CHECKLIST OF ARBOREAL COMPONENT IN AN URBAN FOREST FRAGMENT IN FRANCISCO BELTRÃO, PR

CHECKLIST DO COMPONENTE ARBÓREO DE FRAGMENTO FLORESTAL URBANO EM FRANCISCO BELTRÃO, PR

Tainã de Souza[1]*, Luciana Pellizzaro[1], Mayara Camila Scur[2]

[1] Universidade Paranaense, Laboratório de Botânica, Avenida Júlio Assis Cavalheiro, 2000, CEP 85601-000, Francisco Beltrão, Paraná, Brasil

[2] Universidade Federal de Mato Grosso do Sul, Laboratório de Evolução e Biodiversidade, Avenida Costa e Silva, s/n, CEP 79070-900, Campo Grande, Mato Grosso do Sul, Brasil.

* Autor para correspondência: tainadsouzaa@gmail.com

ABSTRACT

Due to cities expansion, the native forests located in these areas were reduced to urban forest fragments, such as the Environmental Park Irmão Cirilo (EPIC), situated in Francisco Beltrão – Paraná. Due it, we aimed to carry out a survey of the tree species and implementation of an online system for the presentation of these. Tree plants were collected from March of 2013 to October of 2014, in 20 plots of 15 × 10 m totalizing 0.3 hectares. We recorded 72 arboreal taxa belonging to 49 genera and 28 families; eight are considered exotic and 13 are endemic to Brazil; and about the threat level, 12 species shows the status of Least Concern, two are Vulnerable and one is Endangered. Photographic records and morphological features of some taxons are available in the online system called "Dendrology of the Environmental Park Irmão Cirilo" (www.dendrologiapaic.com.br).

Keywords: Ecotone; Mixed Ombrophilous Forest; Seasonal Semideciduous Forest.

RESUMO

Devido à ampliação das cidades, as florestas nativas presentes nestas áreas foram reduzidas a fragmentos florestais urbanos, como é o caso do Parque Ambiental Irmão Cirilo (PAIC), situado em Francisco Beltrão – Paraná. Diante disso, objetivou-se realizar um levantamento das espécies arbóreas e implementação de um sistema *on-line* para apresentação destas. Foram coletadas plantas arbóreas de março de 2013 a outubro de 2014, em 20 parcelas de 15 × 10 m totalizando 0,3 hectares. Registramos 72 táxons arbóreos pertencentes a 49 gêneros e 28 famílias; oito são consideradas exóticas e 13 são endêmicas do Brasil; e sobre o nível de ameaça, 12 espécies mostram o status de Menor Preocupação, duas são Vulneráveis e uma está em Perigo de Extinção. Registros fotográficos e características morfológicas de alguns táxons estão disponíveis no sistema *on-line* "Dendrologia do Parque Ambiental Irmão Cirilo" (www.dendrologiapaic.com.br).

Palavras-chaves: Ecótono; Floresta Estacional Semidecidual; Floresta Ombrófila Mista.

The state of Paraná, until a few years ago, was considered the richest in forest cover of Atlantic Forest in Brazil (MAACK, 2012), however, like others regions of the country, with the expansion of urban, agricultural and livestock, the anthropic activities has reduced the native vegetation, leading to fragmented forest remnants (RODRIGUES et al., 2003; CAPPELATTI; SCHMITT, 2009). These fragmented forest remnants that have resisted to the urbanization process are denominated urban forest fragments (TROIAN et al., 2011).

In the city of Francisco Beltrão - Paraná, located between the coordinates 26° 02' 48.33" S and 53° 02' 22.94" W, is inserted the Environmental Park Irmão Cirilo (EPIC), a Municipal Conservation Unit, with 25.37 hectares. The vegetation type is secondary Mixed Ombrophilous Forest and Seasonal Semideciduous Forest. However, as the park is located in an urban area it suffers negative effects of man activity, caused by vandalism, withdraw of fruits and wood, waste

disposal, among other causes, which threaten the conservation of species (PELLIZZARO; SOUZA; CAMINSCHI, 2013).

Without much information about the flora of the urban forest fragments (ARIOTTI; EICHLER; FREITAS, 2016) and even though it is an altered vegetation, this information is fundamental, once the knowledge of part of the biodiversity present in a place can facilitate the execution of projects that aim its conservation and involve the population in this process, which tends to respect it (SCHERER; ESSI; PINHEIRO, 2015).

The dissemination of scientific data can be done through television, print resources and also via the internet. The latter is a method that has been gaining ground when it comes to ease of access (LORDÊLO; PORTO, 2011). To the disclosure of plant species, the online systems Flora of Brazil (BFG, 2015) and the SIDOL (Online System of Dendrological Identification) (SIDOL, 2017) are largely used.

In this way, the results of researches in urban forest fragments, when known by the population, end up awakening the importance of preserving and performing a proper management of these areas, serving as a leisure area and for environmental education activities. Thus, the objectives of this study were to realize a survey of the tree species and implement an online system to present them.

For this, data were collected from March of 2013 to October of 2014, in 20 plots of 15 × 10 m throughout the EPIC area, totalizing a sampling of 0.3 hectares. In each plot, whenever possible, three fertile branches of arboreal specimens with chest circumference equal or above 15 cm, were collected and herborized following the techniques of herborization (BRIDSON; FORMAN, 2010) and deposited in the Plant Collection of the Botany Laboratory of University Paranaense – Unity of Francisco Beltrão. The morphological characteristics of each specimen were recorded and photographed in the field and in the laboratory using an electronic magnifying glass.

The identification of the taxa was done through specialized literature (BACKES; IRGANG, 2002; LORENZI, 2002a, 2002b, 2009; LORENZI et al., 2003; RAMOS et al., 2008; SOUZA; LORENZI, 2012) and by the SIDOL (Online System of Dendrological Identification System) (SIDOL, 2017). Nomenclature, origin (native or exotic), and conservation status of the species, were following the "Lista de Espécies da Flora do Brasil" (BFG, 2015).

The online system was developed using the languages *Hypertext Preprocessor* (PHP), *Extensible HyperText Markup Language* (HTML) and *Cascading Style Sheets* (CSS). For the storage was used the Database based on "MySQL" and for the maintenance of the information the Database Management System.

We found in the EPIC 72 arboreal taxa belonging to 49 genera and 28 families. The richest families were: Myrtaceae with 11 species, Lauraceae with eight species, Fabaceae with six and Rutaceae with five. Meliaceae, Salicaceae and Sapindaceae presented four species each, Euphorbiaceae three species, while Bignoniaceae, Boraginaceae, Celastraceae, Malvaceae, Solanaceae, Styracaceae and Symplocaceae presented two species each. The other families were monospecific. Only three were identified at the genus level (Table 1).

Eight species recorded are considered exotic, corroborating the results of the survey already done in the park (PELLIZZARO; SOUZA; CAMINSCHI, 2013), and 13 are endemic for Brazil (BFG, 2015). About the conservation status, 12 are categorized as Least Concern, two as Vulnerable and one as Endangered (BFG, 2015).

The species that were found, their morphological characteristics and some images are available in the online system called Dendrology of the Environmental Park Irmão Cirilo (Depic), at the address www.dendrologiapaic.com.br. Data available in online systems increase the chances of identification, through index between species, and facilitate the dissemination of the species to the public (SAUERESSIG; SAUERESSIG; INOUE, 2009).

Table 1. List of tree species found in Environmental Park Irmão Cirilo, Francisco Beltrão, Paraná, recorded between 2013-2014.

Families	Species	Popular name	Collector number
Annonaceae	*Annona rugulosa* (Schltdl.) H.Rainer	Ariticum-de-porco	Souza, T. et al. 96
Aquifoliaceae	*Ilex paraguariensis* A.St.-Hil.[a]	Erva-mate	Souza, T. et al. 124
Araucariaceae	*Araucaria angustifolia* (Bertol.) Kuntze[c]	Araucária	Souza, T. et al. 116
Asteraceae	*Piptocarpha axillaris* (Less.) Baker■	Vassourão-cambará	Souza, T. et al. 150
Bignoniaceae	*Handroanthus albus* (Cham.) Mattos[a]	Ipê-amarelo	Souza, T. et al. 156
	Jacaranda micrantha Cham.■	Caroba	Souza, T. et al. 87
Boraginaceae	*Cordia americana* (L.) Gottschling & J.S.Mill.	Guajuvira	Souza, T. et al. 151
	Cordia trichotoma (Vell.) Arráb. ex Steud.	Louro-pardo	Souza, T. et al. 125
Celastraceae	*Maytenus evonymoides* Reissek	Tiriveiro	Souza, T. et al. 86
	Maytenus gonoclada Mart.[a]	Cafezinho	Souza, T. et al. 155
Cupressaceae	*Cupressus lusitanica* Mill.*	Cipestre	Souza, T. et al. 114
Euphorbiaceae	*Sapium glandulosum* (L.) Morong	Mata-olho	Souza, T. et al. 152
	Sebastiania brasiliensis Spreng.	Leiterinho	Souza, T. et al. 85
	Gymnanthes klotzschiana Müll.Arg.	Branquilho	Souza, T. et al. 126
Fabaceae	*Poincianella pluviosa* (DC.) L.P.Queiroz	Sibipiruna	Souza, T. et al. 105
	Dalbergia frutescens (Vell.) Britton	Rabo-de-bugio	Souza, T. et al. 154
	Machaerium paraguariense Hassl. LC[a]	Farinha-seca	Souza, T. et al. 149
	Parapiptadenia rigida (Benth.) Brenan	Angico-da-mata	Souza, T. et al. 115
	Platypodium elegans Vogel	Jacarandá-do-campo	Souza, T. et al. 153
	Senna multijuga (Rich.) H.S.Irwin & Barneby	Pau-cigarra	Souza, T. et al. 146
Lamiaceae	*Vitex megapotamica* (Spreng.) Moldenke	Tarumã	Souza, T. et al. 113
Lauraceae	*Nectandra grandiflora* Nees■ [a]	Caneleira	Souza, T. et al. 127
	Nectandra cuspidata Nees	Canelão-seboso	Souza, T. et al. 97
	Nectandra oppositifolia Nees	Canela-ferrugem	Souza, T. et al. 145
	Nectandra megapotamica (Spreng.) Mez	Canela-imbuia	Souza, T. et al. 117
	Ocotea catharinensis Mez[b]	Canelinha	Souza, T. et al. 104
	Ocotea diospyrifolia (Meisn.) Mez	Canela-amarela	Souza, T. et al. 98

	Ocotea indecora (Schott) Mez■	Canela-cheirosa	Souza, T. et al. 148

Table 1. Continued…

Families	**Species**	**Popular name**	**Collector number**
	Ocotea silvestris Vattimo-Gil■ [a]	Canela-silvestre	Souza, T. et al. 128
Malvaceae	*Luehea candicans* Mart. & Zucc.[a]	Açoita-cavalo	Souza, T. et al. 143
	Luehea divaricata Mart. & Zucc.	Açoita-cavalo	Souza, T. et al. 118
Meliaceae	*Cedrela fissilis* Vell.[b]	Cedro	Souza, T. et al. 147
	Guarea sp.	Catiguá-morcego	Souza, T. et al. 89
	Trichilia casaretti C.DC.■ [a]	Baga-de-morcego	Souza, T. et al. 144
	Trichilia elegans A.Juss.■	Catiguá-miudo	Souza, T. et al. 142
Monimiaceae	*Mollinedia clavigera* Tul.■	Pimenteirinha	Souza, T. et al. 106
Myrtaceae	*Campomanesia guazumifolia* (Cambess.) O.Berg	Sete-capote	Souza, T. et al. 129
	Campomanesia xanthocarpa (Mart.) O.Berg[a]	Guaviroveira	Souza, T. et al. 141
	Eucalyptus botryoides Sm.*	Eucalipto-bangalai	Souza, T. et al. 112
	Eucalyptus globulus Labill.*	Eucalipto	Souza, T. et al. 140
	Eugenia handroana D.Legrand■	Guamirim	Souza, T. et al. 88
	Eugenia pyriformis Cambess.	Uvaieiro	Souza, T. et al. 139
	Eugenia sp. 1		Souza, T. et al. 102
	Eugenia sp. 2		Souza, T. et al. 103
	Myrciaria delicatula (DC.) O.Berg	Araçá-do-mato	Souza, T. et al. 130
	Myrciaria floribunda (H.West ex Willd.) O.Berg[a]	Cambuí	Souza, T. et al. 90
	Myrcianthes gigantea (D.Legrand) D.Legrand	Pau-pelado	Souza, T. et al. 123
Oleaceae	*Ligustrum lucidum* W.T.Aiton*	Ligustrum	Souza, T. et al. 107
Pinaceae	*Pinus elliottii* L.*	Pinus	Souza, T. et al. 119
Primulaceae	*Myrsine coriacea* (Sw.) R.Br. ex Roem. & Schult.	Capororoquinha	Souza, T. et al. 99
Rosaceae	*Prunus myrtifolia* (L.) Urb.	Pessegueiro-bravo	Souza, T. et al. 93
Rutaceae	*Citrus x limon* (L.) Osbeck*	Limoeiro	Souza, T. et al. 131
	Citrus reticulata Blanco*	Bergamoteira	Souza, T. et al. 111
	Esenbeckia leiocarpa Engl.■ [a]	Guaratã	Souza, T. et al. 122
	Zanthoxylum rhoifolium Lam.	Mamica-de-cadela	Souza, T. et al. 138

	Zanthoxylum fagara (L.) Sarg.	Mamica-de-porca	Souza, T. et al. 95

Table 1. Continued…

Families	**Species**	**Popular name**	**Collector number**
Rhamnaceae	*Hovenia dulcis* Thunb.*	Uva-japão	Souza, T. et al. 92
Salicaceae	*Casearia decandra* Jacq.■	Guaçatonga	Souza, T. et al. 137
	Casearia lasiophylla Eichler■ [a]	Guaçatonga-graúda	Souza, T. et al. 100
	Casearia obliqua Spreng. ■	Guaçatunga-vermelha	Souza, T. et al. 136
	Xylosma ciliatifolia (Clos) Eichler	Sucará	Souza, T. et al. 108
Sapindaceae	*Allophylus edulis* (A.St.-Hil. et al.) Hieron. ex Niederl.	Vacum	Souza, T. et al. 132
	Cupania vernalis Cambess.	Camboatá	Souza, T. et al. 110
	Diatenopteryx sorbifolia Radlk.	Maria- preta	Souza, T. et al. 120
	Matayba elaeagnoides Radlk.	Miguel-pintado	Souza, T. et al. 91
Solanaceae	*Solanum mauritianum* Scop.	Fumo-bravo	Souza, T. et al. 134
	Vassobia breviflora (Sendtn.) Hunz.	Espora-de-galo	Souza, T. et al. 101
Styracaceae	*Styrax camporum* Pohl	Laranjeira-do-mato	Souza, T. et al. 135
	Styrax leprosus Hook. & Arn.	Canela-raposa	Souza, T. et al. 121
Symplocaceae	*Symplocos tetrandra* Mart.	Sete-sangria	Souza, T. et al. 109
	Symplocos uniflora (Pohl) Benth.	Maria-mole	Souza, T. et al. 133
Urticaceae	*Boehmeria macrophylla* Hornem.	Urtiga-mansa	Souza, T. et al. 94

* Exotic species; ■ Endemic species; [a] Species categorized as of Least concern; [b] Species categorized as of Vulnerable; [c] Species categorized as Endangered.

The present study demonstrate the importance of the conservation of the EPIC, considering that the number of species found is similar to those of other tree surveys in urban forest fragments in Southern Brazil (CAPPELATTI; SCHMITT, 2009; HÜLLER et al., 2011; TROIAN et al., 2011; ARIOTTI; EICHLER; FREITAS, 2016). Also, emphasizing the importance of the dissemination from the online system, promoting the knowledge of the flora of the region for the population, providing an easy way for researchers and lay people in botany to learn about the tree species and to realize environmental education projects in the area.

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