v. 2, n. 7, 2022

International Journal of Biological and Natural Sciences

ETHNOBOTANICAL APPROACH WITH FISHERMEN ABOUT THE USE OF AQUATIC PLANTS FOUND IN THE PERICUMÃ RIVER AND IN FLOODED AREAS IN THE BAIXADA MARANHENSE ENVIRONMENTAL PROTECTION AREA (APA DA BAIXADA MARANHENSE)

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Abstract: Aquatic plants perform several extremely important functions for the functioning of aquatic ecosystems. Since their use is based on knowledge passed on from generation to generation, these plants contribute to the maintenance of ethnobotanical knowledge, and make it possible to understand the interrelationships between humans and plants. The present research aims to study the traditional knowledge of the use of vascular aquatic plants from the Pericumã River by fishermen, as a tool to subsidize the conservation and sustainability of aquatic resources. For this purpose, an expedition along the river and surrounding flooded areas, and interviews with fishermen using the "Snowball" methodology were used as study methods. With the present study, it is possible to observe the presence of different ethnospecies which were identified by the interviewees, and that their uses are for adverse purposes, but mainly related to animal feed.
Keywords: Traditional knowledge; popular knowledge; aquatic macrophytes; flooded areas.

INTRODUCTION

Aquatic plants, also called macrophytes or hydrophytes, can be characterized as organisms that are visible to the naked eye, with photosynthetic parts and that present a variable morphological diversity according to their occurrence in the aquatic environment (Irgang & Gastal Jr., 1996 apud. Pompeo & Moschini-Carlos, 2003). These plants play an extremely important role with regard to the numerous ecosystem services provided at trophic levels, nutrient cycling and also the applications and uses of these vegetables in the artisanal fishing activity, an activity that according to Cartella et al. (2012, apud. Silva 2014), is considered an indicator of environmental quality and conservation of fisheries resources.

The emergence of villages, communities and cities located close to aquatic environments, boosted fishing activity, especially artisanal and subsistence fishing, activities that are based mainly on traditional knowledge passed from generation to generation. According to De Morais (2011), this knowledge acquired over generations brings together a set of knowledge about the way of life of animals, plants and the ecosystem as a whole. With regard to traditional knowledge regarding aquatic plants, fishing communities contribute to the maintenance of ethnobotanical knowledge, which consists of understanding the interrelationships between humans and plants.

It is essential to highlight that the Baixada Maranhense is recognized as a Ramsar site, that is, a wetland of international importance, having been established by State Decree 11,900 of June 11, 1991 (Maranhão, 1991). Inserted in the Baixada Maranhense, the city of is bathed by the Pericumã River from north to south, and is surrounded by floodable fields (Carvalho et al, 2011), and has a diversity of aquatic plants, which have been studied by our research group. and also by Barbieri and Carreiro (2017).

Due to the relevance of the study on the aquatic plants found in the Pericumã river basin and their uses by fishermen within the ethnobotanical perspective, this work contributes to the alignment of cultural and environmental factors, on the plants and the use made of them, thus collaborating to raise the awareness of riverine people and the community in general about the importance of conserving aquatic resources and traditional knowledge.

Thus, the objectives of this work were to study the knowledge and use of vascular aquatic plants of the Pericumã River by fishermen, taking into account popular and ethnobotanical knowledge to subsidize the conservation and sustainability of hydroenvironmental resources.

METHODOLOGY

AREA OF STUDY

Initially, an expedition was carried out along the Pericumã river and flooded areas, covering the village of Vitória dos Bragas to the floodgate (Figure 1), in order to collect the species found, identify them and make a photographic record.

ETHNOBOTANICAL STUDY

Semi-structured questionnaires were applied to fishermen, according to the "Snowball" methodology (Bernard, 1988). Initially, a fisherman who lives near the Pericumã river in Pinheiro (MA) was chosen. The interviews were carried out in the fishermen's homes, totaling 3 informants. The questions involved socioeconomic issues of individuals and knowledge about vascular aquatic plants, their uses, and, in the case of plants considered medicinal, their collection and preparation. Before the interviews, each fisherman was informed about the research objectives, and only after signing a consent form were questions asked. Most of the species were recognized at the site, through photos previously taken in the field.

RESULTS AND DISCUSSIONS

SOCIAL CHARACTERIZATION OF INFORMANTS

All fishermen interviewed were male, brown/black, and lived in the Matriz neighborhood, in Pinheiro (MA), for more than 6 years. Their mean age was 52.7 years (±11.8). Most of them (66.6%) have other paid work, and all were born in the Baixada Maranhense (Pinheiro, Peri-Mirim and the village of Ilha Santa Vitória, in Pinheiro). As for access to formal education, most of them

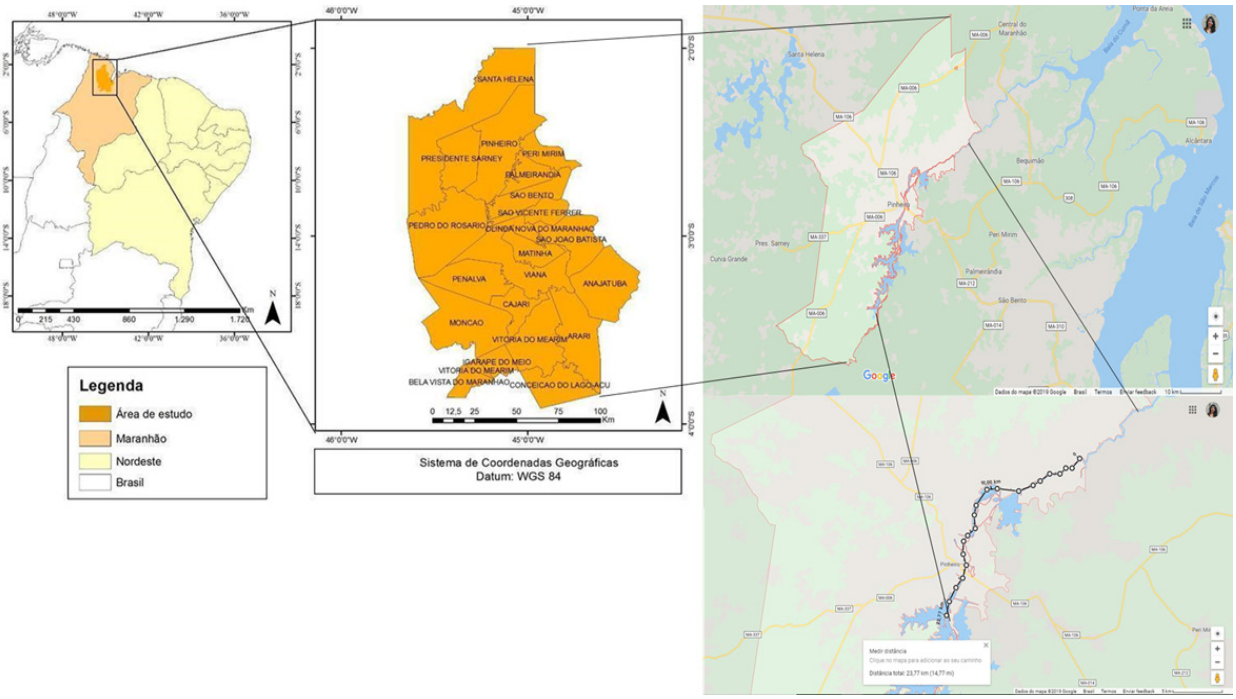

Figure 1. Location map of the study area, in the Baixada Maranhense Microregion – Maranhão.
Source: Modified from Albuquerque do Santos et al (2016) and Google Earth (2019).

(66.6%) have incomplete Elementary School, and one (33.3%) has Completed High School.

USES OF AQUATIC PLANTS

In the collection carried out during the field expedition, 16 species were found, of which 14 were identified, and distributed into 14 genera and 10 botanical families (Table 1).

The fishermen mentioned 21 ethnospecies, distributed in 10 families and 10 genera, of which Araceae (0.63%), Poaceae (0.42%) and Nymphaceae (0.42%) are the most cited families and with the highest number of representatives. 73.08% of the species were mentioned as being used for animal feed (cattle, buffalo, poultry), 11.54% for maintaining ponds and hiding places for fish and 7.69% for medicinal and artisanal uses (Figure 2).

Craft uses refer to making mat and saddle (for horse riding), uses attributed to the species: *Eleocharis interstincta* (Vahl) Roem. & Schult, popularly known as reed. Lizarazo (2015), studying vascular aquatic plants used for crafts on the north coast of Rio Grande do Sul, also found these craft uses for an ethnospecies known as reeds, but the botanical species found in their study is the *Schoenoplectus californicus* (C.A. Mey.) Soják, also from the family: Cyperaceae.

As for the parts most used for different purposes (Figure 3), the whole plant was the most cited (36.36%), mainly for animal food and fish shelter; the leaves (31.82%), mentioned in medicinal uses, for bath and tea; followed by the root (13.64%), also for tea, animal food and fish shelter; and flowers (9.09%), as food for birds, and the seed and stem (4.55%) also for animal feed, mainly cattle.

	Regional Common Name	Common name elsewhere
Family: Araceae		
Pistia stratiotes L.	Gapéua	Alface-d'água, Erva-de-santa-luzia, camalotinho, orelha-de-onça.
Famíly: Cabombaceae		
Cabomba aquática Aubl.	Samambaia	
Famíly: Cyperaceae		
Cyperus blepharoleptos Steud.	Capim-navalha	Baceiro, capim-de-capivara
Eleocharis interstincta (Vahl) Roem. & Schult.	Junco	
Famíly: Fabaceae		
Neptunia oleracea Lour.	Malícia d'água	Boa noite
Famíly: Menyanthaceae		
Nymphoides humboldtiana (Kunh) Kuntze	Gapeua	Lagartixa, Soldadela-d'água, Prato-d'água, Pata-de-burro, Estrela-branca
Famíly: Nymphaeaceae		
Nymphaea lingulata	Gapeua	Largatixa, camalote-da-meia-noite, flor-da-noite, ninféia.
Famíly: Onagraceae		
Ludwigia helminthorrhiza	Samambainha, aguapé	Lombrigueira.
Famíly: Poaceae		
Paspalum repens	Canarana	Capim -fofo, capim-camalote, capim-membeca, capim-d'agua
Famíly: Pontederiaceae		
Eichhornia crassipes	Mururu	Aguapé, camalote, mureré, baronesa, lírio de água.
Famíly: Salviniaceae		
Salvinia auriculata	Gapéua	Orelha-de-onça, salvínia

Table 1. Free list of aquatic plants found in the Pericumã river, identified and classified by the fishermen interviewed.

Sources: 1- Pott e Pott (2000). 2- Flora do Brasil 2020. 3- Pio et al. (2013). 4- Pott e Cervi (1999). 5- IUCN – RED List.

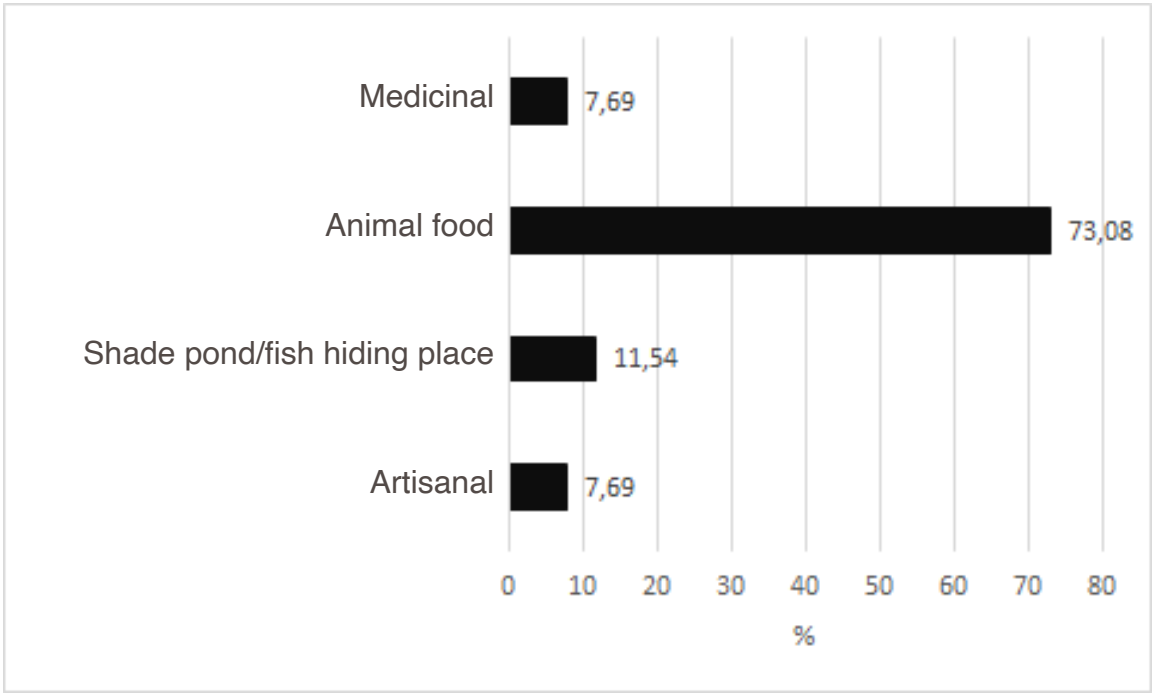

Figure 2. Ways of using aquatic plants, described by fishermen.

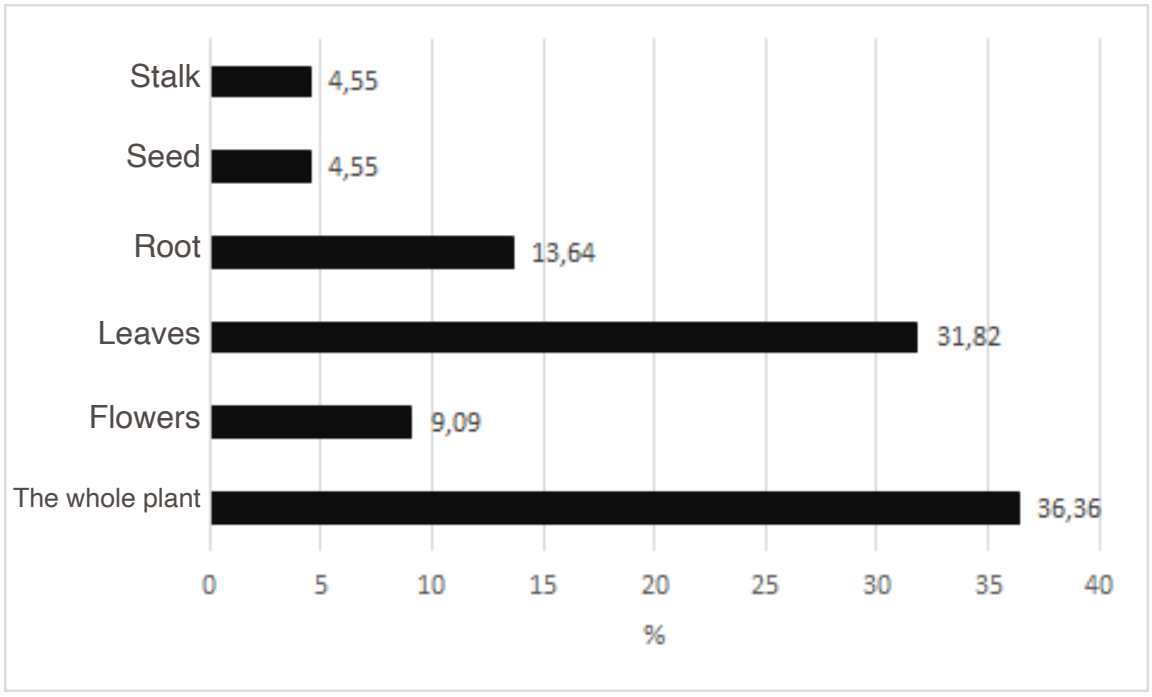

Figure 3 Used parts of aquatic plants, described by fishermen.

CONCLUSIONS

The results of this study demonstrate that the fishermen interviewed know the ecological importance of these aquatic plant species found in the region where they live. So much so that they claim that most are used for animal feed (73.08%) and for fish shelter (11.54%). It is observed that they cite few other uses, and perhaps this is due to all (100%) respondents being male, which induces them to pay more attention to what is most perceptible to them: fishing, and, therefore, the feeding and sheltering these animals.

THANKS

To the Centro de Estudos Superiores de Pinheiro, for the support with the equipment and infrastructure of the research laboratories allocated to this institution. To the other employees for their effort and dedication in carrying out the activities. To the Association of Professional Fishermen and Fishermen and Fishermen Workers of Pinheiro - ASSOPESCA, in the person of Mr. Totozinho, and also to the fishermen Mr. M. and her son, C. A., for taking us to the field and also for collaborating with the information of great relevance to this study.

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