

## Floristic composition of a conservation area in the Federal District of Brazil<sup>1</sup>

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(received: March 19, 2012; accepted: August 10, 2012)

**ABSTRACT** – (Floristic composition of a conservation area in the Federal District of Brazil). *Cerradão* vegetation shares many species with savanna and forest areas and is one of the most vulnerable phytophysiognomies in the *Cerrado* (Brazilian savanna) biome. The floristic composition of the Cerradão Biological Reserve was examined between September/2007 and November/2008. A total of 282 species distributed among 194 genera and 75 families were encountered, demonstrating proportions of 0.91 herbaceous species and 0.54 shrub species for each tree species. Fabaceae, Asteraceae, Rubiaceae, Poaceae, Myrtaceae, Malpighiaceae, and Melastomataceae were the most species-rich families. Fully 72.3% of the species of this dystrophic cerradão were shared by cerrado and forest vegetations, while 60.43% were shared by other cerradão sites, although the largest proportion of species (91%) were shared with cerrado sensu stricto. No species was found to be exclusive to this cerradão site, but approximately 95% of all species were native to the Cerrado biome.

Key words - APA Gama e Cabeça de Veado, cerradão, flora, species richness

### INTRODUCTION

Cerradão is typified by a continuous arboreal layer more than 7 m tall, with 50 to 90% total canopy coverage; the shrub layer is generally dense and composed largely of sclerophyllous species, while there is only a reduced herbaceous layer. Lianas and some climbers are common, but epiphytes are rare (Ribeiro & Walter 2008). Although cerradão constitutes a distinct *cerrado* (Brazilian savanna) phytophysiognomy, it does not have a distinctive flora, but rather a mix of floristic elements from cerrado sensu stricto and forests (Felfili 2002).

Very few studies have focused on the herbaceous/subshrub flora of cerradão, as this is a predominantly arboreal phytophysiognomy. Additionally, although an extensive survey of the flora of the Gama and Cabeça de Veado Environmental Protection Area – EPA (in portuguese: *Área de Proteção Ambiental* – APA) was undertaken, the Cerradão Biological Reserve (in portuguese, *Reserva Biológica* – REBIO), also located in this APA, has not been examined in any detail. The present study was designed

to contribute to future planning and management of the area and to our general knowledge of the mixed flora of this under-protected phytophysiognomy.

### MATERIAL AND METHODS

The present study was undertaken in the Cerradão REBIO, a conservation area created by Federal Decree nº 19.213/98 as an Area of Relevant Ecological Interest (in portuguese, *Área de Relevante Interesse Ecológico* – ARIE) and later transformed into a Biological Reserve (REBIO) by Federal Decree nº 31.757/10. This conservation area covers 54 ha (15°51' S and 47°49' W) and encompasses cerradão as well as dense cerrado vegetation. The regional climate is Tropical Altitudinal (Cwa by the Köppen classification system), with average temperatures in the coldest month below 18 °C, and above 22 °C in the warmest month; the average annual rainfall varies from 1,350 mm to 1,450 mm. This REBIO is extremely important in protecting the water resources of the Federal District, as the region supplies approximately 50% of the local aquifer recharge volume (Ibram 2010). The soils of the reserve are red latosols, similar to those found in other cerradão areas of the Gama and Cabeça de Veado EPA (*Área de Preservação Ambiental* – APA Gama e Cabeça de Veado) in the Federal District (Unesco 2002).

The floristic composition of the cerradão vegetation in the REBIO was examined by undertaking collections every two weeks during the period between September/2007 and November/2008. The cerradão vegetation (which differs from the adjacent dense cerrado vegetation by its more robust phytophysiognomy) within the reserve was surveyed by following a zigzag route through its entire area.

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Characteristics such as plant size and color and the presence of odors or latex were noted. Species identifications were carried out by comparisons with herbarium samples deposited in the University of Brasília (UB), Brasília Botanical Garden (HEPH), and IBGE (IBGE) herbaria, as well as by consulting the literature and taxonomists. In addition to the species collected during our survey, the floristic list includes species encountered during a phytosociological study of the arboreal layer of the same area undertaken by Silva (2009). Some of the species collected in the latter study were only encountered in their vegetative phase in the present survey and were not assigned collection numbers.

The data gathered in the present survey were compared to plant lists published by Mendonça et al. (2008) as the vascular flora of the Cerrado biome, by Proença et al. (2001) as the phanerogamic flora of the Federal District, and by Felfili et al. (2004) as the vascular flora of the Gama and Cabeça de Veado EPA, as well as in posterior publications as the phanerogamic flora of the Federal District series (Assis 2002, Carvalho-Silva & Cavalcanti 2002, Lombardi 2002, Mendonça & Amaral Junior 2002, Ribeiro & Proença 2002, Chacon et al. 2003, Ferreira et al. 2003, Groppo 2003, Lima & Pirani 2003, Pontes & Mello-Silva 2003, Silva & Valente 2003, França 2005, Silva & Barros 2005, Fiaschi 2006, Martins & Filgueiras 2006, Pastore & Cavalcanti 2006, Dittrich et al. 2007, Groppo & Pirani 2007).

The present survey considered: trees belonging to the arboreal layer, shrubs belonging to the shrub-layer, subshrubs, herbaceous plants, and climbers (lianas in general) composing the herbaceous layer, in order to allow comparisons with other floristic surveys, including Proença et al. (2001), Felfili et al. (2004), and Mendonça et al. (2008). Voucher specimens were

deposited in the UB herbarium, and duplicates incorporate into the HEPH and UFMT (Universidade Federal do Mato Grosso) herbaria.

Synonyms were verified by consulting taxonomic revisions of specific groups as well as the databank sites of the Missouri Botanical Garden – W<sup>3</sup>Tropicos (2008) and the International Plant Names Index – IPNI (2008). The botanical classification system followed the recommendations of the Angiosperm Phylogeny Group II (APG II 2003) for the phanerogams flora, and Smith et al. (2006) for the pteridoflora.

## RESULTS AND DISCUSSION

We encountered 282 species belonging to 194 genera and 75 plant families in the Cerradão REBIO, of which 115 (40.78%) were arboreal species, 62 (21.99%) were shrubs, and 105 (37.23%) made up the herbaceous stratum (54 herbs, 31 subshrubs, and 20 climbers) (table 1), resulting in ratios of 0.91 herbaceous species and 0.54 shrub species for each arboreal species. The data of Felfili et al. (2004) for cerradão sites in the Gama and Cabeça de Veado EPA in the Federal District (DF) yielded portions of 0.67 herbaceous species and 0.41 shrub species for each tree species; Proença et al. (2001) found 0.53 herbaceous plant species and 0.45 shrubs per arboreal species in cerradão sites in the Federal District; while Mendonça et al. (2008) reported portions of 1.05 herbaceous species and 0.61 shrubs for each arboreal layer species in cerradão sites in the Cerrado biome.

Table 1. The vascular flora of *cerradão* vegetation in the “REBIO Cerradão”, Federal District, Brazil. Species identified by family, stratum, and phytophysiognomy according to the literature: Proença et al. 2001, Assis 2002, Carvalho-Silva & Cavalcanti 2002, Lombardi 2002, Mendonça & Amaral Junior 2002, Ribeiro & Proença 2002, Chacon et al. 2003, Ferreira et al. 2003, Groppo 2003, Lima & Pirani 2003, Pontes & Mello-Silva 2003, Silva & Valente 2003, Felfili et al. 2004, França 2005, Silva & Barros 2005, Fiaschi 2006, Martins & Filgueiras 2006, Pastore & Cavalcanti 2006, Dittrich et al. 2007, Groppo & Pirani 2007, Mendonça et al. 2008. (\* = exotic/invasive; S = savanna sensu stricto; S(*ls*) = savanna sensu lato; C = *cerradão*; F = forest; GF = gallery forest; MF = mesophytic/dry forest; -- = absent from the lists; Coll. N. = number of collection of JS Silva).

Family	Species	Stratum	Phytophysiognomy	Coll. N.
Acanthaceae	<i>Justicia lanstyakii</i>	Herb	S( <i>ls</i> ), S, GF	16
Alstroemeriaceae	<i>Alstroemeria gardneri</i>	Herb	S	369
Amaranthaceae	<i>Gomphrena agrestis</i>	Herb	S, C	482
	<i>Pfaffia denudata</i>	Herb	S	218
Anacardiaceae	<i>Anacardium humile</i>	Shrub	S, C	4
	<i>Astronium fraxinifolium</i>	Tree	S, C, GF, MF	20
Annonaceae	<i>Annona crassiflora</i>	Tree	S, C, GF	236
	<i>A. tomentosa</i>	Shrub	S, C, GF	149
	<i>Duguetia furfuracea</i>	Shrub	S, C, GF	169
	<i>Guatteria sellowiana</i>	Tree	F, GF	--
	<i>Xylopia aromatica</i>	Tree	S, C, GF, MF	69

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Family	Species	Stratum	Phytophysiognomy	Coll. N.
	<i>X. brasiliensis</i>	Tree	S, C, GF	--
	<i>X. sericea</i>	Tree	C, F, GF, MF	57
Apocynaceae	<i>Aspidosperma macrocarpon</i>	Tree	S, C, MF	154
	<i>A. spruceanum</i>	Tree	S( <i>ls</i> ), GF, MF	--
	<i>A. subincanum</i>	Tree	F, GF, MF	--
	<i>A. tomentosum</i>	Tree	S, C, GF, MF	501
	<i>Ditassa obcordata</i>	Shrub	S, C, F, GF	447
	<i>Ditassa retusa</i>	Climber	S, GF	614
	<i>Hancornia speciosa</i>	Tree	S, C	72
	<i>Odontadenia lutea</i>	Climber	S, C, GF, MF	209
	<i>Prestonia coalita</i>	Climber	S( <i>ls</i> ), F, GF, MF	358
Aquifoliaceae	<i>Ilex conocarpa</i>	Tree	S, C, GF	7
Araliaceae	<i>Schefflera macrocarpa</i>	Tree	S, C, GF	172
Arecaceae	<i>Allagoptera campestris</i>	Shrub	S, C	203
	<i>Syagrus comosa</i>	Shrub	S, C, GF	356
	<i>S. flexuosa</i>	Shrub	S, C, GF	74
Asteraceae	<i>Achyrocline satureoides</i>	Herb	S( <i>ls</i> ), S, GF	547
	<i>Aspilia foliacea</i>	Herb	S	243
	<i>Baccharis dracunculifolia</i>	Subshrub	S( <i>ls</i> ), GF	263
	<i>B. salzmannii</i>	Shrub	S( <i>ls</i> )	120
	<i>Campuloclinium megacephalum</i>	Subshrub	S, F, GF	384
	<i>Chromolaena laevigata</i>	Shrub	S, F, GF	405
	<i>C. leucocephala</i>	Shrub	S	177
	<i>Echinocoryne holosericea</i>	Herb	S	534
	<i>Elephantopus mollis</i> *	Herb	S, C, F, GF, MF	527
	<i>Emilia fosbergii</i> *	Herb	S( <i>ls</i> )	258
	<i>Eremanthus glomerulatus</i>	Shrub	S, C, GF	159
	<i>Gochnatia floribunda</i>	Shrub	S( <i>ls</i> ), S, F	73
	<i>Hoehnephytum trixoides</i>	Subshrub	S	46
	<i>Ichthyothere latifolia</i>	Subshrub	S, F	368
	<i>Lepidaploa aurea</i>	Shrub	S, GF	99
	<i>Lessingianthus compactiflorus</i>	Subshrub	S, GF	362
	<i>Piptocarpha macropoda</i>	Tree	S, F, GF, MF	115
	<i>P. rotundifolia</i>	Tree	S, C	487
	<i>Symphyopappus compressus</i>	Subshrub	S, GF	292
	<i>Trichogonia salviaefolia</i>	Herb	S, GF	259
	<i>Tridax procumbens</i> *	Herb	MF	386
	<i>Vernonia rubriramea</i>	Shrub	S, C, GF	87
	<i>Wedelia bishopii</i>	Herb	S	344
Balanophoraceae	<i>Langsdorffia hypogaea</i>	Herb	C, F, GF	517
Bignoniaceae	<i>Adenocalymma pedunculatum</i>	Shrub	S	213
	<i>Anemopaegma acutifolium</i>	Subshrub	S	519
	<i>Cuspidaria sceptrum</i>	Climber	S, C, GF, MF	176
	<i>Fridericia platyphylla</i>	Climber	S, C, GF	381
	<i>Handroanthus ochraceus</i>	Tree	S, C, GF	98
	<i>H. serratifolius</i>	Tree	S( <i>ls</i> ), S, F, GF, MF	59
	<i>Jacaranda ulei</i>	Subshrub	S, GF	103
	<i>Zeyheria montana</i>	Shrub	S, C	118
Blechnaceae	<i>Blechnum australe</i> subsp. <i>auriculatum</i>	Herb	--	274
Boraginaceae	<i>Cordia truncata</i>	Subshrub	S	389
Bromeliaceae	Bromeliaceae sp.	Herb	--	520
Burseraeae	<i>Protium ovatum</i>	Shrub	S, F, GF, MF	25

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Family	Species	Stratum	Phytophysiognomy	Coll. N.
Caryocaraceae	<i>Caryocar brasiliense</i>	Tree	S, C	95
Celastraceae	<i>Cheiloclinium cognatum</i>	Tree	GF	277
	<i>Plenckia populnea</i>	Tree	S, C, GF	205
	<i>Salacia crassifolia</i>	Shrub	S, GF	70
Chrysobalanaceae	<i>Couepia grandiflora</i>	Tree	S, C, GF, MF	502
Clusiaceae	<i>Kielmeyera abdita</i>	Shrub	S	235
	<i>K. coriacea</i>	Tree	S, C, GF	81
	<i>K. speciosa</i>	Tree	S, F, GF	--
Combretaceae	<i>Terminalia argentea</i>	Tree	S, C, GF	77
	<i>T. fagifolia</i>	Tree	S, C, GF, MF	109
Connaraceae	<i>Connarus suberosus</i>	Tree	S, C	556
Convolvulaceae	<i>Ipomoea procumbens</i>	Climber	S	328
	<i>Merremia contorquens</i>	Climber	S	467
Cucurbitaceae	<i>Cayaponia tayuya</i>	Climber	S, F, GF	343
Cunoniaceae	<i>Lamanonia ternata</i>	Tree	S( <i>ls</i> ), C, F, GF	--
Cyperaceae	<i>Cyperus laxus</i>	Herb	S( <i>ls</i> ), GF	270
	<i>Rhynchospora consanguinea</i>	Herb	S, GF	347
	<i>R. exaltata</i>	Herb	S, C, F	47
Dichapetalaceae	<i>Tapura amazonica</i>	Tree	GF, MF	603
Dilleniaceae	<i>Davilla elliptica</i>	Shrub	S, GF	155
Dioscoreaceae	<i>Dioscorea dodecaneura</i>	Climber	GF	604
Ebenaceae	<i>Diospyros hispida</i>	Tree	S, C, GF, MF	--
Erythroxylaceae	<i>Erythroxylum daphnites</i>	Tree	S( <i>ls</i> ), S, C, GF, MF	--
	<i>E. deciduum</i>	Shrub	S, C, F, GF	607
	<i>E. suberosum</i>	Shrub	S, F	152
Euphorbiaceae	<i>Dalechampia caperonioides</i>	Herb	S	342
	<i>Manihot violacea</i>	Shrub	S	337
	<i>Maprounea guianensis</i>	Tree	S, C, GF, MF	5
Fabaceae	<i>Acosmium dasycarpum</i>	Tree	S, C, GF	326
	<i>Bauhinia cf. dumosa</i>	Shrub	S	425
	<i>B. rufa</i>	Subshrub	S, C, GF	608
	<i>Bowdichia virgilioides</i>	Tree	S, C, GF, MF	557
	<i>Calliandra dysantha</i>	Subshrub	S( <i>ls</i> ), S, C, GF	43
	<i>Centrosema brasilianum</i>	Climber	S( <i>ls</i> ), GF	473
	<i>Chamaecrista conferta</i>	Subshrub	S	85
	<i>Copaifera langsdorffii</i>	Tree	S, C, GF, MF	577
	<i>Crotalaria flavicomis</i>	Herb	S( <i>ls</i> ), S, GF	376
	<i>C. cf. grandiflora</i>	Shrub	S( <i>ls</i> ), GF	418
	<i>Dalbergia miscolobium</i>	Tree	S, C, GF	233
	<i>Dimorphandra mollis</i>	Tree	S, C, GF	237
	<i>Enterolobium gummiferum</i>	Tree	S, C, GF	--
	<i>Galactia boavista</i>	Herb	S( <i>ls</i> )	214
	<i>G. grewiaefolia</i>	Subshrub	S, C	372
	<i>Hymenaea stigonocarpa</i>	Tree	S, C, GF	271
	<i>Hymenolobium heringeranum</i>	Tree	F, GF, MF	--
	<i>Machaerium acutifolium</i>	Tree	S, C, GF, MF	60
	<i>M. opacum</i>	Tree	S, C, MF	--
	<i>Mimosa somnians</i>	Subshrub	S( <i>ls</i> ), S, C, GF	345
	<i>M. velloziana</i> *	Shrub	S( <i>ls</i> ), GF	599
<i>Periandra mediterranea</i>	Shrub	S, C, GF	91	
<i>Piptadenia gonoacantha</i>	Tree	GF, MF	611	
<i>Plathymentia reticulata</i>	Tree	S, C	452	

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Family	Species	Stratum	Phytophysiognomy	Coll. N.
	<i>Platypodium elegans</i>	Tree	S( <i>ls</i> ), S, C, GF, MF	192
	<i>Pterodon pubescens</i>	Tree	S, C, GF	112
	<i>Stryphnodendron adstringens</i>	Tree	S, C	490
	<i>Stylosanthes guianensis</i>	Herb	S( <i>ls</i> ), S	114
	<i>Tachigali vulgaris</i>	Tree	S, C, GF	--
	<i>Vatairea macrocarpa</i>	Tree	S, C, GF	--
Gentianaceae	<i>Voyria aphylla</i>	Herb	F, GF	399
Hypericaceae	<i>Vismia glaziovii</i>	Tree	C, F, GF	267
Icacinaceae	<i>Emmotum nitens</i>	Tree	S, C, GF	83
Lamiaceae	<i>Aegiphila lhotzkiana</i>	Tree	S, C, GF	244
	<i>Hypenia brachystachys</i>	Subshrub	S( <i>ls</i> ), S, C, GF	538
	<i>Hyptis lythroides</i>	Subshrub	S	127
	<i>H. rubiginosa</i>	Subshrub	S	107
	<i>H. villosa</i>	Herb	S	133
Lauraceae	<i>Cassytha filiformis</i> *	Herb	S	364
	<i>Endlicheria paniculata</i>	Tree	GF	254
	<i>Nectandra reticulata</i>	Tree	GF	--
	<i>Ocotea aciphylla</i>	Tree	GF	--
	<i>O. diospyrifolia</i>	Tree	S( <i>ls</i> ), S, GF	498
	<i>O. pomaderroides</i>	Tree	S( <i>ls</i> ), S, GF	9
	<i>O. spixiana</i>	Tree	S, C, GF	21
Loganiaceae	<i>Antonia ovata</i>	Tree	S, C, GF	497
	<i>Strychnos pseudoquina</i>	Tree	S, C	28
Loranthaceae	<i>Phthirusa ovata</i>	Herb	S, GF, MF	151
	<i>Psittacanthus robustus</i>	Herb	S, GF	226
Lythraceae	<i>Cuphea spermacoce</i>	Subshrub	S, C	242
	<i>Diplusodon virgatus</i>	Shrub	S, C, GF	456
	<i>Lafoensia pacari</i>	Tree	S, C, GF, MF	--
Malpighiaceae	<i>Banisteriopsis anisandra</i>	Climber	S( <i>ls</i> ), S, GF	78
	<i>B. argyrophylla</i>	Climber	S( <i>ls</i> ), S, C, GF, MF	359
	<i>B. megaphylla</i>	Shrub	S, GF	469
	<i>B. stellaris</i>	Climber	S, C, GF	331
	<i>Byrsonima crassifolia</i>	Tree	S, C	79
	<i>B. intermedia</i>	Tree	S( <i>ls</i> ), GF	183
	<i>B. laxiflora</i>	Tree	S( <i>ls</i> ), S, GF, MF	150
	<i>B. rotunda</i>	Tree	--	221
	<i>B. sericea</i>	Tree	S( <i>ls</i> ), S, GF	--
	<i>B. verbascifolia</i>	Tree	S, GF	145
	<i>Heteropterys byrsonimifolia</i>	Tree	S	24
	<i>H. pteropetala</i>	Shrub	S, C, F, GF	330
	<i>Janusia</i> sp.	Climber	--	137
	<i>Peixotoa goiana</i>	Shrub	S	478
	<i>P. reticulata</i>	Shrub	S	543
Malvaceae	<i>Eriotheca pubescens</i>	Tree	S( <i>ls</i> ), S, C, F, GF	--
	<i>Pavonia rosa-campestris</i>	Herb	S, C	117
	<i>Pseudobombax longiflorum</i>	Tree	S, CS, GF, MF	561
	<i>Sida linifolia</i> *	Herb	S, GF	625
	<i>Waltheria indica</i> *	Shrub	S, GF	525
Melastomataceae	<i>Leandra aurea</i>	Shrub	S( <i>ls</i> ), GF	336
	<i>Miconia albicans</i>	Tree	S, C, GF	2
	<i>M. burchellii</i>	Tree	S, C, GF, MF	6
	<i>M. cubatanensis</i>	Tree	S, C, GF, MF	529

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Family	Species	Stratum	Phytophysiognomy	Coll. N.
	<i>M. cuspidata</i>	Tree	S(ls), S, C, GF, MF	562
	<i>M. fallax</i>	Shrub	S, C	33
	<i>M. ferruginata</i>	Tree	S, C, GF	8
	<i>M. pepericarpa</i>	Tree	S, GF	14
	<i>M. pohliana</i>	Tree	S, C, GF	558
	<i>Miconia sellowiana</i>	Tree	S, C, GF, MF	573
	<i>Ossaea congestiflora</i>	Shrub	S, F	276
	<i>Tibouchina stenocarpa</i>	Tree	S, C, F, GF	426
Menispermaceae	<i>Cissampelos pareira</i> *	Climber	GF	609
Moraceae	<i>Brosimum gaudichaudii</i>	Shrub	S, C	66
Myristicaceae	<i>Virola sebifera</i>	Tree	S(ls), C, GF, MF	26
Myrsinaceae	<i>Cybianthus densiflorus</i>	Subshrub	S, F, GF	126
	<i>C. detergens</i>	Subshrub	S(ls), S, C, GF	247
	<i>Myrsine coriacea</i>	Tree	S(ls), C, GF, MF	147
	<i>M. guianensis</i>	Tree	S(ls), S, C, GF, MF	63
Myrtaceae	<i>Blepharocalyx salicifolius</i>	Tree	S, C, GF	15
	<i>Campomanesia pubescens</i>	Shrub	S, GF	248
	<i>Eugenia bracteata</i>	Shrub	S(ls), S, GF	174
	<i>E. dysenterica</i>	Tree	S, C, GF	--
	<i>E. puniceifolia</i>	Shrub	S, C, MF	451
	<i>Myrcia cordifolia</i>	Shrub	S, F	45
	<i>M. nivea</i>	Shrub	S(ls), S, C, GF, MF	65
	<i>M. rostrata</i>	Tree	S	105
	<i>M. rubella</i>	Subshrub	S(ls), S	27
	<i>M. tomentosa</i>	Tree	S, C, GF, MF	100
	<i>Pimenta pseudocaryophyllus</i>	Tree	S, GF	446
	<i>Psidium firmum</i>	Shrub	S, GF	595
	<i>P. laruotheanum</i>	Shrub	S, C, GF	157
	<i>Siphoneugena densiflora</i>	Tree	S, C, GF	17
Nyctaginaceae	<i>Guapira areolata</i>	Tree	GF	--
	<i>G. graciliflora</i>	Tree	S(ls), S, C, GF	12
	<i>G. noxia</i>	Tree	S, C, GF	602
	<i>G. opposita</i>	Tree	S(ls), GF, MF	23
	<i>Neea theifera</i>	Tree	S, C, GF	161
Ochnaceae	<i>Ouratea confertiflora</i>	Shrub	S, C	121
	<i>O. floribunda</i>	Subshrub	S, GF	474
	<i>O. hexasperma</i>	Shrub	S, C	40
	<i>O. riedeliana</i>	Shrub	S	180
Opiliaceae	<i>Agonandra brasiliensis</i>	Tree	S, C, GF, MF	--
Orchidaceae	<i>Oncidium varicosum</i>	Herb	GF	318
Oxalidaceae	<i>Oxalis suborbiculata</i>	Subshrub	S(ls), S, C, GF	206
Passifloraceae	<i>Passiflora cerradensis</i>	Climber	C, GF	610
Peraceae	<i>Pera glabrata</i>	Shrub	S(ls), S, C, GF, MF	38
Piperaceae	<i>Piper aduncum</i>	Shrub	C, GF	273
Poaceae	<i>Aristida pendula</i>	Herb	S(ls)	523
	<i>Axonopus barbigerus</i>	Herb	S	524
	<i>Echinolaena inflexa</i>	Herb	S	339
	<i>Ichnanthus pallens</i>	Herb	S, GF	288
	<i>I. bambusiflorus</i>	Herb	S, F, GF	616
	<i>Melinis minutiflora</i> *	Herb	S, GF	287
	<i>Mesosetum loliiforme</i>	Herb	S	620
	<i>Panicum cervicatum</i>	Herb	S, C	367

continue

continuation

Family	Species	Stratum	Phytophysiognomy	Coll. N.
	<i>P. maximum</i> *	Herb	S( <i>ls</i> ), GF	298
	<i>P. selowii</i>	Herb	S, C, F, GF	410
	<i>Paspalum polyphyllum</i>	Herb	S, GF	521
	<i>Schizachyrium sanguineum</i> *	Herb	S, GF	619
	<i>S. tenerum</i>	Herb	S, C	621
	<i>Trachypogon</i> sp.1	Herb	--	623
	<i>Trachypogon</i> sp.2	Herb	--	624
	<i>Urochloa brizantha</i> *	Herb	S( <i>ls</i> ), GF	615
	<i>U. decumbens</i> *	Herb	S	264
Polygalaceae	<i>Bredemeyera velutina</i>	Shrub	S( <i>ls</i> ), S, GF	295
	<i>Polygala violacea</i>	Herb	S	257
Proteaceae	<i>Roupala montana</i>	Tree	S, GF	239
Rubiaceae	<i>Alibertia elliptica</i>	Shrub	S( <i>ls</i> ), S, F, GF	80
	<i>A. macrophylla</i>	Tree	S( <i>ls</i> ), S, C, GF, MF	--
	<i>A. sessilis</i>	Tree	S( <i>ls</i> ), S, GF, MF	144
	<i>Amaioua guianensis</i>	Tree	S( <i>ls</i> ), GF	--
	<i>Chomelia ribesoides</i>	Subshrub	S, GF	234
	<i>Coccocypselum aureum</i>	Herb	S( <i>ls</i> ), S, C, GF	398
	<i>Declieuxia fruticosa</i>	Subshrub	S, GF	382
	<i>Ferdinandusa elliptica</i>	Tree	S, GF	18
	<i>Galium noxium</i>	Herb	GF	265
	<i>Palicourea marcgravii</i>	Subshrub	C, GF	284
	<i>P. officinalis</i>	Subshrub	S, GF	279
	<i>P. rigida</i>	Shrub	S, GF	241
	<i>Psychotria hoffmannseggiana</i>	Subshrub	C, GF	297
	<i>P. prunifolia</i>	Subshrub	C, GF	272
	<i>P. sciaphila</i>	Subshrub	S( <i>ls</i> ), C, GF	291
	<i>Sabicea brasiliensis</i>	Subshrub	S, GF	334
	<i>Spermacoce poaya</i>	Herb	S( <i>ls</i> ), S	374
	<i>Tocoyena formosa</i>	Shrub	S, C, GF	245
Rutaceae	<i>Esenbeckia pumila</i>	Shrub	S, GF	208
	<i>Spiranthera odoratissima</i>	Shrub	S, C, GF	575
	<i>Zanthoxylum rhoifolium</i>	Tree	S( <i>ls</i> ), C, GF	606
Salicaceae	<i>Casearia grandiflora</i>	Shrub	S( <i>ls</i> ), S, C, GF, MF	346
	<i>C. sylvestris</i>	Shrub	S, C, GF	552
Sapindaceae	<i>Matayba guianensis</i>	Tree	S, C, GF, MF	220
	<i>Serjania erecta</i>	Climber	S, F, GF	375
	<i>S. lethalis</i>	Climber	S( <i>ls</i> ), S, GF	160
	<i>S. ovalifolia</i>	Climber	S( <i>ls</i> ), GF	111
Sapotaceae	<i>Pouteria ramiflora</i>	Tree	S, C, GF	576
Schizaeaceae	<i>Anemia phyllitidis</i>	Herb	S, GF, MF	269
Simaroubaceae	<i>Simarouba versicolor</i>	Tree	S, C, GF, MF	108
Siparunaceae	<i>Siparuna guianensis</i>	Tree	S, C, GF, MF	261
Smilacaceae	<i>Smilax brasiliensis</i>	Climber	S, MF	190
Solanaceae	<i>Solanum paniculatum</i> *	Shrub	S, C, GF	116
Styracaceae	<i>Styrax camporum</i>	Tree	S, C, GF, MF	251
	<i>S. ferrugineus</i>	Tree	S, C, GF	39
Symplocaceae	<i>Symplocos mosenii</i>	Tree	S( <i>ls</i> ), S, C, GF	11
	<i>S. nitens</i>	Tree	F, GF	455
Turneraceae	<i>Turnera lamiifolia</i>	Herb	S( <i>ls</i> ), S	488
Verbenaceae	<i>Lantana camara</i> *	Shrub	S( <i>ls</i> ), GF, MF	296
	<i>L. trifolia</i> *	Shrub	S, MF	266

continue

continuation

Family	Species	Stratum	Phytophysiognomy	Coll. N.
Vochysiaceae	<i>Lippia rotundifolia</i>	Shrub	S	511
	<i>Stachytarpheta polyura</i>	Herb	S( <i>ls</i> ), S, GF	293
	<i>Callisthene major</i>	Tree	S( <i>ls</i> ), S, GF, MF	596
	<i>Qualea dichotoma</i>	Tree	S( <i>ls</i> ), S, C, GF, MF	--
	<i>Q. grandiflora</i>	Tree	S, C, GF	283
	<i>Q. multiflora</i>	Tree	S, C, GF	104
	<i>Q. parviflora</i>	Tree	S, C, GF	56
	<i>Vochysia elliptica</i>	Tree	S	--
	<i>V. rufa</i>	Tree	S, C, GF	--
	<i>V. thyrsoidea</i>	Tree	S, C	165
	<i>V. tucanorum</i>	Tree	S( <i>ls</i> ), S, C, GF, MF	49

Higher proportions of arboreal species in cerrado sites as compared to herbaceous or shrub forms are not typical of the Cerrado biome as a whole, which consistently shows higher proportions of species in the herbaceous stratum. Mendonça et al. (2008) noted, however, that all of the subshrubs, climbers and lianas they identified as belonging to the herbaceous stratum could be considered as belonging to the shrub or even arboreal layer (as they were reasonably large, as in the case of woody vines). Other lists, including that obtained in the present study, have confirmed the predominance of the arboreal stratum in the cerrado phytophysiognomies.

Batalha & Mantovani (2001) reported 148 species belonging to 113 genera and 45 families in an area of cerrado in São Paulo State, Brazil, with a proportion of herbaceous to woody species (0.8:1.0) similar to that of the present study. Comparisons of the richness values between any two areas, however, must take into consideration the collection frequencies and the flora types considered (vascular, or only phanerogams).

The families Fabaceae, Asteraceae, Rubiaceae, Poaceae, Malpighiaceae, Myrtaceae, Melastomataceae, Apocynaceae, and Vochysiaceae had the greatest species richness in the present study (52.12% of the total number of species encountered). In relation to the numbers of genera, Fabaceae was again the most abundant family, followed by Asteraceae, Rubiaceae, Poaceae, Myrtaceae, and Bignoniaceae; *Miconia* was the most representative genus (nine species).

Rubiaceae, Myrtaceae, Fabaceae, Vochysiaceae, and Melastomataceae were also among the families demonstrating the greatest richnesses of woody species in areas of cerrado studied by Pereira-Silva et al. (2004); Fabaceae, Malvaceae, and Myrtaceae stood out among the cerrado families in Pantanal de Nhecolândia in Mato Grosso do Sul State (MS) (Salis et al. 2006); and Fabaceae

and Vochysiaceae were the richest families identified in cerrado sensu stricto sites by Assunção & Felfili (2004) and by Costa & Araújo (2001), with Myrtaceae also showing high richness in the latter survey. Studies undertaken in forest areas demonstrated different results, however. The families Fabaceae, Melastomataceae, Myrtaceae, Rubiaceae, Apocynaceae, and Vochysiaceae were cited as demonstrating the greatest species richness in gallery forests, with important contributions also by Sapotaceae, Euphorbiaceae, and Moraceae (poorly represented in the present study) (Marimon et al. 2002, Silva Junior 2004); and Fabaceae, Bignoniaceae, Malvaceae, and Anacardiaceae were well represented in a semi-deciduous dry forest in Diorama, Goiás State (GO) (Santos-Diniz & Souza 2011). It can therefore be seen that, in spite of the floristic differences between the phytophysiognomies, the richness values observed in the Cerradão REBIO were close to those reported for cerrado sensu stricto (Felfili et al. 1994, Costa & Araújo 2001, Silva et al. 2002). According to Souza et al. (2010), the importance of Fabaceae in terms of species richness in the Cerrado biome is due to the capacity of many of its species to fix nitrogen, enabling them to grow in poor and degraded soils.

Lopes (1984) noted that plant distributions are controlled by very basic factors such as the climate, soils, and the availability of water and nutrients, but can also be greatly influenced by latitude, burning frequencies, water table depth, animal pasturing, and anthropogenic factors – which reinforces the importance of floristic and phytosociological studies at many different sites, as each area would be expected to have specific physical conditions and therefore unique population structures (Santos-Diniz & Souza 2011).

The data published in the three plant lists used for comparisons in the present work, in the flora of the



Federal District, and in floristic and phytosociological studies undertaken in both savanna and cerrado forest phytophysiognomies (Felfili et al. 1994, Silva Junior et al. 1998, Marimon et al. 2002, Silva et al. 2002, Assunção & Felfili 2004, Pereira-Silva et al. 2004, Silva Junior 2004, Balduino et al. 2005, Santiago et al. 2005, Salis et al. 2006) indicated that 91% of the fully-identified species encountered in the REBIO cerradão were common to cerrado areas, while 79.5% were common to forest sites. The species commonly encountered in both formations represent 72.3% of the total, while only 60.43% of the fully identified species of the REBIO were reported in other cerradão surveys. No single species was exclusive to the cerradão phytophysiognomy.

The elevated species richness identified in the study area (with almost 95% species being native to the Cerrado biome) indicates the importance of this conservation area, for it not only protects a significant area of cerradão vegetation (a phytophysiognomy poorly represented in other designated conservation areas) but also conserves species such as *Copaifera langsdorffii* (copaíba), *Pterodon pubescens* (sucupira-branca), *Caryocar brasiliense* (pequizeiro), *Eugenia dysenterica* (cagaiteira), *Vochysia thyrsoidea* (gomeira), *Vochysia tucanorum* (pau-doce), *Pseudobombax longiflorum* (embiruçu), *Dalbergia miscolobium* (jacarandá), *Aspidosperma* spp. (perobas), and *Tabebuia* spp. (ipês) that have been designated as protected elements of the Ecological Heritage of the Federal District (Felfili & Santos 2002).

The results obtained in the present study enrich our knowledge of the cerradão flora and can serve as subsidies for the elaboration of management programs for this conservation area (REBIO).

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