Gender differences in plant use knowledge within a traditional fishing community in northeastern Brazil

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Research

Abstract

Background: Understanding patterns in traditional plant use knowledge is crucial for assisting policy making with regard to nature conservation, human nutrition, human health, as well as educational and participatory processes in traditional communities. We aim to document and describe local ethnobotanical knowledge and test the hypothesis that gender structures the knowledge of plant use possessed by artisanal fishers in a fishing community in northeast Bahia, Brazil.

Methods: Through semi-structured interviews and guided walks with traditional experts, we recorded the local knowledge of plant use with regard to medicine, food, wood and fibre, and ritualistic/religious practices. The data were analyzed using quantitative indices of use value (UV) and informant consensus factor (ICF), and gender differences in plant use knowledge was analyzed using a non-metric multidimensional scaling (NMDS ordination).

Results: A total of 161 ethnospecies with local names were registered, including 122 species of plants from 52 botanical families based on scientific (academic) taxonomy, which were identified along with the plant parts used, habitats, and preparation methods. Female and male traditional experts possess a different set of plant use knowledge, with women generally citing more food and medicinal plants, and men citing more wood and fiber plants.

Conclusions: Gender differences in plant use knowledge can be explained by the different occupations of the male and female traditional experts. The results of this study provide a framework for extending our ethnobotanical investigations to other traditional fishing communities, and also to examine other social and demographic factors influencing traditional knowledge related to plant use.

Keywords: Artisanal fishers, Gender differences, Northeast Brazil, Plant uses, Traditional plant knowledge

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Resumo

Contexto: Compreender padrões presentes no conhecimento tradicional sobre o uso de plantas é crucial para auxiliar na tomada de decisões políticas em relação à conservação da natureza, nutrição humana, saúde humana, assim como em processos educacionais e participativos em comunidades tradicionais. Nosso objetivo é documentar e descrever o conhecimento etnobotânico local de uma comunidade de pescadores no nordeste da Bahia, Brasil, e testar a hipótese de que há diferenças de gênero no conhecimento do uso de plantas adquirido por pescadores artesanais.

Métodos: Através de entrevistas semiestruturadas e caminhadas guiadas com especialistas tradicionais, nós registramos o conhecimento relacionado ao uso de plantas, incluindo usos medicinais, alimentícios, como fontes de madeira e fibra, e ritualísticos/religiosos. Os dados foram analisados quantitativamente utilizando o Índice de Valor de Uso (UV) e Fator de Consenso dos Informantes (ICF), e a diferença de gênero no conhecimento do uso de plantas foi analisada utilizando o método de Escalonamento Multidimensional Não Métrico (ordenação NMDS).

Resultados: Foram registradas no total 161 etnoespécies com os nomes locais, incluindo 122 espécies de plantas pertencentes a 52 famílias botânicas com base na taxonomia científica (acadêmica), as quais foram identificadas juntamente com as partes das plantas utilizadas, seus habitats e métodos de preparação. Especialistas tradicionais dos gêneros feminino e masculino possuem conjuntos distintos de conhecimentos sobre o uso de plantas: mulheres citam com maior frequência plantas de uso alimentício e medicinal, e homens citam mais plantas que são fontes de madeira e fibra.

Conclusões: As diferenças de gênero no conhecimento podem ser explicada pelas diferentes ocupações de homens e mulheres que são especialistas tradicionais. Os resultados deste estudo proporcionam um quadro metodológico para estender nossas investigações etnobotânicas para outras comunidades tradicionais de pescadores, e também para examinar outros parâmetros sociais e demográficos que influenciam o conhecimento tradicional relacionado ao uso de plantas.

Background

Human communities that occupy areas close to natural vegetation coexist with great biological diversity and possess a cultural repertoire of practices related to the uses of plants in everyday life (Sujarwo et al. 2016). Concerningly, the erosion of traditional knowledge and the disappearance of traditional communities worldwide is occurring at an alarming and unprecedented rate due to urbanization, land use change, modernization (Gandolfo & Hanazaki 2014, Tang & Gavin 2016), and also by the development of activities in the places where the communities dwell, such as tourism, without due attention to the local communities and their knowledge and culture (Canavan 2016, Xue et al. 2017).

Understanding and conserving traditional knowledge, such as patterns in traditional plant use knowledge, which are the focus of this paper, is therefore crucial for assisting not only policy making with regard to nature conservation, human nutrition, human health (Gómez-Baggethun et al. 2014), but also educational and participatory processes in traditional communities (Kimmerer 2002, Tengö et al. 2017).

In Brazil, these communities include Indigenous peoples, quilombolas (descendants of Afro-Brazilian runaway slaves), and various traditional communities of fishers, river-dwellers, rubber sap gatherers, etc., who often live in well-delineated communities in rural areas away from major cities and surrounded by natural landscapes. Our focus in this paper is on fishing communities, which, whilst characterized by fisheries as their main economic activities, may yield important sources of information for ethnobotany research. Members of such communities have been documented, for instance, to harvest plants for everyday use and even invest varying levels of management in plant cultivation (Hanazaki et al. 2000, 2009, Peroni et al. 2008).

Among the various categories of traditional plant uses typically studied in ethnobotanical surveys, the use of plants for medicinal and curative purposes is by far the most well investigated. In Northeastern Brazil, various authors have focused on medicinal plant use in various traditional communities (Borges & Bautista 2010, Cartaxo et al. 2010, Cunha et al. 2012, da Silva et al. 2012, de Araújo et al. 2018, Gomes & Bandeira 2012). In spite of these surveys, the geographical coverage of these studies is still far from complete. For instance, there are still very little studies on plant uses in traditional communities occupying the northeast shore of Bahia, particularly in artisanal fishing communities, some of them still with relatively well-preserved culture. As a corollary to medicinal plant use, Indigenous communities often have systems of religious or ritual plant use for healing or for restoring well-being (Bussman & Sharon 2006). In these instances, there are members of the community who serve in the capacity...
of shamans or spiritual healers who help cure ailments through ritual use of plants (Voeks 2004). By comparison, such practices are less well known in other traditional rural communities (Rodrigues & Carlini 2006), such as in fishing communities in the region we work.

Additionally, other aspects of plant use deserving attention include the use of non-conventional plant foods and also plants for construction, tool making, and technology. For our purposes, we broadly define non-conventional plant foods as wild, wayside, or naturalized plants that can supplement the nutrition of rural communities (Barminas et al. 1998, Kebu & Fassil 2006). Despite an increased interest in non-conventional plant foods in Brazil in recent years (Bortolotto et al. 2015, do Nascimento et al. 2013, 2015, Kinupp & Lorenzi 2014), this aspect of traditional plant use remains poorly studied in most regions. Likewise, traditional knowledge on plants used for construction, tool making, and technology is poorly documented, but yet highly pertinent for traditional communities that rely on fishing as the main source of sustenance, as fishers often use plant resources to build boats and other structures and tools involved in their fishing technologies (Andrade et al. 2018, de Oliveira & Hanazaki 2011).

Finally, a social factor that underlies these traditional plant uses is gender. Gender has been widely studied as a potential driver of plant knowledge, particularly in traditional communities where gender roles or professions are well defined (Torres-Avilez et al. 2016), as one can see, for instance, in communities where males are predominantly the providers, while females are generally home-makers and child-carers (Wayland 2001). These gender role differences have been cited as the reasons why male and female traditional experts within a community possess varying levels of knowledge across plant use categories (Müller et al. 2015, Torres-Avilez et al. 2016). However, there are still gaps to fill in the study of gender differences in ethnobotanical knowledge. Most studies on this topic have focused squarely on medicinal plants (Albuquerque et al. 2011, Meréêka et al. 2010, Voeks 2007) while paying less attention to other plant use categories. Also, the bulk of these gender comparisons have employed simple descriptive statistics to compare the average number of plant citations made by male and female traditional experts (Albuquerque et al. 2011, Müller et al. 2015, Luzuriaga-Quichimbo et al. 2019).

To our knowledge, these gender studies have not been expanded to investigate knowledge compositional differences between female and male traditional experts. Such an approach could use multivariate analyses to characterize gender-specific structures within the body of traditional knowledge, and further the field by allowing ethnoscientists to draw more robust conclusions on differences in knowledge composition across individuals (Baudalf & dos Santos 2019), for instance, by triangulating qualitative and quantitative analyses. Other auxiliary information on the plants cited by the experts that is straightforward to compile, such as plant origin (for instance, whether a plant is native or introduced) and lifeform, can also provide valuable insights in gender plant use comparisons (Torres-Avilez et al. 2016, Voeks 2007), but, again, these data are frequently left out of ethnobotanical studies.

In the present study, we aim, therefore, to (1) document and describe, using a holistic approach (e.g., Crepaldi & Peixoto 2010), the local knowledge of plant use with regard to medicine, food, wood and fibre, and ritualistic/religious practices in an artisanal fishing community in northeast Brazil, and (2) test the hypothesis that there are gender differences in plant use knowledge across plant use categories, plant origin and lifeform within the fishing community.

**Materials and Methods**

**Study area and brief historical context**

The study was conducted in Siribinha (11º48'49"S, 37º36'38"W; Figure 1), an artisanal fishing community with a population of ~500 inhabitants, located in the north coast of the State of Bahia, Brazil, near the mouth of the Itapicuru River. The community is part of the Municipality of Conde and has an economy driven primarily by fishing and tourism.

The village of Conde was part of the Portuguese occupation north of Salvador, which was the capital of Brazil until 1763, and is currently the capital of the state of Bahia. The occupation in Conde began in 1549 with the first cattle corals around the site where the city is currently located. Between 1558 and 1572, Jesuit missionaries arrived to the area where Conde is today, interacting as part of the Portuguese colonization process with the indigenous Tupinambá people who occupied the region, one of the sources of local ethnobotanical knowledge. In 1621, Portuguese settlers raised livestock, sugarcane and tobacco crops with slave labor mostly from West Africa, resulting in an important afro-descendant influence in the area. Given this historical background, current ethnobiological knowledge in the fishing village of Siribinha can be said to result from a combination of Tupinambá, Portuguese, and African influence (more specifically, from different ethnic groups from West Africa).
The natural vegetation of the area consists of freshwater alluvial wetlands, mangroves, beach vegetation, and shrubby thicket-like forests (locally known as restingas) growing on sand dunes. Coconut plantations and cattle raising also make up part of the land use tenure nearby the fishing village.

The major part of the territory of Conde and all the Itapicuru estuary are located within the Environmental Protection Area of the North Coast of the State of Bahia (http://www.oads.org.br/leis/2724.pdf, accessed 26 May 2019), but this has not prevented socioenvironmental problems such as deforestation and disorderly appropriation of territory, which threaten the cultural heritage of the municipality and the ecological integrity of surrounding natural habitats. In particular, limited employment and income opportunities have led to an exodus of part of the younger generation to larger cities, thereby contributing to the erosion of traditional culture, even though a significant part of the young people from Siribinha eventually returns to their birthplace.

Between August 2018 and July 2019, we made door-to-door visits in order to identify local people with specialized knowledge on plant use (Davis & Wagner 2003), i.e., traditional experts. Our sampling approach was intentionally non-random (Albuquerque et al. 2014a), under the assumption that local experts would provide more specific and higher quality information concerning plant use. During our first contacts with the community the inhabitants themselves identified the traditional experts, who we define as "individuals recognized by the community as having deep knowledge about the traditional uses of native and/or introduced plants". Using the snowball method (Bailey 1994), names of other experts were then obtained during the interviews. Eventually, we interviewed a total of 28 traditional experts in Siribinha (17 women and 11 men), with ages ranging from 43 to 82. All the interviewed traditional experts had lived in the community for at least 30 years and were frequently sought out by other community members for advice on plant use. The interviewed men are currently active or retired fishermen (locally known as "pescadores"), and the women are primarily homemakers who sometimes fish or specialize in collecting crabs, especially Aratu-vermelho (Goniopsis cruentata). Women who fish or catch

**Interviews and guided walks with traditional experts**
crabs are locally known as *pescadoras* or *marisqueiras*. One of the female traditional experts interviewed is also regarded in the community as a “rezadeira”, that is, she is recognized as one who is able to provide benefits from praying or bestowing blessings.

We used semi-structured interviews (Albuquerque et al. 2014b), which best suited our research goals and were also readily accepted by the local community. Our interview protocols were designed to gather information about the medicinal, food, manufacture (particularly, of fishing artifacts) and ritual/religious uses of plants, plant names, plant parts used, and preparation methods where relevant. All interviews were conducted in Brazilian Portuguese, and experts were interviewed individually, as recommended by Phillips and Gentry (1993), to ensure that responses were independent. During the course of the interviews some traditional experts brought us on guided walks (Albuquerque et al. 2014b) through their gardens or through the natural vegetation in the vicinity of their houses to describe the plants they use. Each interview lasted approximately an hour.

We analyzed how community members use plants in four basic categories: (i) medicine, (ii) food, (iii) ritual/religious uses, and (iv) plants providing wood and fibre for manufacturing fishing artifacts and home construction. For descriptive and tabulation purposes, we further subdivided the plants used for making fishing implements (boats, canoes, fishing fences, etc.) and plants for home construction. We also further defined a subcategory of non-conventional plant foods under the food plants category, defined by Kinupp and Lorenzi (2014) as species collected from the surrounding environments or planted in gardens in order to supplement conventional food. This subcategory also includes native or naturalized fruits harvested from surrounding habitats (Lorenzi et al. 2015). As part of our analysis to see if there are gender differences in plant lifeform spectra, we categorized all cited plants into four basic lifeforms: tree, shrub, herb, and climber.

Plants were identified in the field, or where identification was not possible, a sample was brought back to the lab and identified at the herbarium at the Institute of Biology, Federal University of Bahia, using the literature (Lorenzi & Matos 2008) or through consultations with experts. In the case of plants used for construction of houses or boats, it was not possible to ascertain the botanical names of most of the species, because many of these plants are sourced from forests that no longer exist, from other localities, or are commercially sourced. However, we listed genus names for species that are well known commercially. Plants were classified in terms of their origins as native (to Brazil), or non-native and naturalized based on the online flora of Brazil (reflora.jbrj.gov.br/, accessed 26 May 2019), and the cultivated status of each species was also noted.

**Data analysis**

To summarize the overall pattern of plant use, we employed Venn diagram analyses to show how many plants fell within single or multiple categories of the four basic plant use categories: (i) medicine; (ii) food in general; (iii) wood and fibre sources for construction and fishing-related technology; and (iv) ritual/religious plant use. As part of our aim to document and describe traditional plant use in the community, the second step in our data analysis was to calculate two indices related to plant use, the Use Value (UV) for each species cited, and the Informant Consensus Factor (ICF) for each plant use, distribution and lifeform category. The UV shows the relative importance of each species known locally, which we calculated following the formula: $UV = U/N$, where $U$ refers to the number of citations per species, and $N$ refers to the number of traditional experts interviewed (Gürdal & Kültür 2013). The ICF denotes the degree to which traditional experts exchange information about plant use, which we calculated using the following formula: $ICF = \frac{N_v}{N_\text{tr}} - 1$, where $N_v$ refers to the number of use citations in each category and $N_\text{tr}$ is the number of species indicated in each category (Cartaxo et al. 2010). Therefore, ICF values will be low (approaching 0) if plants are chosen randomly, or if traditional experts do not exchange information about their use, but high (approaching 1) if information is exchanged among them. For the ICF index, we divided all cited plants into 12 categories: medicine, food in general, non-conventional food plants, manufacturing and technology in general, fishing-related technology only, ritual/religious plant use, distribution type (native or non-native), lifeform categories (tree, shrub, herb, and climber).

We tested the overall difference in the number of plants cited by male and female traditional experts and also plants within the 12 categories using a student’s $t$-test ($\alpha = 0.05$). A linear regression ($\alpha = 0.05$) was used to determine if the age of traditional experts determined the number of plant species cited. We also identified major gradients in plant use knowledge using non-metric multidimensional scaling (NMDS) ordination, using a Jaccard distance matrix, and plotted the first two NMDS ordination axis scores as a scatterplot to show the plant knowledge compositional patterns across all traditional experts interviewed. For better interpretability, male and female traditional experts were depicted with
Results
We recorded 161 ethnospecies of which 39 cited plant records could not be identified based on academic scientific taxonomy and, thus, only local names are presented here (Figure 2a; Table S1). Among the species we could identify based on the latter taxonomy, we recorded 122 species belonging to 104 genera and 52 families (Table S1). The top five botanical families with the highest number of species with cited uses were Fabaceae (12 spp.), Myrtaceae (8 spp.), Arecaceae and Lamiaceae (7 spp. each), and Anacardiaceae (6 spp.) (Table S1). Plants with the highest Use Values (UV) were *Lippia alba* (UV = 0.82), *Dysphania ambrosioides* (UV = 0.61), *Rhizophora mangle* and *Manilkara* spp. (both UV = 0.57), and *Myrciaria floribunda* (both UV = 0.54).

Medicine and food plants comprised the highest number of citations (81 and 68 spp., respectively), and, among the food category, 50 spp. may be considered non-conventional plant food. For wood and fibre plants, traditional experts cited 47 spp., among which 43 spp. were cited for fishing technology. Plants used in religious or ritual contexts numbered 11 spp. A number of species featured in multiple use categories (Figure 2a), with the highest number of plants shared between the food and medicine categories (26 spp.). A more detailed section on traditional plant use descriptions and culturally relevant notes are provided in the Supplementary Material.

In general, we found high information consensus values (ICF) within all categories of plant use, distribution type, and lifeform (all ICF ≥ 0.65), with the highest ICF values documented in plants used for religious or ritual purposes (Table 1). Female traditional experts cited on average more plants (23.7 spp.) than male traditional experts (20.5 spp.), although a t-test comparing these means was not significant. However, female traditional experts cited significantly more medicinal plants, food plants, non-native species and plants from the herb lifeform than males. In turn, male traditional experts cited more fish plants, than females (Table 1). Our PERMANOVA analysis showed that male and female traditional experts possessed a significantly different set of plant knowledge (F = 3.395, p > 0.001), with female traditional experts citing a group of five species used variously for food or home-grown remedies which were not cited by males, while males cited species used for construction that were not cited by females (Figure 2b). Age of the traditional experts did not have a significant bearing on the number of plants each one of them cited (Linear regression, R² = 0.02, p = 0.53).

Discussion
Globally, cultural knowledge of rural communities is under threat from urbanization, land use change, impacts on productive practices, growth of other activities such as tourism, etc. Therefore, it is critical to understand patterns of this cultural knowledge, both for the sake of conserving cultural diversity and for maintaining the resilience of socioecological systems. Using a holistic approach, we documented a diverse cultural knowledge of plant use for medicinal purposes, feeding, wood and fibre extraction, and ritual/religious purposes in an artisanal fishing community in northeast Brazil, and uncovered a number of gender-related trends specific to this body of cultural knowledge.

The broader context of medicinal plant use
The medicinal plants used by the communities belong to a broader regional milieu of medicinal plant knowledge (di Stasi et al. 2002, Lorenzi & Matos 2008), as supported by the high informant consensus factor that we obtained for the medicinal plant category. The domestic cultivation of the most commonly cited species *Anacardium occidentale*, *Cymbopogon citratus*, *Dysphania ambrosioides*, and *Lippia alba* (Figure 3a) have been reported for other Indigenous (Albuquerque et al. 2009, Borges & Bautista 2010, Cunha et al. 2012), Afro-Brazilian (Quilombola) (Gomes & Bandeira 2012, Lisboa et al. 2017, Mota & Dias 2016), and rural communities in the region (Almeida et al. 2014, Bandeira et al. 2015). Many of the species cited are also available commercially in regional markets within the state of Bahia (de Araújo et al. 2018, authors' pers. obs.). Likewise, the use of various species of *Ocimum* as reported in this study has also been previously documented in the region (Holanda & Albuquerque 1998). Also, many plants listed by the community specialists are herbaceous or naturalized plants, a pattern that has been noted by Voeks (1996).
Figure 2. Venn diagram (a) showing the number of plants cited within each plant use category. The patterns of plant knowledge composition of the 28 traditional experts (depicted by the 11 male and 17 female symbol markers) are visualized in a Non-metric multidimensional scaling ordination (b). The plants listed along each axis represent the species which had a Spearman-rank correlation of $r > 0.5$ or $< -0.5$ ($P > 0.05$) with each ordination axis, signifying their influence on the ordination patterns. Both Venn diagram and ordination analyses used the full dataset of 161 cited plant species.
Table 1. Mean number of citations of plant uses within each category by male and female traditional experts in a traditional fishing community in northeast Brazil. *For the plant distribution category, the figures are based only on the 116 plant species which we could identify at least to genus level. Means and inferential statistics for climbers were not calculated due to low number of citations in this category. T-statistics of t-tests and p values comparing the number of citations of plants under each category by female and male fishers are presented. Significant p values are highlighted. The abbreviation ICF refers to the Informant Consensus Factor.

| Category                                         | All traditional experts | Women | Men | T (p)       | ICF       |
|--------------------------------------------------|-------------------------|-------|-----|-------------|-----------|
| All                                              | 20.5                    | 23.7  | 20.5| 2.034 (0.056) | N.A.      |
| Medicinal                                        | 12.4                    | 15.1  | 8.4 | 3.365 (0.003) | 0.77      |
| Food – All                                       | 11.8                    | 13.5  | 9.0 | 2.316 (0.032) | 0.80      |
| Food – non-conventional plant foods only         | 8.2                     | 8.9   | 7.0 | 1595 (0.127)  | 0.80      |
| Construction & technology in general             | 5.2                     | 3.9   | 7.18| 0.885 (0.391) | 0.79      |
| Fishing technology only                          | 6.3                     | 4.1   | 9.6 | 2.788 (0.011) | 0.76      |
| Religious/Ritual                                 | 2.5                     | 2.8   | 2.0 | 0.549 (0.590) | 0.86      |
| Native species                                   | 14.1                    | 13.2  | 15.6| 1.057 (0.304) | N.A.      |
| Non-native species                               | 8.2                     | 10.3  | 5.0 | 4.860 (>0.001) | N.A.      |
| Tree                                             | 8.6                     | 10    | 7.1 | 1.406 (0.176) | N.A.      |
| Shrub                                            | 5.5                     | 6.6   | 4.3 | 1.470 (0.157) | N.A.      |
| Herb                                             | 3.9                     | 6.0   | 1.4 | 4.689 (>0.001) | N.A.      |
| Climber                                          | N.A.                    | N.A.  | N.A.| N.A.        | N.A.      |

However, some members of the community are also stewards of knowledge regarding medicinal plants in the natural vegetation in the area. For example, traditional experts cited the use of *Anacardium occidentale* and *Schinus terebinthifolia* for skin problems and female genitourinary disorders, in line with recent reports for other riverine fishing communities in the region (Paiva *et al.* 2017). Other notable examples include the harvesting of *Chrysobalanus icaco* (Figure 3b) and *Periandra mediterranea* from the surrounding vegetation for medical use.

The common names applied to medicinal plants deserve special mention. In particular, we came across a common name, Acafo, applied to *Periandra mediterranea*, for which we could not find references in the literature. Previously, other workers had reported the use of this plant under the names Acançu (Almeida *et al.* 2010), Arcançuz (da Silva *et al.* 2012), Alcaçuz and Alcançuz (Gomes *et al.* 2012), from various other localities inland in the state. These site-specific differences in names may reflect phonetic changes in local names being applied to a single plant, as people from the communities move from place to place.

Food plants
As with medicinal plant use, the use of plants for consumption as food fits into the two categories of cultivated for domestic use and wild harvested (Figure 3c), and some of the species overlap with plants used for medicine. Various of the plants used have also been reported for other communities in the Bahia state (Agra *et al.* 2008, do Nascimento *et al.* 2015, Mota & Dias 2016, Neto *et al.* 2014, Rodrigues & Guedes 2006).

Religious and ritual use of plants
We describe for the first-time specific details and attitudes relating to religious and ritualistic practices involving the use of plants in blessing and prayers in fishing communities from Bahia. Notably, most of the plants listed under this purpose are naturalized or cultivated, with the exception of *Protium heptaphyllum* and *Schinus terebinthifolius*, and the species cited have also been documented to be used in other communities (Crepaldi & Peixoto 2010, de Oliveira *et al.* 2009, Varella 1973). Although community members of Siribinha are predominantly Christian (mostly Catholic, but with a growing number of followers from neo-Pentecostal churches), the influences of Afro-Brazilian religions are still conspicuous, particularly in the use of *Jatropha gossypifolia* (Figure 3d; Pires *et al.* 2009, Varella 1973).
Wood and fibre plants for construction and fishing technology

Plants used for construction and fishing technology (Figure 4) have been documented by various studies in the region. Leaves and fibres of palms such as *Attalaea funifera* (Figure 4b), *Bactris* spp. and *Syagrus* spp. feature prominently in traditional use in the region (Lorenzi *et al.* 2000). This is also the case of the use of mangrove wood to construct houses (Bezerra 2008). However, in the community investigated in the present study, wood material for the construction of houses is largely sourced from *Manilkara* spp. (Table S1).

Canoes were previously constructed using a single trunk, and the fishers also used *jangadas* made of several trunks, but boats made of several wood planks were introduced later, around 30 years ago. Among the species we documented for canoe making (Table S1), only *Artocarpus heterophyllus* was also cited in previous literature (Andrade *et al.* 2018).

It is interesting to note that in other ethnobotanical studies carried out in shore communities, the use of species for constructing fishing artifacts has not been mentioned (Lopes *et al.* 2013).
Figure 4. Wood resources and fibres used in construction, fishing artifacts, and daily-use implements in an artisanal fishing community in Siribinha, northeast Bahia, Brazil. (a) *Rhizophora mangle* (Rhizophoraceae) wood and coconut palm leaf thatch used to construct boat shelters; (b) slivers of the leaf rachis of *Attalea funifera* (Arecaceae) palms bound together by cordage of *Davilla flexuosa* (Dilleniaceae) to make covos, local traps for capturing shrimp (small-sized version), *Aratu-vermelho* (*Goniopsis cruentata*) and small fishes (medium-sized version), and *siris* [another kind of crab] (larger-sized version); (c) a needle used to make and mend nets, carved from *Tocoyena bullata* (Rubiaceae); (d) broom heads made from the leaf fibres of *A. funifera*.

Gender-specific patterns in traditional knowledge
Women from the community generally possessed more knowledge of plant foods and medicines, while men had more knowledge about wood- and fibre-producing plants, in keeping with gender role differences within the community and data from previous studies (Torres-Avilez et al. 2016). The gender differences found in the study can be explained by the traditional experts’ different occupations. The male traditional experts are active or retired fishermen and, thus, possess more knowledge of plants used to build boats, fishing artifacts, and also houses. In turn, the female traditional experts are mostly home-makers, often involved in cooking and healing, and thus exhibit more knowledge on plants used as food and medicines.

Women cited more non-native species and herb species than men, which is in part a function of their
superior knowledge on readily harvestable medicinal plants from waysides, but which likely also reflects the role they play in cultivating home gardens with useful herbaceous food and medicinal plants, as supported by our field observations. The role of home gardens as a reservoir of useful plant resources in the community is a potential avenue for follow-up research.

In terms of knowledge compositional differences, our multivariate analysis represents a novel approach for visualizing patterns in plant use knowledge between genders and across individuals (Baldauf & dos Santos 2019). Previous work on this issue has typically just compared average number of citations or use value differences between male and female traditional experts (Camou-Guererro et al. 2007, Torres-Avilez et al. 2016), which does not account for differences in the body of knowledge across individuals. Moreover, our ordination also helped us to identify citations of species that are driving these differences (Figure 2b). While we sampled within a single community, we anticipate that multivariate analyses will serve as a useful framework for an expanded analysis will serve as a useful framework for carrying out analyses in different traditional communities.

The maintenance or erosion of traditional knowledge
There was a consensus among the traditional experts that their knowledge on plant use is undergoing a progressive dilution along the generations. However, this claim that succeeding generations have less knowledge on plant use requires further investigation. Such claims have been challenged on at least one count by Vandebroek and Balick (2012), who studied people who use plants to self-medicate in the Dominican Republic. While age of the traditional experts did not appear to be a factor in the number of plants our traditional experts cited, we interviewed mostly middle-aged to old-aged individuals and, therefore, the method used in the present study was not adequate for fully testing age as a driver of plant knowledge. It would therefore be a worthy follow-up study to conduct more formal interviews with people of all age groups in the community.

More critically, landscape change in the region has meant that certain forests where medicinal plants used to be collected have now been felled. Indeed, environmental degradation and large changes in modern social and economic systems are well known to be drivers leading to a reduction in traditional medicinal plant use (Anyinam 1995, Srithi et al. 2009). For instance, some of the traditional experts reported that some forests where they used to collect certain medicinal plants or harvest wood for home or watercraft construction are no longer extant.

As it has been reported for other communities in the state of Bahia, modernization and the increased access to formal education and availability of modern pharmaceuticals may lead to traditional domains of medical knowledge being increasingly perceived as an irrelevant province of past generations (Gandolfo & Hanazaki 2014, Voeks & Leony 2004). However, it is noteworthy that Siribinha has only a small health facility, where a doctor only attends once a week, and, therefore, the community still relies to a large extent on their ethnomedical knowledge and local healers. It is worth investigating whether some integration between Western scientifically based medicine and ethnomedical knowledge systems has been taking place in Siribinha, as it has been reported for other communities in Northeast Brazil (Medeiros et al. 2016).

The substitution of materials used in fishing artifacts (Figure 4) is probably one of the most prominent observations made during the study. Fishermen in the village no longer make nets using plant material due to the availability of more durable nylon thread, as is the case in most, if not all the fishing communities in the Brazilian Northeast shore. Accordingly, only the elderly generation holds the knowledge on how to process the plant fibres to make nets. To preserve this aspect of artisanal knowledge, videos are being recorded of how fishers used to make nets. In other cases, for instance, in the traps called covos (Figure 4b), we still observe in the community the use of traditional plant materials. Fishermen in the community still catch prawns, small fishes, Aratu-vermelho and siri crabs using covos. These practices may have implications for fisheries conservation, as there are indications that traditional traps are less predatory than traps made of other materials, such as metal, which replaced the traditional traps in many fishing communities (Bavinck & Karunaharan, 2006, Blythe et al. 2013) due to perceptions of higher catch efficiency, lower relative cost, and ease of use (Coastal Resource Center 2013).

The registration of a rich tradition of plant use by a fishing community is surprising and underpins an urgent need to conserve traditional knowledge in the region. Educational programs for elementary school students in the community involving the dissemination of this body of knowledge on traditional plant use are in the works, including the creation of an ethnobotanical garden, with hopes that the next generation will become custodians of their cultural knowledge. Further studies are needed to
document plant use by other traditional communities in the Itapicuru River estuary.

Declarations

List of abbreviations: ICF: Informant Consensus Factor, NMDS: non-metric multidimensional scaling, and UV: Use Value.

Ethics approval and consent to participate: All the interviews with traditional experts were conducted with informed consent and in accordance with the Brazilian laws regulating ethics in research. The project where the current study is located was approved by the Committee of Ethics in Research of the Nursing School of the Federal University of Bahia (n° 2.937.348).

Consent for publication: Not applicable.

Availability of data and materials: Voucher specimens of all collected samples were deposited at the History, Philosophy, and Biology Teaching Laboratory, at the same university. Data will be available from corresponding author by request.

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Authors’ contribution: DYPT, DMGA, and CNE conceptualized the work. DYPT, DMGA, CNE and MDSL did the preliminary work, semi-structured interviews, plant collection, and data generation. DYPT, and DMGA did the data analysis, verification, and authorization. DYPT, DMGA, CNE and MDSL wrote, revised, and edited the manuscript.

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Traditional plant use descriptions

Medicinal plant use

The most widely reported plants used for medicine were Capim-santo (Cymbopogon citratus), Mastruz (Dysphania ambrosioides), Erva-cidreira (Lippia alba) (Figure 3a in main text), Erva doce (Foeniculum vulgare) and Boldo (Plectranthus neochilus). Of the 81 species of plants used for medicinal purposes, 44 species (54.3%) are commonly cultivated in home gardens for use; 15 species (18.5%) are harvested from surrounding natural environments; 10 species (12.3%) are harvested from wayside environments; and 8 species (10%) are bought from markets. However, a number of plants native to the surrounding restinga shrublands and sand dune vegetation are also collected for medicinal purposes, namely Milome (Aristolochia spp.), Gajiru (Chrysobalanus icaco) (Figure 3b in main text), Acanfo (Periandra mediterranea), Aroeira (Schinus terebinthifolia), and Rabujo de Cachorro (Stemodia foliosa).

The most common method of medicinal plant use is through preparing teas from leaves, stems or roots (Table S1). A number of plants are also made into juices or into syrups in conjunction with other ingredients. An interesting mode of using a medicinal plant, Mangaba (Hancornia speciosa), involves stirring the leaf sap into water and drinking the concoction. Some plants are also processed into a paste and applied topically to wounds (e.g., Mastruz, D. ambrosioides), or their shoots are boiled in water and used for bathing (e.g., Cajueiro, Anacardium occidentale and Aroeira, S. terebinthifolia) or for washing wounds.

Uses of non-conventional edible plants and other non-conventional plant foods

Seasonal bush fruits from the surrounding forests and restinga shrublands continue to be widely utilized, and traditional experts report the harvesting of the fruits and nuts of the native palms (primarily, Caxandó, Allagoptera brevicalyx, Tucum, Bactris spp. and Licurioba, Syagrus spp.), cashew nut tree (Anacardium occidentale), and also the fruits of various members of the Annonaceae, Cactaceae (Figure 3c in main text), Clusiaceae, Myrtaceae, Polygonaceae, and Sapotaceae (Table 1).

However, certain specific uses of some species are no longer practiced, such as the extraction of milk from the inner flesh of Licurioba (Syagrus spp.) and Caxandó (Allagoptera brevicalyx) fruits.

Plants used for wood and fibre, fishing technology and daily-use implements

Mangue vermelho (Rhizophora mangle) was the primary species whose wood was used for house making in the past (Table S1), although most homes in the community are now made of bricks and mortar or concrete. Other
species of trees were also used in construction or to fortify the structure of houses (e.g., Mangue manso, Laguncularia racemosa, etc.) (Table S1).

A number of tree species were cited as being used for fishing technology, especially for manufacturing fishing artifacts. In the past, fishing canoes were made using wood of tree species such as Jaqueira (Artocarpus heterophyllus), Jacarandá (Dalbergia nigra), Mulungu (Erythrina velutina), etc. However, A. heterophyllus is particularly held in high esteem for this purpose. Rafts were made using wood from the “Pau de jangada” tree, which, while we do not assign to western scientific species name, has been attributed to Apeiba tibourbou Aubl. in studies conducted in other parts of Bahia (Andrade et al. 2018). In contemporary times, the use of rafts and canoes have been superseded by boats, which are made from wood planks of the same aforementioned trees, and others from trees imported from other regions. Planks are now also bought rather than harvested from the forest.

The leaf stalks of the palms Piaçava (Attalea funifera), Coco (Cocos nucifera) and Dendê (Elaeis guineensis) were also sought-after for making hatch for houses and also boat shelters (Fig. 4a in main text). Additionally, A. funifera and E. guineensis are used to make artisanal fishing fences (camboas) and traps (covos) used to capture crabs, shrimps and small fishes (Figure 4b in main text). These leaf stalks – generally called quitandas – are processed into strips, shaped and bound by cordage obtained from plants such as Cipó-de-fogo (Davilla flexuosa) and Timborana (whose scientific species we could not identify). Another notable example of fishing technology used by the crab gatherers consists of attracting the Aratu-vermelho (Goniopsis cruentata) into the traps by beating mangrove tree branches against the crab traps to make a noise, as has been described by other authors (Maciel & Alves, 2009; Magalhães et al 2011). However, in Siribinha, the most used technique for extracting these crabs involves attracting them by making noise and/or singing and/or beating tree branches against each other, and then employing a fishing rod and small pieces of fish as bait in order to capture them. A novel finding in the current study is that traditional experts also consider that the leaves of R. mangle that are crushed when they beat the branches exudes a scent that attracts the crabs.

Before nylon nets were widely available, the community relied on plant fibres to weave nets. Many traditional experts reported using the leaf stalks of Tucum (Bactris setosa, Arecaceae) for this purpose. The women collected or purchased the leaves at local markets, did the initial processing (beating the leaf stalks to obtain the fibres), and stored the fibers in a spool. The men produced the thread and hand-wove nets with a traditional technique using this spool. The process of net-making with plants was labor-intensive and has been discontinued in favor of widely-available pre-made nylon nets, or nylon wire with which they themselves make one specific net they do not buy pre-made (a throw net called tarrafá). Additional fishing implements constructed from locally-sourced plant material include needles for net making and mending (Figure 4c in main text), for which the wood of Jenipipinho (Tocoyena bullata) is used.

Palm leaves were also historically used to transport fish out of the community to regional markets, whereby fishermen wove the leaflets of the Syagrus spp. or Cocos nucifera palm fronds through the flesh of the fish to secure them onto carrying poles. Other uses of palm fibre included the use of A. funifera leaf stalk fibres to make broom heads (Fig. 4d in main text).

Plants used for ritual/religious purposes and the role of faith
There are still in the community two persons recognized as “blessers” or rezadeiras, i.e., persons who blesses or prays for the villagers upon request. Rezadeiros and rezadeiras used to play a prominent role in Brazilian rural communities, but this is a disappearing practice, now restricted to the older generation.

A number of plants were listed as being used specifically in praying or bestowing blessings, namely Comig o-ninguém-pode (Dieffenbachia spp.), Pinhão-roxo (Jatropha gossypifolia; Fig. 3d in main text), Vassourinha (Scoparia dulcis), and Fedegoso (Senna occidentalis). Importance was also attributed to the number of branches used in blessing. For bestowing blessings or prayers, three branches of the target plant are collected and waved over the recipient as a prayer is recited six times, after which an additional prayer is recited and the branches discarded. In such prayers, the negative energies that cause sickness in a person are believed to be transferred to the discarded leaves or branches. One traditional expert described the praying process as follows:¹

¹Free translation from the Portuguese transcripts was made by the last author. In the quotes from traditional experts’ interviews, we indicate the pauses by slash (’), using period (.) only to signal the end of a speech turn. The number of slashes used reflect the extent of the pause. For each transcript, we provide the Portuguese original excerpts in footnotes.
One just takes three small branches (…)/ and it even shrivels when we pray (…)// (We make the pray) six times/ and the Lord’s Prayer we pray three times/ three times the Hail Mary/ there we go to the side/ of the sunset/ and of the drying tide/ evil eye/ and we throw the plant away.² (TE_W5_77).³

Some community elders emphasized also the importance of faith in healing, attributing huge importance to the recipients having faith in the process. However, one elderly male traditional expert elaborated on certain ritual practices in his use of medicinal plants whereby branches picked for making tea are collected in odd numbers, mostly three or five branches, but never in even numbers:

Sometimes we would break that branch (from Erva-cidreira)/ put the water to boil and would break those small branches/ one/ two/ three// Three because one has to put them anoni (odd number)/ because one cannot put even number/ four/ six/ one cannot (…)/ the medicine does not work. (TE_M2_81).

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² Original: É só pegar três galhinhos (…)/ e chega a murchar quando a gente reza (…)/ (Faz a oração) seis vezes/ e o pai nosso reza três vezes/três Ave-Maria/Ali vai para o lado/do sol se põe/e a maré vaza/olho ruim/ e joga a planta fora.

³ Traditional experts are identified by codes for confidentiality purposes. The code indicates the gender and age of the traditional expert. For instance, TE_W5_77 indicates that the traditional expert (TE) is a woman (W) who is 77 years old.
Table S1: Traditional plant use in the artisanal fishing community of Siribinha, in northeast Bahia, Brazil. Plant uses are divided into four general categories: (i) medicine, (ii) food, (iii) ritual/religious, and (iv) wood/fibre. Some additional uses reported by the traditional experts that did not fit into these categories are listed under an "other" category. Non-conventional plant foods are indicated by the abbreviation NCPF in parenthesis.

| Scientific name       | Family           | Nome local       | Use category and mode of use                                                                 | Status and manner of procurement                      | Lifeform | Use value |
|-----------------------|------------------|------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------|----------|-----------|
| Abarema filamentosa   | Fabaceae         | Barbatimão, Babatenã | Medicine - Bark collected from wild growing trees and boiled to make a tea to drink for toothache. The bark tea is also used as a bath to wash wounds, to treat inflammation in women, and also to help with healing after childbirth. | Native in surrounding forests. Wild harvested.       | Tree     | 0.07      |
| (Benth.) Pittier      |                  |                  |                                                                                               |                                                       |          |           |
| Alibertia edulis      | Rubiaceae        | Marmelo          | Food (NCPF) - Fruits eaten raw.                                                               | Native in surrounding shrublands and forests. Wild harvested. | Tree     | 0.21      |
| (Rich.) A. Rich. Moraes |                 |                  |                                                                                               |                                                       |          |           |
| Allagoptera brevicalyx | Arecaceae        | Caxandó          | Food (NCPF) - Fruits eaten raw. “Milk” extracted from the flesh and used for cooking.         | Native in surrounding shrublands. Wild harvested.    | Shrub    | 0.29      |
| M. Moraes             |                  |                  |                                                                                               |                                                       |          |           |
| Allium sativum L.     | Alliaceae        | Alho             | Medicine – Bulbs made into a tea and drunk for high blood pressure, and also used by women as a bath for treating genitourinary infections | Non-native from Europe.                               | Herb     | 0.04      |
| Aloe vera (L.) Burm.f.| Xanthorrhoeaceae | Babosa           | Medicine - The gel extracted from the leaves applied topically on scalp or on wounds, or made into juices and drunk as a tonic or stomach complaints. Considered a panacea. | Non-native from the Arabian Peninsula. Cultivated in home gardens for use. | Herb     | 0.11      |
| Alpinia zerumbet      | Zingiberaceae    | Pomada           | Medicine - Leaves used to make a tea drunk for flu. Tea also used in a bath for the same purpose. | Non-native from Asia.                                 | Herb     | 0.04      |
| (Pers.) B.L. Burtt & R.M. Sm. |             |                  |                                                                                               |                                                       |          |           |
| Alternanthera         | Amaranthaceae    | Bachitrim, Infectrim | Medicine - Leaves boiled to make tea and drunk for combating inflammation, or used as a gargle for | Native. Cultivated in home gardens for use.           | Shrub    | 0.18      |
| brasiliana (L.)       |                  |                  |                                                                                               |                                                       |          |           |
| Kuntze                |                  |                  |                                                                                               |                                                       |          |           |
| Scientific Name                  | Family            | Common Names                               | Food                                             | Medicine                                      | Habitat                                      | Height | Remarks                                                                 |
|---------------------------------|-------------------|--------------------------------------------|--------|--------------------------------|-----------------------------------------------|--------|-------------------------------------------------------------------------|
| *Anacardium occidentale* L.      | Anacardiaceae     | Caju, Cajueiro                             | Food (NCPF) - Fruit fleshy parts are eaten raw, and made into juices or sweet preserves. The nuts are roasted, dekernelled, and eaten. Medicine - Bark extracted, beaten and used to make a bath for skin problems. | Native in surrounding shrublands and forests. Wild harvested, and also occasionally cultivated for domestic use. Fruits and nuts also bought from markets. | Tree 0.50                                   |
| *Annona muricata* L.            | Annonaceae        | Graviola                                   | Food - Fruits eaten raw. Medicine - Leaves boiled to make tea and drunk to lower cholesterol, lose weight, and for post-operation recovery. | Naturalized. Cultivated in home gardens for use. | Tree 0.18                                   |
| *Annona salzmannii* A. DC.      | Annonaceae        | Araticum, araticum-da-mata                 | Food (NCPF) - fruits eaten raw.                  | Native. Collected from surrounding forests.   | Tree 0.18                                   |
| *Annona squamosa* L.            | Annonaceae        | Pinha                                      | Food - fruits eaten raw.                         | Naturalized. Cultivated in home gardens for use | Tree 0.18                                   |
| *Aristolochia* sp.              | Aristolochiaceae  | Milome                                     | Medicine - Stems used to make a tea and drunk for pain and coughs. Also infused in alcohol and taken for stomach bloating. | Native. Collected from surrounding forests. | Vine 0.29                                  |
| *Artocarpus heterophyllus* Lam. | Moraceae          | Jaqueira                                   | Food - the inner flesh of fruits are eaten.      | Non-native from Southeast Asia. Naturalized and cultivated in home gardens | Tree 0.29                                   |
| *Attalea funifera* Mart.         | Areceae           | Piaçava                                    | Food (NCPF) - The inner flesh of fruits is eaten. The inner flesh is also made into an oil for cooking. Wood/fibre - entire leaves used as thatch for house building. The leaf stalks used to make animal | Native. Also cultivated in plantations in the region. Harvested from restinga or forest habitats or from plantations. | Tree 0.32                                   |
| Species                          | Family     | Common Name | Use(s)                                                                                           | Habitat/Origin                                                                                     |
|---------------------------------|------------|-------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| **Avicennia schaueriana** Stapf & Leechm. ex Moldenke | Avicenniaceae | Siribeira    | Wood/fibre - Wood used for house construction.                                                   | Native. Harvested from surrounding mangroves                                                      |
| **Bactris setosa** Mart.        | Areceae    | Ticum, Tucum | Food (NCPF) - Fruits eaten. Wood/fibre - Fibres extracted from leaf stalk to make fishing nets.  | Native. Harvested from surrounding forests                                                          |
| **Bambusa sp.**                | Poaceae    | Bambú       | Wood/fibre – Used as part of house construction or for tying objects in the house or on boats Also used to make fishing rods. | Non-native and naturalized in the region.                                                          |
| **Bowdichia virgilioides** Kunth | Fabaceae   | Sucupiruçu, sucupira | Wood/fibre - Wood used to construct boats, canoes, and homes. Cordage. | Native. Harvested from waysides and surrounding forests.                                         |
| **Brodriguesia santosii** R.S. Cowan | Fabaceae   | Faverá      | Wood/fibre - boat making, particularly to make the bows, miscellaneous wood implements.       | Native. Harvested from surrounding forest.                                                         |
| **Byrsonima sericea** DC.       | Malpighiaceae | Murici      | Food (NCPF) - Fruits eaten raw. Medicine - Leaves used to make a tea and drunk for lowering cholesterol and also for slimming. Wood/fibre - Wood used in the construction of houses. | Native. Harvested from surrounding forest and resting.                                             |
| **Caesalpinia pulcherrima (L.) Sw.** | Fabaceae   | Maravilha   | Medicine - Leaves used to make a tea for washing wounds.                                         | Non-native. Cultivated in home gardens.                                                            |
| **Capsicum annuum** L.          | Solanaceae | Pimenta     | Food - Fruits eaten. Medicine - Leaves used to treat boils.                                      | Non-native. Cultivated in home gardens.                                                            |
| **Caesalpinia pulcherrima (L.) Sw.** | Fabaceae   | Maravilha   | Medicine - Leaves used to make a tea for washing wounds.                                         | Non-native. Cultivated in home gardens.                                                            |
| Scientific Name                  | Family       | Common Name | Use                                                                                     | Native Status                  | Habitat Description          | Plant Type | Abundance |
|---------------------------------|--------------|-------------|---------------------------------------------------------------------------------------|-------------------------------|-------------------------------|------------|----------|
| Caryocar brasiliense             | Caryocaraceae| Pequi       | Ritual - In a ritualistic use, two leaves wrapped around a cut on a finger in the formation of a cross is believed to help healing. | Native,                       | Tree, Harvested from surrounding beach dunes. | Tree       | 0.04     |
| Catharanthus roseus (L.) Don     | Apocynaceae  | Boa noite   | Medicine – Tea made from leaves and drunk to induce abortion.                        | Non-native. Cultivated in home gardens. | Herb, Harvested from surrounding beach dunes. | Herb       | 0.07     |
| Cenchrus echinatus L.            | Poaceae      | Carrapicho  | Medicine - The leaves and fruits made into a tea for urinary infections. Food (NCPF) - The fruits are eaten raw, or candied. Medicine - The fruit pulp is taken to ease constipation and to improve metabolism. | Native. Harvested from surrounding beach dune and shrubland vegetation. | Herb, Harvested from surrounding beach dune and shrubland vegetation. | Herb       | 0.04     |
| Cereus femambucensis Lem.        | Cactaceae    | Mandacaru, Calda | Medicine - The fruit pulp is taken to ease constipation and to improve metabolism. | Native. Harvested from surrounding beach dune and shrubland vegetation. | Herb, Harvested from surrounding beach dune and shrubland vegetation. | Shrub      | 0.25     |
| Chrysobalanus icaco L.           | Chrysobalanaceae | Gajiru         | Food (NCPF) - The fruits are eaten raw. Medicine - A tea is brewed from the debarked stems and drunk to treat diabetes and vaginal discharge. The tea is also used to wash cuts and wounds. | Native. Wild harvested from surrounding beach dune vegetation. | Shrub, Harvested from surrounding beach dune vegetation. | Shrub      | 0.36     |
| Cinnamomum verum J. Presl        | Lauraceae    | Canela      | Food - Used as a spice in food and sweets and to flavour coffee. Medicine - Boiled to make a tea that is drunk to as a calming agent and for stomach complaints. | Non-native. Obtained from markets. | Tree, Obtained from markets. | Tree       | 0.04     |
| Citrus limon (L.) Burm. f.        | Rutaceae     | Limão       | Food - Fruit juice drunk. Medicine - Fruit used to make tea to counter flu, or used as part of a syrup. | Non-native. Cultivated in home gardens or brought from markets | Shrub, Harvested from restinga vegetation. | Shrub      | 0.14     |
| Cnidosculus urens (L.)           | Urticaceae   | Cansação    | Medicine - The stem pith is extracted to make an eyedrop for eye infections.        | Native. Wild harvested from surrounding restinga vegetation. | Shrub, Harvested from surrounding restinga vegetation. | Shrub      | 0.07     |
| Species                          | Family            | Common Name | Use descriptions                                                                 | Location Notes                                                                 | Habitat                  | Height |
|---------------------------------|-------------------|-------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------|---------|
| Coccoloba laevis                | Polygonaceae      | Pipoquinhã  | Food (NCPF) - Fruits eaten raw. Wood/fibre - cordage is obtained from the tree and used to make baskets for catching crabs. | Native. Wild harvested from surrounding restiga vegetation.                    | Shrub 0.29               |         |
| Cocos nucifera L.               | Arecales          | Coco        | Food - Fruit juice drunk, and flesh used to make "milk" for cooking. Medicine - The meat is cooked and eaten to heal pain. Wood/fibres - The entire leaves used for thatch in home making or for semi-permanent structures. Fibres made into cord used to secure fish for sale at markets. Others - Fibres are burnt to create smoke to repel insects. | Naturalized. Cultivated in beaches and surrounding sandy habitats, and also as a street tree and in homes. | Tree 0.50               |         |
| Conocarpus erectus L.            | Combretaceae      | Mangue-de-botão | Wood/fibres - Wood used for roof rafters. Medicine - Leaves used to make a tea for slimming. Medicine - Entire plant boiled to make a tea and drunk for gastritis. One traditional expert added that drinking too much can affect the vision. | Native. Harvested from surrounding mangrove.                                  | Shrub 0.07               |         |
| Costus spicatus Jacq.           | Costaceae         | Cana de macaco | Medicine - Leaves used to make a tea for slimming.                                | Native. Cultivated in home gardens.                                             | Herb 0.07                |         |
| Coutoubea spicata Aubl.          | Gentianaceae      | Papai Nicolau | Medicine - Entire plant boiled to make a tea and drunk for gastritis. One traditional expert added that drinking too much can affect the vision. | Native. Harvested from surrounding vegetation.                                   | Herb 0.11                |         |
| Cymbopogon citratus (DC.) Stapf | Poaceae           | Capim-santo  | Medicine - Leaves boiled to make a tea and drunk as a relaxant, for high blood pressure, colic, and stomach complaints. | Non-native from South Asia. Cultivated for domestic use.                        | Herb 0.43                |         |
| Cymbopogon nardus (L.) Rendle   | Poaceae           | Capim-citronela | Medicine - Leaves used to make insect repellent.                                  | Non-native from South Asia. Cultivated for domestic use.                        | Herb 0.04                |         |
| Dalbergia nigra (Vell.) Benth.   | Fabaceae          | Jacarandã    | Wood/fibre - Wood used to make boats and canoes.                                 | Native. Harvested from surrounding vegetation.                                 | Tree 0.07                |         |
| Davilla flexuosa A. St.-Hill.    | Dilleniaceae      | Cipó-de-fogo | Wood/fibres - stems collected from surrounding forest to make cordage for securing fishing implements such as crab collecting baskets (covo) and | Native, harvested from surrounding forest.                                     | Vine 0.07                |         |
| Common Name | Family | Scientific Name | Use(s) | Native Status | Type | Value |
|------------|--------|-----------------|--------|---------------|------|-------|
| Dieffenbachia seguine (Jacq.) Schott. | Araceae | Comingo-ningeum-pode | Fishing fences (camboa) or other construction purposes. Ritual - Leaves used in prayer and blessings. | Non-native. | Herb | 0.04 |
| Dysphania ambrosioides (L.) Mosyakin & Clemants | Amaranthaceae | Matruz, Mastruz | Medicine - Shoots used to make a tea or blended into juice and drunk to heal pain; clearing chest congestions, for inflammation, and to expel worms. Shoots mashed into a paste and applied topically to scrape wounds or cuts. Ritual - Used for blessings or prayers. | Naturalized. Cultivated for domestic use. | Herb | 0.61 |
| Elaeis guineenses Jacq. | Arecaceae | Dende | Food (NCPF) - fruits eaten. Wood/fibre - Construction of fishing fences and also crab traps. | Naturalized. Cultivated for domestic use. | Tree | 0.07 |
| Equisetum spp. | Equisetaceae | Cavalinha | Medicine - Plant boiled to make a tea that is drunk as a diuretic and to treat water retention. | Non-native from the northern hemisphere | Herb | 0.04 |
| Eremanthus spp. | Asteraceae | Candeia | Wood/fibre - Wood used to make fishing rods. | Native. Harvested from forests. | Tree | 0.04 |
| Erythrina velutina Willd. | Fabaceae | Mulungu | Wood/fibre – Wood used to make canoes and boats. | Native. Harvested from forests. | Tree | 0.14 |
| Eugenia astringens Cambess. | Myrtaceae | Murta | Food (NCPF) - Fruits eaten raw, or made into candies. | Native. Harvested from restinga and sand dune vegetation. | Shrub | 0.36 |
| Eugenia leitonii D. Legrand | Myrtaceae | Goiabão | Wood processed into planks to make boats. | Native. Harvested from forests | Tree | 0.04 |
| Eugenia uniflora L. | Myrtaceae | Pitanga | Food (NCPF) - Fruits eaten raw. Medicine - Leaves boiled to make a tea and drunk for fever, flu or high blood pressure. In conjunction, the cooled tea is also used as a headwash at night. | Native. Cultivated in home gardens. | Tree | 0.29 |
| **Euphorbia hirta** L. | Euphorbiaceae | Erva Santa Luzia | Medicine: The sap is used as an eyewash and applied to wound to promote healing and to combat infections. | Native. Grows on waysides. | Herb | 0.04 |
|-----------------------|--------------|-----------------|--------------------------------------------------------------------------------------------------|-------------------------------|------|------|
| *Foeniculum vulgare* Mill. | Apiaceae | Erva doce, Erva doce verdadeira | Food - The seeds are used to flavour cachaça (an alcoholic beverage). Medicine - Seeds used to make a tea and administered to children for colic. The tea is also taken for stomach complaints and as a calming agent and to induce sleep. | Non-native. Cultivated in home gardens. | Herb | 0.21 |
| *Garcinia gardneriana* (Planch. & Triana) Zappi | Clusiaceae | Bacupari | Food (NCPF) - Fruits eaten raw. | Native. Harvested from the surrounding restinga vegetation. | Tree | 0.14 |
| *Genipa americana* L. | Rubiaceae | Genipapo | Food (NCPF) - Fruits eaten raw. Medicine - Fruit made into juices and drunk as a tonic and for anaemia. Medicine - Leaves boiled to make tea and drunk for flu, inflammation and for other women complaints. | Native. Cultivated in home gardens. | Tree | 0.14 |
| *Gossypium* spp. | Malvaceae | Algodão | Food (NCPF) - Fruits eaten raw. Medicine - Leaves boiled to make tea and drunk for stomach complaints. | Non-native. Cultivated in home gardens. | Shrub | 0.25 |
| *Gymnanthemum amygdalinum* (Delile) Sch. Bip. ex Walp. | Asteraceae | Alumã | Food (NCPF) - the fruits are collected from the surrounding forests and eaten raw. The pulp is made into candy or popsicles. Medicine - The sap is collected and mixed with water and drunk for gastritis.. | Non-native. Cultivated in home gardens. | Shrub | 0.07 |
| *Hancornia speciosa* Gomes | Apocynaceae | Mangaba | Food (NCPF) - the fruits are collected from the surrounding forests and eaten raw. | Native. Wild harvested from surrounding forests and shrublands. | Tree | 0.36 |
| *Inga* spp. | Fabaceae | Inga | Food (NCPF) - the fruits are collected from the surrounding forests and eaten raw. | Native. Wild harvested from surrounding forests. | Tree | 0.18 |
| Species                        | Family      | Common Name       | Uses                                                                 | Origin/Obtained                              | Plant Type | Height |
|-------------------------------|-------------|-------------------|----------------------------------------------------------------------|----------------------------------------------|------------|--------|
| *Ixora coccinea* L.           | Rubiaceae   | Ixora             | Wood/fibre - Wood used for house construction.                       | Non-native from South India. Cultivated as an ornamental. | Shrub      | 0.04   |
| *Jatropha gossypii* L.         | Euphorbiaceae | Pinhão, Pinhão roxa | Food (NCPF) - the fruits are eaten opportunistically by children.    | Native. Cultivated in home gardens.          | Shrub      | 0.36   |
| *Jatropha curcas* L.          | Euphorbiaceae | Pinhão branco     | Ritual - Leaves used in prayer and blessings.                        | Non-native. Cultivated in home gardens.      | Tree       | 0.07   |
| *Kalanchoe crenata* (Andrews) Haw. | Crassulaceae | Folha da Costa    | Medicine - Leaves used to make a tea for asthma. Ritual - Leaves used in prayer and blessings. | Non-native. Cultivated in home gardens.      | Herb       | 0.21   |
| *Laguncularia racemosa* (L.) C.F. Gaertn. | Combretaceae | Mange manso       | Wood/fibre - Wood collected from surrounding mangroves to make homes. Fine branches used for making cordage. Wood used to make fishing fences and crab traps. Wood also used for making fishing rods, canoes and boats. Leaves beaten on the crab traps believed to release a scent that is attractive to the crabs. | Native. Harvested from surrounding mangroves. | Tree       | 0.39   |
| *Lantana câmarap* L.          | Verbenaceae  | Camara            | Food - Leaves used to make a tea as a coffee substitute.             | Native. Harvested from surrounding forests.  | Shrub      | 0.04   |
| *Laurus nobilis* L.           | Lauraceae    | Louro             | Medicine - Leaves and shoots boiled to make tea and drunk for menstrual colic. | Non-native. Obtained from markets.           | Tree       | 0.07   |
| *Lippia alba* (Mill.) N.E. Br. ex Britton & P. Wilson | Verbenaceae  | Cidrera, Erva-cidreira | Medicine - Leaves and shoots boiled to make tea and drunk for colic, food poisoning, stomach complaints, to lower blood pressure, as a general | Non-native, but naturalized and cultivated in home gardens. | Shrub      | 0.82   |
| Scientific Name | Family | Common Name       | Uses                                                                                      | Origin/Notes                                                                 | Plant Type | Height (m) |
|-----------------|--------|-------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------|------------|
| Malpighia glabra L. | Malpighiaceae | Acerola | Relaxant, and to aid with sleeping. Ritual - Used for prayers or blessings. Food (NCPF) - Fruits eaten raw. Medicine - Leaves used to make a tea for washing head when having a flu. | Non-native. Cultivated in home gardens. | Shrub | 0.18       |
| Mangifera indica L. | Anacardiaceae | Mangeira | Food - Fruits eaten raw. Medicine - Leaves used to make a tea to treat fever. | Non-native from Asia. Cultivated as a wayside tree and in home gardens. | Tree | 0.18       |
| Manilkara spp. | Sapotaceae | Maçaranduba | Food (NCPF) - Fruits eaten raw. Fishing implements - Wood used to make rods for fishing. Wood/fibre - Wood used to make canoes, boats and house roofs. | Native tree from surrounding forests. | Tree | 0.57       |
| Matricaria chamomilla L. | Asteraceae | Camomila | Medicine - Dried flowers boiled to make a tea drunk as a calming agent and to treat stomach pains. | Non-native. Obtained from markets. | Herb | 0.04       |
| Mentha x villosum Huds. | Lamiaceae | Hortelã miúdo | Food - Fresh or dried leaves used as a seasoning to cook beans, meat or fish. Medicine - A juice is made from the fresh leaves and stems with a blender and drunk for treating worms and inflammation. | Non-native. Naturalized and cultivated in home gardens. | Herb | 0.21       |
| Mesophaerum pectinatum (L.) Kuntze | Lamiaceae | Canudinho | Medicine - Stems and leaves boiled to make a tea and drunk for slimming, constipation and inflammation. | Native. Grows by waysides. | Shrub | 0.07       |
| Morinda citrifolia L. | Rubiaceae | Noni | Medicine - Fruits blended with grapes juice to make a tonic for lowering blood pressure and for muscular pains. | Non-native tree from Asia. Cultivated in home gardens. | Tree | 0.07       |
| Momordica charantia L. | Cucurbitaceae | Melão-de-são-caetano | Food (NCPF) - Fruits eaten. | Non-native. Naturalized. | Vine | 0.04       |
| Species                        | Family       | Common Name     | Use(s)                                                                 | Native Status and Harvest Source                                                                 | Plant Type | Height (m) |
|-------------------------------|--------------|-----------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------|------------|
| *Morus spp.*                  | Moraceae     | Amora           | Medicine - Leaves used to make a tea for lowering blood cholesterol, losing weight, and for pains in general. | Non-native. Cultivated in home gardens.                                                            | Tree       | 0.14       |
| *Musa x paradisiaca* L.       | Musaceae     | Bananeira       | Medicine - Leaves used to make a tea for slimming.                    | Non-native. Cultivated in home gardens.                                                            | Tree       | 0.04       |
| *Myrciaria floribunda* (H. West ex Willd.) O. Berg | Myrtaceae     | Cambui          | Food (NCPF) - Fruits collected from surrounding forest and eaten raw, made into juices, and used to flavour alcoholic beverages (cachaça). | Native. Harvested from surrounding forest.                                                        | Shrub      | 0.54       |
| *Nerium oleander* L.          | Apocynaceae  | Espiradeira     | Medicine - Leaves used to make a tea for abortion.                    | Non-native. Cultivated in home gardens.                                                            | Shrub      | 0.07       |
| *Ocimum basilicum* L.         | Lamiaceae    | Manjerício      | Food - Leaves used as a spice for cooking and to flavour juices.      | Non-native. Cultivated in home gardens.                                                            | Herb       | 0.18       |
| *Ocimum gratissimum* L.       | Lamiaceae    | Quioiô           | Medicine - Leaves boiled to make a tea and drunk to treat high blood pressure and high cholesterol, to counter flu, and also to promote slimming. | Non-native. Cultivated in home gardens.                                                            | Herb       | 0.04       |
| *Ocotea sp.*                  | Lauraceae    | Louro-branco    | Wood/fibre - Wood used to construction house roofs and also boat oars. | Native. Harvested from the surrounding forest vegetation.                                          | Tree       | 0.07       |
| *Passiflora spp.*             | Passifloraceae | Maracujá, Maracujá-do-mato | Food (NCPF) - Fruits eaten raw.                                       | Native. Harvested from the surrounding forest vegetation. Also cultivated.                         | Vine       | 0.18       |
| *Passiflora foetida* L.       | Passifloraceae | Ruge            | Food (NCPF) - Fruits eaten raw.                                       | Native. Harvested from the surrounding beach dune vegetation.                                      | Vine       | 0.11       |
| *Pereskia aculeata* Mill.     | Cactaceae    | Ora-pro-nóbis   | Food (NCPF) - Leaves used for cooking or eaten raw in salads.         | Native, but cultivated for domestic use.                                                           | Shrub      | 0.04       |
| Species | Family | Common Name | Use | Origin | Size |
|---------|--------|-------------|-----|--------|------|
| *Periandra mediterranea* (Vell.) Taub. | Fabaceae | Acampho, Campho | Medicine - Roots boiled to make tea and drunk for coughs. | Native. Harvested in the surrounding restinga vegetation. | Shrub 0.04 |
| *Persea americana* Mill. | Lauraceae | Abacateiro | Food - Fruits eaten. Medicine - Leaves boiled to make a tea and drunk for kidney problems and toothache. Bark boiled to make tea for slimming. | Non-native from south Mexico. Naturalized and cultivated in home gardens. | Tree 0.18 |
| *Petiveria alliacea* L. | Phytolaccaceae | Guiné | Medicine - Roots boiled to make tea to promote wound healing. | Native. | Herb 0.04 |
| *Peumus boldus* Molina | Monimiaceae | Boldo do Chile | Medicine - Leaves boiled to make a tea and drunk for stomach complaints. | Non-native from Chile. Obtained from markets. | Shrub 0.04 |
| *Pfaffia glomerata* (Spreng.) Pedersen | Amaranthaceae | Anador | Medicine - Leaves boiled to make a tea and drunk for headaches, fever and stomach complaints. | Native, but cultivated for domestic use. | Shrub 0.11 |
| *Phyllanthus niruri* L. | Phyllanthaceae | Quebra-pedra | Medicine - Shoots used to make a tea and drunk for kidney stones. | Native. Grows by waysides. | Herb 0.18 |
| *Physalis angulata* L. | Solanaceae | Saco de bode | Food - Fruits eaten. | Naturalized, and also cultivated for domestic use. | Herb 0.04 |
| *Pilea microphylla* (L.) Liebm. | Urticaceae | Brilhantina | Food (NCPF) - Shoots and leaves used in salads and blended in juices. Medicine - Shoots and leaves used to make a tea and drunk for stomach pains and diarrhea. | Non-native from South and Central America. Naturalized and cultivated in home gardens. | Herb 0.14 |
| *Plectranthus amboinicus* (Lour.) Spreng. | Lamiaceae | Hotelã, Hortelã grossa | Food - Leaves used for cooking with meat. Medicine - Leaves used for making a syrup for congested chest. | Non-native from India. Cultivated in home gardens. | Shrub 0.32 |
| *Plectranthus barbatus* Andrews | Lamiaceae | Oxalá, Sete Dor | Medicine - Leaves used to make a tea for stomach complaints, colic and general pain. | Non-native from India. Cultivated in home gardens. | Shrub 0.25 |
| *Plectranthus neochilus* Schitr. | Lamiaceae | Boldo | Medicine - Leaves used to make a tea for stomach complaints, poor | Non-native from India. Cultivated in home gardens. | Herb 0.43 |
| Species                  | Family           | Common Name       | Use                                          | Native Habitat                                      | Size  |
|-------------------------|------------------|-------------------|----------------------------------------------|---------------------------------------------------|-------|
| *Portulaca oleracea* L. | Portulacaceae     | Beldroega         | Digestion, intestinal pains, flatulence, and for expelling worms. Food (NCPF) - Leaves used for cooking or eaten raw in salads. | Native. Grows by waysides, and also cultivated in home gardens. | Herb 0.04 |
| *Protium heptaphyllum* (Aubl.) Marchand | Burseraceae | Amescla           | Medicine: Leaves used to make a tea for flu. Resin taken internally. Ritual - The bark is burnt to produce smoke to cleanse negative energies. | Native. Harvested from surround forests. | Tree 0.07 |
| *Psidium guajava* L.   | Myrtaceae         | Goiaba            | Food - Fruits eaten raw. Medicine - Leaves boiled to make a tea for treating diarrhea, and also to ease toothache. | Native. Cultivated in home gardens. | Tree 0.21 |
| *Psidium guineense* Sw. | Myrtaceae         | Araçá-mirim       | Food (NCPF) - Fruits eaten raw.               | Native. Harvested from surround forests. | Tree 0.14 |
| *Psidium rufum* Mart. ex DC. | Myrtaceae | Araçá-cagão       | Food (NCPF) - Fruits eaten raw or candied. Medicine - The fruit husks made into a tea and gargled for sore throats. The leaves, fruit husks and seeds boiled to make a tea and drunk for throat inflammation. | Native. Harvested from surround forests. | Tree 0.32 |
| *Punica granatum* L.   | Lythraceae        | Romã              | Food - Fruits eaten raw. Medicine - The fruit husks made into a tea and gargled for sore throats. The leaves, fruit husks and seeds boiled to make a tea and drunk for throat inflammation. | Non-native from Iran and North India. Cultivated in home gardens for use. | Shrub 0.14 |
| *Rhizophora mangle* L. | Rhizophoraceae    | Mange vermelho    | Wood/fibre - Trunk poles harvested for house-making and other semi-permanent structures. Fishing implements - The branches are beaten against the crab traps to release a scent that is believed to attract Goniopsis cruentata (aratu-vermelho) crabs. The fallen leaves are also believed to attracted the crabs. The branches are also used to make the crab traps. A red dye is extractable from the wood. | Native. Harvested from surrounding mangroves. | Tree 0.57 |
| Species                              | Family       | Common Name | Uses                                                                 | Origin/Location                                      | Type     | Value |
|-------------------------------------|--------------|-------------|----------------------------------------------------------------------|------------------------------------------------------|----------|-------|
| *Ruta graveolens* L.                | Rutaceae     | Arruda      | Medicine: Leaves infused in alcohol and used topically for headaches.  | Non-native from Europe.                              | Herb     | 0.07  |
|                                     |              |             | Ritual: Leaves used in prayer and blessings.                         |                                                      |          |       |
| *Saccharum officinarum* L.          | Poaceae      | Cana        | Medicine: Juice expressed from the stems used to treat low blood      | Non-native from Southeast Asia. Cultivated in home   | Herb     | 0.04  |
|                                     |              |             | pressure.                                                            | gardens or bought from markets.                     |          |       |
| *Schinus terebinthifolia* Raddi     | Anacardiaceae| Aroeira     | Food (NCPF): The fruits are eaten raw.                               | Native. Harvested in the surrounding restinga        | Tree     | 0.39  |
|                                     |              |             | Medicine: Leaves boiled to make a tea for gargling for healing after  | vegetation.                                         |          |       |
|                                     |              |             | tooth removal. Tea is also drunk for inflammation. Tea made from    |                                                      |          |       |
|                                     |              |             | boiled leaves or bark is used in a bath to treat inflammation in     |                                                      |          |       |
|                                     |              |             | women, and also children having skin afflictions. The leaves are    |                                                      |          |       |
|                                     |              |             | used to wrap minor cuts on the hand. Considered a panacea. Others   |                                                      |          |       |
|                                     |              |             | - The fruits and seeds are used to make soap.                        |                                                      |          |       |
| *Scoparia dulcis* L.                | Plantaginaceae| Vassourinha | Medicine: Entire plant boiled and water is used to wash wounds.      | Native. Occurs on waysides.                         | Herb     | 0.18  |
|                                     |              |             | Ritual: Shoots used for prayer and for blessing.                    |                                                      |          |       |
| *Senna obtusifolia* (L.) H.S. Irwin & Barneby | Fabaceae | Senna       | Medicine: Leaves used to make a tea and drunk for inflammation.     | Native. Occurs on waysides.                         | Shrub    | 0.04  |
| *Senna occidentalis* (L.) Link       | Fabaceae     | Fedegoso    | Medicine: Leaves and shoots boiled to make a tea and drunk for flu    | Native. Occurs on waysides, but also cultivated for  | Shrub    | 0.18  |
|                                     |              |             | and stomachache. The tea also used as a bath for children suffering | domestic use.                                       |          |       |
|                                     |              |             | from the flu. Ritual: Shoots used for prayer and for blessing.       |                                                      |          |       |
| Scientific name                          | Family       | Common name                          | Use                          | Native Status                                                                 | Habitat/Collection                                                                 |
|-----------------------------------------|--------------|--------------------------------------|------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| *Solanum agrarium* Sendtn.              | Solanaceae   | Bombão, Bambauzinho Jurubeba         | Food (NCPF) - Fruits eaten raw. | Native. Occurs in beach vegetation                                           | Shrub 0.11                                                                      |
| *Solanum paniculatum* L.               | Solanaceae   | Jurubeba                             | Medicine: Leaves used to make a tea and drunk for flu. | Native. Obtained from markets.                                               | Shrub 0.07                                                                      |
| *Solidago chilensis* Meyen              | Asteraceae   | Arnica                               | Medicine - Leaves crushed and applied on wounds. | Native. Occurs on waysides, but also cultivated for domestic use.            | Herb 0.11                                                                       |
| *Spondias mombin* L.                    | Anacardiaceae | Cajarana                             | Food (NCPF) - Fruit eaten. Household implements - Fibres used to make brooms. Cordage - Fibres made into cordage for securing fish for transport and sale at markets. Leaf fibres used for tying fishing fences. | Native. Planted in home gardens.                                               | Tree 0.04                                                                      |
| *Spondias tuberosa* Attruda             | Anacardiaceae | Umbu                                 | Food (NCPF) - Fruit eaten. | Native. Planted in home gardens.                                               | Tree 0.07                                                                       |
| *Stemodia foliosa* Benth.              | Plantaginaceae | Rabujo de Cachorro                   | Medicine - Shoots and leaves used to make a tea and drunk for stomach pains, especially for children. | Native. Collected wild.                                                       | Herb 0.04                                                                       |
| *Syagrus coronata* (Mart.) Becc.        | Arecaceae    | Alicuri, Licuri                       | Food (NCPF) - Fruit eaten. Wood/fibre - Fibres used to make brooms. Cordage - Fibres made into cordage for securing fish for transport and sale at markets. Leaf fibres used for tying fishing fences. | Native. Collected wild.                                                       | Tree 0.21                                                                      |
| *Syagrus schizophylla* (Mart.) Glassman | Arecaceae    | Alicuri-oba, Licurioba               | Food (NCPF) - Fruit eaten. Wood/fibre - Fibres made into cordage for securing fish for transport and sale at markets. Leaf fibres used for tying fishing fences. | Native. Collected wild.                                                       | Tree 0.11                                                                      |
| *Syzygium cumini* (L.) Skeels           | Myrtaceae    | Jambolão                             | Food (NCPF) - Fruits eaten. Medicine - Leaves boiled to make a tea and drunk to lower cholestrol. | Non-native from Asia. Cultivated as a street tree.                          | Tree 0.11                                                                      |
| *Tabebuia* spp.                         | Bignoniaceae | Taipoca                              | Wood/fibre - Branches historically used for making fishing rods. | Native. Harvested from surrounding forest.                                    | Tree 0.07                                                                      |
| Scientific Name          | Family       | Common Name          | Household use | Food (NCPF) | Medicine | Native/Cultivation | Plant Type | Height |
|--------------------------|--------------|----------------------|---------------|-------------|----------|-------------------|------------|--------|
| *Talinum paniculatum*    | Talinaceae   | Bredo, Maria gorda   | Wood historically used to make beds. | Shoots and leaves eaten as a salad or cooked. | Leaves used to make a tea which is gargled to ease gum inflammation after tooth extraction. | Native. Cultivated in home gardens. | Tree     | 0.04   |
| *Tamarindus indica*      | Fabaceae     | Tamarindo            | Fruits eaten raw. | Non-native from India. | Fruits eaten raw. | Cultivated in home gardens. | Tree     | 0.07   |
| *Tapirira guianensis*    | Anacardiaceae| Pau-pombo            | Fruits eaten raw. | Wood used for making rafts. | Leaves used to make a tea drunk for spinal issues or to lower cholesterol. | Native. Harvested from surrounding forest. | Tree     | 0.07   |
| *Terminalia catappa*     | Combretaceae | Amendoa-da-praia, Amêndoa | Fruits are collected, dekernelled, and the nuts eaten raw. | Medical - Leaves boiled to make a tea for food poisoning. | The stems are boiled to make a tea to treat stomach pains and food poisoning. Also for pains in general. | Non-native from Asia. Cultivated as a wayside tree | Tree     | 0.11   |
| *Tocoyena bullata*       | Rubiaceae    | Genipapinho          | Wood/fibre - The wood is used to make the needles used to mend fishing nets. | Medicine - Leaves boiled to make a tea drunk for inflammation. | Medicine - Leaves boiled to make a bath used for flu. Leaves also | Native. Harvested from surrounding restinga. | Shrub    | 0.07   |
| *Zornia latifolia*       | Fabaceae     | Arrozinha            | Medicine - Leaves boiled to make a tea drunk for inflammation. | Medical - Leaves used to whiten teeth. | Medical - Leaves boiled in water to make a bath used for flu. | Native. Grows by waysides. | Herb     | 0.04   |
|                          |              | Juá                  |                |              | Medicine - Leaves boiled to make a tea drunk for inflammation. | Native from surrounding forests | Shrub    | 0.04   |
| *Araça*                  |              |                      |                |              | Medicine - Leaves boiled to make a tea drunk for inflammation. | Native from surrounding forests | Tree     | 0.11   |
| *Cuaça*                  |              |                      |                |              | Medicine - Leaves boiled to make a tea drunk for inflammation. | Native from surrounding forests | Vine     | 0.18   |
| *Limaozinho*             |              |                      |                |              | Medicine - Leaves boiled to make a tea drunk for inflammation. | Native. Harvested from surrounding restinga. | Tree     | 0.14   |
| Plant Name         | Category (NCPF) | Use                        | Native Habitat                  | Type    | Size |
|-------------------|----------------|-----------------------------|---------------------------------|---------|------|
| Tripa de ovelha   | Food (NCPF)    | Fruits eaten raw.           | Native from surrounding forests | Tree    | 0.07 |
| Biriba            | Food (NCPF)    | Fruits eaten raw.           | Native from surrounding forests | Tree    | 0.11 |
| Capim da Praia    | Wood/fibre     | Used for stuffing pillows.  | Native from surrounding beaches | Herb    | 0.04 |
| Cipó de Alho      | Medicine       | Leaves made into a tea for combating fever | Native from surrounding forests | Vine    | 0.07 |
| Fruta de Paka     | Food (NCPF)    | Fruits eaten raw.           | Native from surrounding forests | Tree    | 0.04 |
| Joaninha          | Food (NCPF)    | Fruits eaten raw.           | Native from surrounding forests | Shrub   | 0.04 |
| Acalypi           | Food (NCPF)    | Fruits eaten raw.           | Native from surrounding forests | Shrub   | 0.04 |
| pindaiba          | Food (NCPF)    | Fruits eaten raw.           | Native from surrounding forests | Shrub   | 0.11 |
| embira-branca     | Wood/fibre     | Wood used for construction of canoes. | Native from surrounding forests | Tree    | 0.07 |
| embira-vermelha   | Wood/fibre     | Wood used for construction. | Native from surrounding forests | Tree    | 0.04 |
| quina-quina       | Medicine       | Tea made from leaves and drunk for infections. | Native | Tree   | 0.04 |
| Pequimbola        | Other          | Leaves broken and rubbed in the insides of shrimp vases to attract shrimp. | Native from surrounding forests | Tree    | 0.04 |
| Podarco           | Wood/fibre     | Branches used to make fishing implements to catch Aratu crabs. | Native. Harvested from forest | Tree    | 0.07 |
| Pau d'arco        | Medicine       | Bark boiled to make a tea and drunk for infection. Wood/fibre - | Native. Harvested from forest | Tree    | 0.11 |
| Plant Name                  | Type          | Description                                                                 |
|-----------------------------|---------------|-----------------------------------------------------------------------------|
| Imadeira                    | Wood/fibre    | Wood used for constructing canoes and also for joining the poles when        |
|                            |               | constructing rafts.                                                         |
| Ingá-Poca                   | Wood/fibre    | Wood used for construction of boats and canoes.                             |
| Lande                       | Wood/fibre    | Wood used for construction of canoes.                                       |
| Leiteira                    | Wood/fibre    | Wood used for construction of rafts.                                        |
| Jequitiba                   | Wood/fibre    | Wood used for construction of boats and canoes.                             |
| Juherana-Branca             | Wood/fibre    | Wood used for construction of boats and canoes.                             |
| Juherana-Vermelha           | Wood/fibre    | Wood used for construction of boats and canoes.                             |
| Jangada, Pau de jangada     | Wood/fibre    | Wood used for construction of canoes and rafts.                             |
| Flor de veado               | Food (NCPF)   | Flowers eaten.                                                              |
| Cipo para conjuntivite      | Medicine      | Vine cut and the water inside used as an eyedrop for conjuntivitis.         |
| Louro-sabão                 | Medicine      | Leaves generate a lather that can be used to wash hair.                     |
| Bugi                        | Food (NCPF)   | Fruits eaten.                                                               |
| Gelol                       | Medicine      | Roots collected, crushed and applied on wounds.                             |
| Angelim pedra               | Wood/fibre    | The wood is used for making boats and canoes.                               |
| Angelim amargoso            | Medicine      | The stem is used to make tea for stomach complains.                         |
| Name                  | Type       | Use                                    | Origin                          | Harvesting                      | Plant  | Quantity |
|-----------------------|------------|----------------------------------------|---------------------------------|---------------------------------|--------|----------|
| Oiticica              | Wood/fibre | The wood is used for making boats and canoes. | Native. Harvested from forest | Tree                            | 0.04   |
| Vinhático             | Wood/fibre | The wood is used for making boats and canoes. | Native. Harvested from forest | Tree                            | 0.04   |
| Sapucarana            | Wood/fibre | Fibres from the stem is extracted for cordage. | Native. Harvested from forest | Tree                            | 0.04   |
| Timborana sp. 1       | Wood/fibre | The wood is processed into planks for making boats. | Native. Harvested from forest | Tree                            | 0.11   |
| Timborana sp. 2       | Wood/fibre | The vine stem is used to make the covo and fishing fences (camboa). | Native. Harvested from forest | Vine                            | 0.21   |
| Espinho cheiroso      | Medicine   | Leaves boiled to make a tea and drunk to treat inflammation. | Native. Bought in markets | Tree                            | 0.18   |