

# Bass fishing potential *Centropomus undecimalis* (Bloch, 1792) on the East Coast of Maranhão according to the local ecological knowledge of fishermen and traders

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**Abstract** - The eastern coast of Maranhão has a diversity of fishing resources that have been extensively explored in recent years. Associated with the fishing activity, the traditional wisdom of fishermen and traders about the local ichthyofauna becomes fundamental for the establishment of conservation measures and the sustainability of fishing in the long term. In this context, the present study aimed to verify the ecological knowledge of fishermen and traders about the fishing potential of the snook *Centropomus undecimalis* in the municipality of Tutóia, state of Maranhão. For the development of this research, interviews were carried out with fishermen and traders in the study region, through the application of semi-structured questionnaires that contained open questions. In the interviews, cognitive aspects related to general aspects of fishing and the potential of sea bass were considered, as well as aspects of its dynamics and reproduction. The results revealed that the ecological knowledge of fishermen and traders constitutes a valuable tool acquired over the years and transferred between generations, the research also revealed that the interviewees indicated that the sea bass has, respectively, potential for commercial fishing, sport fishing and for cultivation.

**Keywords:** Fish. Tutóia Bay. Importance. Ethnobiology.

## Potencialidades da pesca do robalo *Centropomus undecimalis* (Bloch 1792) na costa oriental maranhense de acordo com o conhecimento ecológico local de pescadores e comerciantes

**Resumo** - O litoral oriental do Maranhão possui uma diversidade de recursos pesqueiros que vêm sendo muito explorados nos últimos anos. Associado a atividade pesqueira, a sabedoria tradicional de pescadores e comerciantes sobre a ictiofauna local torna-se fundamental para o estabelecimento de medidas de conservação e sustentabilidade da pesca a longo prazo. Nesse contexto, o presente estudo

objetivou verificar o conhecimento ecológico dos pescadores e comerciantes acerca das potencialidades de pesca do robalo *Centropomus undecimalis* no município de Tutóia, estado do Maranhão. Para o desenvolvimento desta pesquisa foram realizadas entrevistas com pescadores e comerciantes da região de estudo, por meio da aplicação de questionários semiestruturados que continham perguntas abertas. Considerou-se nas entrevistas aspectos cognitivos referentes aos aspectos gerais da pesca e das potencialidades do robalo, além de aspectos sobre sua dinâmica e reprodução. Os resultados revelaram que o conhecimento ecológico dos pescadores e comerciantes se constitui como uma valiosa ferramenta adquirida ao longo dos anos e transferida entre as gerações, a pesquisa revelou ainda, que os entrevistados indicaram que o robalo tem respectivamente potencial para pesca comercial, esportiva e para o cultivo.

**Palavras-chave:** Peixe. Baía de Tutóia. Importância. Etnobiologia.

### **Potenciales de pesca lubina *Centropomus undecimalis* (Bloch 1792) en la costa oriental de maranhense según el conocimiento ecológico local de pescadores y comerciantes**

**Resumen** - La costa este de Maranhão tiene una diversidad de recursos pesqueros que han sido muy explotados en los últimos años. Asociado a la actividad pesquera, el saber tradicional de pescadores y comerciantes sobre la ictiofauna local se vuelve fundamental para el establecimiento de medidas para la conservación y sostenibilidad de la pesca a largo plazo. En este contexto, el presente estudio tiene como objetivo verificar el conocimiento ecológico de los pescadores y comerciantes sobre el potencial de pesca de la lubina *Centropomus undecimalis* en el municipio de Tutoia, estado de Maranhão. Para el desarrollo de esta investigación se realizaron entrevistas a pescadores y comerciantes de la región de estudio, mediante la aplicación de pruebas semiestructuradas que contenían preguntas abiertas. Considerar en las entrevistas aspectos cognitivos relacionados con los aspectos generales de la pesca y el potencial de la lubina, además de aspectos sobre su dinámica y reproducción. Los resultados revelaron que el conocimiento ecológico de los pescadores y comerciantes constituye una valiosa herramienta adquirida a lo largo de los años y transferida entre generaciones, la investigación también reveló que los entrevistados indicaron que la lubina tiene, respectivamente, potencial para la pesca comercial, la pesca deportiva y para el cultivo.

**Palabras clave:** Peces. Bahía Tutóia. Importancia. Etnobiología.

### **Introduction**

The North Coast of Brazil, more specifically the region that goes from the Amazon Coast of Maranhão (western coast) to the East Coast, has a wide fishing productivity (Santos et al. 2003; Barbieri 2010; Diniz et al. 2020).

The State of Maranhão has a coastline with 640 km, occupying an important role in the scenario of national fishing productivity, where most of this production comes from artisanal fishing, ensuring food security which provides food and employment for many human populations of Maranhão, increasing the local economy (Pereira et al. 2018). The city of Tutoia presents itself as an important commercialization center of fish in the region of the eastern coast of Maranhão, in this region there is great fishing productivity (IMESC 2020).

Sea bass are fish widely sought after by sports and professional fishermen, due to the thrill of the catch and the high value of their meat (Da Silveira Menezes 2012; Barrella et al. 2016; Motta et al. 2016; Molitzas et al. 2019). In addition, *C. undecimalis* has survival capacity in waters with low salinity, being conducive to its development, both in fresh water and brackish water and with low oxygenation index (Ager et al. 1976; Peterson and Gilmore 1991; Pereira et al. 2015; Pereira et al. 2020). This flexibility of adaptation to different variations of salinity has allowed the creation of strategies for the cultivation of sea bass that may favor the availability of this fishing resource for commercialization, considering that it is a species of high commercial value (Liebl et al. 2016; Nascimento et al. 2021).

In this dimension, fishermen and traders have multiple knowledge about fish of local and/or regional occurrence (Costa-Neto et al. 2002; Braga 2016). When developing research with ethnoknowledge of fishermen on the coast of Maranhão Rodrigues et al. (2021) highlighted that the identification of traditional knowledge about fishing, fish biology and how these resources are used by riverine people, are indispensable elements in the generation of knowledge that contributes to sustainable long-term environmental measures.

It is important to highlight that UNESCO, FAO and Brazilian legislation recommend the use of traditional ecological knowledge for the implementation of natural resource management measures (BRASIL 2015). According to anthropologist Manuela Carneiro da Cunha, traditional and indigenous peoples are very knowledgeable and can help scientists can effectively understand climate change and the problem of biodiversity loss. She also points out that traditional wisdom is a living and ongoing process, composed of ways of knowing nature, methods, models and “research protocols” (Agência FAPESP 2013).

Since artisanal fishing is of social and economic importance for many families, especially for traditional communities living in the Amazon region (Monroe et al. 2022). In addition, the United Nations General Assembly declared that 2022 is the International Year of Small-scale Fisheries and Aquaculture (FAO, 2021).

Thus, the present study sought to discover, through the traditional knowledge of fishermen and traders, the potential for using *Centropomus undecimalis*, a fish known in this region as sea bass or camurim and which has great commercial value.

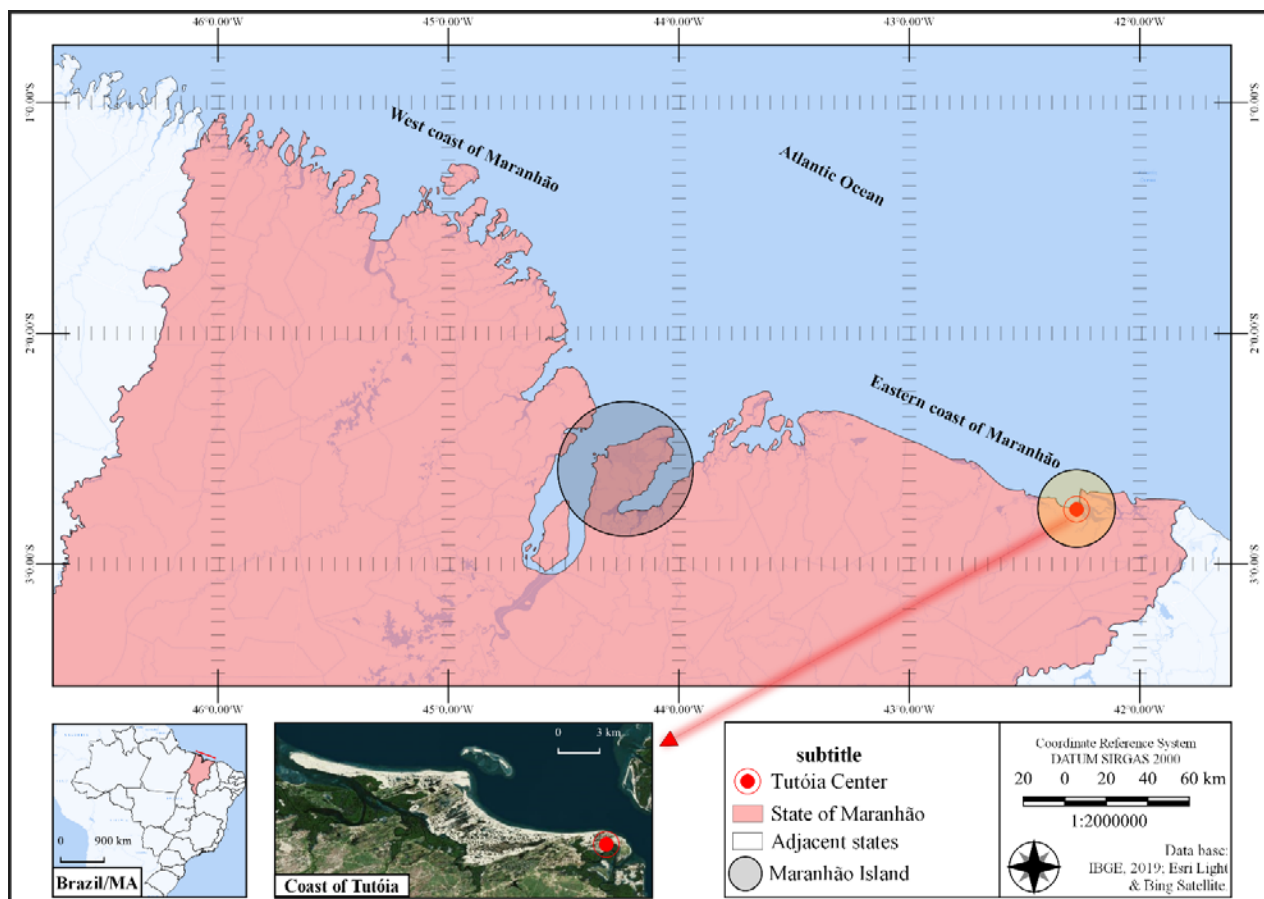
## Material and Methods

### Area description

The eastern coast of Maranhão extends from the eastern bank of the Maranhense gulf to the mouth of the Parnaíba River. This coastline is characterized by a high incidence of watercourses, with a predominance of sandy formations known as *Lençóis Maranhenses* (or Maranhão Sheets), and a rectilinear coastline, which cuts mangroves, sandbanks, fixed and mobile dune cords, beaches, coves and deltaic systems (Almeida 2009; El-Robrini et al. 2006; Gama et al. 2011).

The main fishing communities of the eastern coast of Maranhão are concentrated in Icatu, Humberto de Campos, Primeira Cruz, Santo Amaro do Maranhão, Barreirinhas, Paulino Neves, Tutóia and Araioses (Almeida 2009). The highlight of Figure 1 shows the city of Tutóia.

**Figure 1.** Map of the Maranhense Coast showing the city of Tutóia - MA.



Source: Costa (2020)

### The Cajueiro fishing community: brief configuration

Brazil is a country characterized by a diverse traditional population: indigenous, quilombola, riverside, fishing, extractive, among others, communities that work and live in a biologically mega-diverse country, which has included the creation of public policies of a socio-environmental nature with a view to preserving this biodiversity and the security of local communities. In this scenario, the Amazon is the biome that is the target of debates, a region where research on the subject has been more advanced in recent years, but still insufficient to meet scientific expectations and those of traditional communities.

Over the years, the Amazon biome has been the target of predatory attacks, such as fires, intensive livestock farming, agribusiness, inappropriate use of the coastal environment and negligence in monitoring catches from fish stocks. Within the scope of Science, several areas of knowledge focused on traditional practices in Brazilian rural communities. Multidisciplinary studies in the areas of biology, anthropology, ethnobotany, chemistry and pharmacology, among others, have provided fundamental

data and analyzes for understanding the use, management and conservation of natural resources in these communities, as well as for their very existence. Therefore, studies such as the one proposed here, which point to the direction of interaction between traditional and scientific communities, effectively contribute to the preservation of Amazonian biodiversity.

In this direction, we opted for an interdisciplinary analysis that resorts to methodological procedures from Anthropology linked to field research in local communities, such as: insertion in the research field; interviews or informal conversations recorded in audio or visual audio with community leaders and participants; photographic records of the stages of work; mapping of the areas of the street market and the port of Tutóia, community of cashew fishermen, in addition to those pointed out by the community, aiming to investigate the ecological knowledge of fishermen and local traders.

It is of great importance to map, identify and catalog the repertoire of traditional knowledge, recording the tangible and intangible heritage of these groups, especially due to the concrete possibilities of environmental impacts. Seeking to contribute to academic/scientific production focused on sustainable development and preservation of Amazonian biodiversity.

According to Mr. Daniel da Conceição, fisherman and native, the city and Tutóia has its origin with the indigenous people of the Tremembé people, an influence maintained until today by the traditional habits of the Cajueiro community, such as practices of fishing techniques that are still artisanal. The old Vila Viçosa (founded by Jesuit priests) was elevated to the category of city in 1938. Today, it is known for its urban space, as a fishing town and also a place of intense tourist attraction. With approximately fifty-one thousand inhabitants, it is divided into a rural area, with many villages; and the downtown area, an urban area where we find an extensive area of mangroves and beaches.

We identified in the research, reports of environmental problems reported by fishermen: predatory fishing of shrimp, according to the community, fishing nets drag some species of fish and molluscs that are discarded, destroying small marine animals; as well as destruction of mangrove areas. In addition, there is the excessive exploitation of limestone, which led to the disappearance of fish species; factors that reflect on the social figuration of the villages, considering that they drive the migration process of people native to the locality, especially young people.

Historically, talking about affirmative action and legal rights for traditional peoples and communities is a recent debate. Almeida (2008, p. 25), points out that, in the last two decades, we have been witnessing throughout the country, and notably in the Amazon, the advent of new patterns of political relations in the countryside and in the city.

In 2004, under pressure from social movements, the Federal Government decreed the creation of the Commission for the Sustainable Development of Traditional Communities, whose purpose was to discuss a national policy for sustainable development aimed at the so-called traditional communities. Almeida (2008, p. 26) also warns that the expression “communities” in line with the idea of “traditional peoples” displaced the term “populations” (already exhausted, since it no longer responded to the specific demands of these groups), passing to reproduce the terms of the International Labor Organization (OIT) in 1988-89, which found an echo in the Amazon through the mobilization of the so-called “forest peoples”.

In 2007, through Decree n. 6040, the National Policy for the Sustainable Development of Traditional Peoples and Communities (PNPCT) was instituted. From then on, officially, traditional peoples and communities are defined as

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. (Decree No. 6040, of February 7, 2007).

Among these segments are the quilombolas, gypsies, religious communities of African origin, rubber tappers, chestnut trees, babassu coconut breakers, grassland communities, faxinalenses, artisanal fishermen, shellfish gatherers, riverside dwellers, varjeiros, caiçaras, praiheiros, sertanejos, jangadeiros, azoreans, campeiros, pantaneiros, catingueiros.

### **Data collection and analysis**

This research has a qualitative, cross-sectional and descriptive nature and originated from semi-structured interviews with fishermen and traders in the city of Tutóia-MA who make a life from fishing or the commercialization of the *C. undecimalis* sea bass.

Interviews were conducted with 20 experienced fishermen and 10 traders involved directly in the fishing and sale activity of the sea bass, as well as punctual transcriptions and speech identifications of the informants. A semi-structured questionnaire was applied, which contained open questions. Some issues addressed were: (1) Fishermen's profile; (2) Bass potential; (3) Places of capture (4) Trading of sea bass; (5) Sport fishing; (6) Periods of occurrence and reproduction of sea bass in the region; (7) Types of vessels used for capture; (8) Factors that influence the capture of sea bass; (9) fishing gear (10) Socio-environmental conflicts and (11) Increase or decrease in stocks over the years, among others. The interviews had free time of duration and were conducted with the prior authorization of the participants and, for this, an Informed Consent Form (ICF) was read and the conditions of participation of the subjects in the research were clarified. After that, they were incited to sign or not the term.

The method adopted for the selection of fishermen was the "Snowball Sampling", first used by Coleman (1958) and Goodman (1961), in which an interviewee indicates other possible participants to the researchers. The information obtained from the dialogues with the participants was compared to the studies available in the literature as a method of evaluating and comparing traditional knowledge with scientific knowledge. Quantitative data analyzes were described, using relative frequencies to represent the percentage of respondents' responses. The calculations were performed with the help of the Microsoft Excel (2016) program and then the infographics were prepared with the help of Microsoft PowerPoint (2016). Finally, the data were organized, analyzed and discussed qualitatively.

### **Ethics approval**

The methodological procedures applied in this research with fishermen and traders were authorized by the Ethics Committee of the State University of Maranhão - UEMA (no. 4.476.902/2020).

### **Results and Discussion**

Through the application of questionnaires and voluntary interviews with the 20 fishermen and 10 traders, it was possible to know their profile, with ages between 25 and 59 years old. Among them 6.66% were women and 93.33% were men. It was found that 80% of the interviewees say they are part of the fishermen's colony, but complain about its performance in the region and the other 20% approve of the activity of the fishermen's colony in the Region of Tutóia-MA. It was noticed that much of the community uses fishing to survive, which is the main source of income and subsistence of the region, however, not all fishermen and traders can fish or market the sea bass of the species *C. undecimalis* due to the fishing gear necessary for its capture, in addition to and other aspects. Table 1 relates the citation of fishermen and traders with citations from the scientific literature on aspects of bass fishing in Tutóia-MA.

**Table 1.** Comparative perception of fishermen and traders about bass fishing in Tutóia, Maranhão.

ISSUES ADDRESSED	FISHERMEN QUOTES	LITERATURE QUOTES
Potentials	<p>"(...) I think the greatest potential of sea bass is for trade." [P1]</p> <p>"(...) Sea bass is a great attraction for sport fishing here in Tutóia because it is a fish that grows a lot". [P3]</p> <p>"(...) I sell a lot of sea bass to other states, I'd like to breed them in captivity, do you think it's possible?" [P8]</p>	<p>The species of sea bass are highly valued as game fish and are the target of artisanal and recreational fishing (Motta et al. 2016).</p> <p>The sea bass farming still lacks further studies that describe the cost-benefit ratio of this activity in Maranhão (Nascimento 2021).</p>
Capture Locations	<p>"(...) This big sea bass we can catch them near Travosa, in the salt water, or else in the mangrove here in Tutóia." [P12]</p>	<p>Mendonça 2004 mentions that these fish are characterized as <i>euryhaline</i> species, as they can which can live in fresh water, brackish water, or salt water, with temporary or permanent access and the environmental variables that influence the distribution of sea bass are salinity and temperature.</p>
Trading	<p>"(...) The commerce of sea bass here in Tutóia is only done by some traders because this fish is not much consumed in Maranhão, we send everything to São Paulo and Brasília". [P23]</p>	<p>According to Almeida (2009), research on fishing resources indicates the existence of a high density and ichthyo biomass in Maranhão.</p>
Sport fishing	<p>"(...) We have avoided doing this type of fishing because customers complain that there is not too many sea bass, I realize that it is increasingly difficult to capture them, I think they are decreasing." [P6]</p>	<p>Sport fishing is framed among the category of leisure/recreation fishing, which generates as a final product the association between tourism and fishing areas, also recognized as "sport fishing tourism" (Lopes 2009).</p>

ISSUES ADDRESSED	FISHERMEN QUOTES	LITERATURE QUOTES
<p><b>Periods of occurrence and reproduction of sea bass</b></p>	<p><i>“(…) sea bass reproduces between December and February, in the rainy season. But we find sea bass eggs in other months too. Only there’s a period where he’s gone and we can’t get any.” [P7]</i></p>	<p>These species are observed throughout the year, but have reproductive peaks in February, May and November, that is, in these months it is suggested to avoid bass fishing. (Nascimento et al. 2022).</p>
<p><b>Types of Bass Fishing Vessel</b></p>	<p><i>“(…) motorized fishing boats for commercial fishing and speedboats for sport fishing.” [P1]</i></p>	<p>According to Almeida et al. (2006) motorized boats, rafts, crayfish boats and multiple lines with hooks (called <i>pargueiros</i>) are used for fishing on the Coast of Maranhão.</p>
<p><b>Factors that influence the capture and maintenance of fish stocks</b></p>	<p><i>“(…) Look, I think today what gets in the way of stocks is that fishermen take everything they can and don’t let the fish reproduce, then everything decreases.” [P17]</i></p>	<p>Knowing the reproductive biology of a species can generate useful information for filling gaps since this is reflected in the pattern of evolutionary adaptations that respond to environmental fluctuations, allowing us to infer about growth, sexual maturation, fertility and ecological conditions of ecosystems, contributing with important knowledge for the conservation of natural stocks (Vazoller 1996).</p>
<p><b>Fishing gear</b></p>	<p><i>“(…) To fish for sea bass we use artificial bait and hook when it is in the mangrove and in the sea we use fishing net 100 x 120”. [P20]</i></p>	<p>The use of fishing gear is directly related to the fishing resources explored, as well as to the places of capture (Cordeiro et al. 2020).</p>
<p><b>Socio-environmental conflicts</b></p>	<p><i>“(…) I think what gets the most out of our fishing here are the boats that come from other fishing states in our area, they can take a lot of fish from here because they have bigger boats.” [P15]</i></p>	<p>Stock declines are caused by anthropic actions, such as overfishing, contamination of aquatic environments, among others, have put species at risk in all types of environments in which they occur (Dias et al. 2017; Silva et al. 2021).</p>
<p><b>About the increase or decrease in sea bass stocks in the region.</b></p>	<p><i>“(…) In my opinion they are decreasing a lot, I think it’s because of the fishermen’s greed.” [P24]</i></p>	<p>The commercial importance of <i>C. undecimalis</i> in different regions of Brazil generates excess exploitation of this fishing resource, an aspect that needs to be evaluated, since in general females have greater weight gain than males and may be more susceptible to capture, which may impact the maintenance of the reproductive cycle of the species (Garrone-Neto et al. 2018).</p>

Pereira et al. (2018) mention that fishing in Maranhão still occurs in an artisanal way, this aspect makes the ichthyofauna of Maranhão barely known, since the available information originates from specific surveys carried out in some watersheds and/or environmental protection areas of the state (Barros et al. 2011; Matavelli et al. 2015; Brito et al. 2019). Consequently, the knowledge of the potentialities of a species of a fish globally appreciated as sea bass is an interesting aspect to move the economy of the studied region.



In 2004 Alvarez-Lajonchère already cited that sea bass are fish with great importance in commercial and sport fishing and aquaculture. Currently, this perception is still evidenced by the fishermen and traders interviewed, and although they say that the consumption of *C. undecimalis* is not much appreciated by the people of Maranhão due to its high market value, they highlight its great potential for commercialization in other states. Figure 2 shows the potentialities of *C. undecimalis* mentioned by the interviewees in the studied region.

**Figure 2** - Infographic with percentage of the fishing potential of sea bass *C. undecimalis* in the city of Tutóia - MA, cited by fishermen and local traders.



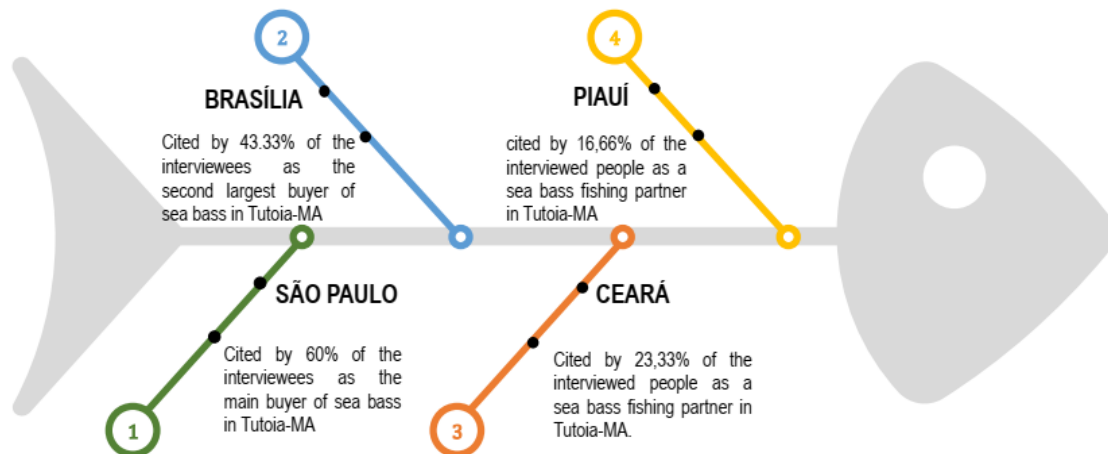
It is noticed that according to the fishermen's report, bass fishing in the city of Tutóia occurs mostly for commercialization and sport fishing and in a smaller amount for farming. This low percentage of the potentiality of *C. undecimalis* for cultivation was predictable since this activity is not yet performed in the region and data described by Nascimento et al. (2021) show that studies on the farming of sea bass in captivity in Brazil still need broader evaluations for its cost- benefit measurements.

During this research, the interviewees pointed out that the region of Tutóia is highly targeted by fishermen from other northeastern states such as Ceará and Piauí who are considered partners of bass and other fish fishing in the region due to the great ichthyophonistic diversity present in Tutóia. However, the same interviewees see as a negative point of this partnership, the use of larger vessels from these states, which capture greater amounts of sea bass and may hinder artisanal fishing of this resource in Tutóia, whose vessels are smaller.

In Tutóia, only four of the trading companies have the structure for selling sea bass (*C. undecimalis*). Because it is a large fish and it has a high commercial value, the companies that can sell it are the ones able to send them to the states of São Paulo and Brasília, for they are the main partners in the

purchase of sea bass in this region. Figure 3 shows the main buyers and fishing partners of sea bass in the Tutóia-MA region according to information from local fishermen and traders.

**Figure 3.** Main buyers and fishing partners of sea bass in the Region of Tutóia-MA according to information from local fishermen and traders



When asked if there was any environmental agency active in the region for fisheries inspection, 40% of respondents said they did not know, while 60% reported that they know they have IBAMA or ICMBio, but that rarely do they perceive supervision of these agencies in the region.

It is noticed that the commercial importance of *C. undecimalis* in different regions of Brazil generates excess exploitation of this fishing resource in the coastal region of Maranhão. This aspect needs to be evaluated to avoid capturing of the species during the closed season.

According to Garrone-Neto et al. (2018), because females have greater weight gain than males and may be more susceptible to capture, which can impact the maintenance of the reproductive cycle and maintenance of the species. Some interviewees even reported that sea bass are less abundant in the region.

When asked if the covid 19 pandemic had impacted the sale of this fishing resort, 100% of respondents said there was a drop in the sale of several species of fish, including sea bass. Some traders have reported the following:

P.1 “ (...) *With the pandemic no one goes out to buy, it was very bad to sell to us*”[sic].

P.2 “ (...) *It was difficult to sell the sea bass to other states in the pandemic, because there was no way to ship and some trading places had to close the doors*” [sic].

Fishermen and traders report that in 2019, before the covid 19 pandemic, sea bass were sold at R\$ 22,00 (twenty-two reais) a kilo. During the covid 19 pandemic they sold R\$ 13,00 (thirteen reais) a kilo, but had no buyers. Currently according to the interviewees the capture of this species is scarcer and because of this the value of the kilo costs around R\$ 35.00 (thirty-five reais) a kilo. It is noteworthy that this scarcity of sea bass has impacted the potential for sport fishing in the region.

In Tutóia, one of the leisure strategies occurs through the sport fishing of sea bass, carried out in the region by a single tourist enterprise that practices the style “fish and release”, a more sustainable sport fishing modality, which after capturing and photographing the fish, returns the specimens to the

environment thus allowing the species to reproduce. The venture welcomes amateur fishermen from different regions of the country. However, the region's sport fishing guide pointed out in his interview that in recent years it has become more difficult to capture the sea bass, because according to him, the species are decreasing and tourists are annoyed when they cannot capture any specimens. They also report that for this reason has avoided inserting the activity of bass sport fishing in tourist packages.

The use of fishing resources has become unsustainable, since the percentage of stocks that are within biologically sustainable levels decreased from 90% in 1974 to 65.5% in 2017 (FAO 2021). These declines caused by anthropic actions, such as overfishing, deforestation, contamination of aquatic environments, among others, have put species at risk in all types of environments in which they occur (Dias *et al.* 2017; Silva *et al.* 2021).

Research conducted by Almeida (2010) already warned that the fishing resources of Maranhão are abundantly exploited without any concern with the depletion of stocks and that this accelerated pace pointed to a short-term decrease of the main species of economic importance captured in the State of Maranhão. It is important to focus that this region does not have a period of closed season for bass fishing established in the legislation and this factor may favor the capture of females in the reproductive period.

Regarding the potential of sea bass for farming in the region, 93.33% of the interviewees pointed out that they do not know anyone who started a fish farm with sea bass, however 6.66% said they had heard of it and still expressed, during the interview, the interest in cultivating the species because they believe in its great potential for trade.

From this perspective, it is necessary to establish a connection between the government and the fishing community in order to develop legislation that creates a period of sea bass fishing, since the interviewees cite a population decline of the species in the region, in addition, the investment in the farming of this species could add a solution for conservation of this resource increasing its productivity and improving the local economy.

## Conclusion

Ethnoknowledge is a valuable tool acquired over the years that goes through generations and allows understanding about general aspects of regional fishing, as well as some strategies for the conservation of fishing resources. The fishermen and traders of Tutoia (MA) demonstrated knowledge about the potential of the sea bass and about general aspects of its life cycle, feeding and reproductive behavior and adaptations to the environment. This demonstrates that traditional knowledge associated with scientific reinforcing the need for effective articulation between society and the scientific academy, which adds essential instruments, methods and knowledge for the definition of strategies for the management of fishing resources in the region. The fishermen and marketers interviewed considered that bass fishing has the potential for trade, sport fishing and farming, although this last activity is not yet developed in the region. Thus, this research provides subsidies so that the government can plan actions aimed at balancing the increase in the productivity of sea bass with strategies for conservation of the species.

**Author's participation:** IRMAN – Conceptualization, Methodology, Formal analysis, Investigation, Writing-Original Draft, Project administration, Funding. CFSM - Methodology, Formal analysis, Investigation, Writing-Original Draft. RNFCN - Conceptualization, Resources, Supervision, Writing-Original Draft.

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**Ethical approval:** Approved by the Ethics Committee of the State University of Maranhão - UEMA (no. 4.476.902/2020).

**Data availability:** The data are not deposit in any repository.

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**Funding Information:** Not applied

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