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CHECKLIST OF THE VASCULAR PLANTS OF THE GUARIBAS BIOLOGICAL RESERVE, PARAÍBA, BRAZIL

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ABSTRACT

Checklist of the Vascular Plants of the Guaribas Biological Reserve, Paraíba, Brazil. The Guaribas Biological Reserve, comprising 4029 ha, is the only Brazilian federal reserve of 4029 ha in the state of Paraíba. It is located about 52 km north of João Pessoa and comprises three distinct areas of Atlantic forest and savanna. Botanical study started in 1990 and has revealed a diverse flora of 629 species of vascular plants, broken down as follows: 26 ferns and fern allies in 13 families, 164 Monocotyledons in 19 families, and 439 Dicotyledons in 90 families. The most diverse plant families are the following: Leguminosae (in the broad sense) 78 species; Poaceae 56; Cyperaceae 44; Rubiaceae 31; Asteraceae 21; Malvaceae 20; Melastomataceae 18; and Myrtaceae 15.
Keywords: Checklist, Vascular Plants, Guaribas Biological Reserve, Atlantic coastal forest.

RESUMO

Lista das plantas vasculares da Reserva Biológica Guaribas, Paraíba, Brasil. A Reserva Biológica Guaribas, com 4029 ha, é a única reserva federal no estado da Paraíba. Localizada cerca de 50 km ao norte de João Pessoa, compreende três áreas distintas de floresta atlântica e savana. Estudos botânicos começaram em 1990 e revelaram uma flora diversa, com 629 espécies de plantas vasculares distribuídas em 26 espécies e 13 famílias de pteridófitas e licófitas, 164 espécies e 19 famílias de monocotiledôneas, e 439 espécies e 90 famílias de eudicotiledôneas. As famílias mais diversas são: Leguminosae s.l. com 78 espécies; Poaceae com 56; Cyperaceae com 44; Rubiaceae com 31; Asteraceae com 21; Malvaceae com 20; Melastomataceae com 18; e Myrtaceae com 15.
Palavras-Chave: Lista plantas vasculares, Reserva Biológica Guaribas, Floresta Atlântica.

INTRODUCTION

In this paper, we present a checklist of the vascular plants of one of the northernmost fragments of Atlantic coastal forest, the Guaribas Biological Reserve. In 2000, the Atlantic coastal forest was designated one of the World's biodiversity "hotspots" deserving high priority for conservation (MYERS *et al*., 2000). Earlier, the World Wildlife Fund called the forests of Atlantic coastal Brazil, along with Madagascar, as the most endangered habitats on earth (WORLD WILDLIFE FUND, 1984; MORI, 1989).

Within the Brazilian coastal forests, those in northeastern Brazil (from Bahia north to Rio Grande do Norte) are the most critically endangered, especially in areas of seasonal forest, with only a fraction of the remaining forest undisturbed (SAATCHI *et al*., 2001; SOS MATA ATLÂNTICA, INPE, 2008; TABARELLI *et al*., 2003). RIBEIRO *et al*. (2009), including fragments as small as 3 ha and secondary forests, estimated that Bahia had 16.7 percent remaining under forest cover and the Brazilian Northeast north of Bahia had only 11.5 percent. These estimates

are regional and do not distinguish the differential clearing of seasonal forests farther inland. Also, logging and land clearing continue despite a federal decree banning those activities in the coastal forest zone.

Paradoxically, despite the diminishing amount of forest, our knowledge of the vascular plant flora of the forests of northeastern Brazil is poor. There are regional and national checklists (BARBOSA *et al*. 2006, FORZZA *et al*. 2010), but there are few checklists for specific sites, with ALVES-ARAÚJO *et al*. (2008) and AMORIM *et al*. (2008) being exceptions.

The Study Site

The Guaribas Biological Reserve is a Brazilian federal reserve of 4029 ha about 52 km north of João Pessoa and comprises three distinct areas located in the municipalities of Mamanguape and Rio Tinto in the state of Paraíba, Brazil. The first area, known as SEMA 1, or "Capim Azul," comprises 674 ha is located between 06°39'47" and 06°42'57" S, and 35°06'46" and 35°08'00" W. The second area, almost adjacent to the first and known as SEMA 2, is the largest, comprising 3016 ha and is also located between 06°40'40" and 06°44'59" S, and 35°07'11" and 35°12'47" W. The third area, SEMA 3 or "Rio Tinto" is about 6 km southeast of the first two, comprises 339 ha, and is located from 06°47'32" to 06°48'36"S and 35°06'32" to 35°45'02"W (IBAMA 2003).

The average annual temperature varies between 24° and 26°C, with the hottest months, December and February, having average high temperatures between 28° and 30°C. The annual maximum is about 36°C. The elevation ranges from 60m to 204m, with most of the area between 100 m and 160m. Although IBAMA (2003) cites a higher estimate, the most accurate estimate for regional rainfall is that of AESA/PB (2004) which lists an average rainfall for Mamanguape of 1512 mm/year based on 64 years of records and 1310 mm/year for Rio Tinto based on four years. The rainy season usually starts in February and lasts through July, with the wettest months being April, May, and June. Following the classification system of Köppen (1936), the climate is As' characterized by being tropical and humid with a dry summer and rainy winter (IBAMA, 2003).

Geologically, the region in which the Reserve is found lies on Tertiary sediments of the Barreiras Formation. This formation, known locally as "tabuleiro," extends 50-100 km inland and from Rio Grande do Norte south to Rio de Janeiro. It is relatively flat and characterized by alluvial sands and clays dissected by steep-sided streams. Locally, much of the area is covered by up to a meter of wind-blown sand lying on top of the Barreiras sediments (IBAMA 2003). The predominant vegetation ranges from lowland semi-deciduous forest to savanna (also known as "tabuleiro") depending on the sandiness of the soil and how well it holds moisture. Along streams where there is year-round access to water and higher humidity, the forest is lowland tropical moist forest (THOMAS and BARBOSA, 2008).

Fire, both spontaneous and anthropogenic is an important factor in the Reserve. During the last year, 20-30 fires had to be extinguished, and the Reserve

field staff has received special training in fighting fires (Marina Klüppel, pers. comm.). Most fires occur in areas near the edges of the reserve, in secondary forests or tabuleiros.

SEMA 1 abuts the coastal highway, BR 101, and is mostly open savanna to the east. It gently slopes downward towards the valley of the Riacho Água Vermelha which is covered in semi-deciduous tropical forest over clay (IBAMA 2003). Elevations range from 181m in the southernmost portion of the area to 60m in the lowest parts of the river valley in the northwest. Perhaps the floristically most distinctive part of the landscape is a large area of savanna and a seepage slope over a perched water table and dominated by *Lagenocarpus rigidus* Nees, locally known as "Capim Azul."

SEMA 2 is the core of the Reserve, with the largest area of semi-deciduous forest. The elevation in this area ranges from 204 m in the western portion to 70m in the river valley, with the richest part of the forest found along the valley of the Rio do Barro Blanco. To the east and west, the forest becomes drier and grades into tabuleiro savanna over deep sand. One of the common tree species in much of the forest is *Caesalpinia echinata* or "pau-brasil," an Atlantic forest endemic species. Although hunted to extinction in what is now the Reserve, *Alouatta belzebul* L., the Red-handed Howler Monkey or "Guariba de mãos-vermelhas," gives the Reserve its name and populations are being re-established in SEMA 2.

SEMA 3 is adjacent to the town of Rio Tinto. The forest slopes from northwest to southeast as it drains into the Riacho Burro d'Água and the Riacho Passagem da Cobra, with elevations ranging from 130m to 20m. While some of the forest is quite tall, some of it includes the exotic *Elaeis guineensis*, the African oil palm or "dendezeiro."

The three areas of the Reserve came under the control of the Secretaria Especial do Meio Ambiente (SEMA) in 1981. In 1990, the area came under the control of IBAMA and was transformed into a federal Biological Reserve. The Reserve headquarters were constructed in 1995 and, by 2003, all the included land had become the property of the government (IBAMA 2003). With the reorganization of IBAMA in 2007, the Reserve came under the supervision of the Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio).

MATERIALS AND METHODS

All known vascular plants (pteridophytes and angiosperms) collections from the area of the Biological Reserve have been used in creating the checklist. The area was first visited by botanists of the Federal University of Paraíba in 1990. The most accessible and most visited areas are the savannas of SEMA 1 and the moist forests of the central part of SEMA 2 along the Rio do Barro Branco valley, known as "Cabeça do Boi." Since 2001, the area has been a study site for students in the Botany Department of the Federal University of Paraíba. Usually, these projects have focused on a single plant group and have

resulted in undergraduate honors theses or Master's Thesis projects. Groups emphasized in these studies include Legumes (DIONISIO *et al*. 2010) and Rubiaceae (PEREIRA and BARBOSA, 2004, 2006).

Collecting trips have been made at all times of the year and efforts are made to visit all ecologically distinct parts of the reserve. Recently, we have emphasized the collection of tree species because they are the most poorly known part of the flora and the most difficult to collect. Species in flower or fruit were sought and were collected unless we were sure that they had been previously collected (minimizing the repeated collection of common or weedy species). Fertile plants were found by walking through each site and searching for flowers or fruits, either fallen or in the trees. In cases where trees, lianas, or epiphytes could not be collected from the ground, they were reached using aluminum clipper poles which extended up to ca. 10 m above the ground.

Collected specimens were pressed in the field, numbered, catalogued, and dried on portable driers or at the herbarium of the Federal University of Paraíba (JPB). In many cases, photographs of the specimens were made before they were collected and pressed. Collections were identified by comparison with material in the JPB herbarium and duplicates were sent to specialists in Brazil and internationally.

RESULTS

To date, we have collected 629 species of vascular plants, broken down as follows: 26 ferns and fern allies in 13 families, 164 Monocotyledons in 19 families, and 439 Dicotyledons in 90 families. The most diverse plant families are the following: Leguminosae (in the broad sense) 78 species (Caesalpinioideae 21, Mimosoideae 19 , and Papilionoideae 38); Poaceae 56; Cyperaceae 44; Rubiaceae 31; Asteraceae 21; Malvaceae 20; Melastomataceae 18; and Myrtaceae 15 (Table 1).

There are 17 genera with six or more species. Several, such as the genera of Cyperaceae and Poaceae, are mostly savanna specialists, and are diverse in open areas with alternating wet and dry seasons. At the other extreme, *Psychotria* and *Miconia* are mostly restricted to forests (Table 2).

DISCUSSION

This study complements earlier studies on plants (DIONISIO *et al*. 2010; PEREIRA and BARBOSA, 2004, 2006) and animals, including a checklist of the birds of the reserve (ALMEIDA and TEIXEIRA, 2010), an inventory of the bees of the tabuleiro savannas (CAMILLO DE AGUIAR and MARTINS, 2003), and a study of the scarabid beetles (ENDRES *et al*., 2007).

The most comparable area for which a checklist exists is the Usina São

José, 100 km to the south in adjacent Pernambuco (MELO *et al*., 2011; ALVES-ARAÚJO *et al.* 2008). There, the known number of angiosperms species is 821 in 112 families found in nine fragments comprising 1360 ha. In the Guaribas reserve we found 603 species of angiosperms in 109 families found in 3 fragments comprising 4029 ha.

The species diversity is high in the Guaribas Biological Reserve because there are four distinct habitats, each with their characteristic species: well-drained tabuleiro savannas are the dominant vegetation type in SEMA 1 and also found in some areas of SEMA 2; savannas with seepage slopes, dominated by *Lagenocarpus rigidus*, are found only in SEMA 1; semi-deciduous tabuleiro forests are most widespread in SEMA 2, but found in small areas of SEMA 1 and SEMA 3; and moist forests are found along streams in all three areas and predominate in SEMA 3.

Although most of the species-rich genera (Table 2) are found in several habitats, many are most diverse in one habitat. The genera *Rhynchospora*, *Cyperus*, and *Utricularia*, for instance, are especially diverse because of the presence of moist savannas and seepage slopes providing a diverse assortment of wetland habitats. *Bulbostylis*, *Panicum*, *Paspalum*, and *Polygala* are diverse in open savannas. In contrast, *Miconia* and *Psychotria* are diverse in both moist and semi-deciduous forests. *Chamaecrista*, *Erythroxylum*, and *Sida*, on the other hand, bridge the gap between forest and savanna, with species found in both habitats.

There are many notable species (rare, endemic, endangered, or new to Paraíba or northeastern Brazil) in the Guaribas reserve. The most remarkable of these is the discovery of a species, new to science, of the previously monotypic genus *Lacandonia* (Triuridaceae) which, until now, was known only from southern Mexico (Aline Melo, pers. comm.). *Albolboda americana* (Xyridaceae) is rare in northeastern Brazil and, outside of Bahia, is known only from two collections, both from the Capim Azul area of the Reserve. Similarly, the genus *Trembleya* (Melastomataceae) is found only in Bahia and Ceará, and in the SEMA 3 area of the Reserve. Two Bromeliaceae, *Aechmea leptantha* and *Hohenbergia ridleyi*, are found only in the Pernambuco center of endemism, i.e. coastal forests in the states of Alagoas, Pernambuco and Paraíba; THOMAS et al. (1998). *Parkia pendula*, a large mimosoid tree also found in the Amazon basin, nears its northern limit in the Atlantic forest in the reserve (DIONISIO *et al*., 2010).

A tree species locally common in the reserve is *Caesalpinia echinata* (Pau-brasil or Pernambuco), a species endemic to the Atlantic forests of Brazil. Pau-brasil was almost extirpated in the past because of its valuable wood and is now listed by the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Appendix II (CITES, 2006).

Table 1 - A checklist of the vascular plants of the Guaribas Biological Reserve. Vouchers specimen codes are: CABM = C.A.B. de Miranda, ESS = E. S. Santana, LPF = L. P. Félix, MRB = M. R. V. Barbosa, RNAB = R. N. A. Brasil, WWT = Wm. Wayt Thomas, JPB = Herbarium of the Federal University of Paraíba.

FAMILY	SPECIES	VOUCHER
	FERNS AND FERN ALLIES	
LYCOPODIACEAE	*Lycopodiella cernua* (L.) Pichi. Serm.	ESS & LPF 224
	Lycopodiella caroliniana (L.) Pichi. Serm. var. *meridionalis* (Underw. & F.E. Lloyd) B. Øllg. & P.G. Windisch	WWT 15031
BLECHNACEAE	*Blechnum brasiliense* Desv.	ESS & LPF 296
	Blechnum serrulatum L.C. Rich.	WWT 15032
	Salpichlaena volubilis (Kaulf.) J. Sm.	ESS & LPF 217
CYATHEACEAE	*Cyathea microdonta* (Desv.) Domin.	ESS & LPF 108
	Cyathea phalerata Mart.	ESS & LPF 326
DENNSTAEDTIACEAE	*Pteridium aquilinum* (L.) Kuhn.	ESS & LPF 237
GLEICHENIACEAE	*Gleichenia flexuosa* (Schrad.) Mett.	ESS & LPF 377
	Sticherus bifidus (Willd.) Ching.	ESS & M.A. Sousa 369
HYMENOPHYLLCEAE	*Trichomanes pinnatum* Hedw.	ESS & LPF 211
LINDSAEACEAE	*Lindsaea stricta* (Sw.) Dryand.	WWT 15033
LOMARIOPSIDACEAE	*Lomariopsis* sp.	ESS & LPF 358
	Nephrolepis biserrata (Sw.) Schott L.	ESS & LPF 256
LYGODIACEAE	*Lygodium venustum* Sw.	ESS & LPF 312
	Lygodium volubile Sw.	ESS & M. A. Sousa 192
POLYPODIACEAE	*Microgramma vacciniifolia* (Langsd. & Fisch.) Copel.	ESS & LPF 362
	Phlebodium decumanum (Willd.) J. Sm.	ESS & LPF 204
	Serpocaulon triseriale (Sw.) A.R. Sm.	ESS & LPF 255
PTERIDACEAE	*Acrostichum danaeifolium* Langsd. & Fisch.	ESS & LPF 314
	Pityrogramma calomelanos (L.) Link.	ESS & LPF 292
	Pteris multifida Poir.	ESS & LPF 263 (Cult.)
	Vittaria lineata (L.) Sm.	ESS & LPF 406
SCHIZAEACEAE	*Actinostachys pennula* (Sw.) Hook.	ESS & M.A. Sousa 170
THELYPTERIDACEAE	*Thelypteris interrupta* (Willd.) K. Iwats.	ESS & LPF 215
	Thelypteris serrata (Cav.) Alston	ESS & LPF 203

Table 1 - continued

	ANGIOSPERMS MONOCOTYLEDONS	
AMARYLLIDACEAE	*Hippeastrum stylosum* Herb.	M.S. Pereira 684
ARACEAE	*Anthurium affine* Schott	LPF 2569
	Anthurium gracile (Rudge) Schott	LPF 2573
	Philodendron acutatum Schott	LPF 2570
	Philodendron leal-costae Mayo & G.M.Barroso	LPF s.n. (JPB 8112)
	Philodendron rudgeanum Schott	LPF s.n. (JPB 16003)
ARECACEAE	*Desmoncus polyacanthos* Mart.	LPF 2632
	Syagrus oleracea (Mart.) Becc.	LPF 2634
	Bactris sp.	WWT 15020
	Elaeis oleifera (Kunth) Cortés	Not vouchered
BROMELIACEAE	*Aechmea leptantha* (Harms) Leme & J. A. Siqueira-Filho	R.A. Pontes 470
	Aechmea mertensii (G. Mey.) Schult. & Schult. f.	R.A. Pontes 559
	Aechmea patentissima (Mart. ex Schult. & Schult. f.) Baker	R.A. Pontes 558
	Ananas ananassoides (Baker) L.B.Sm.	R.A. Pontes 127
	Bromelia karatas L.	G. Martinelli 15083 (RB)
	Hohenbergia ridleyi (Baker) Mez	R.A. Pontes 626
	Tillandsia bulbosa Hook.	R.A. Pontes 500
	Tillandsia paraensis Mez	R.A. Pontes 129 (RB)
	Vriesea procera (Mart. ex Schult. & Schult.f.) Wittm. var. *procera*	R.A. Pontes 560
BURMANNIACEAE	*Burmannia capitata* (Walter ex J.F.Gmel.) Mart.	WWT 14828
	Gymnosiphon divaricatus (Benth.) Benth. & Hook.f.	A. Melo 509
COMMELINACEAE	*Commelina erecta* L.	RNAB 22
COSTACEAE	*Costus lasius* Loes.	LPF & CABM s.n. (JPB 8323)
	Costus scaber Ruiz. & Pav	LPF & ESS 2771
CYCLANTHACEAE	*Evodianthus funifer* (Poit.) Lindm.	LPF 3911
CYPERACEAE	*Bulbostylis conifera* (Kunth) C.B. Clarke	LPF & ESS 2814
	Bulbostylis hirtella (Schrad.) Urb.	RNAB 05
	Bulbostylis junciformis (Kunth) C.B. Clarke	M.S. Pereira 538
	Bulbostylis lagoensis (Boeckeler) Prata & M.G. Lopéz	LPF & CABM s.n. (JPB 19998)
	Bulbostylis scabra (Presl) C.B. Clarke	I.B. Lima 983
	Bulbostylis sp. 1	MRB 2736
	Bulbostylis sp. 2	MRB 2737
	Bulbostylis sp. 3	MRB 2274

Table 1 - continued

Calyptrocarya glomerulata (Brongn.) Urb.	LPF et al. 3910
Cyperus aggregatus (Willd.) Endl.	LPF & CABM s.n. (JPB 22010)
Cyperus articulatus L.	LPF & ESS s.n. (JPB 8048)
Cyperus haspan L.	LPF & CABM s.n. (JPB 22000)
Cyperus laxus Lam.	LPF & CABM s.n. (JPB 22020)
Cyperus ligularis L.	I. B. Lima 981
Cyperus luzulae (L.) Retz.	LPF & ESS s.n. (JPB 16046)
Cyperus odoratus L.	LPF & ESS 2228
Cyperus sphacelatus Rottb.	LPF & ESS s.n. (JPB 8044)
Cyperus sp.	R.A. Pontes 518
Eleocharis geniculata (L.) Roem. & Schult.	LPF 3680
Eleocharis interstincta (Vahl) Roem. & Schult.	CABM & ESS s.n. (JPB 9386)
Fimbristylis cymosa R. Br.	LPF 3682
Fimbristylis complanata (Retz.) Link	LPF & ESS s.n. (JPB 8047)
Fuirena umbellata Rottb.	LPF & ESS 3619
Lagenocarpus guianensis Lindl. ex Ness	LPF & ESS 2808
Lagenocarpus rigidus Nees	RNAB 135
Pycreus polystachyos (Rottb.) P. Beauv.	LPF & CABM s.n. (JPB 9382)
Rhynchospora barbata (Vahl) Kunth	LPF & CABM s.n. (JPB 22008)
Rhynchospora cephalotes (L.) Vahl	RNAB 199
Rhynchospora comata (Link) Roem & Schult.	LPF & ESS 2944
Rhynchospora exaltata Kunth	RNAB 197
Rhynchospora cf. *eximia* (Ness) Boeckl.	WWT 14845
Rhynchospora filiformis Vahl	LPF & ESS 2805
Rhynchospora globosa (Kunth) Roem. & Schult.	LPF & ESS 2799
Rhynchospora holoschoenoides (Rich.) Herter	RNAB 177
Rhynchospora marisculus Lindl. & Nees.	LPF & ESS 3580
Rhynchospora nervosa (Vahl) Boeckeler	MRB 2271
Rhynchospora pubera (Vahl) Boeckeler subsp. pubera	CABM & LPF s.n. (JPB 7356)

Table 1 - continued

	Rhynchospora ridleyi C. B. Clarke	WWT 14851
	Rhynchospora riparia (Nees) Boeckeler	RNAB 66
	Rhynchospora tenerrima Nees ex Spreng.	LPF & CABM s.n. (JPB 9390)
	Rhynchospora sp.	WWT 14845
	Scleria bracteata Cav.	LPF & ESS 2811
	Scleria interrupta Rich.	LPF & CABM s.n. (JPB 22001)
	Scleria sp.	J. L. Viana 144
ERIOCAULACEAE	*Leiothrix pilulifera* (Körn.) Ruhland	RNAB 75
	Paepalanthus bifidus (Schrad.) Kunth	LPF 2137
	Paepalanthus lamarckii Kunth	CABM 153
	Paepalanthus myocephalus (Mart.) Körn.	CABM s.n. (JPB 19056)
	Paepalanthus subtilis Miq.	RNAB 103
	Syngonanthus gracilis (Bong.) Ruhland	MRB 2454
HELICONIACEAE	*Heliconia psittacorum* L.	M.S. Pereira 205
HYPOXIDACEAE	*Hypoxis decumbens* L.	LPF 3675
IRIDACEAE	*Trimezia* sp.	RNAB 236
MARANTACEAE	*Calathea brasiliensis* Körn.	LPF & ESS 2946
	Calathea villosa (Lodd) Lindl.	LPF & CABM 3435
	Maranta noctiflora Regel & Körn.	LPF & ESS 3051
	Monotagma laxum (Poepp. & Endl.) K. Schum.	LPF & ESS (JPB 8109)
	Monotagma plurispicatum (Körn.) K. Schum.	LPF & ESS 2901
ORCHIDACEAE	*Catasetum discolor* Lindl.	RNAB 140
	Cleistes tenuis (Rchb.f. ex Griseb.) Schldt.	CABM 3957
	Cyrtopodium intermedium Brade	LPF s.n. (JPB 16043)
	Cyrtopodium flavum Link & Otto ex Rchb.f.	RNAB 170
	Dimerandra emarginata (G. Mey.) Hoehne	RNAB (JPB 46712)
	Epidendrum imatophyllum Lindl.	LPF 2597
	Epidendrum macrocarpum Rich.	RNAB 201
	Epidendrum cinnabarinum Salzm.	MRB 2449
	Epistephium lucidum Cogn.	RNAB 225
	Eltroplectris cf. *calcarata* (Sw.) Garay & H.R.Sweet	G. A. Gomes-Costa 143
	Galeandra montana Barb. Rodr.	LPF & M. A. Sousa 4014
	Habenaria pratensis (Salzm. ex Lindl.) Rchb. f.	LPF 3564

Table 1 - continued

	Habenaria petalodes Lindl.	M. S. Pereira 534
	Liparis nervosa (Thunb.) Lindl.	LPF 3934
	Notylia lyrata S. Moore	LPF & ESS 2531
	Oeceoclades maculata (Lindl.) Lindl.	RNAB 229
	Sarcoglottis grandiflora (Hook.) Klotzsch.	WWT 14854
	Vanilla bahiana Hoehne	RNAB 123
POACEAE	*Andropogon leucortachyus* Kunth	LPF 3512
	Andropogon selloanus (Hack.) Hack.	MRB 2270
	Aristida longifolia Trin.	LPF s.n. (JPB 19073)
	Aristida riparia Trin.	LPF s.n. (JPB 19078)
	Aristida setifolia Kunth	LPF 3075
	Aristida cf. *setifolia* Kunth	LPF s.n. (JPB 19071)
	Aristida sp.	CABM s.n. (JPB 17981)
	Axonopus aureus P. Beauv.	LPF 2968
	Axonopus chrysoblepharis Chase	LPF s.n. (JPB 19077)
	Axonopus polydactylus (Steud.) Dedecca	LPF 2791
	Axonopus sp.	MRB 2275
	Chaetium festucoides Nees	LPF 3921
	Coix lacryama-jobi L.	CABM s.n. (JPB 5994)
	Colanthelia sp.	LPF s.n. (JPB 7318)
	Cyphonanthus discrepans (Döll) Zuloaga & Morrone	LPF 9347
	Digitaria ciliaris (Retz.) Koeler	LPF 3444
	Digitaria horizontalis Willd.	LPF s.n. (JPB 8058)
	Digitaria longiflora (Retz.) Pers.	LPF 3442
	Echinolaena inflexa (Poir.) Chase	LPF 3455
	Eleusine indica (L.) Gaertn.	LPF 8054
	Eragrostis aff. *amabilis* (L.) Wight & Arn.	CABM s.n. (JPB 6001)
	Eragrostis maypurensis (Kunth) Steud.	LPF s.n. (JPB 19067)
	Eriochloa punctata (L.) Desv. ex Ham.	LPF s.n. (JPB 8059)
	Eriochrysis cayennensis (Trin.) Kuhlm.	LPF 3576
	Gouinia barbata (Hack.) Swallen	CABM s.n. (JPB 17965)
	Gouinia aff. *brasiliensis* (S.Moore) Swallen	LPF 2851
	Guadua paniculata Munro	WWT 14853
	Gymnopogon foliosus (Willd.) Nees	LPF 2220
	Gymnopogon spicatus (Spreng.) Kuntze	LPF s.n. (JPB 19080)

Table 1 - continued

	Ichnanthus sp.	LPF 2833
	Lasiacis ligulata Hitchc. & Chase	LPF s.n. (JPB 19079)
	Leptochloa myuros (Lam.) Chose.	LPF s.n. (JPB 9389)
	Megathyrsus maximus (Jacq.) B.K.Simon & S.W.L.Jacobs	LPF s.n. (JPB 19072)
	Olyra latifolia L.	CABM s.n. (JPB 17967)
	Panicum cyanescens Nees ex Trin.	LPF 2803A
	Panicum aff. *cyanescens* Nees ex Trin.	LPF 2803
	Panicum millegrana Poir	LPF 2827
	Panicum pilosum Sw.	LPF 9380
	Panicum rudgei Roem. & Schult.	LPF s.n. (JPB 19062)
	Panicum trichanthum Nees	LPF s.n. (JPB 19065)
	Paspalum arenarium Schrad.	LPF s.n. (JPB 19064)
	Paspalum conjugatum P.J.Bergius	LPF s.n. (JPB 8060)
	Paspalum gardnerianum Nees	MRB 2276
	Paspalum maritimum Trin.	LPF s.n. (JPB 8049)
	Paspalum millegrana Schrad. ex Schult.	LPF s.n. (JPB 16026)
	Paspalum multicaule Poir.	LPF 3558
	Paspalum parviflorum Rhode ex Flüggé	WWT 14831
	Pennisetum pedicellatum Trin.	LPF s.n. (JPB 8051)
	Schizachyrium aff. *condensatum* (Kunth) Nees	LPF s.n. (JPB 8052)
	Schizachyrium microstachyum (Desv. ex Ham.) Roseng.	LPF s.n. (JPB 19066)
	Setaria parviflora (Poir.) Kergué-len	LPF s.n. (JPB 8055)
	Sporobolus indicus (L.) R.Br.	LPF 3625
	Sporobolus sp.	LPF s.n. (JPB 8053)
	Streptostachys asperifolia Desv.	CABM s.n. (JPB 8056)
	Trachypogon spicatus (L.f.) Kuntze	MRB 2272
PONTEDERIACEAE	*Eichhornia crassipes* (Mart.) Solms	LPF s.n. (JPB 16048)
SMILACACEAE	*Smilax* sp.	LPF s.n. (JPB 16055)
XYRIDACEAE	*Abolboda americana* (Aubl.) Lanj.	RNAB 143
	Xyris fallax Malme	LPF & ESS 2960
	Xyris moraesii L.B. Sm. & Downs	LPF & ESS 2141
	Xyris paraensis Poepp. ex Kunth var. *paraensis*	LPF & ESS 2229
	ANGIOSPERMS DICOTYLEDONS	
ACANTHACEAE	*Aphelandra nuda* Nees	CABM 175

Table 1 - continued

	Elytraria imbricata (Vahl) Pers.	LPF s.n. (JPB 16852)
	Justicia sp.	LPF s.n. (JPB 8036)
	Mendoncia puberula (Mart.) Nees	LPF 2961
	Ruellia paniculata L.	LPF s.n. (JPB 8012-A)
AMARANTHACEAE	*Amaranthus spinosus* L.	LPF s.n. (JPB 16010)
	Amaranthus viridis L.	LPF s.n. (JPB 14006)
	Alternanthera tenella Colla	LPF s.n. (JPB 8099)
	Chenopodium ambrosioides L.	LPF s.n. (JPB 8023) (cultivated)
ANACARDIACEAE	*Anacardium occidentale* L.	MRB 2635
	Schinus terebinthifolius Raddi	M.E.M. Fortunado & Z.G. Quirino 27
	Tapirira guianensis Aubl.	LPF & ESS 3029
	Thyrsodium spruceanum Benth.	LPF & ESS s.n. (JPB 8107)
ANNONACEAE	*Annona salzmannii* DC.	M.S.Pereira 334
	Duguetia gardneriana Mart.	LPF & ESS 3061
	Guatteria schomburgkiana Mart.	M. S. Pereia 122
	Xylopia frutescens Aubl.	M. A. Sousa 1059
	Xylopia laevigata (Mart.) R.E.Fr.	LPF s.n. (JPB 22016)
APOCYNACEAE	*Asclepias curassavica* L.	LPF. s.n. (JPB 8040)
	Ditassa crassifolia Decne.	RNAB 120
	Hancornia speciosa Gomes	T.M.G. Veloso 25
	Himatanthus phagedaenicus (Mart.) Woodson	MRB 2315
	Mandevilla hirsuta (Rich.) K. Schum.	LPF 2964
	Mandevilla microphylla (Stadelm.) M. F. Sales	LPF 2818
	Mandevilla moricandiana (A. DC.) Woodson	RNAB 20
	Mandevilla scabra (Hoffmanns. ex Roem. & Shult.) K. Schum.	RNAB 35
	Matelea sp.	RNAB 105
	Petalostelma sp.	LPF 2920
	Prestonia bahiensis Müll. Arg.	LPF 3074
	Tabernaemontana flavicans Willd. ex. Roem. & Schult.	LPF 2889
	Temnadenia stellaris (Lindl.) Miers	LPF 2790
ARALIACEAE	*Schefflera* sp.	unvouchered
ARISTOLOCHIACEAE	*Aristolochia birostris* Duch.	J.L. Viana 143
	Aristolochia papillaris Mast.	M.A. Sousa 1050
	Aristolochia trilobata L.	LPF & ESS s.n. (JPB 8037)
ASTERACEAE	*Aspilia procumbens* Baker	RNAB 03
	Conyza bonariensis (L.) Cronquist	LPF s.n. (JPB 15667)

Table 1 - continued

	Cyanthillium cinereum (L.) H.Rob.	LPF 3440
	Cyrtocymura scorpioides (Lam.) H.Rob.	LPF 3436
	Elephantopus hirtiflorus DC.	CABM 155
	Elephantopus mollis Kunth	LPF s.n. (JPB 7322)
	Emilia fosbergii Nicolson	LPF 2758
	Lourteigia ballotifolia (Kunth) R.M. King & H. Rob.	LPF s.n. (JPB 18006)
	Koanophyllon conglobatum (DC.) R.M. King & H. Rob.	LPF s.n (JPB 14670)
	Lepidaploa chalybaea (Mart. ex DC.) H.Rob.	LPF 2979
	Mikania cordifolia (L. f.) Willd.	LPF 3659
	Mikania psilostachya DC.	LPF 2778
	Platypodanthera melissifolia (DC.) R.M. King & H. Rob.	LPF 2157
	Pluchea sagittalis (lam.) Cabrera	LPF s.n. (JPB 19007)
	Porophyllum ruderale (Jacq.) Cass.	CABM s.n. (JPB 14663)
	Rolandra fruticosa (L.) Kuntze	CABM s.n. (JPB 16809)
	Sonchus oleraceus L.	LPF & CABM s.n. (JPB 7308)
	Sphagneticola trilobata (L.) Pruski	LPF 3612
	Stilpnopappus cearensis Huber	MRB 2298
	Tilesia baccata (L.f.) Pruski	LPF s.n. (JPB 14674)
	Wedelia villosa Gardner	LPF s.n. (JPB 18450)
BIGNONIACEAE	*Anemopaegma* sp.	CABM & LPF s.n. (JPB 7353)
	Arrabidaea conjugata (Vell.) Mart.	J.R. Lima 215
	Arrabidaea cinnamomea (A. DC.) Sandwith	LPF & ESS 2892
	Arrabidaea rego (Vell.) DC.	LPF & ESS 3671
	Lundia cordata (Vell.) DC.	M.A. Sousa & A.T. Moura 1339
	Pithecoctenium sp.	LPF & ESS 3068
	Tabebuia sp.	A.J.C. Aguiar s.n. (JPB 25432)
	Tecoma stans (L.) Juss. ex Kunth	S.R. Nobrega 97 (cultivated)
BIXACEAE	*Cochlospermum regium* (Mart. ex Schrank) Pilg.	J.L. Viana 157
BORAGINACEAE	*Cordia nodosa* Lam.	LPF & ESS 2296
	Cordia superba Cham.	WWT 15048
	Euploca procumbens (Mill.) Diane & Hilger	LPF & ESS s.n. (JPB 16041)
	Tournefortia candidula (Miers) Johnst.	MRB 2291
	Tournefortia rubicunda Salzm. Ex A.DC.	S.R. Nóbrega 16

Table 1 - continued

	Varronia multispicata (Cham.) Borhidi	LPF & ESS 2963
BURSERACEAE	*Protium* cf. *brasiliense* (Spreng.) Engl.	LPF 3608
	Protium heptaphyllum (Aubl.) Marchand	LPF 3917
CACTACEAE	*Epiphyllum phyllanthus* (L.) Haw.	M.S. Pereira 578
	Melocactus violaceus Pfeiff.	LPF 4028
CANNABACEAE	*Trema micrantha* (L.) Blume.	LPF 3012
CAPPARACEAE	*Capparis flexuosa* (L.) L.	LPF s.n. (JPB 43536r)
	Physostemon guianense (Aubl.) Malme	LPF s.n. (JPB 14658)
	Physostemon rotundifolium Mart. & Zucc.	LPF 3964
	Tarenaya spinosa (Jacq.) Raf.	LPF s.n. (JPB 16015)
CARYOPHYLLACEAE	*Polycarpaea corymbosa* (L.) Lam.	LPF s.n. (JPB 15662)
CELASTRACEAE	*Cheiloclinium serratum* (Cambess.) A.C.Sm.	LPF & ESS 2902
	Maytenus erythroxyla Reissek	LPF & ESS 2885
	Maytenus obtusifolia Mart.	F.O. Silva 46
	Prionostemma aspera (Lam.) Miers	LPF & ESS 2249
CHRYSOBALANCEAE	*Hirtella ciliata* Mart. et Zucc.	F. Camarotti 67
	Hirtella racemosa Lam.	M.S. Pereira 124
CLUSIACEAE	*Clusia nemorosa* G. Mey.	M.S. Pereira 225
	Clusia paralicola G. Mariz	LPF & ESS 3059
	Symphonia globulifera L.f.	LPF & ESS 3004
COMBRETACEAE	*Buchenavia tetraphylla* (Aubl.) R.A.Howard	M.S.Pereira 571
CONVOLVULACEAE	*Aniseia martinicensis* (Jacq.) Choisy	L. P. Xavier s.n. (JPB 214)
	Ipomoea bahiensis Willd.	LPF 2207
	Ipomoea batatoides Choisy	LPF 2238
	Jacquemontia glaucescens Choisy	RNAB 115
	Jacquemontia serrata Meisn.	R. A. Pontes 519
	Jacquemontia tamnifolia (L.) Griseb.	LPF s.n. (JPB 15666)
CUCURBITACEAE	*Gurania subumbellata* (Miq.) Cogn.	CABM & LPF 7362
	Gurania bignoniacea (poepp. & Endl.) C. Jeffrey	R.A. Pontes 485
	Momordica charantia L.	S.R.Nóbrega 13
DILLENIACEAE	*Davilla kunthii* A.St.-Hil.	RNAB 193
	Tetracera breyniana Schltdl.	MRB 2292
DIOSCOREACEAE	*Dioscorea martiana* Griseb.	R.A. Pontes 555
	Dioscorea sincorensis R.Knuth	LPF 2934
DROSERACEAE	*Drosera communis* A. St.-Hil.	LPF 3960
	Drosera sessilifolia A. St.-Hil.	LPF 2287
ELAEOCARPACEAE	*Sloanea garckeana* K.Schum.	A.Melo 491

Table 1 - continued

ERYTHROXYLACEAE	*Erythroxylum citrifolium* A. St.-Hil.	LPF s.n. (JPB 8017)
	Erythroxylum passerinum Mart.	LPF 3031
	Erythroxylum pauferrense Plowman	LPF 2529
	Erythroxylum rimosum O.E. Schulz	LPF 3554
	Erythroxylum suberosum A.St.-Hil. var. *denudatum* O.E. Schulz	MRB 2302
	Erythroxylum squamatum Sw.	M.E.M. Fortunato 22
EUPHORBIACEAE	*Chaetocarpus myrsinites* Baill.	A.J.C. Aguiar 45
	Chamaesyce hyssopifolia (L.) Small	LPF s.n. (JPB 7868)
	Croton grandulosus L.	LPF 3443
	Croton hirtus L'Herit.	M.A. Sousa 1042
	Croton nepetifolius Baill.	LPF 2551
	Croton sellowii Baill.	LPF 2842
	Croton urticifolius Lam.	LPF 2550
	Croton sp.	LPF s.n. (JPB 22023)
	Dalechampia sp.	LPF s.n. (JPB 19058)
	Euphorbia prostrata Ait.	LPF s.n. (JPB 15520)
	Microstachys corniculata (Vahl) Griseb.	LPF 4009
	Pera glabrata (Schott) Poepp. ex Baill.	CABM s.n. (JPB 5389)
	Pogonophora schomburgkiana Miers	LPF 2848
GENTIANACEAE	*Chelonanthus purpurascens* (Aubl.) Struwe, S. Nilsson & V.A. Albert	LPF 3954
	Schultesia guianensis (Aubl.) Malme var. *guianensis*	CABM s.n. (JPB 5210)
	Schultesia pohliana Progel	LPF 2286
	Voyria tenella Hook.	A. Melo 511
	Voyria caerulea Aubl.	A. Melo 480
GESNERIACEAE	*Codonanthe uleana* Fritsch	RNAB 202
HERNANDIACEAE	*Sparattanthelium botocudorum* Mart.	M. S. Pereira 208
HUMIRIACEAE	*Sacoglottis mattogrossensis* Malme var. *mattogrossensis*	MRB 1346
HYPERICACEAE	*Vismia guianensis* (Aubl.) Choisy	CABM 158
KRAMERIACEAE	*Krameria tomentosa* A. St.-Hil.	MRB 2287
LAMIACEAE	*Aegiphila pernambucensis* Moldenke	LPF 2890
	Hyptis atrorubens Poit.	CABM s.n. (JPB 16020)
	Hyptis fruticosa Salzm. ex Benth.	MRB 2615
	Hyptis recurvata Poit.	LPF 2962
	Hyptis aff. *sinuata* Pohl ex Benth.	LPF s.n. (JPB 8012)
	Marsypianthes chamaedrys (Vahl) Kuntze	R.A. Pontes 551

Table 1 - continued

	Rhaphiodon echinus Schauer	LPF 2161
LAURACEAE	*Cassytha filiformis* L.	MRB 2294
	Ocotea canaliculata (Rich.) Mez	R.A. Pontes 490
	Ocotea duckei Vattimo-Gil	LPF 2900
	Ocotea gardneri (Meisn.) Mez	MRB 2640
	Ocotea glomerata (Nees) Mez	LPF s.n. (JPB 7325)
LECYTHIDACEAE	*Cariniana legalis* (Mart.) Kuntze	LPF & ESS 3017
	Eschweilera ovata (Cambess.) Miers	M.S. Pereira 318
	Lecythis pisonis Cambess.	MRB 3450
LEGUMINOSAE-CAESALPINIOIDEAE	*Apuleia leiocarpa* (Vogel) J.F. Macbr.	G.O. Dionísio 287
	Caesalpinia echinata Lam.	G.O. Dioníso 293
	Chamaecrista desvauxii (Collad.) Killip	LPF 2140
	Chamaecrista diphylla (L.) Greene	LPF 3562
	Chamaecrista ensiformis (Vell.) H.S. Irwin & Barneby	LPF 2854
	Chamaecrista flexuosa (L.) Greene	LPF 2184
	Chamaecrista hispidula (Vahl) H.S. Irwin & Barneby	LPF 2089
	Chamaecrista nictitans (L.) Moench	LPF s.n. (JPB 8415)
	Chamaecrista nictitans subsp. *disadena* (Steud.) H.S. Irwin & Barneby	LPF 2182
	Chamaecrista ramosa (Vogel) H.S. Irwin & Barneby	LPF 2275
	Chamaecrista rotundifolia (Pers.) Greene	LPF 2259
	Chamaecrista supplex (Mart. ex Benth.) Britton & Rose ex Britton & Killip	LPF s.n. (JPB 8417)
	Hymenaea courbaril L.	G.O. Dionísio 292
	Hymenaea rubriflora Ducke	LPF 2876
	Senna georgica H.S. Irwin & Barneby	M.E.M. Fortunato 30
	Senna obtusifolia (L.) H.S. Irwin & Barneby	CABM 7349
	Senna pinheiroi H.S. Irwin & Barneby	M.A. Sousa 1061
	Senna quinquangulata (Rich.) H.S. Irwin & Barneby	LPF 2772
	Senna rizzinii H.S. Irwin & Barneby	LPF 2198
	Senna splendida (Vogel) H.S. Irwin & Barneby	LPF 2153
	Tachigali densiflora (Benth.) L.G. Silva & H.C. Lima	G.O. Dionísio 297

Table 1 - continued

LEGUMINOSAE – MIMOSOIDEAE	*Abarema cochliacarpos* (Gomes) Barneby & J.W.Grimes	MRB 2288
	Abarema filamentosa (Benth.) Pittier	MRB 2277
	Albizia polycephala (Benth.) Killip ex Record	LPF 2625
	Calliandra parvifolia (Hook. & Arn.) Speg.	LPF 2631
	Chloroleucon acacioides (Ducke) Barneby & J.W. Grimes	LPF 2419
	Inga blanchetiana Benth.	LPF 3553
	Inga capitata Desv.	LPF 3016
	Inga laurina (Sw.) Willd.	LPF 2553
	Inga marginata Willd.	G.O. Dionísio 286
	Inga thibaudiana DC.	G.O. Dionísio 294
	Inga vera subsp. *affinis*(DC.) T.D. Penn.	LPF s.n. (JPB 8007)
	Mimosa hirsutissima Mart.	A.C.A. Moura 123
	Mimosa pigra L.	LPF s.n. (JPB 8010)
	Mimosa polydactyla Humb. & Bonpl. ex Willd.	LPF 2766
	Mimosa quadrivalvis var. *leptocarpa* (DC) Barneby	LPF s.n. (JPB 8421)
	Mimosa sensitiva L.	LPF 2953
	Mimosa somnians Humb. & Bonpl. ex Willd.	LPF s.n. (JPB 14662)
	Parkia pendula (Willd.)Benth.ex Willd.	G.O. Dinísio 295
	Pityrocarpa moniliformis (Benth.) Luckow & R.W.Jobson	P.C. Gadelha-Neto 2940
LEGUMINOSAE – PAPILIONOIDEAE	*Aeschynomene histrix* var. *denisiflora* (Benth.) Rudd	LPF 2585
	Aeschynomene histrix Poir. var. *histrix*	CABM s.n. (JPB 9170)
	Aeschynomene sensitiva Sw.	LPF s.n. (JPB 22028)
	Aeschynomene viscidula Michx.	LPF s.n. (JPB 9349)
	Andira cf. *carvalhoi* R.T. Penn. & H.C. Lima	MRB 2441
	Andira fraxinifolia Benth.	A.J.C. Aguiar 03
	Andira humilis Mart. ex Benth.	MRB 2267
	Andira legalis (Vell.) Toledo	T.M.G. Veloso 42
	Bowdichia virgilioides Kunth	G.O. Dionísio 296
	Calopogonium velutinum (Benth.) Amshoff	LPF 2263
	Centrosema brasilianum (L.) Benth. (L.) Benth.	RNAB 134
	Clitoria guianensis (Aubl.) Benth.	LPF 2017
	Crotalaria retusa L.	LPF 3676
	Crotalaria stipularia Desv.	LPF 3451

Table 1 - continued

	Dalbergia ecastophyllum (L.) Taub.	LPF s.n. (JPB 8005)
	Desmodium axillare (Sw.) DC.	LPF 2764
	Desmodium barbatum (L.) Benth.	LPF 2131
	Desmodium discolor Vogel	LPF 2156
	Desmodium incanum DC.	LPF s.n. (JPB 16821)
	Dioclea violaceae Mart. ex Benth.	LPF 3906
	Dioclea virgata (Rich.) Amshoff	LPF 2210
	Indigofera suffruticosa Mill.	LPF 2915
	Macroptilium lathyroides (L.) Urb.	LPF 2256
	Periandra coccinea (Schrad.) Benth.	LPF s.n. (JPB 8429-B)
	Periandra mediterranea (Vell.) Taub.	MRB 2445
	Pterocarpus rohrii Vahl	LPF 3611
	Rhynchosia minima (L.) DC.	LPF 2225
	Rhynchosia phaseoloides (Sw.) DC.	LPF s.n. (JPB 8426)
	Soemmeringia cf. *semperflorens* Mart.	LPF s.n. (JPB 8429-A)
	Stylosanthes angustifolia Vogel	LPF 2113
	Stylosanthes capitata Vogel	LPF 2124
	Stylosanthes gracilis Kunth	LPF 2788
	Stylosanthes guianensis (Aubl.) Sw.	LPF 2273
	Stylosanthes scabra Vogel	RNAB 45
	Stylosanthes viscosa (L.) Sw.	LPF 2171
	Vigna luteola (Jacq.) Benth.	LPF s.n. (JPB 16071)
	Zornia diphylla (L.) Pers.	LPF 2788
	Zornia sericea Moric.	RNAB 50
LENTIBULARIACEAE	*Genlisea filiformis* A. St.-Hil.	LPF 4018
	Utricularia guyanensis A. DC.	LPF s.n. (JPB 18042)
	Utricularia juncea Vahl	RNAB 223
	Utricularia nana A. St.–Hil. & Girard	WWT 14838
	Utricularia subulata L.	LPF s.n. (JPB 9042)
	Utricularia tricolor A. St.-Hil.	A. Melo 498
	Utricularia sp.	LPF s.n. (JPB 8412)
LINDERNIACEAE (separated from Scrophulariaceae)	*Torenia thouarsii* (Cham. & Schltdl.) Kuntze	LPF & ESS 2835
LOGANIACEAE	*Strychnos* aff. *parviflora* Spruce ex Benth.	J. R. Lima 214
LORANTHACEAE	*Phthirusa pyrifolia* (H.B.K.) Eichl.	A.C.C. Almeida s.n. (JPB 8457)
	Psittacanthus dichroos Mart.	LPF & ESS 3631

Table 1 - continued

	Struthanthus marginatus (Desr.) Blume	LPF & ESS 2924
	Struthanthus syringifolius (Mart.) Mart.	Chagas-Mota 8704
LYTHRACEAE	*Cuphea flava* Spreng.	A.J.C. Aguiar 16
MALVACEAE	*Apeiba tibourbou* Aubl.	M. S. Pereira 362
	Eriotheca sp.	Unvouchered
	Guazuma ulmifolia Lam.	S. R. Nóbrega 75
	Helicteres eichleri K.Schum.	LPF 2917
	Luehea ochrophylla Mart.	LPF 3018
	Malvaviscus arboreus Cav.	LPF 2013 (cultivated)
	Pavonia cancellata (L.) Cav.	LPF 2203
	Pavonia malacophylla (Link & Otto) Garcke	LPF 2261
	Sida acuta Burm.f.	LPF s.n. (JPB 8089)
	Sida angustissima A.St.-Hil.	LPF 2903
	Sida ciliaris L.	RNAB 77
	Sida cordifolia L.	LPF 2615
	Sida linifolia Cav.	LPF 3439
	Sida rhombifolia L.	LPF 3674
	Sida spinosa L.	LPF s.n. (JPB 14650)
	Triumfetta rhomboidea Jacq.	LPF s.n. (JPB 8328)
	Triumfetta semitriloba Jacq.	LPF 2224
	Urena lobata L.	LPF 3021
	Waltheria americana L.	CABM 151
	Waltheria viscosissima A.St.-Hil.	CABM 3549
MALPIGHIACEAE	*Byrsonima crassifolia* (L.) Kunth	MRB 2625
	Byrsonima gardneriana A. Juss.	MRB 2614
	Byrsonima sericea DC.	MRB 2310
	Heteropterys nordestina Amorim	M.N. Camelo 51
	Stigmaphyllon paralias A. Juss.	MRB 2619
	Stigmaphyllon rotundifolium A. Juss.	M.N. Camelo 49
	Tetrapterys phlomoides (Spreng.) Nied.	M.N. Camelo 47
MARCGRAVIACEAE	*Schwartzia brasiliensis* (Choisy) Bedell ex Gir.-Cañas	RNAB 184
MELASTOMATACEAE	*Clidemia biserrata* DC.	LPF 3894
	Clidemia debilis Crueg.	R.A. Pontes 491
	Clidemia hirta (L.) D. Don	R.A. Pontes 489
	Clidemia sericea D. Don	LPF 13
	Comolia villosa (Aubl.) Triana	R.A. Pontes 522
	Marcetia ericoides (Spreng.) O. Berg. ex Cogn.	LPF 11
	Miconia albicans (Sw.) Steud.	Chagas-Mota 8709
	Miconia amoena Triana	Chagas-Mota 8707

Table 1 - continued

	Miconia ciliata (Rich.) DC.	RNAB s.n. (JPB 32051)
	Miconia cuspidata Mart. ex Naudin	Chagas-Mota 8710
	Miconia ferruginata DC.	Chagas-Mota 7857
	Miconia minutiflora (Bonpl.) DC.	Chagas-Mota 8706
	Miconia serialis DC.	Chagas-Mota 8716
	Miconia stenostachya DC.	Chagas-Mota 8708
	Nepsera aquatica (Aubl.) Naudin	LPF 19
	Pterolepsis glomerata (Rottb.) Miq.	LPF s.n. (JPB 8085)
	Pterolepsis perpusilla (Naudin) Cogn.	LPF 2223
	Trembleya cf. *phlogiformis* DC.	LPF 3024
MOLLUGINACEAE	*Mollugo verticillata* L.	CABM s.n. (JPB 14004)
MORACEAE	*Brosimum guianense* Huber ex Ducke	LPF 2904
	Sorocea cf. *hilarii* Gaudich.	M.E.M. Fortunato 44
MYRSINACEAE	Myrsine cf. monticola Mart.	LPF 3975
MYRTACEAE	*Campomanesia aromatica* (Aubl.) Griseb.	R.B. Barros 18
	Campomanesia dichotoma (O. Berg) Mattos	R.B. Barros 36
	Eugenia hirta O. Berg	F.O. Silva 96
	Eugenia punicifolia (Kunth) DC.	R. B. Barros 50
	Eugenia umbelliflora O. Berg	J.R. Lima 202
	Myrcia bergiana O. Berg	MRB 2447
	Myrcia guianensis (Aubl.) DC.	MRB 2309
	Myrcia multiflora (Lam.) DC.	MRB 2259
	Myrcia sylvatica DC.	R.B. Barros 17
	Myrcia tomentosa (Aubl.) DC.	M.S. Pereira 120
	Myrciaria floribunda (H. West ex Willd.) O. Berg	LPF & ESS 2857
	Psidium guineense Sw.	R.B. Barros 20
	Psidium oligospermum Mart.	R.B. Barros & G.O. Dionísio 31
NYCTAGINACEAE	*Boerhavia coccinea* Mill.	LPF & M.A.Sousa s.n. (JPB 16036)
	Guapira opposita (Vell.) Reitz	LPF & ESS 3064
	Guapira pernambucensis (Casar.) Lundell	LPF & ESS 3063
	Mirabilis jalapa L.	M.A.Sousa 1045
NYMPHAEACEAE	*Nymphaea* sp.	unvouchered
OCHNACEAE	*Ouratea hexasperma* (A. St.-Hil.) Baill.	F. O. Silva 18
	Ouratea salicifolia (A.St.-Hil. & Tul.) Engl.	F. O. Silva 71
	Sauvagesia erecta L.	M.C. R. Pessoa 588

Table 1 - continued

	Sauvagesia sprengelii A.St.-Hil.	F. O. Silva 95
OLACACEAE	*Ximenia americana* L.	A. J. Aguiar 37
ONAGRACEAE	*Ludwigia nervosa* (Poir.) H.Hara	LPF & ESS 3023
OROBANCHACEAE	*Agalinis hispidula* (Mart.) D'Arcy	LPF & G.V. Dornelas 2336
	Melasma melampyroides (Rich.) Pennell	LPF & ESS s.n. (JPB 8101)
OXALIDACEAE	*Oxalis divaricata* Mart. ex Zucc.	LPF & CABM s.n. (JPB 8442)
PASSIFLORACEAE	*Passiflora foetida* L.	LPF 2580
	Passiflora subrotunda Mast.	LPF 2889
	Passiflora glandulosa Cav.	CABM s.n. (JPB 9363)
PHYTOLACCACEAE	*Microtea glochidiata* Moq.	LPF s.n. (JPB 16051)
	Microtea scabrida Urb.	LPF s.n. (JPB 8026)
	Petiveria alliacea L.	LPF s.n. (JPB 16031)
	Phytolacca thyrsiflora Fenzl. ex J.A.xSchmidt	LPF & CABM s.n. (JPB 8443)
	Rivina humilis L.	LPF & ESS 3026
	PICRAMNIACEAE	
	Picramnia andrade-limae Pirani	A.R. Pontes & J.R. Lima 567
PIPERACEAE	*Piper arboreum* Aubl.	LPF 2297
	Piper caldense C. DC.	LPF & ESS s.n. (JPB 16859)
	Piper tuberculatum Jacq.	M.S. Pereira 210
PLANTAGINACEAE	*Achetaria scutellarioides* (Benth.) Wettst.	LPF & ESS 2959
	Scoparia dulcis L.	LPF 2293
	Stemodia durantifolia (L.) Sw.	LPF & ESS s.n. (JPB 8095)
	Stemodia pratensis (Aubl.) C.P. Cowan	LPF & ESS 2135
	Tetraulacium veroniciforme Turcz.	LPF & ESS s.n. (JPB 7321)
PLUMBAGINACEAE	*Plumbago scandens* L.	LPF & ESS 3028
POLYGALACEAE	*Bredemeyera autranii* Chod.	R.A. Pontes 472
	Polygala glochidiata Kunth	LPF s.n. (JPB 8446)
	Polygala leptocaulis Torr. & A.Gray	LPF 2801
	Polygala longicaulis Kunth	MRB 2457
	Polygala martiana A.W. Benn.	RNAB 48
	Polygala cf. *decumbens* A.W.Benn.	LPF s.n. (JPB 14667)
	Polygala spectabilis DC.	MRB 2633
	Polygala violacea Aubl.	LPF 2985
POLYGONACEAE	*Coccoloba alnifolia* Casar.	F.O. Silva 02
	Coccoloba arborescens (Vell.) R.A.Howard	RNAB 83
	Coccoloba laevis Casar.	LPF 2995

Table 1 - continued

	Coccoloba mollis Casar.	LPF 2579
	Coccoloba ramosissima Wedd.	LPF s.n. (JPB 9348)
	Coccoloba scandens Casar.	LPF s.n. (JPB 7355)
PORTULACACEAE	*Portulaca hirsutissima* Camb.	LPF & M. A. Sousa 4011
	Portulaca oleracea L.	LPF & ESS s.n. JPB 8068
	Talinum triangulare (Jacq.) Willd.	LPF & ESS 3030
PROTEACEAE	*Roupala montana* Aubl.	A.Melo 490
RHAMNACEAE	*Colubrina glandulosa* subsp. *reitzii* (M.C.Johnst.) Borhidi	M.E.M. Fortunato & Z.G.M.Quirino 24
	Gouania blanchetiana Miq.	LPF & CABM 25
	Ziziphus undulata Reissek	MRB 3451
RANUNCULACEAE	*Clematis dioica* L.	LPF & ESS 2295
RUBIACEAE	*Alseis pickelii* Pilg. & Schmale	M.S. Pereira 601
	Borreria humifusa Mart.	M.S. Pereira 481
	Borreria ocymifolia (Roem. & Schult.) Bacigalupo & E.L.Cabral	M.S. Pereira 445
	Borreria scabiosoides Cham. & Schltdl.	M.S. Pereira 604
	Borreria verticillata (L.) G. Mey.	M.S. Pereira 563
	Chiococca alba (L.) Hitchc.	M.S. Pereira 387
	Chomelia cf. *intercedens* Muell. Arg.	LPF 3909
	Chomelia obtusa Cham. ex Schltdl.	M.S. Pereira 549
	Coccocypselum hirsutum Bartl. ex DC.	M.S. Pereira 264
	Cordiera myrciifolia (K. Schum.) Perss. & Delprete	M.S. Pereira 235
	Coutarea hexandra (Jacq.) K. Schum.	M.S. Pereira 335
	Declieuxia fruticosa (Willd. ex Roem. & Schult.) Kuntze	LPF & CABM 28
	Diodella apiculata (Willd. ex Roem. & Schult.) Delprete	M.S. Pereira 366
	Guettarda grazielae M.R.Barbosa	M.S. Pereira 400
	Guettarda platypoda DC.	M.S. Pereira 372
	Mitracarpus frigidus var. *discolor* (Miq.) K.Schum.	M.S. Pereira 600
	Palicourea crocea (Sw.) Roem. & Schult.	M.S. Pereira 330
	Perama hirsuta Aubl.	M.S. Pereira 596
	Posoqueria longiflora Aubl.	M.S. Pereira 478
	Psychotria bahiensis DC.	M.S. Pereira 221
	Psychotria barbiflora DC.	M.S. Pereira 507
	Psychotria bracteocardia (DC.) Müll. Arg.	M.S. Pereira 459
	Psychotria carthagenensis Jacq.	M.S. Pereira 201

Table 1 - continued

	Psychotria hoffmannseggiana (Willd. ex Roem. & Schult.) Müll. Arg.	M.S. Pereira 285
	Psychotria subtriflora Müll. Arg.	M.S. Pereira 230
	Richardia grandiflora (Cham. & Schltdl.) Steud.	M.S. Pereira 215
	Sabicea cinerea Aubl.	M.S. Pereira 491
	Salzmannia nitida DC.	M.S. Pereira 363
	Staelia virgata (Link ex Roem. & Schult.) K. Schum.	M.S. Pereira 521
	Tocoyena formosa (Cham. & Schltdl.) K. Schum.	M.S. Pereira 367
	Tocoyena sellowiana (Cham. & Schltdl.) K. Schum.	M.S. Pereira 263
RUTACEAE	*Esenbeckia grandiflora* subsp. *brevipetiolata* Kaastra	LPF 3072
SALICACEAE	*Casearia sylvestris* Sw.	P.C. Gadelha-Neto 2766
	Prockia crucis P.Browne ex L.	M.E.M. Fortunato 32
SANTALACEAE	*Phoradendron chrysocladon* A. Gray	M.A.Sousa 1052
	Phoradendron piperoides (H.B.K.) Nutt.	LPF & CABM s.n. (JPB 8337)
	Phoradendron strongyoclados Eichl.	LPF 2114
	Phoradendron sp.	Chagas-Mota 8701
SAPINDACEAE	*Allophylus levigatus* (Turcz.) Radlk.	LPF & ESS 3036
	Cupania revoluta Radlk.	F. Camarotti 26
	Serjania paucidentata DC.	LPF & ESS 2583
	Serjania sazmanniana Schltdl.	F. Camarotti 08
	Talisia esculenta (Cambess.) Radlk.	LPF & ESS 2636
SAPOTACEAE	*Manilkara salzmannii* (A. DC.) Lam.	WWT 14834
	Pradosia lactescens (Vell.) Radlkofer	LPF 3952
SCHOEPFIACEAE	*Schoepfia brasiliensis* DC.	LPF & ESS 2994
SIMAROUBACEAE	*Simaba* aff. *maiana* Casar.	LPF & ESS 2604
	Simaba cedron Planch.	Unvouchered
	Simarouba amara A. St.-Hil.	Unvouchered
SIPARUNACEAE	*Siparuna guianensis* Aubl.	LPF 2955
SOLANACEAE	*Physalis angulata* L.	LPF & ESS s.n. (JPB 8104)
	Schwenckia americana L. var. *americana*	LPF & ESS 2760
	Schwenckia sp.	RNAB 151
	Solanum asperum Rich.	LPF & ESS 2763
	Solanum capsicoides All.	LPF & ESS 3425
	Solanum paludosum Moric.	F. Camarotti 23
	Solanum paniculatum L.	M.S. Pereira 157
	Solanum rhytidoandrum Sendtn.	LPF 2607

Table 1 - continued

SPHENOCLEACEAE (previously in Campanulaceae)	*Sphenoclea zeylanica* Gaertn.	LPF s.n. (JPB 8024)
TRIGONIACEAE	*Trigonia nivea* Cambess.	LPF & ESS 2630
TRIURIDACEAE	*Lacandonia* sp.	A. Melo 487
TURNERACEAE	*Piriqueta racemosa* (Jacq.) Sweet	LPF s.n. (JPB 7309)
	Turnera subulata Sm.	M.S. Pereira 353
	Turnera caerulea var. *surinamensis* (Urb.) Arbo & Fernández	LPF 2222
URTICACEAE	*Cecropia cinerea* Miq.	LPF 2601
	Cecropia cf. *pachystachya* Trécul	LPF 3902
	Laportea aestuans (L.) Chew	LPF 3013
VERBENACEAE	*Lantana camara* L.	LPF 3596
	Lantana radula Sw.	LPF & ESS 2754
	Lippia alba (Mill.) N.E.Br.	R.A. Pontes 481
	Stachytarpheta polyura Schauer	CABM s.n. (JPB 14007)
	Stachytarpheta lythrophylla Schauer	LPF & ESS 3010
	Tamonea spicata Aubl.	M.A. Sousa 1063
VIOLACEAE	*Hybanthus calceolaria* (L.) Oken	CABM & LPF s.n. (JPB 14672)
VITACEAE	*Cissus erosa* Rich.	LPF s.n. JPB 8330
VOCHYSIACEAE	Indet. 1	R.A. Pontes & R.C. Duré 752
ZYGOPHYLLACEAE	Kallstroemia tribuloides (Mart.) Steud.	Unvouchered

Table 2 - The most species-rich genera in the flora of the Guaribas Biological Reserve.

FAMILY	GENUS	NR. OF SPECIES
CYPERACEAE	*Rhynchospora*	15
LEGUMINOSAE (CAESALPINIODEAE)	*Chamaecrista*	10
CYPERACEAE	*Bulbostylis*	8
CYPERACEAE	*Cyperus*	8
MELASTOMATACEAE	*Miconia*	8
POACEAE	*Paspalum*	7
POLYGALACEAE	*Polygala*	7
MALVACEAE	*Sida*	7
POLYGONACEAE	*Coccoloba*	6
EUPHORBIACEAE	*Croton*	6
ERYTHROXYLACEAE	*Erythroxylum*	6
LEGUMINOSAE (MIMOSOIDEAE)	*Inga*	6
LEGUMINOSAE (MIMOSOIDEAE)	*Mimosa*	6
POACEAE	*Panicum*	6
RUBIACEAE	*Psychotria*	6
LEGUMINOSAE (PAPILIONOIDEAE)	*Stylosanthes*	6
LENTIBULARIACEAE	*Utricularia*	6

CONCLUSIONS

Because of the diversity of vegetation types protected, the Guaribas Biological Reserve harbors a rich assemblage of species, many of which have limited distributions and are at the northern end of their range. The Guaribas Biological Reserve is also the northernmost federal protected natural area in the Atlantic forest and, therefore, it plays a critical role in the preservation of Brazil's natural heritage.

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