Ferns and lycophytes: an ethnobotany review for Brazil

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Review

Abstract

Background: Ferns and lycophytes comprise all vascular plants with no flowers, fruits, or seeds, grouped under the artificial name Pteridophytes. This group presents a broad range of ethnobotanical uses, being those medicinal, ornamental, ritual, edible, or others, but there are few studies that register the uses of this specific group and no comprehensive gathering of this data under one study in Brazil. This review aimed to gather, analyze, and organize existing data on the historical and present ethnobotany of Pteridophytes in Brazil.

Methods: This study was conducted through a literature review, regarding historical and current data in order to understand how the human populations in Brazil utilize these plants. Species were also updated when necessary to generate a taxonomic correct listing.

Results: We gathered data regarding 367 species, within 702 valid citations in 124 different sources, dating from the 16th century until today. Another 118 imprecise citations were registered, making up to a total of 820 species' citations. The most reported uses were medicinal and ornamental, followed by those of ritual and food uses. Almost all Pteridophyte families have recorded uses, and the species are used in all regions of the country, by diverse human groups.

Conclusion: This survey brings to surface the broad use of Pteridophyte species in the country, compiling this information in an unprecedented way for Brazil, and highlighting their importance for human groups.

Keywords: brazilian flora; brazilian biodiversity; useful plants; traditional knowledge.

Background

Pteridophytes represent two lineages of vascular plants, with no flowers, seeds, or fruits (Prado & Sylvestre 2010), having spore dispersion, and a two-phase lifecycle: the first is gametophytic, ephemeral, and small-sized, and the second is sporophytic, perennial, vascularized and larger. The name "Pteridophyta" has been used for grouping different taxonomic groups with diverging morphologic and evolutionary characteristics (Pteridophyte Phylogeny Group I - PPG I 2016). There's a different understanding of this nowadays, as phylogenetic surveys stated it is not a monophyletic group, but two diverging lineages, ferns, and lycophytes, which emerged after avascular

embryophytes and before vascular plants with seeds (Pryer *et al.* 2001, Pryer *et al.* 2004, Smith *et al.* 2006). Although it is currently agreed that they are distinct lineages, "pteridophyte" continues to be used as an informal term to refer to these two lineages (PPG I 2016).

The lineage represented by Lycophytes is the first of vascular plants to appear in the evolutionary scale, about 420 million years ago (m.y.a.) (Spencer *et al.* 2021). They differ from other groups by the protostele with exarch xylem and microphilic leaves (Prado & Sylvestre 2010). The species are herbaceous, usually small, and occur as terrestrial, epiphytic, rupicolous, or aquatic. They account for less than 1% of the diversity of vascular plants (Smith *et al.* 2006) - 1,338 species arranged in the families Isoetaceae, Lycopodiaceae, and Selaginellaceae (PPG I 2016). There are 188 species in Brazil (Flora e Funga do Brasil - FFB 2022).

The Fern lineage, on the other hand, appeared about 380 m.y.a. (Pryer *et al.* 2004), sharing a common ancestor with spermatophytes (Smith *et al.* 2006). They differ from lycophytes by their megaphylls, vascularized leaves with more than one branching, among other characters. This helped fern species to grow and occupy multiple niches, varying a lot in their morphology and habits (Prado & Sylvestre 2010). The group includes over 10 thousand species under 48 families (PPG I 2016). In Brazil, there are 1,219 species (FFB 2022).

Pteridophytes represent around 2 to 5% of all vascular plants. They have a cosmopolite distribution, although their richness is concentrated in tropical regions (Ranker & Haufler 2008). There are more than 11,900 species of pteridophytes in the world (PPG I 2016), and 1,407 in Brazil (544 endemic ones) (FFB 2022). They are present in every Brazilian region, with most species in the Southeast (913 spp.) and then North (633), South (598), Northeast (553), and Midwest (468). They are also represented in every phytogeographic domain: Mata Atlântica (949 spp.), Amazônia (559), Cerrado (304), Pampa (73), Caatinga (51) and Pantanal (50) (FFB 2022).

These plants usually prefer humid environments and medium temperatures, as well as fertile soils with larger biomass availability (Mehltreter *et al.* 2010), which shifts their distribution within the ecosystems, favoring their presence, for example, in tropical settings and phytogeographic domains such as Mata Atlântica. Despite that, they occur in diverse environments, from sea level to the tops of mountains, high salinity environments, and even desert edges (Barros *et al.* 2006, Prado & Sylvestre 2010). They are fundamental in their ecosystems, initiating successional stages that favor the development of other organisms, helping maintain humidity and establish the microfauna and microflora, serving as food and shelter for other species (Barros *et al.* 2006, Mehltreter *et al.* 2010). However, the conservation status of these plants has been under discussion, since they are under high pressure from climate change and anthropogenic alterations (Sharpe 2019), and that data on ecology, distribution and the status of these species' populations are still incomplete and scarce (Barros *et al.* 2006, Sharpe 2019).

Human populations and their uses of pteridophytes play a fundamental role in the ecological dynamics of the species, interfering with their conservation and modifying their distribution. As harmful as interference can be, with the loss of pteridophyte habitats (such as Mata Atlântica, the main phytogeographic domain for them in Brazil) (Barros *et al.* 2006), or excessive extraction, as with the **samambaia-preta** [*Rumohra adiantiformis* (G. Forst.) Ching], and the **xaxim** (*Dicksonia sellowiana* Hook.) (Lorenzi 2015, Souza *et al.* 2006), these are important relations that could be maintained to preserve both plant species and cultural processes. One example is the management of the *Rumohra adiantiformis* in the Southern Region, where collection strategies have already been evaluated and have the potential to help preserve the species (Baldauf *et al.* 2007, Ribas *et al.* 2007, Souza *et al.* 2006). As with other plant groups, pteridophytes have deep connections with human communities, for their uses and symbolic relevance, investigated in the field of ethnobotany.

Ethnobotany studies the interrelationships between people in their cultural contexts and the plants in their environment (Albuquerque 2005). It allows investigations beyond the use of plant organisms, observing their cultural and symbolic importance, and the relations and exchanges that exist between people and the plants they use. Pteridophytes are used by people from diverse cultures, as medicine, food, rituals, and as ornamental, besides other uses and potential ones to be explored (Barros *et al.* 2006, Mannan *et al.* 2008, Reinaldo *et al.* 2015, Scarpa & Cassa 2015). In Brazil, there are records of use in different regions, cultures, and moments in history (Brasil 2006, Oliveira *et al.* 2009, Peckolt & Peckolt 2016, Pio Correa 1926, 1931, 1952, 1969, 1974, 1975), using multiple parts of the sporophyte such as fronds, roots, and shoots.

Among the categories of use for pteridophytes, the most common in literature are medicinal and ornamental. Medicinal ones are well represented in popular pharmacopeias, with records for several active compounds (Santos *et al.* 2010). The most remarkable case in Brazil is the **cavalinhas**, a popular name used to designate several species of the genus *Equisetum* L., (Carneiro *et al.* 2013, Correa 2010, FFB 2022), used as antimicrobial, analgesic, anti-inflammatory, diuretic, and others (Carneiro *et al.* 2013, Correa 2010, Lorenzi & Matos 2008, Wright *et al.* 2007). *Equisetum arvense* L. is the only pteridophyte to appear on the List of Medicinal Plants of Interest in the Unified Health System (SUS) - RENISUS (Brasil 2021). Other species frequently reported include *Adiantum raddianum* C. Presl., used to treat cough, colds, fever, and others (Reinaldo *et al.* 2018), and *Selaginella convoluta* (Arn.) Spring, which is applied to the treatment of fevers and pain (Reinaldo *et al.* 2015). Ornamental use is also well represented since pteridophytes are important commercial species, as well as collected ones. Some of those in literature include *Adiantum raddianum* (Lorenzi 2015, Reinaldo *et al.* 2018), *Rumohra adiantiformis* (Lorenzi 2015, Souza *et al.* 2006), *Platycerium bifurcatum* (Cav.) C. Chr. (Santos-Silva *et al.* 2020) and *Dicksonia sellowiana* (Lorenzi 2015). There are also records of food use (Mannan *et al.* 2008) as is the case for *Pteridium aquilinum sensu lato* [s. lat., including here also *Pteridium caudatum* (L.) Maxon and *Pteridium arachnoideum* (Kaulf.) Maxon], which is consumed in Brazil, despite its reported toxicity (Lorenzi *et al.* 2011, Ulian *et al.* 2010); ritualistic uses (Albuquerque *et al.* 2007, Sátiro *et al.* 2019), as is the case of *Lygodium venustum* Sw. (**abre-caminho**) (Sátiro *et al.* 2019); and others such as artisanal, for fertilization, cosmetics, and others.

Despite the relevance of the use of these species in all fields mentioned they could be underrepresented in ethnobotanical studies (Reinaldo *et al.* 2015) and authors report the lack of information on these taxa in several botany fields (Della & Falkenberg 2019, Macedo & Nonato 2009, Reinaldo *et al.* 2015). In ethnobotany, they are usually included in general studies lists, which consider any species mentioned, reducing their expressiveness in relation to other vascular species. This happens partly because of their lower diversity proportion (for instance, in Brazil there are 1,407 species of pteridophytes compared to over 35 thousand angiosperms), partly because of the way data collection is carried out in these studies, and of the perception that the population has of its lower effectiveness (Reinaldo *et al.* 2015). Also, many citations of use are old, and over the years the taxa have undergone several nomenclatural changes (PPG I 2016, Pryer *et al.* 2004), especially after advances in molecular systematics research, making tracking the use of these species over time more difficult. Given these factors, the current scenery on pteridophytes ethnobotany in Brazil is diffuse and data is scattered, hindering access to this information. There is also no ethnobotanical review in the country as in other places such as Argentina (Scarpa & Cassa 2015), Ukraine (Minarchenko *et al.* 2017) and Sri Lanka (Ranil & Bussmann 2021), and few publications with a specific focus on the group, as in Barros & Andrade (1997) and Reinaldo *et al.* (2015). Gathering this data provides an important overview on the use of these plant groups and grants easy access to which species could be prospected for deeper, more specialized studies, using this concentrated information as a starting point to select species. It could be used, for example, for studies of chemical profiling for some taxa, or investigating whether their specific uses (like medicinal or food uses, for example) could be applied on larger scales, or even for further specialized ethnobotanical studies on taxa worth investigating. It also shows the gaps in knowledge we have for this subject regarding Brazilian species.

Considering this, our research aimed to gather, organize and analyze data on the ethnobotanical record of pteridophytes of Brazil through a literature review, in order to understand how these species are used by human populations in the country. It compiles and lists the species used in Brazil, verifies taxonomic records, updates scientific nomenclature of the species, records ethnobotanical uses and potential uses of the species, geographic and ethnic distribution of these plants and their origins (native or exotic). The data was examined from an ethnobotanical perspective, linking taxonomic and biological aspects with cultural and human ones. We gathered information from both ethnobotanical and general botany sources on the use of these species, incorporating pieces of information that added to the discussion as they were available. This gathered data can be fundamental to understand conservation issues (by mapping which ferns and lycophytes are being used by human populations, which could lead to further investigations to wheter they are being over exploited or not), potential economic uses (through the knowledge of how each species is used, giving clues about which economic potentials they have for more specific investigations) , factors that make the species culturally important (leading to more specific ethnical and ethnobotanical studies), and how their uses have changed over time (with the observation of historical data and present registers). Our data compilation is also essential to understand the knowledge gaps on the subject.

Materials and Methods

Bibliographic research and data collection

The research methodology was a literature review, which consists of searches for treated material, such as books and scientific papers, and allows the research to be carried out broadly through time and territory (Gil 2008), enabling this analysis at the national level and through history. Data collection occurred between March 2020 and December 2021, during which time it was not possible to collect field data or visit local libraries which were closed due to the COVID-19 pandemic. Thus, the consultations were carried out through the internet and in materials available in the authors' personal collections, as well as in local libraries who granted us access.

The research was carried out through searches in the virtual databases Scielo (2022), LILACS (2022) and Scopus (2022), chosen because of the open data access, easier navigation, and amount of brazilian publications they present. In total, 21 different search terms were used (Ethnobotany, Ethnobotany Brazil Ferns, Ethnobotany ferns, Ethnobotany fern, Ornamental ethnobotany, Edible plants ethnobotany, Indigenous ethnobotany, Pteridophyte ethnobotany, Quilombola ethnobotany, Urban ethnobotany, Ornamental plants, Edible plants Brazil, Candomblé plants, Ethnobotanical plants Brazil, Plants of religious use, Medicinal plants Brazil, Ornamental plants Brazil, Ritual plants Brazil, Umbanda plants, Useful plants Brazil, Ornamental ferns and lycophytes), searched both in Portuguese and English. We considered works published until December 31, 2021, with no starting limit for the period of publication of the sources, as this study looked for data throughout the entire Brazilian history as they were found in the scope of search. Sources were selected if they included data recorded for the Brazilian territory, at least one species of pteridophyte and at least one category of use for these, even when unspecified (*e.g.,* "others"). Primary data works and bibliographic reviews were collected, considering that the data of the reviews did not overlap with those of other primary data sources. For each review, a rigorous check was carried out in order to respect this condition. The sources are listed in Table 1.

Data processing and complementation

The selected works include those exclusively about pteridophytes and those on general data including other vascular plants. All species found in the sources were counted to carry out a comparative analysis of uses between pteridophytes and other groups, verifying the proportion in which the former appeared in the sources. The pteridophyte species were reviewed in greater detail over the factors surrounding them: origin (native or exotic), ethnobotanical uses, occurrence of species in nature, and human groups that use them. Pteridophyte records were compiled in Table 2, unconfirmed taxa are being given in Table 3.

Ethnobotanical uses and human groups who use them were recorded directly from the sources. Geographic distribution data included data from the sources (to determine the places where species were recorded as used) and data on the natural occurrence of plants in Brazilian territory and their origin were obtained from the FFB (2022, continuously updated). Information on conservation and chemical composition were recorded when available on the sources and consulted in articles and complementary books when necessary and available, to complement the literature review data in the discussion of this article. Documentary data was also collected when available to complement data in the discussion. It differs from bibliographic data because it observes materials with no analytical treatment (such as legislation, reports, websites, and others) (Gil 2008).

Ethnobotanical uses were categorized using the authors' descriptions. To quantify and analyze the different uses, they were labeled as medicinal, ornamental, potentially ornamental, ritualistic, food, other (citations of other infrequent or inconsistent uses) and not informed/not specified by the authors. The creation of a category for potentially ornamental species was necessary due to imprecise citations from the six volumes of Pio Corrêa's work (1926, 1931, 1952, 1969, 1974, 1975). The author groups species under their popular names and sometimes describes all plants under that popular name as ornamental, rather than doing it for each species individually, as in other citations. These species were most likely mentioned for their potential, sometimes as a personal opinion of the author, without confirmation of use by the population. Medicinal uses were sub-categorized under the 11th Revision of the International Classification of Diseases - ICD-11 (World Health Organization - WHO 2019) and counted. Species cited as toxic were also recorded for discussion.

To ensure taxonomic data was correct, selected sources had to use at least one type of systematic review in their methodologies: consultation with specialists, herbarium reviews or through herbarium materials, or review through specialized literature. Popular names were transcribed according to the authors' records in the sources and included in the analyses.

Table 1. Sources gathered through the bibliographical review. * = Sources that refer to data collected prior to the year 2000, even if the source was published after that. ** = Review sources with data from both before and after the year 2000.

Nº	Year	Title	Authors
1	2021	What's in a name? Revisiting medicinal and religious plants at an Amazonian market	Geertsma IP, Françozo M, Van Andel T, Rodríguez MA
2	2021	Temporal assessment of the medicinal plants trade in public markets of the state of Paraíba, northeastern Brazil	Ferreira EC, Lucena RFP, Bussmann RW, Paniagua-Zambrana NY, Cruz DD
3	2021	The role of schools as an opportunity for transmission of local knowledge about useful Restinga plants: experiences in southeastern Brazil	Van Luijk N, Soldati GT, Fonseca-Kruel VS
4	2021	"Not just useless bush": food culture and spontaneous plants in the Jequitinhonha Valley, Minas Gerais/Brazil	Silva LHP, Costa FN, Murta NMG
5	2021	Comparing ethnobotanical knowledge of medicinal plants between community health workers and local experts in the "Mata da Paraíba" zone, northeastern Brazil	Maia ACP, Ferreira EC, Lucena CM, Sousa AS, Cruz DD, Lucena RFP
6	2021	Gender differences in plant use knowledge within a traditional fishing community in northeastern Brazil	Tng DYP, Apgaua DMG, Lisboa MDS, El-Hani CN
7	2020	Plantas medicinais usadas em uma comunidade do Noroeste do Rio Grande do Sul, Brasil	Bremm N, Ramos RF, Nilles JH, Pivetta CP, Pelegrin CMG
8	2020	Plantas medicinais e ritualísticas dos Kaiowá do Tekoha Taquara como contribuição para a demarcação da terra ancestral, Mato Grosso do Sul, Brasil	Million JL, Veron V, Vilharva KN, Cáceres NV, Oliveira RC
9	2020	Conhecimento etnobotânico de moradores do Sítio Histórico de Olinda, Patrimônio Natural e Cultural da Humanidade	Santos EA, Andrade LHC
10	2020	Participatory methods on the recording of traditional knowledge about medicinal plants in Atlantic forest, Ubatuba, São Paulo, Brazil	Sauini T, Fonseca-Kruel VS, Yazbek PB, Matta P, Cassas F, Cruz C, Barretto EHP, Santos MA, Gomes MAS, Garcia RJF, Honda S, Passero LFD, Conde BE, Rodrigues E
11	2019	Uso místico, mágico e medicinal de plantas nos rituais religiosos de Candomblé no agreste alagoano	Sátiro LN, Vieira JH, Rocha DF
12	2019	Knowledge and Use of the Flora in a Quilombola Community of Northeastern Brazil	Santos JA, Silveira AP, Gomes VS
13	2019	Plantas Medicinais de Uso Popular na Comunidade Quilombola de Piracanjuba - Ana Laura, Piracanjuba, GO	Guimarães BO, Oliveira AP, Morais IL
14	2019	Ethnomedicinal Plants Used for the Treatment of Cardiovascular Diseases by Healers in the Southwestern State of Paraná, Brazil, and Their Validation Based on Scientifc Pharmacological Data	Menetrier JV, Bonkoski VR, Medeiros KA, Estevan DA, Palozi RAC, Lívero FAR, Velasquez LG, Lourenço ELB, Junior AG
15	2019	Levantamento etnobotânico de plantas medicinais comercializadas no município de Buriticupu	Colacio DS, Cajaiba RL, Sousa LA, Martins JSC, Sousa ES
16	2018	Estudo etnobotânico em comunidades rurais de Sinop, Mato Grosso, Brasil	Barreto MR, Spanholi ML
17	2018	Ethnobotany and regional knowledge: combining popular knowledge with the biotechnological potential of plants in the Aldeia Velha community, Chapada dos Guimarães, Mato Grosso, Brazil	Cavalheiro L, Guarim-Neto G

18	2018	Traditional Plants Used by Remaining Healers from the Region of Grande Dourados, Mato Grosso do Sul, Brazil	Coelho FC, Tirloni CAS, Marques AAM, Gasparotto FM, Lívero FAR, Junior AG
19	2017	Ethnobotanical study of medicinal plants used by Ribeirinhos in the North Araguaia microregion, Mato Grosso, Brazil	Ribeiro RV, Bieski IGC, Balogun SO, Martins DTO
20	2017	Ethnobotanical study of antimalarial plants in the middle region of the Negro River, Amazonas, Brazil	Tomchinsky B, Ming LC, Kinupp VF, Hidalgo AF, Chaves FCM
21	2017	Each person has a science of planting: plants cultivated by quilombola communities of Bocaina, Mato Grosso State, Brazil	Santos TAC, Barros FB
22	2017	Medicinal plants in the family farms of rural areas in southern Brazil: ecological and ethnobotanical aspects	Fernandes P, Boff P
23	2017	Conhecimento sobre plantas medicinais por mulheres em processo de envelhecimento	Schiavo M, Gelatti GT, Oliveira KR, Bandeira VAC, Colet CF
24	2017	Agrobiodiversity and in situ conservation in quilombola home gardens with different intensities of urbanization	Ávila JVC, Mello AS, Beretta ME, Trevisan R, Fiaschi P, Hanazaki N
25	2017	Local ecological knowledge and its relationship with biodiversity conservation among two Quilombola groups living in the Atlantic Rainforest, Brazil	Conde BE, Ticktin T, Fonseca AS, AL Macedo, Orsi TO, Chedier LM, Rodrigues E, Pimenta DS
26	2017	Culture-Bound Syndromes of a Brazilian Amazon Riverine population: Tentative correspondence between traditional and conventional medicine terms and possible ethnopharmacological implications	Pagani E, Santos JFL, Rodrigues E
27	2016	Plantas medicinais referenciadas por raizeiros no município de Jataí, estado de Goiás	Souza LF, Dias RF, Guilherme FAG, Coelho CP
28	2016	Ethnobotany and antioxidant evaluation of commercialized medicinal plants from the Brazilian Pampa	Teixeira MP, Cruz L, Franco JL, Vieira RB, Stefenon VM
29	2016	Anthropogenic impact on a protected area, Rio Doce Park	Rogério ITS, Conde BE, Siqueira AM, Chedier LM, Pimenta DS
30	2016	Medicinal plants at Rio Jauaperi, Brazilian Amazon: Ethnobotanical survey and environmental conservation	Pedrollo CT, Kinupp VF, Shepard Jr G, Heinrich M
31	2015	Do ferns and lycophytes function as medicinal plants? A study of their low representation in traditional pharmacopoeias	Reinaldo RCPS, Santiago ACP, Medeiros PM, Albuquerque UP
32	2015	Diversidade e equitabilidade de Plantas Alimentícias Não Convencionais na zona rural de Viçosa, Minas Gerais, Brasil	Barreira TF, Paula Filho GX, Rodrigues VCC, Andrade FMC, Santos RHS, Priore SE, Pinheiro-Sant'ana HM
33	2015	Inventory and Implications of Plant Use for Environmental Conservation in Visconde de Mauá, Serra da Mantiqueira, Brazil	Quinteiro MMC, Tamashiro AMG, Santos MG, Pinto LJS, Moraes MG
34	2015	Ethnobotanical study of plants used for therapeutic purposes in the Atlantic Forest region, Southern Brazil	Tribess B, Pintarelli GM, Bini LA, Camargo A, Funez LA, Gasper AL, Zeni ALB
35	2015	Ethnobotanical study of medicinal plants by population of Valley of Juruena Region, Legal Amazon, Mato Grosso, Brazil	Bieski IGC, Leonti M, Arnason JT, Ferrier J, Rapinski M, Violante IMP, Balogun SO, Pereira

			JFCA, Figueiredo RCF, Lopes CRAS, Silva DR, Pacini A, Albuquerque UP, Martins DTO
36	2014	Potencial terapêutico e uso de plantas medicinais em uma área de Caatinga no estado do Ceará, nordeste do Brasil	Ribeiro DA, Macedo DG, Oliveira LGS, Saraiva ME, Oliveira SF, Souza MMA, Menezes IRA
37	2014	Conhecimento botânico medicinal sobre espécies vegetais nativas da caatinga e plantas espontâneas no agreste da Paraíba, Brasil	Cordeiro JMP, Felix LP
38	2014	Uso popular de plantas medicinais e perfil socioeconômico dos usuários: um estudo em área urbana em Ouro Preto, MG, Brasil	Messias MCTB, Menegatto MF, Prado ACC, Santos BR, Guimarães MFM
39	2014	Plantas ornamentais em quintais urbanos de Rio Branco, Brasil	Siviero A, Delunardo TA, Haverroth M, Oliveira LC, Roman ALC, Mendonça AMS
40	2014	Women's ethnomedicinal knowledge in the rural community of São José da Figueira, Durandé, Minas Gerais, Brazil	Tuler AC, Silva NCB
41	2014	Species with medicinal and mystical-religious uses in São Francisco do Conde, Bahia, Brazil: a contribution to the selection of species for introduction into the local Unified Health System	Almeida MZ, Léda PHO, Da Silva MQOR, Pinto A, Lisboa M, Guedes MLML, Peixoto AL
42	2014	Ethno-medicinal study of plants used for treatment of human ailments, with residents of the surrounding region of forest fragments of Paraná, Brazil	Bolson M, Hefler SR, Chaves EIDO, Junior AG, Junior ELC
43	2013	Traditional botanical knowledge of artisanal fishers in southern Brazil	Baptista MM, Ramos MA, Albuquerque UP, Coelho-de-Souza G, Ritter MR
44	2013	Potencial de uso dos recursos vegetais em uma comunidade rural no semiárido potiguar	Roque AA, Loiola MIB
45	2012	Medicina popular em Mandaguaçu, Estado do Paraná: uma abordagem etnobotânica	Furlanetto PNC, Novakowski GC, Correa EA
46	2012	Intracultural Variation in the Knowledge of Medicinal Plants in an Urban-Rural Community in the Atlantic Forest from Northeastern Brazil	Almeida CFCBR, Ramos MA, Silva RRV, Melo JG, Medeiros MFT, Araujo TAS, Almeida ALS, Amorim ELC, Alves RRN, Albuquerque UP
47	2012	Observations on the therapeutic practices of riverine communities of the Unini River, AM, Brazil	Santos JFL, Pagani E, Ramos J, Rodrigues E
48	2012	An ethnomedicinal survey on phytotherapy with professionals and patients from Basic Care Units in the Brazilian Unified Health System	Oliveira SGD, Moura FRR, Demarco FF, Nascente PS, Del Pino FAB, Lund RG
49	2012	Ethnopharmacology of Medicinal Plants of the Pantanal Region (Mato Grosso, Brazil)	Bieski IGC, Santos FR, Oliveira RM, Espinosa MM, Macedo M, Albuquerque UP, Martins DTO
50	2011	Etnobotânica de Plantas Medicinais no Assentamento Monjolinho, município de Anastácio, Mato Grosso do Sul, Brasil	Cunha SA, Bortolotto IM
51	2011	Etnobotânica e urbanização: conhecimento e utilização de plantas de restinga pela comunidade nativa do distrito do Campeche (Florianópolis, SC)	Gandolfo ES, Hanazaki N
52	2011	Abordagem etnobotânica na comunidade de Conceição-Açu. Mato Grosso, Brasil	Corette-Pasa M
53	2011	Levantamento etnobotânico de plantas medicinais em área de caatinga no município de São José de Espinharas, Paraíba, Brasil	Marinho MGV, Silva CC, Andrade LHC

54	2011	Plantas medicinais utilizadas pela comunidade do bairro dos Tenentes - município de Extrema, MG, Brasil	Costa VP, Mayworm MAS
55	2011	Levantamento etnobotânico de plantas medicinais utilizadas pelos moradores do povoado de Manejo, Lima Duarte - MG	Oliveira ER, Menini Neto L
56	2011	O uso de plantas medicinais em uma comunidade rural de Mata Atlântica – Nova Rússia, SC	Zeni ALB, Bosio F
57	2011	Dynamics of medicinal plants knowledge and commerce in an urban ecosystem (Pernambuco, Northeast Brazil)	Monteiro JM, Ramos MA, Araújo EL, Amorim ELC, Albuquerque UP
58	2010	Levantamento etnobotânico de plantas utilizadas como anti-hiperlipidêmicas e anorexígenas pela população de Nova Xavantina-MT, Brasil	Silva MAB, Melo LVL, Ribeiro RV, Souza JPM, Lima JCS, Martins DTO, Silva RM
59	2010	Quintais urbanos de Mirassol D'Oeste-MT, Brasil: uma abordagem etnobotânica	Carniello MA, Silva RS, Cruz MAB, Guarim-Neto G
60	2010	Limitações ao uso de espécies florestais nativas podem contribuir com a erosão do conhecimento ecológico tradicional e local de agricultores familiares	Zuchiwschi E, Fantini AC, Alves AC, Peroni N
61	2010	Local knowledge on medicinal plant gardens in a rural community near the Atlantic Rain Forest, southeastern Brazil	Christo AG, Guedes-Bruni RR, Silva AG
62	2010	Local knowledge of medicinal plants in three artisanal fishing communities (Itapoá, Southern Brazil), according to gender, age, and urbanization	Merétika AHC, Peroni N, Hanazaki N
63	2010	Ethnopharmacological study of medicinal plants used in Rosário da Limeira, Minas Gerais, Brazil	Oliveira HB, Kffuri CW, Casali VWD
64	2010	Uso e diversidade de plantas medicinais da Caatinga na comunidade rural de Laginhas, município de Caicó, Rio Grande do Norte (nordeste do Brasil)	Roque AA, Rocha RM, Loiola MIB
65	2010	Use and knowledge of plants by ''Quilombolas'' as subsidies for conservation efforts in an area of Atlantic Forest in Espírito Santo State, Brazil	Crepaldi MOS, Peixoto AL
66	2010	Plantas medicinais e seus usos na comunidade da Barra do Jucu, Vila Velha, ES	Albertasse PD, Thomaz LD, Andrade MA
67	2010	A comparison of knowledge about medicinal plants for three rural communities in the semi-arid region of northeast of Brazil	Almeida CFCBR, Ramos MA, Amorim ELC, Albuquerque UP
68	2010	Ethnopharmacological survey among migrants living in the Southeast Atlantic Forest of Diadema, São Paulo, Brazil	Garcia D, Domingues MV, Rodrigues E
69	2009	Species composition and plant use in old urban homegardensin Rio Claro, Southeast of Brazil	Eichemberg MT, Amorozo MCM, Moura LC
70	2009	Usos múltiplos de plantas do cerrado: um estudo etnobotânico na comunidade sítio pindura, Rosário Oeste, Mato Grosso, Brasil	Moreira DL, Guarim-Neto G
71	2009	Urban ethnobotany in Petrópolis and Nova Friburgo (Rio de Janeiro, Brazil)	Leitão F, Fonseca-Kruel VS, Silva IM, Reinert F
72	2009	Levantamento das pteridófitas ornamentais na cidade de Salvador, Bahia	Macedo TS, Nonato FR
73	2009	Levantamento etnobotânico de plantas popularmente utilizadas como antiúlceras e antiinflamatórias pela comunidade de Pirizal, Nossa Senhora do Livramento-MT, Brasil	Jesus NZT, Lima JCS, Silva RM, Espinosa MM, Martins DTO
74	2009	Medicinal plants used by "Passo da Ilha" rural community in the city of Pato Branco, southern Brazil	Marchese JA, Ming LC, Franceschi L, Camochena RC, Gomes GDR, Paladini MV, Capelin D, Marchese CF

75	2009	O conhecimento sobre os recursos vegetais alimentares em bairros rurais no Vale do Paraíba, SP, Brasil	Pilla MAC, Amorozo MCM
76	2008	Espécies de restinga conhecidas pela comunidade do Pântano do Sul, Florianópolis, Santa Catarina, Brasil	Melo S, Lacerda VD, Hanazaki N
77	2008	Plantas de uso medicinal em Quissamã, Rio de Janeiro, Brasil	Boscolo OH, Valle LS
78	2008	Plantas medicinais comercializadas no Mercado Municipal de Campo Grande-MS	Ustulin M, Figueiredo BB, Tremea C, Pott A, Pott VJ, Bueno NR, Castilho RO
79	2007	Plantas medicinais e ritualísticas vendidas em feiras livres no Município do Rio de Janeiro, RJ, Brasil: estudo de caso nas zonas Norte e Sul	Maioli-Azevedo V, Fonseca-Kruel VS
80	2007	Estudo etnobotânico junto à Unidade Saúde da Família Nossa Senhora dos Navegantes: subsídios para o estabelecimento de programa de fitoterápicos na Rede Básica de Saúde do Município de Cascavel (Paraná)	Negrelle RRB, Tomazzoni MI, Ceccon MF, Valente TP
81	2007	Estudo etnobotânico em duas comunidades rurais (Limeira e Ribeirão Grande) de Guaratuba (Paraná, Brasil)	Negrelle RRB, Fornazzari KRC
82	2007	Plants popularly used for losing weight purposes in Porto Alegre, South Brazil	Dickel ML, Rates SMK, Ritter MR
83	2006	Obtenção e uso das plantas medicinais no distrito de Martim Francisco, Município de Mogi-Mirim, SP, Brasil	Pilla MAC, Amorozo MCM, Furlan A
84	2006	Plantas medicinais e de uso religioso comercializadas em mercados e feiras livres no Rio de Janeiro, RJ, Brasil	Azevedo SKS, Silva IM
85	2006	Plantas medicinais utilizadas no município de Jupi, Pernambuco, Brasil	Teixeira SA, Melo JIM
86	2006	Levantamento etnobotânico das plantas utilizadas como medicinais pormoradores do bairro Ponta Grossa, Porto Alegre, Rio Grande do Sul,Brasil	Vendruscolo GS, Mentz LA
87	2006	Uso de recursos vegetais em comunidades rurais limítrofes à reserva biológica de Poço das Antas, Silva Jardim, Rio de Janeiro: estudo de caso na Gleba Aldeia Velha	Christo AG, Guedes-Bruni RR, Fonseca-Kruel VS
88	2006	Medicinal and poisonous diversity of the flora of “Cariri Paraibano”, Brazil	Agra MF, Baracho GS, Nurit K, Basílio IJLD, Coelho VPM
89	2005	Estudo etnobotânico na comunidade de Conceição-Açu (alto da bacia do rio Aricá Açu, MT, Brasil)	Corette-Pasa M, Soares JJ, Neto GG
90	2005	Estudo da concordância das citações de uso e importância das espécies e famílias utilizadas como medicinais pela comunidade do bairro Ponta Grossa, Porto Alegre, RS, Brasil	Vendruscolo GS, Mentz LA
91	2004	Etnobotânica nordestina: estudo comparativo da relação entre comunidades e vegetação na Zona do Litoral - Mata do Estado de Pernambuco, Brasil	Silva ARJ, Andrade LHC
92	2004	Os quintais caiçaras, suas características sócio-ambientais e perspectivas para a Comunidade do Saco do Mamanguá, Paraty-RJ	Garrote V
93	2003	Plantas medicinais comercializadas por raizeiros no Centro de Campo Grande, Mato Grosso do Sul	Nunes GP, Silva MF, Resende UM, Siqueira JM
94	2002	Plantas usadas como medicinais no município de Ipê, RS, Brasil	Ritter MR, Sobierajski GR, Schenkel EP, Mentz LA
95	2002	Uso e conservação de plantas e animais medicinais no estado de Pernambuco (Nordeste do Brasil): um estudo de caso	Almeida CFCBR , Albuquerque UP
96	2002	Plantas medicinais do Município de Dom Pedro de Alcântara, Estado do Rio Grande do Sul, Brasil: Espécies, famílias e usos em três grupos da população humana	Marodin SM, Baptista LRDM
97	2001	Uso e diversidade de plantas medicinais em Santo Antônio do Leverger, MT, Brasil	Amorozo MCM

98	2001	Levantamento de dados sobre plantas medicinais de uso popular no município de São João do Polêsine, RS, Brasil. I - Relação entre enfermidades e espécies utilizadas	Dorigoni PA, Ghedini PC, Froes LF, Baptista KC, Ethur ABM, Baldisserotto B, Bürger ME, Almeida CE, Lopes AMV, Záchia RA
99	2001	Plantas comercializadas como medicinais no Município de Barra do Piraí, RJ	Parente CET, Rosa MMT
100	2001	Etnobotânica Xucuru: espécies místicas	Silva VA, Andrade LHC
101*	1989	Plantas medicinais de Minas Gerais, Brasil	Grandi TSM, Trindade JA, Pinto MJF, Ferreira LL, Catella AC
102*	1985	Plantas utilizadas em rituais afro-brasileiros no estado do Rio de Janeiro - um ensaio etnobotânico	Guedes RR, Profice SR, Costa EL, Baumgratz JFA, Lima HC
103*	1983	Folk medicine of Alter do Chão, Pará, Brazil	Branch LC, Da Silva MF
104*	1975	Dicionário das plantas úteis do brasil e das exóticas cultivadas - Volume VI	Pio Corrêa M
105*	1974	Dicionário das plantas úteis do brasil e das exóticas cultivadas - Volume V	Pio Corrêa M
106*	1969	Dicionário das plantas úteis do brasil e das exóticas cultivadas - Volume IV	Pio Corrêa M
107*	1952	Dicionário das plantas úteis do brasil e das exóticas cultivadas - Volume III	Pio Corrêa M
108*	1931	Dicionário das plantas úteis do brasil e das exóticas cultivadas - Volume II	Pio Corrêa M
109*	2008	Other medicinal plants and botanical products from the first edition of the Brazilian Official Pharmacopoeia	Brandão MGL, Zanetti NNS, Oliveira GRR, Goulart LO, Monte-Mor RLM
110*	2006	Medicinal plants and other botanical products from the Brazilian Official Pharmacopoeia	Brandão MGL, Cosenza GP, Moreira RA, Monte-Mor RLM
111*	1926	Dicionário das plantas úteis do brasil e das exóticas cultivadas - Volume I	Pio Corrêa M
112*	2016	História das Plantas Úteis e Medicinais do Brasil	Peckolt T, Peckolt G (*org.),* Paula-Souza J, Brandão MGL
113*	2015	Exchange of useful plants between Brazil and England in the second half of the nineteenth century: Glaziou and the botanists of the Royal Botanic Gardens, Kew	Brito MR, Lughadha EN, Duarte LFD, Senna-Valle L
114*	2010	Identificação de termos oitocentistas relacionados às plantas medicinais usadas no Mosteiro de São Bento do Rio de Janeiro, Brasil	Medeiros MFT, Andreata RHP, Valle LS
115*	2017	Plants from the Brazilian Traditional Medicine: species from the books of the Polish physician Piotr Czerniewicz (Pedro Luiz Napoleão Chernoviz, 1812–1881)	Ricardo LM, Paula-Souza J, Andrade A, Brandão MGL
116*	2015	Useful Brazilian plants listed in the manuscripts and publications of the Scottish medic and naturalist George Gardner (1812–1849)	Fagg CW, Lughadha EN, Milliken W, Hind DJN, Brandão MGL
117*	2020	Marcgrave and Piso's plants for sale: The presence of plant species and names from the Historia Naturalis Brasiliae (1648) in contemporary Brazilian markets	Rodríguez MA, Geertsma IP, Françozo M, Van Andel T
118*	2006	Brazilian plants with possible action on the central nervous system—A study of historical sources from the 16th to 19th century	Giorgetti M, Negri G, Rodrigues E
119**	2018	Lista preliminar das plantas alimentícias nativas de Mato Grosso do Sul, Brasil	Bortolotto IM, Damasceno-Junior GA, Pott A

120**	2016	Toxicidade de espécies vegetais	Campos SC, Silva CG, Campana PRV, Almeida VL
121**	2011	Plantas com possível atividade hipolipidêmica: uma revisão bibliográfica de livros editados no Brasil entre 1998 e 2008	Pizziolo VR, Brasileiro BG, Oliveira TT, Nagem TJ
122**	2006	Plantas utilizadas na medicina popular brasileira com potencial atividade antifúngica	Fenner R, Betti AH, Mentz LA, Rates SMK
123**	2003	Recursos medicinais de espécies do cerrado de Mato Grosso: um estudo bibliográfico	Neto GG, Morais RG
124**	1997	Pteridófitas Medicinais	Barros ICL, Andrade LHC

Table 2. Pteridophyte species with related ethnobotanical uses. "Cited as" refers to species that were only cited as other names, and "Also cited as" to those cited as their accepted name and also other ones. Use categories - M = Medicinal; O = Ornamental; PO = Potentially ornamental; R = Ritualistic; F = Food; OtCt = Others, cultivated; OtCm = Others, commercialized in markets; OtCh = Others, with described chemical compounds; OtAp = Others, aphrodisiac; OtPs = Others, planting substrates; OtSt = Others, stuffing; OtPd = Others, pharmacies drying; OtFe = Others, fertilizing; OtAt = Others, artisanal; OtAr = Others, aromatic; OtVe = Others, veterinary; OtHa = Others, hallucinogen; OtBr = Others, manufacturing brandy; OtSp = Others, manufacturing smoking pipes; OtFu = Others, fuel; OtSm = Others, smoking; OtGl = Others, glass production; NI = Not-informed. Origin according to the FFB (2022) - N = Native; E = Exotic; C = Cultivated exotic; NA = Naturalized exotic.

Family/Species	Popular name	Source	Nº of cits.	Use cits.	Origin
Anemiaceae					
Anemia adiantifolia (L.) Sw.	Feto	107	1	PO (1)	E
Anemia blechnoides Sm. (cited as *Aneimia radicans* Raddi)	Feto	107	1	PO (1)	N
Anemia buniifolia (Gardner) T. Moore	Feto	107	1	PO (1)	N
Anemia collina Raddi	Feto	107	1	O (1), OtCt (1)	N
Anemia elegans (Gardner) C.Presl	Feto	107	1	PO (1)	N
Anemia ferruginea var. *ahenobarba* (Christ) Mickel (cited as *Aneimia ahenobarba* Christ)	Feto	107	1	PO (1)	N
Anemia gardneri Hook.	Feto	107	1	PO (1)	N
Anemia glareosa Gardner	Feto	107	1	PO (1)	N
Anemia hirsuta (L.) Sw. (also cited as *Aneimia filiformis* Sw.)	Feto	107, 107	2	PO (2)	N
Anemia hirta (L.) Sw.	Feto	107	1	PO (1)	N
Anemia hispida Kunze (cited as *Aneimia heterodoxa* Christ)	Feto	107	1	PO (1)	N
Anemia humilis (Cav.) Sw.	Feto	107	1	PO (1)	N
Anemia lanuginosa Bong. ex J.W.Sturm	Feto	107	1	PO (1)	N
Anemia mandiocana Raddi	Feto	107	1	PO (1)	N
Anemia millefolia (Gardner) C.Presl	Feto	107	1	PO (1)	N
Anemia nervosa Pohl (cited as *Aneimia ouropretana* Christ)	Feto	107	1	PO (1)	N
Anemia oblongifolia (Cav.) Sw. (also cited as *Aneimia ulei* Christ)	Feto	107, 107	2	PO (2)	N
Anemia phyllitidis (L.) Sw. (cited as *Aneimia phyllitides* Sw.)	Avenca-de-espiga, feto, pluma-de-cacho	107, 124	2	M (1), PO (1)	N
Anemia phyllitidis var. *fraxinifolia* (Raddi) Hassl. (also cited as *Aneimia fraxinifolia* Raddi, *Aneimia langsdorfiana* C.Presl)	Avenca-de-espiga, feto	107, 111, 112	3	M (2), PO (1)	N
Anemia phyllitidis var. *tweedieana* (Hook.) Hassl. (cited as *Aneimia tweediana* Hook.)	Feto	107	1	PO (1)	N
Anemia pyrenaea Taub.	Feto	107	1	PO (1)	N

Anemia tomentosa (Sav.) Sw. (also cited as *Aneimia fulva* (Cav.) Sw.)	Espiga-de-ferrugem, feto	107, 112	2	M (1), PO (1)	N
Anemia tomentosa var. *anthriscifolia* (Schrad.) Mickel (cited as *Aneimia anthriscifolia* Schrad.)	Feto	107	1	PO (1)	N
Aspleniaceae					
Asplenium abscissum Willd.	Douradinha	108	1	NI (1)	N
Asplenium alatum Humb. & Bonpl. ex Willd.	Feto	107	1	PO (1)	N
Asplenium angustum Sw.	Feto	107	1	PO (1)	N
Asplenium auritum Sw. (also cited as *Asplenium sulcatum* Lam.)	Douradinha, samambaia-douradinha	104, 108, 124	3	M (1), NI (2)	N
Asplenium brasiliense Sw. (cited as *Scolopendrium brasiliense* (Sw.) Fisch. ex Kunze)	Feto	107	1	PO (1)	N
Asplenium cuneatum Lam.	Samambaia	104	1	NI (1)	N
Asplenium formosum Willd.	Avenca-mirim, feto	100, 107	2	PO (1), R (1)	N
Asplenium gastonis Fée (cited as *Asplenium divergens* Mett.)	Avenca	111	1	OtCt (1)	N
Asplenium hallii Hook.	Feto	107	1	PO (1)	N
Asplenium jucundum Fée	Douradinha	108	1	NI (1)	N
Asplenium lunulatum Sw.	Samambaia-mirim	104, 112	2	M (1), NI (1)	E
Asplenium monanthes L.	Feto	107	1	M (1), PO (1)	N
Asplenium mucronatum C. Presl.	Feto	107	1	PO (1)	N
Asplenium nidus L.	Asplênio, asplênio-ninho-de-ave, esplênio, ninho-de-passarinho	69, 72	2	O (2)	E
Asplenium obtusifolium L.	Feto	107	1	PO (1)	E
Asplenium oligophyllum Kaulf. (also cited as *Asplenium camptocarpon* Fée)	Douradinha, feto	107, 108	2	PO (1), NI (1)	N
Asplenium praemorsum Sw.	Feto	107	1	PO (1)	N
Asplenium pseudonitidum Raddi	Feto	107	1	PO (1)	N
Asplenium pulchellum Raddi	Feto	107	1	PO (1)	N
Asplenium radicans L.	Douradinha	108	1	NI (1)	N
Asplenium salicifolium L.	Douradinha	108	1	NI (1)	N
Asplenium scandicinum Kaulf.	Avencão-da-serra	111	1	M (1)	N
Asplenium schwackei Christ	Douradinha	108	1	NI (1)	N
Asplenium serra Langsd. & Fisch.	Feto	107	1	PO (1)	N
Asplenium serratum L.	Feto-macho-do-Pará, rabo-de-azanata	107, 112, 124	3	M (3)	N

Asplenium trichomanes L.	Feto	107	1	M (1), O (1)	E
Asplenium uniseriale Raddi	Feto	107	1	PO (1)	N
Asplenium wacketii Rosenst.	Avencão-da-serra	112	1	M (1)	N
Hymenasplenium laetum (Sw.) L.Regalado & Prada (cited as *Asplenium laetum* Sw.)	Feto	107	1	PO (1)	N
Athyriaceae					
Athyrium filix-femina (L.) Roth	Douradinha	108	1	M (1), O (1), OtCt (1)	E
Diplazium cristatum (Desr.) Alston (cited as *Diplazium arboreum* (Willd.) C. Presl)	Feto	107	1	PO (1)	N
Diplazium riedelianum (Bong. ex Kuhn) C.Chr.	-	113	1	O (1)	N
Blechnaceae					
Blechnum asplenioides Sw.	Samambaia	104	1	NI (1)	N
Blechnum occidentale L.	Blecno, samambaia-da-palmeira	31, 124	2	M (2)	N
Neoblechnum brasiliense (Desv.) Gasper & V.A.O.Dittrich (cited as *Blechnum brasiliense* Desv.)	Samambaiaçu-do-brejo	104	1	NI (1)	N
Salpichlaena volubilis (Kaulf.) J.Sm. subsp. v*olubilis* (cited as *Blechnum volubile* Kaulf.)	Samambaia-de-trepar	104	1	NI (1)	N
Telmatoblechnum serrulatum (Rich.) Perrie, D.J.Ohlsen & Brownsey (cited as *Blechnum serrulatum* Rich.)	Avenca, blecno, samambaia	3, 91, 124	3	M (1), NI (2)	N
Culcitaceae					
Culcita coniifolia (Hook.) Maxon (cited as *Dicksonia coniifolia* Hook.)	Feto-grande	107	1	NI (1)	N
Cyatheaceae					
Alsophila capensis (L.f.) J.Sm. (cited as *Hemitelia capensis* (L.f.) Spreng.)	Samambaiaçu	104	1	NI (1)	N
Alsophila setosa Kaulf. (cited as *Cyathea leucosticta* Fée, *Hemitelia setosa* (Kaulf.) Mett.)	Samambaia, samambaiaçu	104, 104	2	NI (2)	N
Alsophila sternbergii (Sternb.) D.S.Conant (cited as *Cyathea caesariana* Christ)	Samambaiaçu	104	1	NI (1)	N
Cyathea arborea (L.) Sm.	Coqueiro-macho	108, 112	2	M (2), F (1), OtPs (1)	N

Cyathea atrovirens (Langsd. & Fisch.) Domin (cited as *Alsophila atrovirens* (Langsd. & Fisch.) C.Presl)	Pau-cardoso, samambaiaçu-do-brejo	104, 112	2	M (1), OtPs (1)	N
Cyathea corcovadensis (Raddi) Domin (also cited as *Alsophila corcovadensis* (Raddi) C.Chr., *Alsophila elegans* Mart., *Alsophila miersii* Hook., *Alsophila taenetis* (Roth.) Kunze)	Samambaiaçu, samambaia-assú	104, 104, 104, 104, 112	5	M (1), NI (4)	N
Cyathea delgadii Sternb. (also cited as *Cyathea vestita* Mart., *Cyathea schanschin* Mart.)	Fetos-arbóreos, pau-cardoso, rabo-de-bugio, samambaia, samambaiaçu, xaxim	31, 104, 104, 113	4	M (1), O (1), OtPs (1), NI (1)	N
Cyathea dichromatolepis (Fée) Domin (cited as *Alsophila dichromatolepis* Fée, *Alsophila arbuscula* Baker)	Samambaia, Samambaiaçu-do-brejo	104, 104	2	NI (2)	N
Cyathea glaziovii (Fée) Domin. (cited as *Alsophila glaziovii* Fée)	Samambaia	104	1	NI (1)	N
Cyathea leucofolis Domin (cited as *Alsophila leucolepsis* Mart.)	Samambaiaçu	104	1	NI (1)	N
Cyathea macrocarpa (C. Presl) Domin	-	113	1	O (1)	N
Cyathea microdonta (Desv.) Domin (also cited as *Alsophila armata* Mart., *Alsophila microdonta* (Desv.) Desv., *Trichipteris microdonta* (Desv.) Tryon.)	Feto-arborescente, pau-cardoso, rabo-de-bugio, rabo-de-macaco, samambaiaçu, xaxim-armado	95, 105, 105, 112, 112, 115, 117, 124	8	M (6), OtCm (1), NI (1)	N
Cyathea multiflora Sm. (cited as *Hemitelia multiflora* (Sm.) Spreng.)	Samambaia	104	1	NI (1)	N
Cyathea phalerata Mart. (also cited as *Alsophila goyazensis* Christ, *Alsophila paleolata* Mart.)	Fetos-arbóreos, samambaia, samambaiaçu	104, 104, 113	3	O (1), NI (2)	N
Cyathea praecincta (Kunze) Domin	-	113	1	O (1)	N
Cyathea pungens (Willd.) Domin (cited as *Alsophila infesta* Kunze, *Alsophila procera* (Willd.) Desv., *Alsophila pungens* (Willd.) C.Presl)	Pau-cardoso, samambaia	104, 104, 105	3	NI (3)	N
Cyathea surinamensis (Miq.) Domin (cited as *Sphaeropteris hirsuta* (Desv.) Tryon.)	Rabo-de-guariba	124	1	M (1)	N
Cyathea villosa Willd. (also cited as *Alsophila villosa* (Willd.) Desv.)	Samambaiaçu	104	1	NI (1)	N
Hemitelia apiculata Hook	Samambaia	104	1	NI (1)	E
Sphaeropteris gardneri (Hook.) R.M.Tryon (also cited as *Cyathea gardneri* Hook.)	Samambaia	104, 113	2	O (1), NI (1)	N
Davalliaceae					
Davallia fejeensis Hook. (also cited as *Davallia fijiensis* Diels)	Canela-de-veado, renda-portuguesa	9, 39, 69, 72, 92	5	O (5)	C

Dennstaedtiaceae					
Dennstaedtia cicutaria (Sw.) T.Moore	Feto-grande	107	1	NI (1)	N
Pteridium aquilinum s.l. (cited as *Pteridium aquilinum* (L.) Kuhn*, Pteridium caudatum* (L.) Maxon*, Pteris aquilina* var. *caudata* (L.) Hook.*, Pteridium arachnoideum* (Kaulf.) Maxon)	Avenca, avenca-pluma-grande, broto-de-samambaia, conambaia, feto-águia, samambaia, samambaia-das-queimadas, samambaia-das-roças, samambaia-das-taperas, samambaia-do-campo, samambaia-do-mato, samambaia-verdadeira	4, 22, 32, 33, 35, 38, 49, 56, 75, 77, 91, 96, 104, 104, 112, 117, 120, 123, 124	19	M (13), F (6), OtCm (1), OtCh (1), OtSt (1), OtFe (1), NI (1)	E
Desmophlebiaceae					
Desmophlebium lechleri (Mett.) Mynssen *et al.* (also cited as *Diplazium lechleri* (Mett.) T.Moore)	Feto	107	1	PO (1)	N
Dicksoniaceae					
Dicksonia sellowiana Hook.	Chachim, xaxim	22, 108	2	M (2), O (1), OtPs (1), OtFu (1)	N
Lophosoria quadripinnata (J.F.Gmel.) C.Chr. (cited as *Alsophila pruinata* Kaulf.)	Samambaia	104	1	NI (1)	N
Dryopteridaceae					
Arachniodes denticulata (Sw.) Ching (cited as *Dryopteris denticulata* (Sw.) Kuntze)	Feto	107	1	PO (1), OtCt (1)	N
Bolbitis aliena (Sw.) Alston (cited as *Leptochilus alienus* (Sw.) C. Chr.)	Feto	107	1	PO (1)	N
Ctenitis distans var. *isabellina* (Fée) R.S.Viveros & Salino (cited as *Dryopteris ctenitis* form. *isabellina* (Fée) C. Chr.)	Feto	107	1	PO (1)	N
Ctenitis flexuosa (Fée) Copel. (cited as *Dryopteris flexuosa* (Fée) C. Chr.)	Feto	107	1	PO (1)	N
Ctenitis submarginalis (Langsd. & Fisch.) Ching (cited as *Nephrodium caripense* Hook.)	Feto	107	1	PO (1)	N
Cyclodium heterodon (Schrad.) T.Moore (cited as *Dryopteris abbreviata* Kuntze, *Cyclodium heterodon* var. *abbreviatum* (C. Presl) A.R. Sm.)	Feto	107, 113	2	O (1), PO (1)	N
Cyrtomium falcatum (L. f.) C. Presl (cited as *Aspidium falcatum* Sw.)	Samambaia-japonesa	104	1	NI (1)	C

Dryopteris filix-mas (L.) Schott (also cited as *Nephrodium filix-mas* (L.) Rich.)	Denterrura, feto-macho, feto-macho-verdadeiro	107, 110, 112	3	M (3), OtCt (1), OtCh (1), OtSt (1), OtVe (1)	C
Dryopteris wallichiana (Spreng.) Hyl. (cited as *Dryopteris paleacea* Sw.)	Feto	107	1	PO (1)	N
Elaphoglossum apodum (Kaulf.) Schott	Feto	107, 124	2	M (1), PO (1)	E
Elaphoglossum aubertii (Desv.) T. Moore	Feto	107	1	PO (1)	E
Elaphoglossum decoratum (Kunze) T.Moore	Elaphoglossum	108	1	NI (1)	N
Elaphoglossum discolor (Kuhn) C.Chr. (cited as *Elaphoglossum juruenae* A.Samp.)	Elaphoglossum	108	1	NI (1)	N
Elaphoglossum erinaceum (Fée) T.Moore	Feto	107	1	O (1)	E
Elaphoglossum herminieri (Bory & Fée) T.Moore	Elaphoglossum	108	1	OtCt (1)	N
Elaphoglossum horridulum (Kaulf.) J.Sm.	Feto	107	1	PO (1)	N
Elaphoglossum laminarioides (Fée) T. Moore	Feto	107	1	PO (1)	N
Elaphoglossum lindeni (Bory ex Fée) T.Moore	Feto	107	1	PO (1)	N
Elaphoglossum lineare (Fée) T.Moore (cited as *Elaphoglossum gracile* (Fée) C.Chr.)	Feto	107	1	PO (1)	N
Elaphoglossum lingua (C.Presl) Brack.	Feto	107	1	PO (1)	N
Elaphoglossum muscosum (Sw.) T.Moore	Feto	107	1	PO (1)	N
Elaphoglossum ornatum (Mett. ex Kuhn) Christ	Elaphoglossum	108	1	NI (1)	E
Elaphoglossum paleaceum (Hook. & Grev.) Sledge (cited as *Elaphoglossum squamosum* J. Sm.)	Feto	107	1	PO (1)	E
Elaphoglossum piloselloides (C.Presl) T.Moore	Feto	107	1	PO (1)	N
Elaphoglossum plumosum (Fée) T. Moore	Elaphoglossum	108	1	NI (1)	N
Elaphoglossum rigidum (Aubl.) Urb. (cited as *Elaphoglossum flaccidum* (Fée) T.Moore)	Feto	107	1	PO (1)	N
Elaphoglossum squamipes (Hook.) T.Moore	Feto	107	1	PO (1)	N
Elaphoglossum tectum (Humb. & Bonpl. ex Willd.) T.Moore	Feto	107	1	PO (1)	N
Elaphoglossum ulei Christ	Elaphoglossum	108	1	NI (1)	N
Elaphoglossum viscidum (Fée) Christ	Elaphoglossum	108	1	NI (1)	N
Megalastrum connexum (Kaulf.) A. R. Sm. & R.C. Moran	Samambaia-da-queimada, samambaia-do-mato	42	1	M (1)	N
Megalastrum eugenii (Brade) A.R.Sm. & R.C.Moran (cited as *Dryopteris eugenii* Brade)	Feto	107	1	PO (1)	N
Mickelia guianensis (Aubl.) R.C. Moran, Sundue & Labiak (cited as *Leptochilus guianensis* (Aubl.) C.Chr.)	Feto	107	1	PO (1)	N

Mickelia nicotianifolia (Sw.) R.C.Moran, Labiak & Sundue (cited as *Leptochilus nicotianifolius* (Sw.) C.Chr.)	Feto	107	1	PO (1)	N
Polybotrya caudata Kunze	Cipó-de-coati, coati, feto	107	1	PO (1)	N
Polybotrya osmundacea Willd.	Feto	107	1	PO (1)	N
Rumohra adiantiformis (G.Forst.) Ching (also cited as *Polystichum adiantiforme* Smith., *Polystichum remotum* Fée, *Aspidium capense* Willd.)	Calaguala, davália-bola, feto, renda-francesa, samambaia, samambaia-mansa, samambaia-preta	51, 69, 72, 76, 107, 107, 111, 124	8	M (2), O (7)	N
Stigmatopteris prionites (Kunze) C.Chr.	-	113	1	O (1)	N
Stigmatopteris tyucana (Raddi) C.Chr. (cited as *Phegopteris tijuccana* Fée)	Feto	107	1	PO (1)	N
Equisetaceae					
Equisetum arvense L. (also cited as *Equisetum arvensis* L.)	Cavalinha, equiseto, rabo-de-cavalo	15, 16, 18, 40, 49, 68, 80, 84, 117, 123, 124	11	M (10), OtCm (1)	C
Equisetum giganteum L. (also cited as *Equisetum pyramidale* Goldm., *Equisetum xylochaetum* Mett., *Equisetum martii* Milde)	Bambuzinho, caninha-do-brejo, canna-de-jacaré, cavalinha, cavalinha-do-brejo, cavallinho, colla-de-cavalo, limpa-prata, lixa-vegetal, rabo-de-cavalo, rabo-de-lagarto	2, 11, 17, 22, 23, 29, 38, 50, 59, 74, 78, 82, 86, 90, 93, 96, 101, 108, 108, 108,111, 112, 112, 113, 117, 122, 124	27	M (23), O (2), OtCm (1), OtAt (1), OtGl (1), NI (2)	N
Equisetum hyemale L. (also cited as *Equisetum hiemale* L.)	Bambuzinho, cavalinha, cavalinha-de-horta, junco, taquarinha	7, 14, 19, 27, 29, 33, 34, 35, 42, 43, 54, 55, 56, 61, 62, 66, 71, 79, 83, 87, 117, 121	22	M (21), OtCm (1)	C
Equisetum ramosissimum Desf.	Cavallinha	108	1	NI (1)	E
Gleicheniaceae					
Dicranopteris flexuosa (Schrad.) Underw.	Gleiquênia, samambaia, samambaia-do-mato-virgem	31, 107, 124	3	M (2), O (1), OtCt (1)	N
Dicranopteris linearis (Burm.f.) Underw.	Gleiquênia, samambaia	107	1	M (1), O (1), F (1), OtCt (1), OtSt (1), OtFe (1), OtAt (1)	E

Gleichenella pectinata (Willd.) Ching (also cited as *Dicranopteris pectinata* (Willd.) Underw.)	Gleiquênia, gleiquênia-de-pente, samambaia, samambaia-cabeluda, samambaia-do-mato-virgem	31, 107, 112, 124	4	M (4), O (1), F (1), OtCt (1)	N
Sticherus bifidus (Willd.) Ching (also cited as *Dicranopteris bifida* (Willd.) Maxon)	Feto, samambaia-cabeluda	107, 112	2	M (1), PO (1)	N
Hemidictyaceae					
Hemidictyum marginatum (L.) C.Presl	Feto	107	1	O (1)	N
Hymenophyllaceae					
Didymoglossum reptans (Sw.) C.Presl (cited as *Trichomanes reptans* Sw.)	Carrapatinha	108	1	NI (1)	N
Hymenophyllum caudiculatum Mart.	Samambaia	104	1	NI (1)	N
Hymenophyllum crispum Kunth	Samambaia-rasteira	104	1	NI (1)	N
Hymenophyllum elegans Spreng. (also cited as *Hymenophyllum silveirae* Christ)	Samambaia	104, 104	2	NI (2)	N
Hymenophyllum fucoides (Sw.) Sw. (also cited as *Hymenophyllum vacilans* Christ)	Samambaia	104, 104	2	NI (2)	N
Hymenophyllum hirsutum (L.) Sw. (cited as *Hymenophyllum ciliatum* (Sw.) Sw.)	Samambaia	104	1	NI (1)	N
Hymenophyllum polyanthos (Sw.) Sw.	Himenófilo-polianto, samambaia	104, 124	2	M (1), NI (1)	N
Hymenophyllum rufum Fée	Samambaia	104	1	NI (1)	N
Hymenophyllum vestitum (C.Presl) Bosch (cited as *Hymenophyllum ulei* Christ)	Samambaia	104	1	NI (1)	N
Trichomanes elegans Rich.	Trichomanes-elegante	124	1	M (1)	N
Trichomanes pinnatum Hedw.	Trichomanes-pinado	124	1	M (1)	N
Trichomanes vittaria DC. ex Poir.	Língua-de-tucano	106, 124	2	M (1), NI (1)	N
Vandenboschia rupestris (Raddi) Ebihara & K.Iwats. (cited as *Trichomanes rupestre* Raddi)	Samambaia	104	1	NI (1)	N
Isoetaceae					
Isoetes martii A.Braun	Batatinha-d'água	111, 112	2	M (2)	N
Lindsaeaceae					
Lindsaea botrychioides A.St.-Hil.	Avenca	111	1	NI (1)	N

Lindsaea falcata Dryand.	Avenca	111	1	OtCt (1)	N
Lindsaea guianensis (Aubl.) Dryand. (cited as *Lindsaya guyanensis* Dryand.)	Feto	107	1	PO (1)	N
Lindsaea lancea (L.) Bedd. (also cited as *Adiantum lancea* L., *Lindsaya lancea* Bedd.)	Avenca, feto, lindsaia-lança	111, 124, 107	3	M (1), PO (1), NI (1)	N
Lindsaea macrophylla Kaulf. (cited as *Schizoloma macrophyllum* (Kaulf.) C. Presl)	Feto	107	1	PO (1)	N
Lindsaea pendula Klotzsch (cited as *Lindsaya pendula* Klotzsch)	Feto	107	1	PO (1)	E
Lindsaea sagittata (Aubl.) Dryand. (cited as *Schizoloma saggitatum* (Aubl.) Diels)	Feto	107	1	PO (1)	E
Lindsaea stricta (Sw.) Dryand. (cited as *Lindsaya stricta* (Sw.) Dryand.)	Feto	107	1	PO (1)	N
Lomariopsidaceae					
Cyclopeltis semicordata (Sw.) J.Sm.	Feto	107	1	PO (1)	N
Dracoglossum plantagineum (Jacq.) Christenh. (cited as *Tectaria plantaginea* (Jacq.) Maxon)	Feto	107	1	PO (1)	E
Lomariopsis japurensis (Mart.) J.Sm.	Rabo-ardente	124	1	M (1), OtHa (1)	N
Lycopodiaceae					
Austrolycopodium erectum (Philippi) Holub (cited as *Lycopodium fastigatum* var. *assurgens* R. Br., Fée)	Licopódio-do-Brasil	106	1	NI (1)	N
Diphasiastrum thyoides (Willd.) Holub (cited as *Lycopodium complanatum* L.)	Pinheirinho-de-sala	105	1	NI (1)	N
Huperzia catharinae (Christ) Holub (cited as *Lycopodium catharinae* Christ)	Pinheirinho-de-sala	105	1	NI (1)	N
Lycopodium clavatum L.	Colchão-de-pobre, floco-rasteiro, licopódio, licopódio-indígena, musgo, pé-de-lobo, proco-rasteiro	38, 101, 105, 110, 112, 122, 124	7	M (7), OtPd (2)	N
Palhinhaea cernua (L.) Franco & Vasc. (also cited as *Lycopodiella cernua* (L.) Pic. Serm.)	Licopódio, memby-jauja, palma-de-são-joão, pé-de-galinha, pé-de-lobo, pinheirinho, pinheirinho-de-sala, unha-de-gato	8, 38, 91, 101, 105, 112, 124	7	M (6), O (1), OtPd (1), OtVe (1), NI (1)	N
Phlegmariurus acerosus (Sw.) B.Øllg. (cited as *Urostachys acerosus* (Sw.) Herter ex Nessel)	Samambaia-de-pendurar	104	1	PO (1)	N

Phlegmariurus comans (Herter ex Nessel) B.Øllg. (cited as *Urostachys comans* Herter ex Nessel)	Samambaia-de-pendurar	104	1	PO (1)	N
Phlegmariurus dichotomus (Jacq.) W.H.Wagner (cited as *Urostachys dichotomus* (Jacq.) Herter)	Pinheirinho	105	1	NI (1)	N
Phlegmariurus erythrocaulon (Fée) B.Øllg. (cited as *Urostachys eritrocaulon* (Fée) Nessel)	Pinheirinho-de-sala	105	1	NI (1)	N
Phlegmariurus loefgrenianus (Silveira) B. Øllg. (cited as *Lycopodium leitzii* Nees.)	Licopódio-de-São-Paulo	106	1	NI (1)	N
Phlegmariurus mandiocanus (Raddi) B.Øllg. (cited as *Urostachys mandiocanus* (Raddi) Herter)	Pinheirinho	105	1	NI (1)	N
Phlegmariurus pungentifolius (Silveira) B. Øllg. (cited as *Lycopodium ouropretanum* Christ)	Pinheirinho	105	1	NI (1)	N
Phlegmariurus reflexus (Lam.) B.Øllg. (cited as *Lycopodium reflexum* Lam.)	Pinheirinho	105	1	NI (1)	N
Phlegmariurus sellowianus (Herter) B. Øllg. (cited as *Urostachys brasilianus* (Herter) Nessel)	Pinheirinho-de-sala	105	1	NI (1)	N
Phlegmariurus taxifolius (Sw.) A.Löve & D.Löve (cited as *Lycopodium taxifolium* var. *nitens* Poepp.)	Pinheirinho-de-sala	105	1	NI (1)	N
Pseudolycopodiella meridionalis (Underw. & Loyd) Holub (cited as *Lycopodium carolinianum* var. *meridionale* (Underw. & F.E. Lloyd) Nessel)	Pinheirinho-de-sala	105	1	NI (1)	N
Lygodiaceae					
Lygodium venustum Sw. (also cited as *Lygodium polymorphum* (Cav.) Kunth, *Lygodium hastatum* (Willd.) Desv.)	Abre-caminho, coentrão, herva-de-são-joão, samambaia, samambaia-cipó	11, 31, 37, 104, 106, 112, 117, 123	8	M (4), R (1), OtCm (1), NI (2)	N
Lygodium volubile Sw. (also cited as *Lygodium expansum* Desv.)	Abre-caminho, samambaia, samambaia-cipó, samambaia-de-trepar, segue-caminho	11, 25, 71, 79, 84, 102, 104, 104, 117	9	O (1), R (6), OtCm (1), NI (2)	N
Marattiaceae					
Danaea nodosa (L.) Sm. (cited as *Danaea eliptica* Sm.)	Feto	107	1	PO (1)	N
Eupodium kaulfussii (J.Sm.) J.Sm. (cited as *Maratia kalfussii* J. Sm. ex Hook.)	Samambaiaçu-do-brejo	104	1	O (1), NI (1)	N

Marattia cicutifolia Kaulf. (also cited as *Marattia verschaffeltiana* (de Vriese) Sturm, *Marattia cicutaefolia* Kaulf.)	Samambaia, samambaia-do-brejo	104, 104, 112, 113	4	M (1), O (1), OtSp (1), NI (2)	N
Marsileaceae					
Marsilea deflexa A.Braun	Trevo-d'água	112	1	M (1)	N
Marsilea polycarpa Hook. & Grev.	Trevo-de-quatro-folhas	104	1	NI (1)	N
Nephrolepidaceae					
Nephrolepis biserrata (Sw.) Schott	Avenca, escadinha-do-céu, feto, rabo-de-peixe, samambaia, samambaia-rabo-peixe	9, 58, 69, 72, 107, 124	6	M (2), O (3), PO (1), OtCt (1)	N
Nephrolepis brownii (Desv.) Hovenkamp & Miyam.	Avenca	9	1	O (1)	N
Nephrolepis cordifolia (L.) C. Presl	Avenca, escadinha-do-céu, feto, samambaia, samambaia-de-metro	9, 59, 92, 107, 124	5	M (1), O (4), OtCt (1)	N
Nephrolepis exaltata (L.) Schott	Feto, samambaia (fern), samambaia-americana, samambaia-de-boston, samambaia-espada	5, 12, 39, 69, 72, 107	6	M (1), O (5), OtCt (1)	N
Nephrolepis pectinata (Willd.) Schott	Samambaia	69	1	O (1)	N
Nephrolepis rivularis (Vahl) Mett. ex Krug	Feto	107	1	PO (1)	N
Oleandraceae					
Oleandra articulata (Sw.) C.Presl	Feto	107	1	PO (1)	N
Oleandra neriiformis Cav.	Feto	107	1	M (1), PO (1)	E
Ophioglossaceae					
Botrypus virginianus (L.) Michx. (also cited as *Botrychium virginianum* (L.) Sw.)	Língua-de-víbora-do-campo	106, 112	2	M (1), OtBr (1), NI (1)	N
Cheiroglossa palmata (L.) C.Presl (also cited as *Ophioglossum palmatum* L.)	Língua-de-víbora	106, 112	2	M (1), F (1), NI (1)	N
Ophioglossum reticulatum L.	Língua-de-víbora	106	1	NI (1)	N
Osmundaceae					
Osmunda spectabilis Willd. (cited as *Osmunda gracilis* Link.)	Feto	107	1	PO (1)	N

Osmundastrum cinnamomeum (L.) C.Presl (cited as *Osmundastrum cinnamomeum* subsp. *cinnamomeum* (L.) C.Presl)	Feto	107	1	PO (1), OtCt (1)	N
Polypodiaceae					
Alansmia cultrata (Bory ex Willd.) Moguel & M.Kessler (cited as *Polypodium cultratum* Bory ex Willd.)	Samambaia-de-pendurar	104	1	PO (1)	N
Campyloneurum angustifolium (Sw.) Fée (also cited as *Polypodium angustifolium* Sw.)	Feto, polipódio-angustifólio	107, 124	2	M (2), PO (1)	N
Campyloneurum decurrens (Raddi) C.Presl (cited as *Polypodium decurrens* Raddi)	Feto	107	1	PO (1)	N
Campyloneurum phyllitidis (L.) C.Presl (cited as *Polypodium phyllitidis* L.)	Feto, língua-de-serpente, polipódio-filititidio	107, 124	2	M (1), PO (1)	N
Campyloneurum rigidum Sm.	-	72	1	O (1)	N
Ceradenia albidula (Baker) L.E. Bishop (cited as *Polypodium rosentockii* Maxon, *Polypodium albidulum* Baker)	Feto, samambaia-de-pendurar	104, 107	2	PO (2)	N
Ceradenia capillaris (Desv.) L.E. Bishop (cited as *Polypodium capillare* Desv.)	Feto	107	1	PO (1)	N
Cochlidium furcatum (Hook. & Grev.) C.Chr.	Feto	107	1	PO (1)	N
Cochlidium punctatum (Raddi) L.E. Bishop	Mão-de-anjo, mão-de-deus	9	1	O (1)	N
Cochlidium serrulatum (Sw.) L.E. Bishop (cited as *Polypodium duale* Maxon., *Grammitis serrulata* (Sw.) Sw.)	Feto, polipódio-serreado	107, 124	2	M (1), PO (1)	N
Goniophlebium persicifolium (Desv.) Bedd. (also cited as *Polypodium persicifolium* Desv.)	Samambaia-de-metro	69, 72	2	O (2)	E
Goniophlebium subauriculatum (Blume) C. Presl (cited as *Polypodium subauriculatum* Blume)	Samambaia, samambaia-chorona, samambaia-de-pendurar, samamambaia-pendente	72, 104	2	O (2)	E
Lellingeria apiculata (Kunze ex Klotzsch) A.R.Sm. & R.C.Moran (cited as *Polypodium apiculatum* Kunze)	Feto	107	1	PO (1)	N
Lellingeria suspensa (L.) A.R.Sm. & R.C.Moran (cited as *Polypodium suspensum* L.)	Samambaia-de-pendurar	104	1	PO (1)	N
Melpomene moniliformis (Lag. ex Sw.) A.R.Sm. & R.C.Moran (cited as *Polypodium moniliforme* Lag. ex Sw.)	Feto	107	1	PO (1)	N
Melpomene pilosissima (M.Martens & Galeotti) A.R.Sm. & R.C.Moran (*Polypodium pilosissimum* M.Martens & Galeotti)	Feto	107	1	PO (1)	E

*Microgramma lycopodioide*s (L.) Copel. (also cited as *Polypodium lycopodioides* L.)	Feto, polipódio-escamoso, silvina-grande	107,112, 124	3	M (3), PO (1)	N
Microgramma megalophylla (Desv.) de la Sota (cited as *Polypodium megalophyllum* Desv.)	Feto	107	1	PO (1)	N
Microgramma percussa (Cav.) de la Sota (also cited as *Polypodium percussum* Cav.)	Feto-macho-de-Minas	107, 112	2	M (2)	N
Microgramma persicariifolia (Schrad.) C.Presl (cited as *Polypodium persicariaefolium* Schrad.)	Feto	107	1	PO (1)	N
Microgramma squamulosa (Kaulf.) de la Sota	Cipó-cabeludo, cipó-índio, sordinha	14, 33, 74, 98	4	M (4)	N
Microgramma vacciniifolia (Langsd. & Fisch.) Copel. (also cited as *Polypodium vacciniifolium* Langsd. & Fisch.)	Cipó-cabeludo, erva-de-passarinho-miúda, estanga-sangue, herva-silveira, herva-silvina, herva-teresa, salambaia, samambaia-grama, silvina	42, 66, 86, 90, 96, 100, 106, 112, 124	9	M (8), R (1)	N
Microsorum punctatum (L.) Copel.	Chifre-de-veado	69	1	O (1)	C
Microsorum scolopendria (Burm. f.) Copel. (also cited as *Phymatodes scolopendria* (Burm.f.) Ching, *Phymatosorus scolopendria* (Burm.f.) Pic. Serm.)	Jamaica, samambaia, samambaia-jamaica	9, 69, 72	3	O (3)	E
Moranopteris gradata (Baker) R.Y.Hirai & J.Prado (also cited as *Polypodium gradatum* Baker)	Polipódio-de-degrau, samambaia, samambaia-de-pendurar	104	1	PO (1)	N
Niphidium crassifolium (L.) Lellinger (also cited as *Polypodium crassifolium* L.)	Calaguala, feto, rabo-de-arara	60, 107, 112, 124	4	M (3), O (1), NI (1)	N
Pecluma hoehnei (A. Samp.) Salino (also cited as *Polypodium hoenei* A. Samp.)	Feto	107	1	PO (1)	N
Pecluma pectinata (L.) M.G. Price (also cited as *Polypodium pectinatum* L.)	Feto	107	1	O (1)	N
Pecluma pectinata (L.) M.G. Price (also cited as *Polypodium pectinatum* L.)	Feto	107	1	O (1)	N
Pecluma recurvata (Kaulf.) M.G. Price (also cited as *Polypodium recurvatum* Kaulf.)	Feto	107	1	PO (1)	N
Phlebodium aureum (L.) J.Sm. (also cited as *Polypodium aureum* L.)	Abre-caminho, avenca-dourada, palminha, polipódio, polipódio-areolado, samambaia	31, 41, 72, 111	4	M (3), O (1), R (1), OtCt (1)	N
Phlebodium decumanum (Willd.) J.Sm. (also cited as *Polypodium decumanum* Willd.)	Avenca, avencão, cipó-cabeludo, erva-de-macaco, feto, guaribinha, rabo-de-cachilão, rabo-de-cachinganga, rabo-de-caxinguelê, rabo de macaco, samambaia, samambaia-chorona	11, 13, 21, 25, 29, 35, 49, 52, 59, 69, 70, 103, 107, 123, 124	15	M (10), O (3), PO (1), R (1)	N

Phlebodium pseudoaureum (Cav.) Lellinger	Avenca-dourada	112	1	M (1)	N
Platycerium bifurcatum (Cav.) C. Chr.	Avenca, chifre-de-veado, samambaia-chifre-de-veado	9, 69, 72, 92	4	O (4)	C
Pleopeltis lepidopteris (Langsd. & Fisch.) de la Sota (also cited as *Polypodium lepidopteris* Langsd. & Fisch.)	Feto-macho-do-Rio-Grande, matataúba, samambaia, samambaia-fina	51, 105, 112	3	M (1), O (1), OtCh (1), NI (2)	N
Pleopeltis macrocarpa (Bory ex Willd.) Kaulf. (also cited as *Polypodium lanceolatum* L.)	Feto, polipódio-lanceolado	107, 124	2	M (2), O (1)	N
Pleopeltis minima (Bory) J.Prado & R.Y.Hirai	Silvina-miúda	112	1	M (1)	N
Pleopeltis trindadensis (Brade) Salino (cited as *Polypodium trindadense* Brade)	Feto	107	1	PO (1)	N
Polypodium punctatum Thunb.	Ninho-de-passarinho	72	1	O (1)	C
Serpocaulon catharinae (Langsd. & Fisch.) A.R.Sm. (cited as *Polypodium catharinae* Langsd. & Fisch.)	Feto	107	1	M (1), O (1)	N
Serpocaulon fraxinifolium (Jacq.) A.R.Sm. (also cited as *Polypodium fraxinifolium* Jacq.)	Feto, samambaia	33, 107	2	M (1), PO (1)	N
Serpocaulon latipes (Langsd. & Fisch.) A.R.Sm.	Kara-guara	8	1	M (1)	N
Serpocaulon triseriale (Sw.) A.R.Sm. (also cited as *Polypodium brasiliense* Poir.)	Caticéa, coaticea, samambaia-cheirosa, samambaia-cumaru	104, 112	2	M (1), OtCh (1), OtAr (1)	N
Pteridaceae					
Acrostichum aureum L.	Avencão	111	1	M (1)	N
Acrostichum danaeifolium Langsd. & Fisch.	Avencão, feto	107, 124	2	M (2), O (1)	N
Adiantopsis chlorophylla (Sw.) Fée (citado também como *Cheilantes chlorophylla* Sw.)	Avenca-da-terra, samambaia-roxa	74, 111, 112	3	M (3)	N
Adiantopsis dichotoma (Sw.) T. Moore	Feto	107	1	PO (1)	N
Adiantopsis flexuosa (Kunze) Link-Pérez & Hickey (cited as *Cheilantes flexuosa* Kunze)	Feto	107	1	PO (1)	N
Adiantopsis monticola (Gardner) T.Moore	Feto	107	1	PO (1)	N
Adiantopsis radiata (L.) Fée (also cited as *Cheilantes radiata* (L.) J.Sm.)	Avenca, avenca-estrelada, avenca-de-minas, feto-estrelado, samambaia	111, 112, 124	3	M (3)	N
Adiantopsis regularis (Mett.) T.Moore (also cited as *Cheilantes regularis* Mett.)	Avenca-da-serra	111, 112	2	M (1), NI (1)	N
Adiantopsis senae (Baker) Schuettp. & A.Davila (cited as *Adiantum tenuissimum* Taub.)	Avenca	111	1	NI (1)	N

Adiantum abscissum Schrad. (cited as *Adiantum brasiliense* Raddi)	Avenca	111	1	NI (1)	N
Adiantum cajennense Willd. ex Klotzsch	Feto	107	1	PO (1)	N
Adiantum calcareum Gardner	Feto	107	1	PO (1)	N
Adiantum capillus-veneris L.	Avenca, avenca-cabello-de-Vênus, avenca-comum, cabelo-de-Vênus, capilária, capilária-do-comércio, capillaria-de-Montpellier	18, 35, 36, 109, 110, 111, 112, 114, 124	9	M (9), R (1), OtCh (1), OtSm (1)	N
Adiantum concinnum Willd.	Avenca, culantrilho	108, 124	2	M (2), O (1)	N
Adiantum curvatum Kaulf.	Avenca, feto	22, 107	2	M (1), PO (1)	N
Adiantum deflectens Mart.	Feto, vinca	107, 116	2	M (1), O (1), OtCt (1)	N
Adiantum digitatum Hook.	Feto	107	1	PO (1)	N
Adiantum diogoanum Glaz. ex Baker	Avenca	111	1	NI (1)	N
Adiantum edgeworthii Hook. (cited as *Adiantum caudatum* var. *rhizoporum* Wall. ex C.B.Clarke)	Avencão	112	1	M (1)	C
Adiantum glaucescens Klotzsch	Feto	107	1	PO (1)	N
Adiantum gracile Fée	Avenca, feto	107	1	PO (1)	N
Adiantum hispidulum Sw. (also cited as *Adiantum pedatum* L.)	Avenca-do-Canadá, capilária-do-Canadá	110, 111	2	M (2), O (1), OtCt (1), OtCh (1)	C
Adiantum intermedium Sw.	Avenca	111	1	OtCt (1)	N
Adiantum latifolium Lam.	Feto	107	1	PO (1)	N
Adiantum lucidum (Cav.) Sw.	Feto	107	1	PO (1)	N
Adiantum macrophyllum Sw.	Avenca-de-folha-grande, feto	107, 124	2	M (1), PO (1)	N
Adiantum obliquum Willd.	Culantrilho	108	1	O (1)	N
Adiantum pectinatum Kunze ex Baker	Feto	107	1	PO (1)	N
Adiantum petiolatum Desv.	Adianto-peciolado, avenca-peciolada, culantrilho	108, 124	2	M (1), O (1)	N
Adiantum philippense L. (cited as *Adiantum lunulatum* Burm.f.)	Avenca	111	1	M (1)	N
Adiantum platyphyllum Sw.	Avenca	111	1	OtCt (1)	N
Adiantum poiretii Wickstr.	Avenca, avenca-de-Poiret	124	1	M (1)	N
Adiantum polyphyllum Willd.	Feto	107	1	PO (1)	E
Adiantum pseudotinctum Hieron.	Avenquinha-graúda	28, 98	2	M (2)	N
Adiantum pulvurulentum L.	Culantrilho	108	1	O (1)	N

Adiantum raddianum C. Presl. (also cited as *Adiantum cuneatum* G. Forst.)	Adianto, avenca, avenca-brasileira, avenca-cuneiforme, avenca-de-folha-miúda, avenca-delta, avenca-miúda, avenca-véu-de-noiva, avencão, avenquinha-da-miúda, capilária, capilário, sapatinho-de-anjo	9, 10, 33, 34, 38, 39, 40, 59, 69, 71, 72, 74, 86, 90, 94, 96, 98, 99, 101, 111, 112, 123, 124	23	M (18), O (8)	N
Adiantum rhyzophytum Schrad.	Avencão	111	1	NI (1)	N
Adiantum serratodentatum Willd. (cited as *Adiantum obtusum* Desv., *Adiantum serrato-dentatum* Willd.)	Avenca-serrato-dentada, feto, quebra-pedra	107, 124	2	M (1), PO (1)	N
Adiantum sinuosum Gardn.	Avenca	111	1	NI (1)	N
Adiantum subcordatum Sw.	Avenca, avenca-da-grande, avencão	9, 111, 112	3	M (1), O (1), NI (1)	N
Adiantum tenerum Sw.	Avenca, avenca-tenra, capillaria-do-México	72, 111, 124	3	M (2), O (1), OtCt (1)	N
Adiantum tetraphyllum Willd.	Feto, avenca-de-quatro-folhas	107, 124	2	M (1), PO (1)	N
Adiantum tomentosum Klotzsch	-	124	1	M (1)	N
Adiantum trapeziforme L. (also cited as *Cheilantes farinosa* Klf.)	Avenca-dos-córregos, avenca-estrelada, avenca-grande, avenca-paulista, avencão	111, 112, 124	3	M (3), OtCt (1)	E
Ananthacorus angustifolius (Sw.) Underw. & Maxon (cited as *Ananthocorus angustifolia* (Sw.) Underw. & Maxon)	Feto	107	1	PO (1)	N
Ceratopteris pteridoides (Hook.) Hieron.	-	119	1	F (1)	N
Ceratopteris thalictroides (L.) Brongn.	-	113	1	O (1)	N
Cheilanthes eriophora (Fée) Mett. (cited as *Notochlaena eriophora* Fée)	Feto	107	1	PO (1)	N
Cheilanthes incisa Kunze ex Mett.	Feto	107	1	PO (1)	N
Cheilanthes micropteris Sw.	Feto	107	1	PO (1)	N
Cheilanthes pohliana Mett.	Feto	107	1	PO (1)	N
Doryopteris concolor (Langsd. & Fisch.) Kuhn & Decken (also cited as *Doryopteris baturitensis* Brade)	Feto	107	2	PO (2)	N
Doryopteris pentagona Pic. Serm. (cited as *Doryopteris pedata* Fée, *Doryopteris pedata* var. *palmata* (Willd.) Hicken)	Feto, samambaia-miúda	107, 112	2	M (1), O (1)	N
Doryopteris rediviva Fée (cited as *Doryopteris angularis* Fée)	Feto	107	1	O (1)	N
Doryopteris sagittifolia (Raddi) J.Sm.	Feto	107	1	O (1)	N
Doryopteris triphylla (Lam.) Christ (cited as *Cassebeera pedatifida* Christ, *Cassebeera triphylla* (Lam.) Kaulf.)	Feto	107, 107	2	PO (2)	N
Hecistopteris pumila (Spreng.) J.Sm.	Feto	107	1	PO (1)	N
Hemionitis palmata L.	Feto	107	1	O (1)	N
Hemionitis tomentosa (Lam.) Raddi	Gimnópteris-tomentosa	124	1	M (1)	N

Lytoneuron crenulans (Fée) Yesilyurt (cited as *Doryopteris crenulans* Fée)	Feto	107	1	PO (1)	N
Lytoneuron itatiaiense (Fée) Yesilyurt (cited as *Pallaea itatiaiensis* Fée)	Feto	107	1	PO (1)	N
Lytoneuron lomariaceum (Kunze ex Klotzsch) Yesilyurt (cited as *Doryopteris lomariacea* Klotzsch)	Feto	107	1	O (1)	N
Lytoneuron ornithopus (Mett. ex Hook. & Baker) Yesilyurt (also cited as *Doryopteris ornithopus* (Hook. & Baker) J.Sm.)	Feto, samambaia	101, 107, 113	3	M (1), O (2)	N
Lytoneuron paradoxum (Fée) Yesilyurt (cited as *Cassebeera paradoxa* Fée)	Feto	107	1	PO (1)	N
Lytoneuron microphyllum (Christ) Yesilyurt (cited as *Cassebeera microphylla* Fée)	Feto	107	1	PO (1)	E
Ormopteris gleichenioides (Gardner) J.Sm. (cited as *Cassebeera gleichenioides* Gardner)	Feto	107	1	PO (1)	N
Ormopteris pinnata (Kaulf.) Lellinger (cited as *Cassebeera pinata* Kaulf.)	Feto	107	1	PO (1)	N
Pellaea viridis (Forssk.) Prantl (cited as *Pellaea bongardiana* Baker, *Pellea flavescens* Fée, *Pallaea flavescens* Fée)	Feto	107, 107, 113	3	O (1), PO (2)	NA
Pityrogramma calomelanos (L.) Link (also cited as *Pityrogramma chrysophylla* (Sw.) Link, *Gymnogramma calomelanos* (L.) Kaulf.)	Avenca-branca, avenca-preta, calomelano-vegetal, feto-amarelo, feto-branco, pitirograma-lindo-negra, samambaia-do-brejo	59, 107, 107, 111, 112, 124	6	M (3), O (3), OtCt (3), NI (1)	N
Pityrogramma chaerophylla (Desv.) Domin (cited as *Gymnogramma choerophylla* Desv.)	Feto	107	1	PO (1)	N
Pityrogramma ebenea (L.) Proctor (cited as *Pityrogramma tartarea* (Cav.) Maxon)	Feto	107	1	O (1), OtCt (1)	N
Pityrogramma trifoliata (L.) R.M.Tryon (cited as *Trismeria trifoliata* (L.) Diels)	Feto	107	1	PO (1)	N
Polytaenium cajenense (Desv.) Benedict (also cited as *Antrophyum cajenense* (Desv.) Spreng.)	Feto, tajazinho-de-enfeite	107, 124	2	M (1), PO (1)	N
Polytaenium guayanense (Hieron.) Alston (cited as *Antrophyum guayanense* Hieron.)	-	124	1	M (1)	N
Pteris cretica L.	Folhagem	69	1	O (1)	NA
Pteris decurrens C.Presl	Feto	107	1	PO (1)	N
Pteris denticulata Sw.	Samambaia	104	1	NI (1)	N
Pteris leptophylla Sw. (cited as *Pteris liptophylla* Sw.)	Avenca-do-Rio-Grande	111, 112	2	M (1), NI (1)	N

Pteris schwackeana Christ	Samambaia	104	1	NI (1)	N
Pteris vittata L.	Avenca, samambaia	9, 69	2	O (2)	NA
Pterozonium reniforme (Mart.) Fée	Feto	107	1	PO (1)	N
Radiovittaria stipitata (Kunze) E.H.Crane (cited as *Vittaria stipitata* Kunze)	Feto	107	1	PO (1)	N
Tryonia myriophylla (Sw.) Schuettp., J.Prado & A.T.Cochran (cited as *Cheilantes glandulifera* Fée, *Gymnogramma myriophylla* Sw.)	Feto	107, 107	2	O (1), PO (1)	N
Tryonia schwackeana (Christ) Schuettp., J.Prado & A.T.Cochran (cited as *Gymnogramma schwackeana* Christ)	Feto	107	1	PO (1)	N
Saccolomataceae					
Saccoloma elegans Kaulf.	Feto	107	1	PO (1)	N
Saccoloma inaequale (Kunze) Mett.	Feto	107	1	PO (1)	N
Salviniaceae					
Azolla caroliniana Willd.	Mururé-rendado	105	1	OtAp (1)	N
Azolla filiculoides Lam.	Almíscar-vegetal, âmbar-vegetal	112	1	OtAp (1)	N
Salvinia auriculata Aubl.	Apeay, mururé-carrapatinho, mururê-carrapato	105, 112, 124	3	M (2), NI (1)	N
Schizaeaceae					
Actinostachys subtrijuga (Mart.) C.Presl (cited as *Schizaea subtrijuga* Mart.)	Feto	107	1	PO (1)	N
Schizaea elegans (Vahl) Sw.	Esquizéia-elegante, feto	107, 124	2	M (1), PO (1)	N
Schizaea poeppigiana J.W.Sturm (cited as *Lophidium poeppigianum* (J.W. Sturm) Underw. ex Maxon)	Feto	107	1	PO (1)	N
Selaginellaceae					
Selaginella amazonica Spring	Nambaia, samambaia	30	1	M (1)	N
Selaginella asperula Spring	-	124	1	M (1)	N
Selaginella breynii Spring	Selaginela-rasteira	104	1	NI (1)	N
Selaginella conduplicata Spring	Samambainha	26	1	M (1), R (1)	N

Selaginella convoluta (Arn.) Spring	Erva-milagrosa, gericó, jericó, mão-de-sapo, mão-fechada, pé-de-papagaio, planta-da-ressurreição, ressurreição	2, 11, 31, 44, 53, 64, 67, 88, 106, 112, 116, 117, 118, 124	14	M (13), OtCm (1), OtAp (4)	N
Selaginella decomposita Spring	Selaginela	104	1	O (1)	N
Selaginella exaltata (Kunze) Spring (also cited as *Selaginella strobilifera* Christ)	Musgo, selaginela	104, 124	2	M (1), O (1)	N
Selaginella flexuosa Spring	Selaginela	104	1	O (1)	N
Selaginella jungermannioides (Gaudich.) Spring	Selaginela-rasteira	104	1	NI (1)	N
Selaginella macrostachya (Spring) Spring	Selaginela	104	1	O (1)	N
Selaginella marginata (Humb. & Bonpl. ex Willd.) Spring	Selaginela	104	1	O (1)	N
Selaginella microphylla (Kunth) Spring (also cited as *Selaginella thujaefolia* Spring)	Selaginela	104, 104	2	O (2)	N
Selaginella muscosa Spring (cited as *Selaginella brasiliensis* Lindm. ex Raddi)	Selaginela	104	1	O (1)	N
Selaginella pallescens (C.Presl) Spring (cited as *Selaginella cuspidata* (Link) Link)	Selaginela	104, 104	2	O (2)	N
Selaginella parkeri (Hook. & Grev.) Spring (cited as *Selaginella pedata* Klotzsch)	Samambaia	1, 117, 122	3	M (2), OtCm (1)	N
Selaginella revoluta Baker (cited as *Selaginella demissa* Christ)	Jericó, selaginela	104, 106	2	O (1), NI (1)	N
Selaginella stellata Spring	Cama-de-menino, samambaia	103, 104, 124	3	M (2), O (1)	E
Selaginella tenuissima Fée	Selaginela	104	1	O (1)	N
Selaginella umbrosa Lem. ex Hieron.	Folhagem	69	1	O (1)	N
Selaginella willdenowii (Desv. ex Poir.) Baker	Selaginela	104	1	O (1)	N
Tectariaceae					
Tectaria incisa Cav. (cited as *Tectaria martinicensis* (Spreng.) Copel.)	Feto	107	1	O (1)	N
Tectaria trifoliata (L.) Cav.	Feto	107	1	O (1)	N
Thelypteridaceae					
Amauropelta decurtata (Kunze) Salino & T.E. Almeida (cited as *Athyrium decurtatum* (Kunze) Fée)	Feto	107	1	PO (1)	N
Amauropelta eriosorus (Fée) Salino & T.E.Almeida (cited as *Dryopteris eriosora* (Fée) C. Chr.)	Feto	107	1	PO (1)	N

Amauropelta novaeana (Brade) Salino & T.E.Almeida (cited as *Dryopteris novaeana* Brade)	Feto	107	1	PO (1)	N
Christella dentata (Forssk.) Brownsey & Jermy (cited as *Thelyptens dentata* (Forssk.) E.P.St.John), *Dryopteris dentata* (Forssk.) C. Chr.)	Feto, samambaia	69, 107	2	O (2)	N
Christella patens (Sw.) Pic. Serm. (cited as *Nephrodium patens* (Sw.) Desv., *Thelypteris patens* (Sw.) Small)	Samambaia-cheirosa, samambaiaçu	104, 112	2	M (1), NI (1), OtAr (1)	N
Cyclosorus interruptus (Willd.) H. Ito (cited as *Dryopteris gongylodes* (Schkuhr) Kuntze)	Feto	107	1	PO (1)	N
Goniopteris poiteana (Bory) Ching (cited as *Dryopteris poiteana* (Bory) Urb.)	Feto	107	1	PO (1)	N
Goniopteris refracta (Fischer & C. Meyer) Brade (cited as *Nephrodium refractum* Hook.)	Feto	107	1	PO (1)	N
Goniopteris tetragona (Sw.) C. Presl (cited as *Dryopteris subtetragona* (Link) Maxon)	Feto	107	1	PO (1)	N
Goniopteris tristis (Kunze) Brade (cited as *Thelypteris tristis* (Kunze) R.M. Tryon)	Feto-macho-de-Goiás	112	1	M (1)	N
Macrothelypteris torresiana (Gaudich.) Ching	Avenca, feno-grego, samambaia, samambaiazinha	9, 10, 31	3	M (2), O (1)	N
Meniscium angustifolium Willd. (cited as *Dryopteris angustifolia* (Willd.) Urb.)	Feto	107	1	PO (1)	N
Meniscium serratum Cav. (cited as *Dryopteris serrata* (Cav.) C. Chr.)	Feto-grande	107	1	NI (1)	N
Steiropteris decussata (L.) A.R.Sm. (cited as *Phegopteris decussata* (L.) Mett.)	Feto	107	1	PO (1)	N

Table 3. Unconfirmed taxa with related ethnobotanical uses. Use categories - M = Medicinal; O = Ornamental; PO = Potentially ornamental; R = Ritualistic; OtTe = Others, technological; OtPs = Others, planting substrates; OtCt = Others, cultivated; NI = Not-informed.

Family/Species	**Popular name**	**Source**	**Nº of cit.**	**Uses**
Aneimiaceae				
Aneimia flexuosa Raddi	Feto	107	1	PO
Aspleniaceae				
Asplenium auritum var. *sulcatum* Sw., (Lam.) Baker	Samambaia-douradinha	112	1	M, O
Asplenium sp.	Samambaiazinha	25	1	O
Athyriaceae				
Diplazium striatum (L.) C.Presl	Feto	107	1	PO
Blechnaceae				
Blechnum sp.	-	113	1	O
Lomaridium acutum (Desv.) Gasper & V.A.O.Dittrich (also cited as *Blechnum acutum* Desv.)	Samambaia	104	1	NI
Lomaridium attenuatum (Sw.) Gasper & V.A.O.Dittrich (cited as *Lomaria attenuata* (Sw.) Willd.)	Feto	107	1	PO
Cyatheaceae				
Alsophila aquilina Christ.	Samambaia	104	1	NI
Alsophila aspera R. Br.	Samambaiaçu-do-brejo	104	1	NI
Cyathea schenckii Christ.	Samambaia	104	1	NI
Cyathea sp.	Samambaiaçú	25	1	M, O, OtTe
Cyathea sp.	Samambaia	25	1	O
Hemitelia grandifolia Spreng.	Samambaiaçu	104	1	NI
Davalliaceae				

Davallia sp.	Samambaia	25	1	O
Davallia sp.	Samambaia	87	1	O
Davallia sp.	Canela-de-veado	91	1	NI
Dennstaedtiaceae				
Dennstaedtia ordinata Moore	Feto-grande	107	1	NI
Pteridium sp.	Samambaia-de-cipó	49	1	M
Dicksoniaceae				
Dicksonia sp.	Xaxim	60	1	O, OtPs
Dryopteridaceae				
Dryopteris guadalupensis Kze.	Feto	107	1	PO
Dryopteris linkiana Maxon	Feto	107	1	PO
Dryopteris reticulata Urban	Feto	107	1	PO
Dryopteris tetragona (Sw.) Urb.	Feto	107	1	PO
Dryopteris villosa (L.) O. Ktze.	Feto	107	1	PO
Elaphoglossum auricomum (Kunze) T.Moore	Feto	107	1	PO
Elaphoglossum conforme (Sw.) Schott	Feto	107	1	PO
Elaphoglossum petiolosum (Desv.) T.Moore	Cipó-de-coaty, coaty	108	1	NI
Elaphoglossum schiadeanum Kuntze	Elaphoglossum	108	1	NI
Elaphoglossum simplex (Sw.) Schott	Feto	107	1	PO
Polystichum aculeatum (L.) Roth (incorrect name for *Polystichum platylepis* Fée)	Feto	107	1	O
Equisetaceae				
Equisetum bogotense Kunth.	Cavallinha, lixa-vegetal	108	2	M, NI
Equisetum cf. *giganteum* L.	Cavalinha	85	1	M
Equisetum sp.	Cavalinha	6	1	M
Equisetum sp.	-	28	1	M
Equisetum sp.	-	45	1	M
Equisetum sp.	Cavalinha	46	1	M
Equisetum sp.	Cavalinha	48	1	M

Equisetum sp.	Cavalinha	57	1	M
Equisetum sp.	Cavalinha	63	1	M
Equisetum sp.	Cavalinha	81	1	M
Hymenophyllaceae				
Hymenophyllum lineare (Sw.) Sw. (incorrect name for *Hymenophyllum pulchellum* Schltdl. & Cham.)	Samambaia	104	1	NI
Hymenophyllum sp.	-	113	1	O
Trichomanes aff. *cristatum* Kaulf.	Samambaia	31	1	M
Trichomanes sp.	-	113	1	O
Lindsaeaceae				
Lindsaea imrayana (Hook.) Perez Arbel. (cited as *Saccoloma imrayanum* Kunze)	Feto	107	1	PO
Lycopodiaceae				
Diphasium jussiaei (Desv. ex Poir.) C. Presl ex Rothm. (cited as *Lycopodium scariosum* Forst.)	Pinheirinho-de-sala	105	1	NI
Lycopodiella alopecuroides (L.) Cranfill (cited as *Lycopodium alopecuroides* L.)	Pinheirinho-de-sala, tupi-guarani	105, 124	2	M, NI
Lycopodium fastigiatum R. Br.	Pinheirinho-de-sala	105	1	NI
Lycopodium inundatum L.	Pinheirinho	105	1	NI
Lycopodium saururus Lam.	Pinheirinho-de-sala	105	1	NI
Lycopodium verticilatum L.	Pinheirinho-de-sala	105	1	NI
Urostachys brongniartii (Spring) Hert. ex. Ness	Pinheirinho-de-sala	105	1	NI
Marattiaceae				
Marattia alata Radd.	Samambaiaçu-do-brejo	108	1	O, NI
Nephrolepidaceae				
Nephrolepis sp.	Avenca	9	1	O
Nephrolepis sp.	-	24	1	OtCt
Nephrolepis sp.	Samambaia	39	1	O
Nephrolepis sp.	Samambaia	65	1	O

Nephrolepis sp.	Samambaia	92	1	O
Nephrolepis sp.	Avenca	91	1	NI
Nephrolepis sp.	Samambaia	69	1	O
Nephrolepis sp.	Samambaia	69	1	O
Nephrolepis sp.	Samambaia	69	1	O
Nephrolepis sp.	Samambaia	69	1	O
Nephrolepis sp.	Samambaia-paulistinha	69	1	M, O
Nephrolepis sp.	Samambaia-de-metro	69	1	O
Nephrolepis sp.	Samambaia-saia-de-baiana	69	1	O
Nephrolepis sp.	Samambaia-cabelo-de-anjo	69	1	O
Nephrolepis sp.	Samambaia, samambaia-cabeluda	69	1	O
Osmundaceae				
Osmunda regalis L. (incorrect name for *Osmunda spectabilis* Willd.)	Feto-real, samambaia-de-penacho	104, 112	2	M, O
Polypodiaceae				
Campyloneurum sp.	Avenca	9	1	O
Ceradenia meridensis (Klotzsch) L.E.Bishop (cited as *Polypodium meridense* Klotzsch)	Samambaia-de-pendurar	104	1	PO
Cochlidium graminoides (Sw.) Kaulf. (cited as *Monogramma graminoides* (Sw.) Baker in Hook. & Baker, incorrect name for *Cochlidium serrulatum* (Sw.) L.E.Bishop)	Feto	107	1	PO
Cochlidium seminudum (Willd.) Maxon (incorrect name for *Cochlidium punctatum* (Raddi) L.E.Bishop)	Feto	107	1	PO
Grammitis marginella (Sw.) Sw. (cited as *Polypodium marginellum* Sw.)	Feto	107	1	PO
Microgramma sp.	Cipó-cabeludo	43	1	M
Pleopeltis angusta Humb. & Bonpl. ex Willd. (cited as *Polypodium angustum* (Humb. & Bonpl. ex Willd.) Liebm, incorrect name for *Pleopeltis pleopeltifolia* (Raddi) Alston)	Feto	107	1	PO

Pleopeltis polypodioides (L.) Andrews & Windham (cited as *Polypodium polypodioides* (L.) Watt, incorrect name for *Pleopeltis minima* (Bory) J. Prado & R.Y. Hirai)	Feto, mbyrujá, samambaia, silvina-miúda	8, 107, 124	3	M, PO
Polypodium discolor Hook	Feto	107	1	PO
Polypodium dissimile L.	Feto	107	1	PO
Polypodium laevigatum Cav.	Feto	107	1	PO
Polypodium leucatamus Poir	Rabo-de-catinguelê	73	1	M
Polypodium leucatomus Poir	Lã-de-carneiro, rabo-de-caxinguelê, rabo-de-macaco	97	1	M
Polypodium sp.	Samambaia-do-brejo	52	1	O
Polypodium sp.	Samambaia-mato	52	1	O
Polypodium sp.	Samambaia	89	1	O
Pteridaceae				
Adianthum sp.	Avenca	92	1	O
Adianthum sp.	Avenca-verde	92	1	O
Adianthum sp.	Avenca-vermelha	92	1	O
Adianthum sp.	Avenca	103	1	M
Adiantum aethiopicum L. (incorrect name for *Adiantum raddianum* C. Presl.)	Avenca	111	1	OtCt
Adiantum cf. *subcordatum* Sw.	Avencão	69	1	O
Adiantum cristatum L. (incorrect name for *Adiantum tetraphyllum* Willd.)	Feto	107	1	PO
Adiantum denticulatum Sw.	Avenca	111	1	OtCt
Adiantum sp.	Avenca	25	1	M, O
Adiantum sp.	Avenca	83	1	M
Adiantum sp.	Avenca	52	1	O
Adiantum sp.	Avenca	60	1	M
Adiantum sp.	Avenca-da-pedra	65	1	M
Adiantum sp.	Avenca	89	1	O
Adiantum sp.	Avenca	123	1	M
Aleuritopteris farinosa (Forssk.) Fée	Feto	107	1	O
Neurogramme scandens Fée	Feto-cipó	107	1	NI
Pteris sp.	-	113	1	O

Pteris sp.	Vence-tudo	47	1	M, R
Selaginellaceae				
Selaginella brachylepsis Christ	Selaginela	104	1	O
Selaginella huberi Christ	Selaginela	104	1	O
Selaginella laevigata Baker	Selaginela	104	1	O
Selaginella lepidophylla (Hook. & Grev.) Spring	Licopódio-da-ressurreição, planta-da-ressurreição	106	1	NI
Selaginella plumosa Baker	Selaginela	104	1	O
Selaginella rupestris (L.) Spring	Selaginela	104	1	O
Selaginella sp.	Avenca	9	1	O
Selaginella sp.	Samambaia	20	1	M
Woodsiaceae				
Woodsia mollis (Kaulf.) J.Sm. (incorrect name for *Woodsia montevidensis* (Spreng.) Hieron.)	Feto	107	1	PO

Nomenclatural review and update

The listed species were revised and updated using the FFB (2022) as the primary source, consulting additional databases for clarification when necessary, including Global Biodiversity Information Facilities – GBIF (2022), Tropicos (2022), speciesLink (2022), and International Plant Names Index – IPNI (2022). The taxonomic system used follows the Pteridophyte Phylogeny Group (PPG I 2016). To compose the final listing (Table 2), the selected species should be accurately recognized with valid names up to species level, and be native from Brazil, or cultivated/exotic species to which some use in national territory could be identified. Taxa that did not meet these criteria were removed from the final listing. However, they were not discarded from this work, but registered in an additional listing (Table 3), with their respective popular names and uses.

Results and Discussion

Over 28000 results were found in the search engines and author's collections. After filtering the data following the established criteria, 124 different sources containing pteridophyte species were recorded. These include 702 citations of valid species (or updated to valid names) that refer to 367 species (Table 2). Other 118 citations of inconclusive taxa are presented separately in Table 3, adding up to 820 species citations in total. Of the 124 sources, 116 are primary data, and 8 are review works or compilations covering data from different publications. The sources are distributed among the five regions of the country, with 18 referring to several regions at the same time, and the others distributed in the Southeast region (29 sources), followed by the South (25), Northeast (23), Midwest (22) and North (7). Most sources (100 out of 124) are recent and refer to data collected after the year 2000. Another five are reviews or compilations that refer to data before and after that period, while the remaining 19 are about data collected before the year 2000. Despite representing a smaller number of publications, sources with data referring to the period prior to the 2000s represent more than two-thirds of the species citations found in this survey (562 out of 820).

Most used pteridophyte families and species

Brazilian diversity comprises 1,407 species of pteridophytes (FFB 2022), of which 367 are included in our survey, representing more than a quarter (26%) of the available biodiversity in the country. Ferns are represented by 330 species, while 37 are lycophytes. Native species comprise 327 taxa, followed by 40 exotic species. These include 10 described as cultivated in the FFB (2022), and three others naturalized. Other 27 appear as "not occurring in Brazil" in the FFB but were kept in the main list because they present other registers of use or commercialization, or had samples collected in Brazil available on speciesLink. We also assumed that all species included in the FFB (2022) should have been recorded as present in Brazil at some point, even when listed as exotic.

The 1,407 Brazilian species are included in 39 families, 34 being represented in our survey. The families with the highest number of species citations among the 820 are Pteridaceae (151 spp. cit./18%) and Polypodiaceae (93/11%), followed by Equisetaceae (61/7%), Dryopteridaceae (50/6%), Cyatheaceae (43/5%) and Aspleniaceae (37/5%) (Fig. 1).

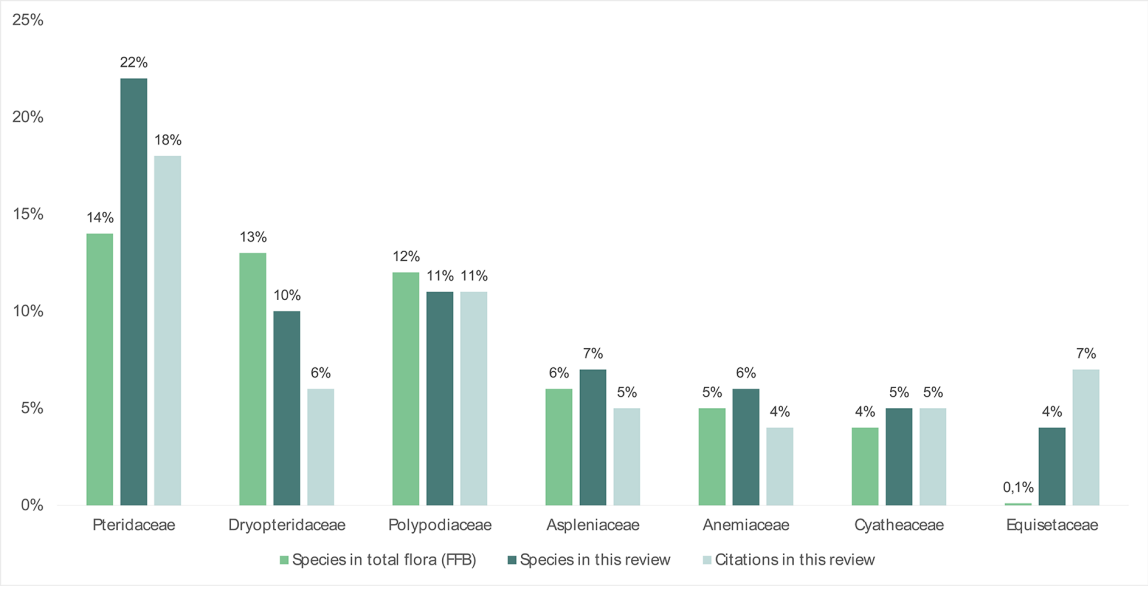

Figure 1. Comparison between the best - represented families (%) in terms of the number of total species of Pteridophytes in Brazil (FFB 2022), the number of species found in this review, and the number of citations in this review.

Regarding the number of species, however, Pteridaceae and Polypodiaceae are still the most mentioned (84/22% and 43/11% respectively), but followed by Dryopteridaceae (39/10%), Aspleniaceae (29/7%) and Anemiaceae (23/6%). These proportions are similar to the families that occur most frequently in the country: Pteridaceae (207/14% of Brazilian pteridophytes flora), Dryopteridaceae (192/13%), and Polypodiaceae (173/12%). The most cited species in this survey are *Equisetum giganteum* L. (27 spp. cit.) (Fig. 2A), *Adiantum raddianum* (23), *Equisetum hyemale* L. (22), *Pteridium aquilinum s. lat.* (19), *Phlebodium decumanum* (Willd.) J. Sm. (15), *Selaginella convoluta* (14), *Equisetum arvense* (11), *Lygodium volubile* Sw., *Microgramma vacciniifolia* (Langsd. & Fisch.) Copel., and *Adiantum capillus-veneris* L. (9).

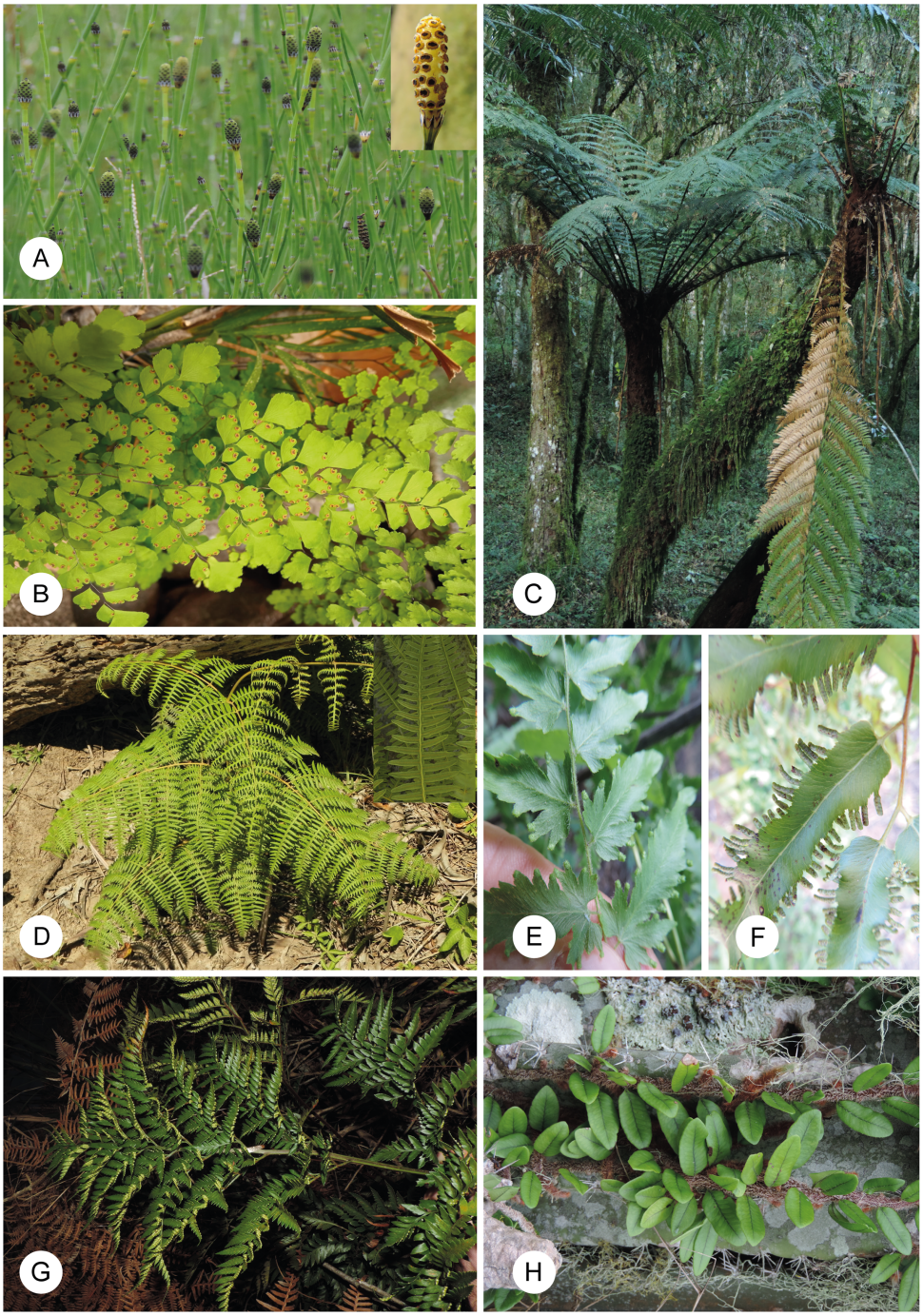

Figure 2. Diversity of Pteridophytes including some of the most cited species in this review. A = *Equisetum giganteum*; B = *Adiantum raddianum;* C = *Dicksonia sellowiana*; D = *Pteridium aquilinum s.l.* (*Pteridium arachnoideum*); E = *Lygodium venustum*; F = *Lygodium volubile*; G = *Rumohra adiantiformis*; H = *Microgramma vacciniifolia*. All images belong to the personal archives of author Felipe Gonzatti.

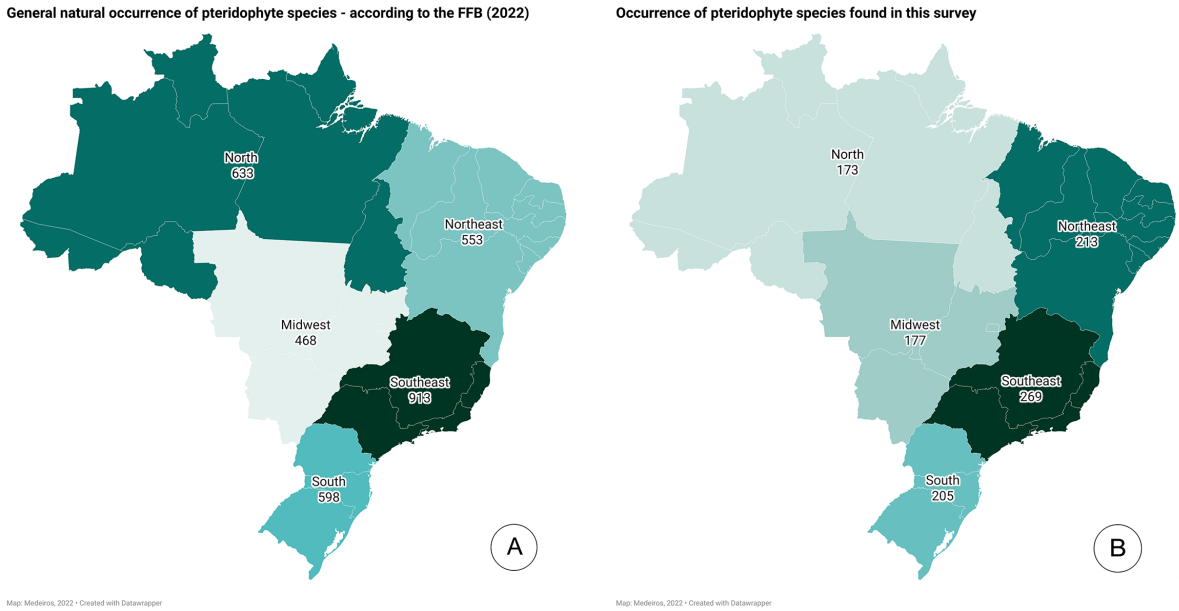

Figure 3. A: Map of the natural occurrence of all species of pteridophytes in the country, according to the FFB (2022). B: Map of the occurrence of species found in this survey in different regions of the country. While the best represented regions in "A" are SE, N, S, NE and CO, respectively, this changes for species of ethnobotanical use ("B"), from SE to NE, S, CO and N, respectively, evidencing the disparity mainly for the Northern region.

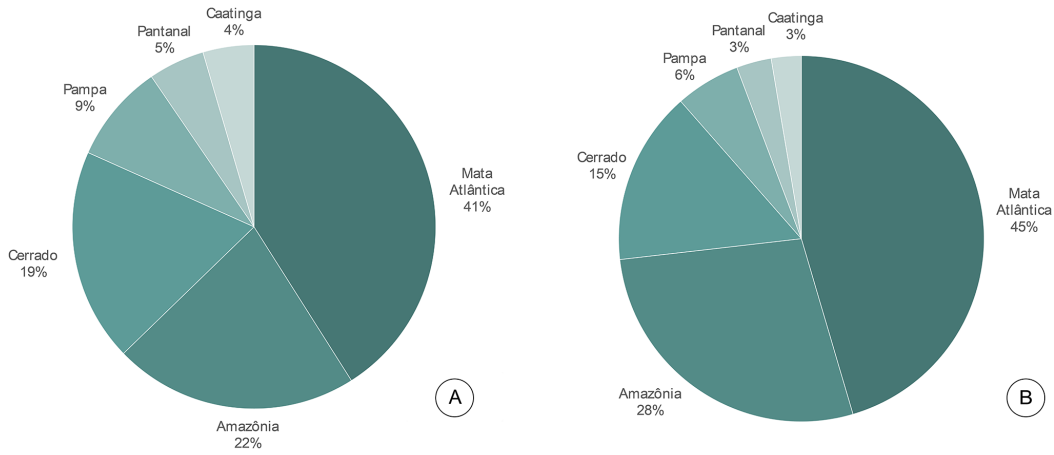

Figure 4. A: Occurrence of all species of pteridophytes native to Brazil by Phytogeographic Domain. Source: FFB (2022). B: Occurrence of pteridophyte species native to Brazil found in this survey by Phytogeographic Domain.

As for the phytogeographic domains in which used pteridophytes are distributed, the greatest richness is present in Mata Atlântica (262 spp.), followed by Amazônia (139), Cerrado (121), Pampa (56), Pantanal (32), and Caatinga (29) (Fig. 4A). The general distribution of species in nature follows a similar pattern, with the same order for absolute amounts of diversity: 942 in Mata Atlântica, 575 in the Amazônia, 318 in Cerrado, 119 in Pampa, 64 in Pantanal, and 55 in Caatinga (FFB 2022) (Fig. 4B).

Most sources refer to poorly delimited ethnical groups and non-traditional communities. Among the 124 sources, 63 refer to general groups of residents of rural or urban areas, in surveys carried out for a specific neighborhood, city or region. Other 37 refer to non-homogeneous data, when it is not possible to specify the collaborating populations, either because they do not mention any specific group or because they are included in sources that are reviews of other works. Thus, 24 sources remain where groups of collaborators were well defined by the authors with a specific profile, including: quilombolas (7 sources), raizeiros (3), healers (3), indigenous people (2), caiçaras (2), artisanal fishermen (2), riverside people (2), members of African-based religions (2) and agrarian reform settlers (1).

Use categories

The 786 different use citations were obtained from the 702 taxa citations (for 367 valid species), given that some species citations contained more than one use for it. The most documented uses were for medicinal species (289 use citations), potentially ornamental (163), ornamental (129), ritualistic (13), food (11), and others (70 citations). This last one category covers infrequent or less consistent uses in its description, such as cosmetic, aromatic, or agronomic, for instance. Still, 111 use citations were of uninformed use (species listed as used in some way but without describing how) (Fig. 5).

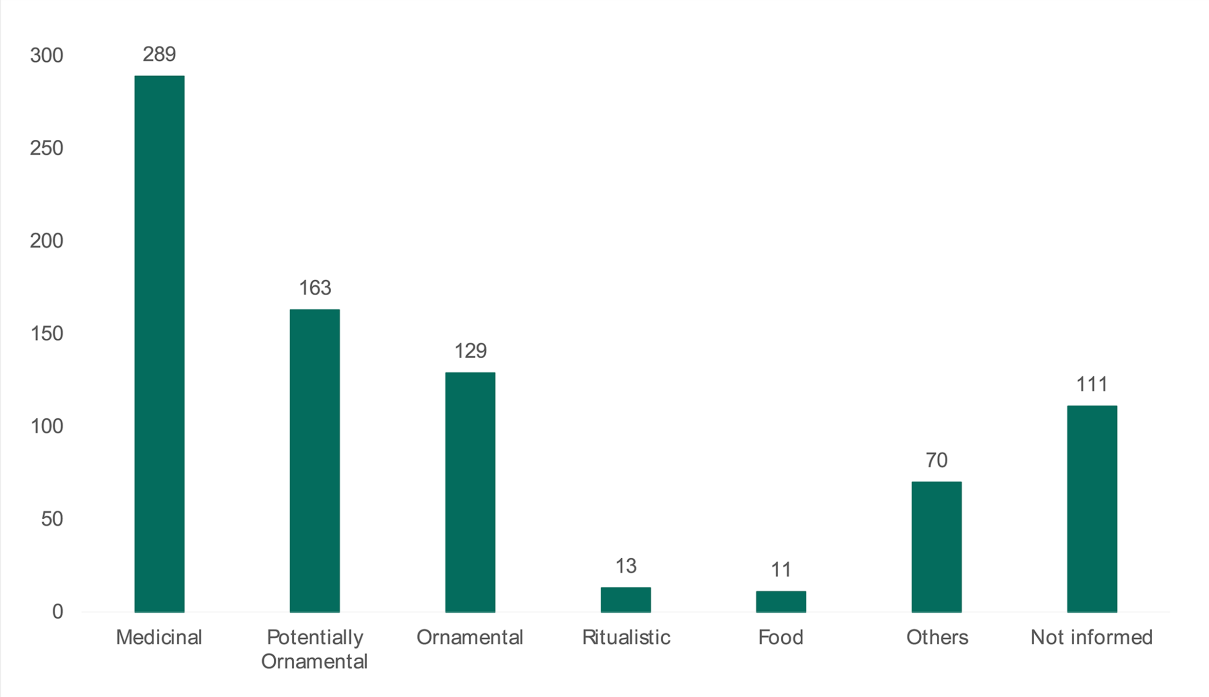

Figure 5. Most frequent use categories recorded in this survey.

Medicinal use

Medicinal species were the most cited category, with 289 use citations for 110 species (Table 2). Pteridophytes are well represented in traditional medicine around the world and throughout history (Ho *et al.* 2011), and this compilation of medicinal data highlights the research potential for both ethnobotanical and pharmaceutical data. Some have well-described chemical compounds, and the group is rich in secondary metabolites, mainly terpenoids, phenolic compounds, flavonoids, alkaloids, and others (Ho *et al.* 2011), whose medicinal use can be explored. It is important, though, to note that 75 of the 124 sources (60%) (Table 1) focus or refer to data on medicinal plants only, a pattern that accompanies ethnobotany studies in Brazil in general (Ritter *et al.* 2015).

Most medicinal uses could be categorized according to the ICD-11 (WHO 2019). The 289 medicinal use citations contain 479 descriptions of uses distributed among the species, and of these descriptions, only 57 were not specified. The largest subcategory is diseases of the respiratory system (79 descriptions of use), followed by those of the genitourinary system (77) and unclassified clinical symptoms (69). These and other categories can be seen in Fig. 6. In addition, 38 are described as "undefined", since they could not be classified by the ICD, due to their broad definitions (such as "tonic", "syrup" or "astringent"), with no specific destine of action. Four other descriptions are for “spiritual afflictions”, not specifying which ones. Although they do not always present well-defined physical symptoms or records for Western biomedicine, they are extremely relevant to traditional populations and knowledge systems.

“Diseases of the respiratory system” include cough inducers, for treating bronchitis, “pectorals” and others, with the most used families here being Pteridaceae (41 descriptions of use), Cyatheaceae (8), and Polypodiaceae (7). “Diseases of the genitourinary system” comprise both descriptions for treating the kidneys and bladder, diuretics (most cited in this subcategory), as well as conditions related to the menstrual cycle, prostate and others. Here, species of the family Equisetaceae (33 descriptions of use), Pteridaceae (14) and Lycopodiaceae (8) stand out. The category “Unclassified clinical symptoms or signs” refers to general symptoms like “pain treatment”, “anti-

inflammatory", "febrifuge", "edema treatment" and others that are targeted, but whose source of the clinical condition is not specified ("pain" instead of "earache" or "muscle pain", for example). For diseases of the digestive system, the most cited are those of the liver, and for the musculoskeletal system and connective tissues, the most reported was anti-rheumatic. There also seems to be a pattern of use, with several citations for the "cleansing" of the organism, using this term and also "diuretics", "expectorants", "disobstructing" and "vomiting".

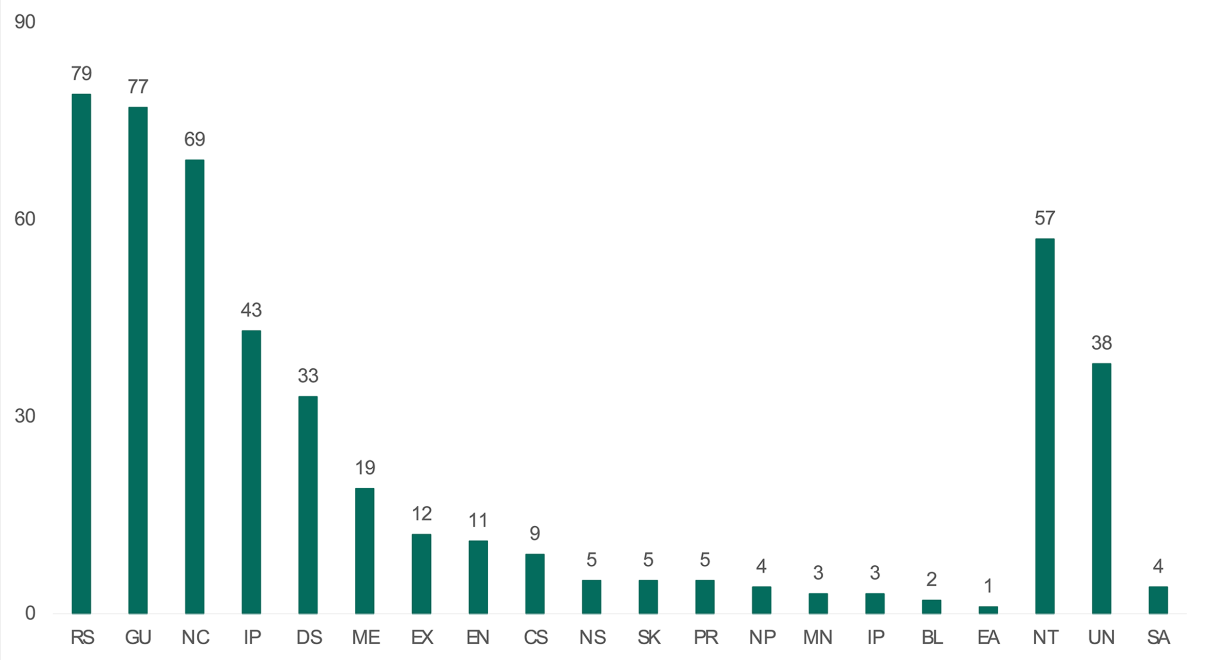

Figure 6. Frequency of citations of specific medicinal uses. RS = Diseases of the respiratory system; GU =Diseases of the genitourinary system; NC = Symptoms, signs or clinical findings, not elsewhere classified; IP = Certain infectious or parasitic diseases; DS = Diseases of the digestive system; ME= Diseases of the musculoskeletal system or connective tissue; EX = External causes of morbidity or mortality; EN = Endocrine, nutritional or metabolic diseases; CS = Diseases of the circulatory system; NS = Diseases of the nervous system; SK = Diseases of the skin; PR = Pregnancy, childbirth or the puerperium; NP = Neoplasms; MN = Mental, behavioral or neurodevelopmental disorders; IP = Injury, poisoning or certain other consequences of external causes; BL = Diseases of the blood or blood-forming organs; EA = Diseases of the ear or mastoid process; NT = Not specified; UN = Undefined; SA = Spiritual afflictions.

Some species have well-defined uses, like *Adiantopsis radiata* (L.) Fée (always mentioned as "pectoral") or *Micrograma lycopodioides* (L.) Copel. (always diaphoretic and astringent). Others are the opposite, such as *Adiantum capillus-veneris* (with uses arranged in eight different categories) or *Phlebodium pseudoaureum* (Cav.) Lellinger (with four different descriptions of medicinal use for only one citation). Plants reputed as miraculous are often cited, especially in older sources, usually because of their wide range of uses as it happens with *Adiantum capillus-veneris* (**capilária)** with syrups and tonics of the same name. This pattern of low specificity usually appears in ethnobotanical data and is commonly reported for pteridophytes as well (Ho *et al.* 2011).

Other records should be viewed with caution, with descriptions of questionable meanings. One example is the expression "cures even cancer", most likely used related to multiple or strong medicinal effects of a species. Also, in older records, nonspecific terms such as "astringent", "emollient" or "tonic" under the "undefined" category appear more frequently. Some conditions also seem dated and have fallen into this category, such as the use "against harmful consequences of scares". In addition to the older, obsolete terms, there are also diseases for which treatment does not fit in the current context or must be infrequent, as is the case, for example, of tuberculosis, which, despite not having been eradicated in Brazil, was much more present in the last century.

The families with most species used as medicinal are Pteridaceae and Polypodiaceae (30 and 18 spp. with medicinal uses related, respectively), followed by Selaginellaceae (10). Looking at citations, however, Equisetaceae stands out:

despite having only three used species, it has 53 different medicinal use citations, even more than Polypodiaceae (46) and only behind Pteridaceae (68).

Equisetaceae also represents the most cited medicinal species (Table 2): *Equisetum giganteum* (23 med. cit.) and *Equisetum hyemale* (21 med. cit.). *Equisetum arvense* is also frequently cited (10 med. cit.). These species, called **cavalinhas** (horsetails), are commonly traded in markets or herbal stores under this name. There is an extensive record of its uses and chemical components in literature, and it is most likely the best-documented group among medicinal pteridophytes (Al-Snafi 2017, Carneiro *et al.* 2013, Carneiro *et al.* 2019, Correa 2010, Lorenzi & Matos 2008, Wright *et al.* 2007). Their uses are mostly diuretic, but also to treat diseases of the kidneys and bladder, gastrointestinal system, cardiovascular system, healing, antifungal, expectorant, anti-hemorrhagic and others. *Equisetum giganteum* is the only native species of the three, which may explain the greater number of citations. It is usually consumed as tea (Lorenzi & Matos 2008). *Equisetum hyemale* is cultivated in Brazil and marketed for use in teas as **cavalinha**. It contains anti-inflammatory, antioxidant and antimicrobial substances (De Queiroz *et al.* 2015). Despite also being cultivated *Equisetum arvense* is the only species among pteridophytes to appear on the list of medicinal plants of interest to the SUS (RENISUS), organized by the government to direct research on medicinal species (Brasil 2021). Its compounds have antimicrobial, hypotensive, antioxidant, antidiabetic and even anticancer effects described (Al-Snafi 2017, Mello & Budel 2013).

Adiantum raddianum (18 med. cit.) is cited mainly for diseases of the respiratory system, but also against arthritis and rheumatism, among other functions. It is considered very effective in traditional medicine (Reinaldo *et al.* 2018) and has chemical components described in literature and associated with its medicinal use (like filicene, triterpene associated with its analgesic effects, and other triterpenes) (Reinaldo *et al.* 2018), in addition to having proven antimicrobial action. *Pteridium aquilinum s. lat.* (13 med. cit.) predominant use is vermifuge, but also antirheumatic, expectorant, diuretic, and against tuberculosis. Its medicinal use is widely documented in other places, like North America and Asia (Vetter 2011), with records of antioxidant and antimicrobial substances (Kardong *et al.* 2013). *Selaginella convoluta* (13 med. cit.) has a generalist use, for treating disorders of the respiratory and genitourinary system, infectious diseases in general, and fevers and pain. *Phlebodium decumanum* (10 med. cit.) is also used widely, but for treating jaundice, liver and spleen disorders, pain and rheumatism. With nine medicinal use citations, also widely used, is *Adiantum capillus-veneris.* It stands out in the consulted sources, especially older, because of cápilária (capillary), a medicine used for several treatments and produced from this plant. It is listed as a dewormer, diuretic, pectoral and many others. Other species often cited include *Microgramma vacciniifolia* (8 med. cit.); *Lycopodium clavatum* L. (7); *Cyathea microdonta* (Desv.) Domin (6); and *Palhinhaea cernua* (L.) Franco & Vasc. (6).

Ornamental and Potentially Ornamental uses

Ornamental pteridophytes comprises 85 species within 129 use citations (Table 2). If this was added to the Potentially Ornamental species (discounting the overlaps), they would make up to a total of 239 species, becoming the most used category. Ornamental plants are those that stand out visually and are used by people to fill and decorate spaces, allowing for visual contact with nature (Lorenzi & Souza 2001). Pteridophytes are valuable as ornamental, with a great diversity of forms to create foliages, arrangements in bouquets, and decorative spaces. Ornamental species found in this survey comprise this wide variety of forms, from arborescent species like *Dicksonia sellowiana* and *Cyathea phalerata* Mart., to small or delicate ones like *Davallia fejeensis* Hook. or *Selaginella exaltata* (Kunze) Spring.

The most cited species (Table 2) is *Adiantum raddianum* (8 ornamental use citations). It is known as **adianto**, **avenca**, **capilária**, **sapatinho-de-anjo** and other variations of the name **avenca** and is the most referred plant with this name. It is very delicate, with a distinct leaf shape, widely marketed and studied by horticulture, with described cultivation and propagation techniques (Amaki & Higuchi 1990, Fujino & Reid 1983). It has several varieties selected for cultivation (Brickell 2003). *Rumohra adiantiformis* (popularly known in Brazil as **samambaia-preta -** black fern) follows, with seven ornamental use citations. It is well-documented for its ornamental use, in Brazil and other countries (Baldauf *et al.* 2007, Souza *et al.* 2006, Milton & Moll 1988), for the production of floral arrangements, due to the long time the fronds remain green after being removed from the soil. In Brazil, it is collected by local populations for commercialization, as a way of supplementing family income, with its extraction and management methods documented in literature (Baldauf *et al.* 2007, Souza *et al.* 2006). Other frequently cited species include *Nephrolepis exaltata* (L.) Schott, *Davallia fejeensis*, *Pityrogramma calomelanos* (L.) Link (5 orn. cit. each), *Platycerium bifurcatum*, *Nephrolepis cordifolia* (L.) C. Presl (4)*, Phlebodium decumanum* and *Nephrolepis biserrata* (Sw.) Schott (3). The remaining species were only cited once or twice.

Despite the volume of data collected, this list does not contain every ornamental species in Brazil: only in the florist virtual catalogs of big floriculture like Úrsula® and Veiling Holambra® other species that do not appear in the sources are marketed as ornamental, such as *Asplenium bulbiferum* G. Forst. (**samambaia-indica**) and *Selaginella kraussiana* (Kunze) A. Braun (**tapete-amarelo**). Unfortunately, it was not possible to quantify the number of species in these catalogs, since not all of them are taxonomically identified. Records of the cultivated varieties also did not appear in any of the 124 sources. Opposingly, if a survey was carried out only on commercial plants, it would not describe all ornamental pteridophytes in Brazil, as some species are only collected, and others have their uses restricted to certain places or groups.

In addition to being a traditionally ornamental group, its sales have expanded in the horticulture market in a recent and urban cultural phenomenon, still poorly documented. The text published in the general circulation magazine "Elle" (D'Amaro 2021) documents the 25% increase in fern sales by one of the largest distributors in the country in 2021, following the growth of the ornamental plant market during the COVID-19 pandemic due to people's need to get closer to nature in this period of isolation.

It was necessary to highlight species with imprecise ornamental registers that are probably only potentially ornamental (PO in Tables 2 and 3). This encompasses 165 use citations for 156 species (Table 2). When observing these species closely, it is clear that most wouldn't be cultivated or ornamental. Most are not domesticated or commercialized, and some are endemic or restricted to small areas, threatened, or have no other records of use in the sources. A remarkable example is *Pleopeltis trindadensis* (Brade) Salino, an endemic species from Trindade Island (state of Espírito Santo), the most remote inhabited place in the country, which only occurs naturally with no record of use or cultivation. Other species are too delicate and have no other documentation of extraction or planting. Even so, there are beautiful species whose ornamental potential could be investigated. The overlap with ornamental use citations occurs only for two species [*Cyclodium heterodon* (Schrad.) T. Moore, and *Phlebodium decumanum*], but it shows the possibility of finding other ornamental records for these species in further searches.

Ritual uses

This category comprises 13 use citations for eight species (Table 2). *Lygodium volubile* was the only one cited more than once (6 rit. cit.). Pteridophytes can be associated with African-based religions (Albuquerque *et al.* 2007, Reinaldo *et al.* 2015) and appear in this context here, but in other contexts as well, such as mystical species for Xucuru indigenous people and riverside communities of the Amazon. There are also records of ritualistic use of ferns in the literature in Africa (Verger 1995) and other parts of the Americas where African-based religions are present (Brandon 1991).

Lygodium volubile, the most cited species, is known as **abre-caminho**, **segue-caminho** or variations of the name **samambaia**, being used (like *Lygodium venustum*) in purification baths (Albuquerque *et al.* 2007) and other rituals of African-based religions. It is visually quite distinctive, which can help communities identify and use the species more consistently. However, it is very similar in morphology to *Lygodium venustum* and shares the same popular name, which may explain the use of both species for the same purposes. **Abre-caminho** is also a popular name in African-based religions, and is used for other species of vascular plants, like *Justicia gendarussa* Burm. (Acanthaceae).

In Reinaldo *et al.* (2015), the authors propose that pteridophytes are often associated with African-based religions due to their use in baths and rituals. Despite the few records found in the scientific literature, online herbalists that sell plants for ritual uses frequently register pteridophyte species, often under the popular name **samambaia**, and there's information on online blogs on the importance of ferns in tradition, although with no taxonomic description. In the scientific literature, there is little information on the use of pteridophytes in religious rituals, and the results in search engines are scarcer for the subject of plants of ritual use, making it more difficult to investigate.

Food use

Food use was cited 11 times among six different species (Table 2). The only species cited more than once is *Pteridium aquilinum s. lat.* (6 food use citations). As it occurs for ritualistic uses, few ethnobotanical works focused on this use were found in databases. Pteridophytes are not traditional food species, especially within the commercial circuit. In addition to the little diversity of color, flavor, and aromas, they do not have fruits or seeds, plant structures most frequently commercialized as food. Some are also described as bitter or unpalatable, and others are cited as scarcity food. In Asian countries, ferns are more popular edible plants (Singh & Khare 2011, Giri

& Uniyal 2022, Liu *et al.* 2012, Sujarwo *et al.* 2014), while in Brazil they are used in specific places and cultural contexts, being out of the mainstream commercial circuit, and usually collected rather than cultivated.

Pteridium aquilinum s. lat., the most frequently mentioned species, has its use limited to specific regions and is even considered an Unconventional Food Plant (PANC) (Kinupp & Lorenzi 2014). Its shoots are used in the city of Ouro Preto and throughout the state of Minas Gerais, and its preparation and chemical composition are well documented in the literature. It is used sparsely in other places, although it grows spontaneously in nature in different parts of the country, to the point of being considered a weed (Kinupp & Lorenzi 2014). Its sprouts are prepared in preserves and usually served boiled, as siding to other dishes. Its taste is described as bitter but tasty. The species is also toxic, making it less attractive for potential commercial use: the shoots contain possibly carcinogenic substances. For this reason, cooking with extensive boiling and changing the water used is indicated to avoid health problems (Kinupp & Lorenzi 2014, Lorenzi *et al.* 2011), as well as consuming it only occasionally.

Other uses

This category comprises 70 use citations for 47 species (Table 2), representing the least cited uses or those with less information about them. The species were grouped under subcategories of use: cultivated (25 use cit.), commercialized in markets (9), with described chemical compounds (6), aphrodisiac (6), planting substrates (4), stuffing (3), pharmacies drying (3), fertilizing (2), artisanal (2), aromatic (2), veterinary (2), hallucinogen (1), manufacturing brandy (1), manufacturing smoking pipes (1), fuel (1), smoking (1) and glass production (1).

The most cited subcategory is cultivated species. They are mentioned as "present in greenhouses" or "cultivated" but with no further specified use. Most of them (18) have some other registered use. Those sold in markets also have no other specific purposes attached, but mostly are cited in other sources with well-defined uses, which can help infer the purpose of their sale. Some examples are *Cyathea microdonta* (only cited elsewhere as medicinal) or *Lygodium venustum* (only cited as medicinal and ritual). In the subcategory of described chemical compounds, *Serpocaulon triseriale* (Sw.) A.R. Sm. is worth mentioning: it contains coumarin, a factor that appears in other publications and is well documented. Its popular names are **samambaia-cheirosa** (fragrant-fern) and **samambaia-cumaru** (coumarin-fern) and, like *Christella patens* (Sw.) Pic. Serm. (which also contains coumarin), it is also cited as aromatic.

Species used as planting substrates include arborescent ones, whose caudex has already been extensively extracted, and its fibers used for manufacturing vases and substrates, especially for orchids. The caudex retains moisture and facilitates the root gas exchange for cultivated plants. Due to excessive extraction that led to the decrease of populations in nature, putting them at risk of extinction (Martinelli & Moraes 2013), the extraction of the **xaxim** (tree fern) (*Dicksonia sellowiana*) was prohibited in some places, as in the state of São Paulo since 2004, with state law nº 11.754. Also, other substrates can be used in the same way, such as synthetic fibers, coconut fiber, and mixtures of pine bark and charcoal. Pots of other materials are sometimes also sold under the name **xaxim**.

Although it is not mentioned in the reviewed sources, the authors uncovered another use for *Dicksonia sellowiana.* A personal communication indicated that **xaxim**'s caudex was extensively cut off and placed over dynamite sticks in order to muffle explosions during the construction of the federal road BR-116 in Caxias do Sul (Rio Grande do Sul) in the late 1930's, which could have contributed to the decrease of its populations in the region.

Not-informed uses

Some species cited as used did not have their use specified, listed under expressions such as "not informed", "other" or simply blank spaces in the data sheets in the sources. These include 111 of the 786 use citations, comprising 94 species (Table 2). However, only 64 species have had no other uses described in all sources and are in fact species with no specified use.

Toxicity remarks

Some sources have listed species as toxic, including four citations related to two species: *Pteridium aquilinum s. lat.* (3 cit.) and *Equisetum giganteum.* Despite the well-documented toxicity record, these are, respectively, the most consumed pteridophyte for food and the most used medicinal one in the country according to this survey, which raises the possibility that this could be a public health issue. *Pteridium aquilinum s. lat.* contains toxic substances like ptaquiloside and pterosin B (considered carcinogenic) (Lorenzi *et al.* 2011) as well as thiaminase, an enzyme that degrades vitamin B1, which can cause a deficiency in both people and animals. It is described as toxic to horses and livestock in general, especially cattle (Tokarnia 2012), but also sheep and pigs (Hojo-Souza *et al.* 2010). All

parts of the plant are described as toxic, especially the rhizome, but among the aerial parts the shoots (used as food) are the most toxic (Tokarnia 2012). *Equisetum giganteum*, on the other hand, has its toxicity recorded mainly for the large amount of silica in its tissues, which can be harmful to both humans and farm animals (Lorenzi & Matos 2008). In addition, it contains thiaminase (Lorenzi & Matos 2008), and its use is not recommended continuously due to the intensity of its diuretic effect. Although only two species were mentioned in the sources, others from this survey can be listed as toxic from the literature, such as *Microgramma vacciniifolia* (Albuquerque *et al.* 2014), *Dryopteris filix-mas* (L.) Schott (Pohl 1955), and *Equisetum hyemale* (Lorenzi *et al.* 2011).

Changes through history

The sources encompass data from different moments in history, from the 16th century up to 2021. Most sources (100 out of 124) refer to data collected after the year 2000. Five refer to periods both before and after the year 2000, and 19 are from before the year 2000. Although most of the sources are quite recent, most recorded citations refer to before the year 2000: out of the 820 total citations, 562 were recorded in these 19 sources of older records.

Over the time, some species presented changes in their uses, and many used historically are not used currently, with many species registering less diversity of uses in present times. This difference can be explained by three main factors: historical uses that no longer make sense, the breadth of the data contained in Pio Corrêa's dictionary (1926, 1931, 1952, 1969, 1974, 1975) "Dicionário de Plantas Úteis do Brasil e das Exóticas Cultivadas" (hardly achieved through isolated ethnobotany surveys) and questionable citations of use in the dictionary. Among historical uses that are not currently applicable, there are cases like the horsetail, used previously to sand wood and metal due to the amount of silica crystals and druses in its mesophyll (Mello & Budel 2013) that confer the abrasive property. In some historical sources, it's named **lixa-vegetal (**vegetable sandpaper). It is also described as used to produce glass, which would be unlikely today, given the industrial methods of this process. Another example is *Lycopodium clavatum*, used as a drying agent for drugstore pills. The species is used today only for medicinal purposes. There are also species used for treating diseases that have been almost eradicated or with more efficient treatments today, such as tuberculosis (treated with *Pteridium aquilinum s. lat.* and *Microgramma vacciniifolia*).

Among the 562 species citations, 409 are from Pio Corrêa's work, published in six volumes (1926, 1931, 1952, 1969, 1974, 1975). In his monumental dictionary, Pio Corrêa lists 234 pteridophyte species, representing 63% of those in our survey. The dictionary's data is valuable and essential to our listing but presents inconsistencies and missing information about some species cited by the author. This happens for the 121 species only cited as Potentially Ornamental, and another 59 with no described use. A more in-depth investigation could find more records of uses for part of these 180 species, but some appear unlikely to be used by populations, due to factors like having no other records or being too fragile to cultivate. Many plants cited in Pio Corrêa's dictionary also fall under the unconfirmed taxa category, due to being cited as native even though they are exotic to Brazil, with no occurrence confirmed in the national territory. Even so, the author registered them in Brazil, many with associated uses and popular names, such as *Adiantum denticulatum* Sw., *Aleuritopteris farinosa* (Forssk.) Fée, and *Polypodium leucatomus* Poir. Future studies could investigate which species the author is actually referring to when citing those.

Unconfirmed taxa

Beyond the 367 species (and 702 citations) with confirmed identities, 118 citations referring to 113 taxa were unconfirmed ones. Unconfirmed taxa are listed separately because they include taxa that was cited only up to genus level or those who, despite being listed as species in the source, refer to exotic ones we could not confirm that occurred or were ever used in the country. They sometimes represent misapplied names that were used to Brazilian specimens, and many even have popular names and uses associated. The list of unconfirmed taxa can be consulted in Table 3.

Taxa poorly identified to species level represents 58 taxa out of 113 listed, and 63 of the 118 citations (others are identified only to genus level). Unconfirmed taxa had predominant ornamental (45), medicinal (29) and potential ornamental uses (23). There are still 22 not-informed uses, five under the "others" category and one ritualistic. Some examples include *Polypodium leucotomos* Poir., used for medicinal purposes in other countries (Choudhry *et al.* 2014), but not in Brazil, where it is exotic and has no cultivation confirmed. Another example is *Asplenium auritum* var. *sulcatum* Sw., (Lam.) Baker, which is registered as ornamental and medicinal, but does not occur in Brazil, despite being listed as native in the sources. Some popular names appear only in the unconfirmed taxa list (Table 3), such as **samambaia-saia-de-baiana** and **samambaia-cabelo-de-anjo** (*Nephrolepis* spp.), **tupi-guarani** [*Lycopodiella alopecuroides* (L.) Cranfill] and **samambaia-de-penacho** (*Osmunda regalis* L.).

Popular names

Popular names refer to local classification systems for species and show how plants are seen by human communities, their patterns of use, and how they are differentiated. Despite their enormous diversity, people tend to homogenize pteridophytes, and most species are simply called **samambaia**, **feto**, **avenca**, **pinheirinho** or **cavalinha**. In fact, only 60 of the 367 species recorded here are not under these denominations or variations of those (such as **feto-macho-do-pará**, **avencão**, **samambaia-de-trepar**). Patterns exist even among those with different popular names, as is the case for all species of the Ophioglossaceae family listed, all under the popular name **língua-de-víbora**, or all *Equisetum* species, called **cavalinha** (horsetail) and sold under this name. Grouping species under the same popular name could lead to confusion for identifying and using such species. It can be problematic especially for medicinal species, if the plant used incorrectly is toxic while originally used was not, or simply because it does not produce the desired medicinal effect. In addition, identification both by the population and researchers can be hampered.

Folk names relate to their uses, whether or not they imply an effect, as it is the case for **língua-de-víbora** (viper's tongue) [*Cheiroglossa palmata* (L.) C. Presl] and **língua-de-víbora-do-campo (**field viper's tongue) [*Botrypus virginianus* (L.) Michx.], both used to treat snake bites, with similar names, but with different morphology and systematic positions. In addition, some popular names seem to have been created by the authors, especially in older sources (Barros & Andrade 1997, Pio Corrêa 1926, 1931, 1952, 1969, 1974, 1975). In these records they appear as almost exact transfers or translations of the scientific names from Latin to Portuguese, and it seems unlikely that they were designated popularly. This was a common practice in older publications, and it can also be noticed in others such as the Flora Ilustrada Catarinense (Sehnem & Reitz 1970). Some examples include **blecno** (for *Blechnum* spp.), **equiseto** (*Equisetum* spp.), **himenófilo-polianto** [*Hymenophyllum polyanthos* (Sw.) Sw.] and **trichomanes-elegante** (*Trichomanes elegans* Rich.). Other names appear more frequently in old records, such as **feto**, which seems to have been used even more than **samambaia** for pteridophyte species. The popular names also show how uses changed over the time, as it is the case for the genus *Equisetum*, which in historical materials appear under names like **lixa-vegetal** (vegetable sandpaper) or **limpa-prata** (silver cleaner), referring to their use for sanding and polishing materials. In more recent sources, however, these species appear as **cavalinha** (horsetail), **taquarinha** and other names that do not refer to this use, which also ceases to appear in the record.

Pteridophyte use representation among vascular plants

On average, 1.5% of the species mentioned in sources that include other vascular species are pteridophytes, and in most sources (97) the proportion is up to 3% of the citations. For comparison, the general proportion of pteridophyte species for the total vascular species that occur in Brazil is 2.92% (FFB 2022). Analyzing only these numbers, pteridophytes don't seem to be underrepresented in ethnobotany studies, though further investigations should be conducted. For now, we can only discuss how they are presented in this survey.

On one hand, they make up a small part of the vascular plant's lists and do not receive much attention in ethnobotany works, with few sources focused on discussing the group (Barros & Andrade 1997, Macedo & Nonato 2009, Reinaldo *et al.* 2015). Due to the delicate nature of some species and the lack of specialists to identify them, it is also common that they are not properly identified or even collected in surveys, although this data needs further investigation. On the other hand, the proportion of species of ethnobotanical use within the group is high (more than a quarter of the biodiversity available in Brazil, exceeding the initial expectations of this research), and almost all families present in the country are represented here. More investigation is required to assess whether or not the group is underrepresented and why. There are not many references that discuss this representation of pteridophytes, but the work by Reinaldo *et al.* (2015) comments on the disadvantages of including them in ethnobotanical surveys of free listing on any species, since there is a risk of being less cited compared to other vascular ones. The authors propose that the methods used are not suitable for collecting information about the group, and that it is sometimes less used because it is perceived as less effective (at least as medicinal).

Conclusions

This research leaves no doubt on the importance of pteridophytes used in Brazil, revealing biodiversity with ethnobotanical richness and even greater potential to explore. A large number of sources were collected, making this study a comprehensive compilation of current data, although it does not close discussions on the subject. It is also relevant for compiling and organizing this data in a single list with updated taxa, benefiting future studies that use this information.

It also highlights the gaps in the current knowledge of the subject. Few sources focused on the group, accounting for only three works, and although others exist outside the scope of this work, those are still rare. Also, they are rarely mentioned within the universe of generalist studies, representing less than 2% of vascular species cited. The results returned by the search engines also showed a pattern among ethnobotanical publications within our scope of review (containing fern information for Brazil): most of those sources (60%) are focused on medicinal uses, while we found less sources regarding specifically ornamental, ritual, and food uses of ferns. It is also remarkable that most sources consult non-traditional groups. Although most sources are well distributed among the country regions, there is a gap in the Northern region: it houses the second highest biodiversity of pteridophytes in nature (FFB 2022) but is the least represented here. The region is diverse in human groups that use its plant resources (diverse indigenous peoples, caboclos, riverside people, and others). With the increasing advance of deforestation and damage caused to the traditional populations of the region, it is urgent to register the ethnobotanical richness and plant diversity. These matters of anthropogenic intervention pose a threat to pteridophyte species, and further studies and data collections could help track and understand the species conservation status in Brazil, in order to protect both the plants and the cultures who relate to them.

A listing with this volume of ethnobotanical data for pteridophytes is unprecedented in Brazil and can be used as a starting point for other studies, such as deeper investigations of listed species, ethnobotanical, historical, phytochemical, and pharmacological works, filling in the gaps and investigating what that is not yet known on the subject. Pteridophytes are a rich group, whose potential use and symbolic relevance can be revisited and further explored by future studies, and this review leaves no doubt on that.

Declarations

List of abbreviations: spp. cit. = species citations, use cit. = use citations, med. cit. = medicinal use citations, orn. cit. = ornamental use citations, rit. cit. = ritual use citations, FFB = Flora e Funga do Brasil (2022), ICD-11 = 11th Revision of the International Classification of Diseases, m.y.a = million years ago, PPG I = Pteridophyte Phylogeny Group I (2016), RENISUS = List of Medicinal Plants of Interest to the Unified Health System (SUS), S. lat. = sensu lato, Spp. = species.
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Authors contributions: CMM conducted the research, data collecting and tabulation, drafted the manuscripts and translated and formatted the article in English, FG gathered some bibliography, reviewed the taxonomic and nomenclatural data, provided images to compose figures, and improved some discussions, MRR provided many discussions and data interpretations, and collaborated with formal academic support.
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