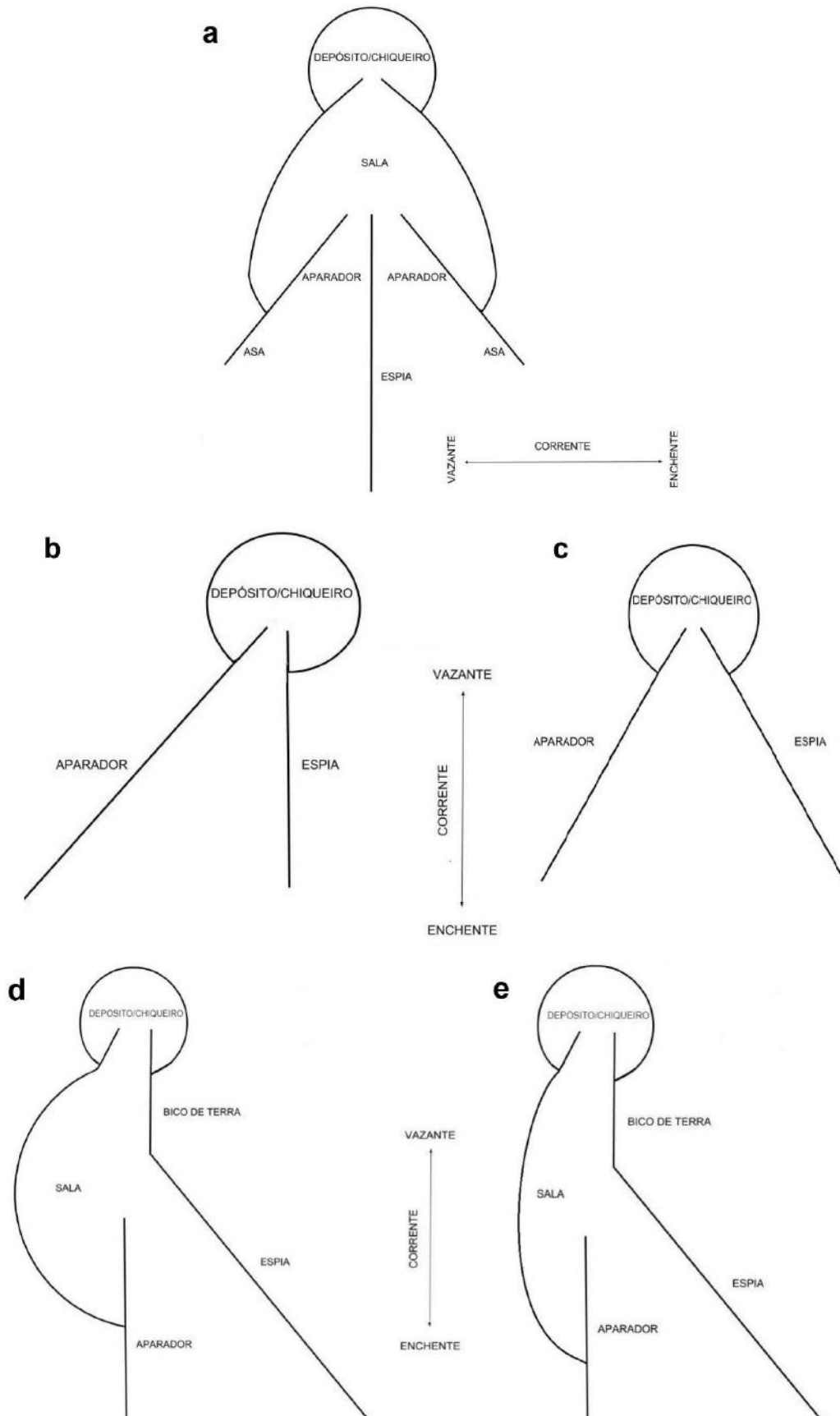
All respondents have a stable relationship. Only three are native to the island of Algodual, others are native to neighboring locations, as: Maracanã, Magalhães Barata, Marapanim and Fortalezinha. For the majority of the respondents, this activity is not their only source of income and only two fishermen have a society in the corral. According to Brito and Vianna (2011), this type of fishing has been the main financial and food source for fishermen who live in the coastal area of Pará, but in the Algodual-Maiandeuá APA most fishermen have secondary sources of income, such as hotels, restaurants, rooms for rent during the high season for visiting the area, small businesses and/or retirement funds.

With regard to its structure, the corral can be made up of principal and/or secondary parts. The principal parts are the most important for the performance of the corral and can be defined as follows: fence-like structure (most important structure, which guides the fish into the corral); or sty and deposit (part where the fish are retained until the time of catching). The rooms or deposits are the secondary parts of the corral and facilitate the increase of the capture capacity of the corral (Piorski et al., 2009). In various regions of the country, the corrals of different types and forms can be found, where this difference is related to the types of bottom of the sea, tidal flow and species, etc. (Moraes, 2007).

On the coastal line of Pará, the classification of corrals is based mainly on their format and location (border or outskirts) (Rocha et al., 2018). According to the format, there are basically three types of corral: heart, thong and pipe, each with its own features. As described by the fishermen of the APA, the heart type corral (Figure 4a) is formed from a single line, a sideline on each side that may or may not have an extension called a wing, a chamber, a storage/sty and fishing both at high and low tide. When the heart-shaped corrals are placed on the edge, they are called cacuri, as they are smaller.

The corrals of the fence-like structure and cacoeira type have a fence-like structure, a sideline and a storage/sty. They are mostly from the outside used for fish only at low tide and are differentiated by the angle at which the fence-like structure is placed (Fig. 4b, 4c). The corrals of the pipe type and camboa are formed of a fence-like structure, an earth spout, a sideboard, a chamber on the side and a storage/sty. These corrals are different only in the width and length of the chamber. They are also classified as outside corrals, fishing only at low tide (Fig. 4d, 4e). In the APA, the most common type of corral is the type of border heart or cacuri, where those who do not have large boats fish or do not use other fishing gear, using the production of the corral in daily family consumption as well, as recorded by Maneschky (1993) and Brabo (2006), in the municipality of São Caetano de Odivelas.

Figura 4 - Heart-shaped corrals (a), fence-like structure (b), cacoeira (c), pipe structure (d) and camboa (e) described and used by fishermen in the Algodal-Maiandeuá APA.



Source: Authors.

The plant species most used in the construction of the corral are: bacuri (*Platonia insignis*), caraipé (*Licania sp.*), jarana (*Lecythis lurida*) and buiuçú (*Ormosia coutinhoi*). The woods are used in the production of fence posts, rods or stems, paris or mat, which is the structure that acts as the walls of the corral. The preference for these species occurs because they are considered the most resistant and durable. This material is purchased in Maracanã or Magalhães Barata, costing 3 to 5 Brazilian reals (BRL) per stick. The average number of sticks used for the construction of a corral in the APA is 274, but according to IBAMA (2002) 150 to 180 sticks are needed.

Fishermen from the communities of: Vista Alegre, Marudá, Porto Alegre, Crispim and Araticum-Miri use for the manufacture of corrals: bambu (*Poaceae*), cumatê sticks (*Myrcia atramentifera*), caraipé (*Licania sp.*), envireira (*Annonaceae juss.*) and abiurana (*Pouteria sp.*) extracted from the areas of secondary forests. The fishermen of Magalhães Barata use mainly bambu (*Poaceae*), cipó tracuá (*Philodendron myrmecophilum*) and jarana (*Lecythis lurida*) “which are thin trees” (ICMBIO, 2014).

One of the issues with regard to corral fishing is environmental, since this type of trap requires a large amount of wood, which in most cases is removed from the mangroves, which are considered APP (Permanent Preservation Areas), protected by Law No. 9.605/98 (Environmental Crimes Law). The interviewee no longer remove wood from the mangrove for use in the corral due to (i) awareness of the importance of the mangrove and the island such as APA, (ii) prohibitions and (iii) lack of mangrove tree (*Rhizophora mangle* L.) and tinteiro (*Laguncularia racemosa* (L.) C.F. Gaertn), species previously widely used in the corral.

The corral fishermen are not fishing all year round. The durability of the wood varies from six months to a year in the water, the parts that rot faster in the corral are the center parts and the parts stuck in the sand. The fisherman who remove wooden sticks from the water when the corral is inactive, reuse them as follows: reuse in the corral after cleaning the sticks and removal of barnacle, donate to neighbors or make charcoal. Those who do not reuse the sticks, leave them piled up next to the corral.

The assembly or renewal of the corrals is performed after the period of large waters or tides in Sizígia by March/April. The labor required for the construction or renewal of a corral varies from three to 12 people, which can be family, friends or hired staff. The materials used in the construction of the corrals are: wood, nails, canvas and synthetic ropes. According to Brabo (2006), durability, availability and cost of materials are the main factors that influence the choice of materials used to build the corral. Therefore, many owners look for lower cost/benefit to build the trap and for this reason they started to use materials such as plastic strings or nylon nets to replace the vegetable vine.

The assembly begins with the orientation of the fence-like structure, consisting in determining the position of the corral in relation to the water current. The corral fishermen themselves guide the fence-like structure of their corrals. In Marudá (Furtado, 1987) and São Caetano de Odivelas (Maneschy, 1993) the steps for making a corral are: Drafting of wood, splitting of splints, mat weaving, marking, walling, strapping, covering and bundling.

The removal of the fish is carried out by the fisherman with the help of his wife and/or children, or by persons hired, twice a day, at low or dry tide. The fish are removed from the chamber/deposit by dragging with a net or a net with stick, or with their hands.

The most abundant species in corral fisheries on the coast of Pará are: Gó (*Macrodon ancylodon*) (38%), Bagre (*Arius herzbergii*) (10%), Bandeirado (*Bagre bagre*) (6%), Corvina (*Micropogonias furnieri*) (4%) and Peixe-pedra (*Genyatremus luteus*) (2%) (Tavares et al., 2005). In mid-January to March, the fish that is most caught in the APA corrals are Camuri (*Centropomus spp.*), Piramutaba [catfish] (*Brachyplatystoma vaillantii*) and Dourada (*Brachyplatystoma flavicans*; *Brachyplatystoma rousseauxii*). In the period from May to August, the Gó (*Macrodon ancylodon*) and Uritinga (*Arius proops*) are the most abundant fish in the corrals. In Bragança (Espírito Santo, 2002) and São João de Pirabas (Britto et al., 2015), Gó

presents peak of capture between the months of April to September, period corresponding to less wet and rainy, strengthening the information obtained in this study. When asked about the lack or absence of catching some species of fish, the most cited were: Mero (*Epinephelus itajara*), Tainha (*Mugil spp.*) and Xaréu (*Caranx spp.*), what had already been reported in the study conducted by SEMA (2007). In addition to the fish, the corrals catch turtles, rays and sharks, the latter being of rare occurrence.

4. Final Considerations

With regard to the Management Plan of the UC, we notice an increase of 27 corrals in the Algodoal-Maiandeuá APA, where most are concentrated and active in Vila de Algodoal. This fishing method is exercised primarily by older men, coming from Maracanã and neighboring municipalities. Corral fishing was not considered the main source of income, since fishermen have other ways of obtaining income.

Corral fishing shows an inheritance activity, where it has been passed on for generations, but in APA there is a great lack of interest on the part of young people in to exercise this activity. Factors such as opportunities in other jobs, other professions and/or the incentive to study given by the parents, has been causing a loss in the transfer of the technique and knowledge.

The most common type of corral is the border heart shape, better known as cacuri. The wood used for the construction of the corral is no longer the species coming from the mangrove like the tinteiro and the mango tree due to their unavailability and also, because the fishermen have become aware of prohibitions and the importance of mangrove. Now fishermen use bacuri, caraipé, jarana and buiuçú, which are bought in neighboring towns.

The species most captured in the corrals, depending on the season, are: Camuri, Piramutaba, Dourada, Gó and Uritinga. According to fishermen fish as Mero, Tainha and Xaréu were more abundant a few years ago and today they are not so frequent anymore.

With the goal of to fill some existing gaps on corral fishing in the unit, assist the manager in the choice of technical tools, provide scientific support and meeting the requirements of the Management Programs that the unit has, we suggest: 1) The use of the results presented in updating the APA Management Plan, where it is in the early stage of upgrade; 2) Establishing of a corral fishermen association or cooperative to develop co-management policies – such as the Fisheries Agreements that were initiated in 2009 but have not continued - , better organization and implementation of fisheries management, this traditional art in the APA; 3) Studies on the possibility of developing a planting scheme for the most used plant species in the fishing corrals at the unit.

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