





Floristic survey of a Caatinga area of high biological importance in the Mesoregion of Paraíba backlands, Northeast Brazil¹

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ABSTRACT – (Floristic survey of a Caatinga area of high biological importance in the Mesoregion of Paraíba backlands, Northeast Brazil). The Caatinga occupies an area of approximately 912,529 km², being one of the most distinct phytogeographic regions of the Brazilian territory. It has a vegetation that varies according to its distribution and relationship with the geography of each area. This study aimed to carry out a floristic survey of ABA farm, located in the municipality of Passagem, mesoregion of the Paraíba backlands. For four years, fortnightly botanical collections were carried out in all the plant's physiognomies on the farm, following a standard botanical protocol of floristic survey and herborization techniques. The results of this research brought up an important floristic list, consisting of 322 species from 194 genera belonging to 62 botanical families. Among these families, the ones with the higher number of species were Fabaceae (48 spp.), Euphorbiaceae (23 spp.), Convolvulaceae (21 spp.), Malvaceae (19 spp.) and Asteraceae (15 spp.). The habits were herbs (108 spp.), trees (59 spp.), subshrubs (56 spp.), shrubs (46 spp.), lianas (46 spp.), epiphytes and parasites (four spp.) In addition, 38 new species records were registered for the Paraíba State.

Keywords: diversity, flora, floristic composition, semiarid

RESUMO – (Levantamento florístico de uma área de Caatinga de alta importância biológica na Mesorregião do Sertão Paraibano, Nordeste do Brasil). A Caatinga ocupa uma área de aproximadamente 912.529 km², sendo umas das regiões fitogeográficas mais distintas do território brasileiro. Possui uma vegetação que varia conforme a sua distribuição e relação com a geografia de cada área. Este trabalho teve como objetivo fazer um levantamento florístico da Fazenda ABA, localizada no município de Passagem, mesorregião do sertão paraibano. Durante quatro anos foram realizadas coletas botânicas quinzenais em todas as fitofisionomias da Fazenda ABA, obedecendo a um protocolo botânico padrão de técnicas de levantamento florístico e herborização de exsicatas. Os resultados desta pesquisa geraram uma lista florística importante, constituída de 322 espécies de 194 gêneros pertencentes a 62 famílias botânicas, dentre estas as famílias que mais se destacaram em número de espécies temos Fabaceae (48 spp.), Euphorbiaceae (23 spp.), Convolvulaceae (21 spp.), Malvaceae (19 spp.) e Asteraceae (15 spp.). Os hábitos foram o herbáceo (108 spp.), arbóreo (59 spp.), subarborescente (56 spp.), arbustivo (46 spp.), lianas (46 spp.), epífitas e parasitas (quatro spp.). Além disso foram apontados 38 novos registros de espécies para o Estado da Paraíba. Palavra-chave: composição florística, diversidade, flora, semiárido

Introduction

The Caatinga is located in the northeastern semiarid and occupies an area of approximately 912,529 km² (Silva *et al.* 2017), being one of the most distinct phytogeographic

regions of the Brazilian territory. Its flora, in the Caatinga domain, has a representation of 5.022 species, with 2.307 species being found in the Paraíba State, according to a study presented in BFG (2021).

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The Caatinga climate is semi-arid, forming vegetation mosaics, mostly deciduous, xerophilous and prickly plants, with poorly distributed rainfall and precipitation in a period of three to six months (IBGE 2004, Silva *et al.* 2017). In the Northern backland depression, rainfall is more concentrated in this ecoregion than in other parts of the Caatinga, varying from 500 to 800 mm (Veloso *et al.* 2002).

ABA Farm is located in an area which is considered by MMA (2002) as of high biological importance in the Caatinga, placed in the mountain complex also named Aba after the river that crosses this geologic mountain complex. The totality of its area presents many phytophysiognomies with mountains up to 800 m high and dense well-preserved tree-shrub caatinga associated to riparian forest, rupicolous flora and open fields. Among these areas riparian forests, open fields with the presence of exotic species and montane vegetation can be found (MMA 2002).

In the mesoregion of the Paraíba hinterland, floristic studies have been developed in the last five years and have improved knowledge about the state's flora, contributing to a better understanding of the flora and vegetation of Caatinga areas (Lucena *et al.* 2015, Torres *et al.* 2016, Brito *et al.* 2018, Costa *et al.* 2019, Fernando *et al.* 2021). The present study consists of a floristic survey of ABA farm, in the municipality of Passagem, Paraíba State, Northeast Brazil.

Material and methods

Study area – The municipality of Passagem is located in the mesoregion of the Paraíba hinterland, bordering with Quixaba and São Mamede by north, Taperoá e Cacimba by south, and Cacimba de Areia by east (IBGE 2019) (figure 1). The climate is semi-arid (Bsh), warm and dry, with an average annual temperature of 25°C (Francisco 2015, IBGE 2019).

ABA farm is located at 4.6km from the urban area of Passagem, occupies an area of 350 ha of which 120 are legal reserve. Although most of the farm is located on a plain, the caatingas also reach the mountains, where the wavy to strongly wavy relief predominates, with elevations ranging from 300m to 810m, with emphasis on the Aba Mountains and Preacas (Beltrão *et al.* 2005).

The set of mountains which compose the farm (figure 2) shows a well-preserved vegetation, compared to vegetation at the lower altitudes of the area. The predominant vegetation is dense tree-shrubby, with some segments of open shrubby caatinga, riparian forests of a temporary river, rupicolous and aquatic vegetation. In the area where the farm is located there are many anthropic activities such as cattle and goat raising and their subsistence farming. Such activities do

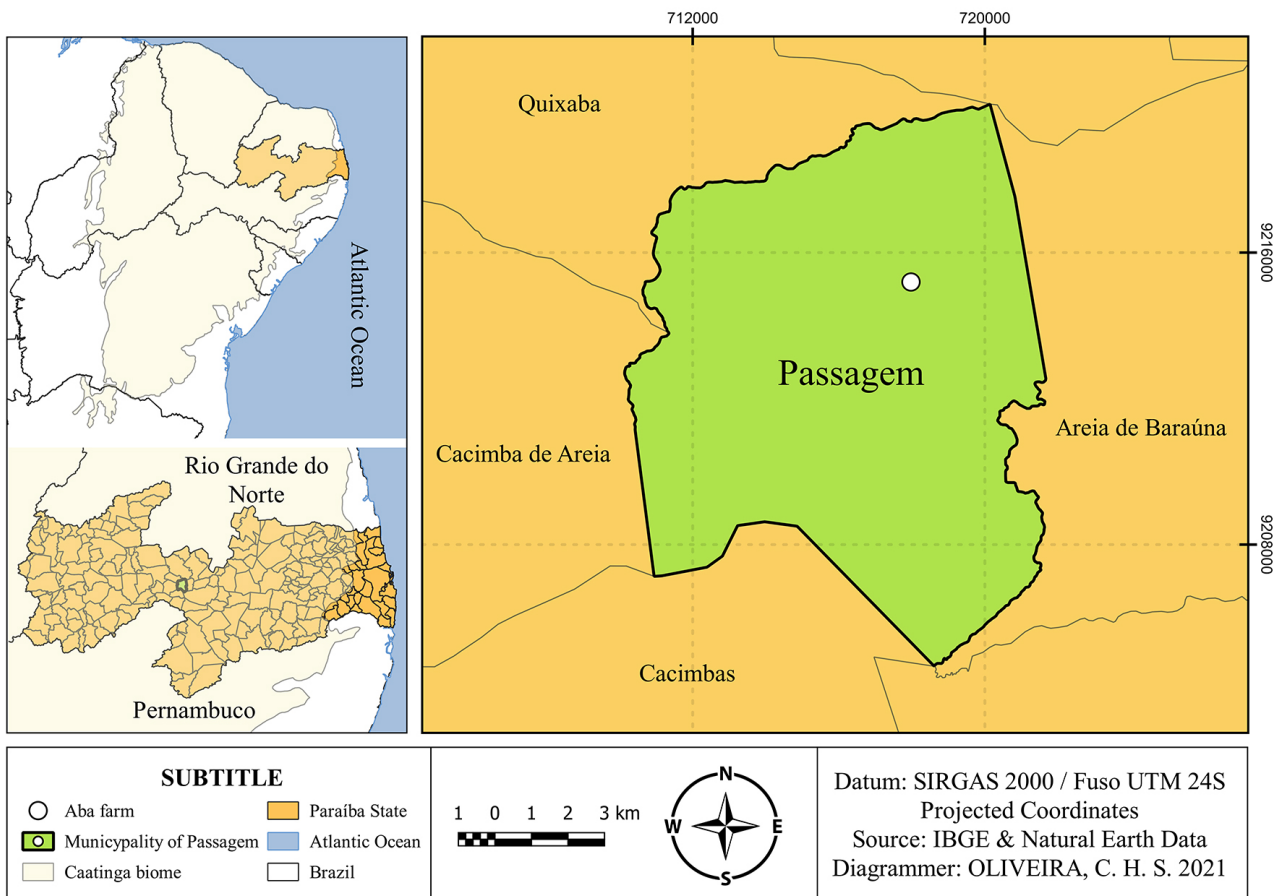


Figure 1. Location map of the municipality of Passagem, Paraíba State, Brasil.

not expand to the mountainous areas, being limited to the surroundings of mountains or close to houses.

Data collection – Floristic sampling was carried out from 2014 to 2017, period in which the botanical collections were carried out through exploratory and random walks in

the study area, seeking to cover the larger possible area and all phytophysiognomies present. Fertile specimens were collected using the technique and method by preparing the botanical material according to parameters of usual taxonomy (Judd *et al.* 2009, IBGE 2012). Important features and



Figure 2. General aspects of the Aba mountains, Passagem, Paraíba State, Brazil.

information for the identification of the taxa were recorded in a field book, in addition to the photographic record, geographic coordinates, landscape and soil characterization.

The collected material was incorporated to HCSTR collection, acronym according to Thiers 2022, which is constantly updated. The specimens were identified with the help of specialized literature and examinations by specialists. The floristic list was ordered alphabetically by family and species and the circumscription of botanical families followed the proposal of “Angiosperm Phylogeny Group” (APG IV 2016). In order to check the writing of scientific names, the electronic databases of Flora do Brasil (BFG 2021) and Tropicos (<http://www.tropicos.org>) were consulted.

Results and Discussion

Three hundred and twenty-two species and 194 genera distributed in 62 botanical families were identified. Two families of Pteridophytes were found, with the predominant species being *Selaginella convoluta* (Arn.) Spring occurring in all phytophysionomies of the farm, mainly in the riparian forest. Angiosperms were the group which prevailed in the study area, with 60 families registered, two of them being basal Angiosperms (Annonaceae and Aristolochiaceae) represented by the species *Annona leptopetala* (R.E.Fr.) H.Rainer and *Aristolochia birostris* Duch.

Eudicotyledons were predominant in the angiosperms group with 47 families, with Fabaceae (48 spp.), Euphorbiaceae (23 spp.), Convolvulaceae (21 spp.), Malvaceae (19 spp.) and Asteraceae (15 spp.) being the most representative ones. As for Monocotyledons, 11 families were registered, being represented mainly by Poaceae (nine spp.), Bromeliaceae (six spp.), Commelinaceae (six spp.) and Cyperaceae (five spp.) which frequently occurred in the study area.

Among the genera, the most represented were: *Ipomoea* L. with nine species and *Euphorbia* L., *Oxalis* L.

and *Tillandsia* L. with five species each. Among life forms, the herbaceous was the predominant one (108 spp.), followed by trees (59 spp.), subshrubs (56 spp.), shrubs (46 spp.), lianas (46 spp.), epiphytes and parasitic forms (four spp.). All species are listed in Table 1.

Thirty-eight new species occurrences were recorded for the Paraíba State (see * in table 1), one of these being new occurrences of genera: *Eriope* Kunth ex Benth. Three new occurrences for the Caatinga domain were also recorded: *Helicteres andersonii* Cristóbal (Malvaceae), *Niedenzuella multiglandulosa* (A. Juss.) WR Anderson (Malpighiaceae) and *Oxalis latifolia* Kunth (Oxalidaceae); and two new species described by (Monteiro et al 2018) and (Harley et al 2019) were recorded: *Harpochilus paraibanus* F.K.S. Monteiro, J.I.M Melo & E.M.P. Fernando and *Mesosphaerum caatingense* Harley & J.F.B. Pastore.

Eriope Bonpl. ex Benth. constitutes a new occurrence of the genus for the Paraíba State by the species *Eriope macrostachya* Mart. ex Benth. It is a shrub from the Lamiaceae family, which was found flowering between April and July and fruiting in August, at 810m height, the highest point of ABA farm. The species *Niedenzuella multiglandulosa* (A.Juss.) W.R. Anderson represents a new record for the Caatinga domain. It is a vine with yellow flowers and its populations were found in the riparian woods of the farm.

Two new species were described at the ABA Farm by Monteiro et al. (2018) and Harley et al. (2019); one of them from the Acanthaceae family, genus *Harpochilus* Nees, which is shrub species with a cream yellow inflorescence (*Harpochilus paraibanus* FKS Monteiro, JIM Melo & EMP Fernando), described for the Paraíba semiarid (Monteiro et al. 2018). The second species found was from the Lamiaceae family, genus *Mesosphaerum* P. Browne, a subshrub described for the Caatinga, with distribution in the States of Paraíba, Pernambuco and Rio Grande do Norte, *Mesosphaerum caatingense* Harley & J.F.B. Pastore (Harley et al. 2019).

Table 1. List of families and species of the ABA Farm, Passagem, Paraíba State, Brazil. * New records of Paraíba State; ** New records for the Caatinga (Figures 3 e 4).

Family/Species	Habit	Voucher
Acanthaceae		
<i>Dicliptera ciliaris</i> Juss.	Subshrub	Fernando 339
<i>Harpochilus paraibanus</i> F.K.S.Monteiro, J.I.M Melo & E.M.P.Fernando	Shrub	Fernando 138
<i>Justicia aequilabris</i> (Nees) Lindau	Subshrub	Fernando 329
<i>Justicia asclepiadea</i> (Nees) Wassh. & C.Ezcurra *	Subshrub	Fernando 429
<i>Justicia</i> sp.	Subshrub	Fernando 354
<i>Ruellia asperula</i> (Mart. ex Ness) Lindau	Subshrub	Fernando 146
<i>Ruellia bahiensis</i> (Nees) Morong *	Subshrub	Fernando 460
<i>Ruellia paniculata</i> L.	Shrub	Fernando 459

Table 1 (continued)

Family/Species	Habit	Voucher
Aizoaceae		
<i>Trianthema portulacastrum</i> L.	Herb	Fernando 206
Amaranthaceae		
<i>Alternanthera brasiliana</i> (L.) Kuntze	Subshrub	Fernando 262
<i>Alternanthera tenella</i> Colla	Subshrub	Fernando 137
<i>Amaranthus spinosus</i> L.	Herb	Fernando 203
<i>Amaranthus viridis</i> L.	Subshrub	Fernando 417
<i>Amaranthus</i> sp.	Subshrub	Fernando 428
<i>Froelichia humboldtiana</i> (Roem. & Schult.) Seub.	Herb	Fernando 123
<i>Gomphrena celosioides</i> Mart. *	Subshrub	Fernando 306
<i>Gomphrena demissa</i> Mart.	Subshrub	Fernando 226
<i>Gomphrena vaga</i> Mart.	Shrub	Fernando 234
Amaryllidaceae		
<i>Zephyranthes cearensis</i> (Herb.) Baker	Herb	Fernando 386
Anacardiaceae		
<i>Astronium urundeuva</i> (M.Allemão) Engl	Tree	Fernando 140
<i>Schinopsis brasiliensis</i> Engl.	Tree	Fernando 158
<i>Spondias tuberosa</i> Arruda	Tree	Fernando 176
Annonaceae		
<i>Annona leptopetala</i> (R.E.Fr.) H.Rainer	Tree	Fernando 384
Apocynaceae		
<i>Allamanda blanchetii</i> A.DC.	Shrub	Fernando 416
<i>Aspidosperma pyriformis</i> Mart. & Zucc.	Tree	Fernando 182
<i>Aspidosperma</i> sp.	Tree	Fernando 312
<i>Calotropis procera</i> (Aiton) W.T.Aiton	Tree	Fernando 355
<i>Funastrum clausum</i> (Jacq.) Schltr.	Liana	Fernando 462
Araceae		
<i>Philodendron acutatum</i> Schott	Liana	Fernando 194
<i>Taccarum ulei</i> Engl. & K.Krause	Herb	Fernando 385
Arecaceae		
<i>Copernicia prunifera</i> (Mill.) H.E.Moore	Tree	Fernando 197
<i>Syagrus cearensis</i> Noblick	Tree	Fernando 202
Aristolochiaceae		
<i>Aristolochia birostris</i> Duch.	Herb	Fernando 145
Asteraceae		
<i>Bidens bipinnata</i> L.	Herb	Fernando 439
<i>Bidens pilosa</i> L.	Herb	Fernando 260
<i>Bidens subalternans</i> DC. *	Herb	Fernando 442
<i>Bidens</i> sp.	Subshrub	Fernando 192
<i>Centratherum punctatum</i> Cass.	Herb	Fernando 121
<i>Chresta martii</i> (DC.) H.Rob.	Subshrub	Fernando 136
<i>Conocliniopsis prasiifolia</i> (DC.) R.M.King & H.Rob. *	Shrub	Fernando 319

Table 1 (continued)

Family/Species	Habit	Voucher
<i>Cyrtocymura scorpioides</i> (Lam.) H.Rob.	Subshrub	Fernando 350
<i>Delilia biflora</i> (L.) Kuntze	Herb	Fernando 321
<i>Eclipta prostrata</i> (L.) L.	Herb	Fernando 111
<i>Pectis oligocephala</i> (Gardner) Sch.Bip.	Herb	Fernando 415
<i>Pluchea sagittalis</i> (Lam.) Cabrera *	Subshrub	Fernando 454
<i>Porophyllum ruderale</i> (Jacq.) Cass.	Subshrub	Fernando 328
<i>Tilesia baccata</i> (L.) Pruski	Subshrub	Fernando 411
<i>Tridax procumbens</i> L.	Herb	Fernando 110
Bignoniaceae		
<i>Anemopaegma citrinum</i> Mart. ex DC.	Liana	Fernando 419
<i>Anemopaegma laeve</i> DC.	Liana	Fernando 201
<i>Dolichandra quadrivalvis</i> (Jacq.) L.G.Lohmann	Liana	Fernando 376
<i>Fridericia platyphylla</i> (Cham.) L.G.Lohmann	Liana	Fernando 380
<i>Handroanthus impetiginosus</i> (Mart. ex DC.) Mattos	Tree	Fernando 337
<i>Tabebuia aurea</i> (Silva Manso) Benth. & Hook.f. ex S.Moore	Tree	Fernando 160
<i>Tanaecium dichotomum</i> (Jacq.) Kaehler & L.G.Lohmann	Liana	Fernando 467
<i>Tanaecium parviflorum</i> (Mart. ex DC.) Kaehler & L.G.Lohmann	Liana	Fernando 380
<i>Tanaecium pyramidatum</i> (Rich.) L.G.Lohmann	Liana	Fernando 215
Bixaceae		
<i>Cochlospermum vitifolium</i> (Willd.) Spreng.	Tree	Fernando 461
Boraginaceae		
<i>Cordia oncocalyx</i> Allemão	Tree	Fernando 601
<i>Cordia trichotoma</i> (Vell.) Arráb. ex Steud.	Tree	Fernando 124
<i>Euploca polyphylla</i> (Lehm.) J.I.M.Melo & Semir	Herb	Fernando 190
<i>Euploca</i> sp.	Shrub	Fernando 412
<i>Heliotropium indicum</i> L.	Herb	Fernando 366
<i>Heliotropium</i> sp.	Shrub	Fernando 225
<i>Myriopus rubicundus</i> (Salzm. ex DC.) Luebert	Shrub	Fernando 235
<i>Myriopus salzmännii</i> (DC.) Diane & Hilger	Liana	Fernando 287
<i>Varronia globosa</i> Jacq.	Shrub	Fernando 218
<i>Varronia leucocephala</i> (Moric.) J.S.Mill.	Shrub	Fernando 133
Bromeliaceae		
<i>Encholirium spectabile</i> Mart. ex Schult. & Schult.f.	Herb	Fernando 170
<i>Neoglaziovia variegata</i> (Arruda) Mez	Herb	Fernando 378
<i>Tillandsia loliacea</i> Mart. ex Schult. & Schult.f.	Epi	Fernando 129
<i>Tillandsia mallemonii</i> Glaz. ex Mez *	Herb	Fernando 602
<i>Tillandsia recurvata</i> (L.) L.	Epi	Fernando 345
<i>Tillandsia streptocarpa</i> Baker	Epi	Fernando 144
<i>Tillandsia usneoides</i> (L.) L.	Epi	Fernando 344
Burseraceae		
<i>Commiphora leptophloeos</i> (Mart.) J.B.Gillett	Tree	Fernando 195
Cactaceae		

Table 1 (continued)

Family/Species	Habit	Voucher
<i>Cereus jamacaru</i> DC.	Tree	Fernando 603
<i>Melocactus ernestii</i> Vauple	Herb	Fernando 187
<i>Melocactus zehntneri</i> (Britton & Rose) Luetzelb.	Herb	Fernando 604
<i>Pilosocereus chrysostele</i> (Vaupel) Byles & G.D.Rowley	Shrub	Fernando 188
<i>Tacinga inamoena</i> (K.Schum.) N.P.Taylor & Stuppy	Herb	Fernando 173
<i>Tacinga palmadora</i> (Britton & Rose) N.P.Taylor & Stuppy	Shrub	Fernando 200
<i>Xiquexique gounellei</i> (F.A.C.Weber) Lavour & Calvente	Tree	Fernando 172
Capparaceae		
<i>Cynophalla flexuosa</i> (L.) J.Presl	Tree	Fernando 166
<i>Neocalyptrocalyx longifolium</i> (Mart.) Cornejo & Iltis	Shrub	Fernando 139
Celastraceae		
<i>Monteverdia erythroxylla</i> (Reissek) Biral	Tree	Fernando 400
Chysobalanaceae		
<i>Microdesmia rigida</i> (Benth.) Sothers & Prance	Tree	Fernando 162
Cleomaceae		
<i>Physostemon guianense</i> (Aubl.) Malme	Herb	Fernando 220
<i>Tarenaya spinosa</i> (Jacq.) Raf.	Shrub	Fernando 155
Combretaceae		
<i>Combretum leprosum</i> Mart.	Shrub	Fernando 163
<i>Combretum rotundifolium</i> Rich. *	Tree	Fernando 397
Commelinaceae		
<i>Commelina benghalensis</i> L.	Herb	Fernando 310
<i>Commelina diffusa</i> Burm.f.	Herb	Fernando 280
<i>Commelina erecta</i> L.	Herb	Fernando 224
<i>Commelina obliqua</i> Vahl	Herb	Fernando 293
<i>Dichorisandra hexandra</i> (Aubl.) C.B.Clarke	Subshrub	Fernando 326
<i>Tripogandra diuretica</i> (Mart.) Handlos	Herb	Fernando 295
Convolvulaceae		
<i>Bonamia agrostopolis</i> (Vell.) Hallier f.	Liana	Fernando 330
<i>Cuscuta partita</i> Choisy	Parasite	Fernando 444
<i>Distimake aegyptius</i> (L.) A.R.Simões & Staples	Liana	Fernando 134
<i>Evolvulus filipes</i> Mart.	Herb	Fernando 248
<i>Evolvulus frankenioides</i> Moric.	Herb	Fernando 251
<i>Evolvulus linarioides</i> Meisn. *	Subshrub	Fernando 361
<i>Evolvulus ovatus</i> Fernald	Herb	Fernando 115
<i>Ipomoea asarifolia</i> (Desr.) Roem. & Schult.	Liana	Fernando 364
<i>Ipomoea bahiensis</i> Willd. ex Roem. & Schult	Liana	Fernando 330
<i>Ipomoea blanchetii</i> Choisy	Liana	Fernando 396
<i>Ipomoea carnea</i> Jacq.	Subshrub	Fernando 605
<i>Ipomoea incarnata</i> (vahl) Choisy *	Liana	Fernando 167
<i>Ipomoea longeramosa</i> Choisy	Liana	Fernando 279
<i>Ipomoea marcellia</i> Meisn.	Liana	Fernando 457

Table 1 (continued)

Family/Species	Habit	Voucher
<i>Ipomoea nil</i> (L.) Roth	Liana	Fernando 606
<i>Ipomoea subincana</i> (Choisy) Meisn.	Liana	Fernando 398
<i>Jacquemontia evolvuloides</i> (Moric.) Meisn.	Liana	Fernando 240
<i>Jacquemontia gracillima</i> (Choisy) Hallier f.	Herb	Fernando 285
<i>Jacquemontia mucronifera</i> (Choisy) Hallier f.	Herb	Fernando 113
<i>Operculina macrocarpa</i> (L.) Urb.	Liana	Fernando 292
<i>Turbina cordata</i> (Choisy) D.F.Austin & Staples	Liana	Fernando 343
Cucurbitaceae		
<i>Doyerea emetocathartica</i> Grosourdy	Liana	Fernando 465
<i>Cucumis anguria</i> L.	Liana	Fernando 242
<i>Cucumis</i> sp.	Liana	Fernando 282
<i>Momordica charantia</i> L.	Liana	Fernando 367
Cyperaceae		
<i>Cyperus aggregatus</i> (Willd.) Endl.	Herb	Fernando 272
<i>Cyperus esculentus</i> L. *	Herb	Fernando 126
<i>Cyperus ligularis</i> L.	Herb	Fernando 151
<i>Eleocharis filiculmis</i> Kunth	Herb	Fernando 127
<i>Fimbristylis littoralis</i> Gaudich.	Herb	Fernando 125
Dioscoreaceae		
<i>Dioscorea campestris</i> Griseb.	Liana	Fernando 232
<i>Dioscorea grandiflora</i> Mart. ex Griseb. *	Liana	Fernando 394
Erythroxylaceae		
<i>Erythroxylum pungens</i> O.E.Schulz	Tree	Fernando 377
Euphorbiaceae		
<i>Acalypha multicaulis</i> Müll.Arg. *	Herb	Fernando 424
<i>Astraea lobata</i> (L.) Klotzsch	Herb	Fernando 341
<i>Bernardia sidoides</i> (Klotzsch) Müll.Arg.	Subshrub	Fernando 276
<i>Bernardia</i> sp.	Herb	Fernando 422
<i>Cnidoscolus quercifolius</i> Pohl	Tree	Fernando 174
<i>Cnidoscolus urens</i> (L.) Arthur	Subshrub	Fernando 181
<i>Croton adenocalyx</i> Baill.	Shrub	Fernando 228
<i>Croton heliotropiifolius</i> Kunth	Shrub	Fernando 180
<i>Croton hirtus</i> L'Hér.	Herb	Fernando 264
<i>Dalechampia scandens</i> L.	Liana	Fernando 342
<i>Ditaxis malpighiacea</i> (Ule) Pax & K.Hoffm. *	Shrub	Fernando 311
<i>Euphorbia comosa</i> Vell.	Tree	Fernando 421
<i>Euphorbia hirta</i> L.	Herb	Fernando 427
<i>Euphorbia hyssopifolia</i> L.	Herb	Fernando 109
<i>Euphorbia insulana</i> Vell.	Herb	Fernando 291
<i>Euphorbia prostrata</i> Aiton	Herb	Fernando 243
<i>Gymnanthes boticario</i> Esser, M.F.A.Lucena & M.Alves	Shrub	Fernando 399
<i>Jatropha mollissima</i> (Pohl) Baill.	Shrub	Fernando 154

Table 1 (continued)

Family/Species	Habit	Voucher
<i>Manihot dichotoma</i> Ule. *	Tree	Fernando 217
<i>Ricinus communis</i> L.	Shrub	Fernando 455
<i>Sapium glandulosum</i> (L.) Morong	Tree	Fernando 391
<i>Sebastiania riparia</i> Schrad.	Tree	Fernando 214
<i>Tragia volubilis</i> L.	Liana	Fernando 246
Hydrocharitaceae		
<i>Egeria densa</i> Planch.	Herb	Fernando 153
Lamiaceae		
<i>Eriope macrostachya</i> Mart. ex Benth. *	Shrub	Fernando 334
<i>Hypenia salzmannii</i> (Benth.) Harley	Shrub	Fernando 371
<i>Leonotis nepetifolia</i> (L.) R.Br	Herb	Fernando 450
<i>Leucas martinicensis</i> (Jacq.) R.Br.	Herb	Fernando 418
<i>Marsypianthes chamaedrys</i> (Vahl) Kuntze	Subshrub	Fernando 275
<i>Mesosphaerum caatingense</i> Harley & J.F.B.Pastore	Subshrub	Fernando 193
<i>Mesosphaerum pectinatum</i> (L.) Kuntze	Shrub	Fernando 351
<i>Mesosphaerum suaveolens</i> (L.) Kuntze	Subshrub	Fernando 270
<i>Vitex megapotamica</i> (Spreng.) Moldenke	Tree	Fernando 382
<i>Vitex triflora</i> Vahl *	Tree	Fernando 332
Leguminosae		
<i>Amburana cearensis</i> (Allemão) A.C.Sm.	Tree	Fernando 373
<i>Anadenanthera colubrina</i> (Vell.) Brenan	Tree	Fernando 161
<i>Arachis dardani</i> Krapov. & W.C.Greg.	Herb	Fernando 219
<i>Bauhinia cheilantha</i> (Bong.) Steud.	Tree	Fernando 267
<i>Calliandra depauperata</i> Benth. *	Shrub	Fernando 402
<i>Cenostigma pyramidale</i> (Tul.) Gagnon & G.P.Lewis	Shrub	Fernando 177
<i>Centrosema brasilianum</i> (L.) Benth.	Liana	Fernando 437
<i>Centrosema pascuorum</i> Mart. ex Benth.	Liana	Fernando 304
<i>Chamaecrista duckeana</i> (P.Bezerra & Afr.Fern.) H.S.Irwin & Barneby *	Subshrub	Fernando 263
<i>Chamaecrista pilosa</i> (L.) Greene *	Subshrub	Fernando 283
<i>Chamaecrista rotundifolia</i> (Pers.) Greene	Herb	Fernando 268
<i>Chamaecrista serpens</i> (L.) Greene	Herb	Fernando 252
<i>Chamaecrista supplex</i> (Mart. ex Benth.) Britton & Rose ex Britton & Killip	Herb	Fernando 286
<i>Crotolaria retusa</i> L.	Subshrub	Fernando 365
<i>Ctenodon martii</i> (Benth.) D.B.O.S.Cardoso, P.L.R.Moraes & H.C.Lima	Tree	Fernando 383
<i>Ctenodon monteiroi</i> (Afr.Fern. & P.Bezerra) D.B.O.S.Carsono, Filardi & H.C.Lima	Subshrub	Fernando 148
<i>Desmanthus virgatus</i> (L.) Willd.	Herb	Fernando 209
<i>Dioclea virgata</i> (Rich.) Amshoff	Liana	Fernando 119
<i>Enterolobium contortisiliquum</i> (Vell.) Morong	Tree	Fernando 363
<i>Erythrina velutina</i> Willd.	Tree	Fernando 106
<i>Indigofera blanchetiana</i> Benth. *	Subshrub	Fernando 340
<i>Indigofera hirsuta</i> L.	Subshrub	Fernando 244
<i>Indigofera lespedezioides</i> Kunth *	Subshrub	Fernando 289

Table 1 (continued)

Family/Species	Habit	Voucher
<i>Indigofera microcarpa</i> Desv.	Subshrub	Fernando 156
<i>Indigofera suffruticosa</i> Mill.	Subshrub	Fernando 288
<i>Libidibia ferrea</i> (Mart. ex Tul.) L.P.Queiroz	Tree	Fernando 168
<i>Lonchocarpus sericeus</i> (Poir.) Kunth ex DC.	Tree	Fernando 130
<i>Luetzelburgia auriculata</i> (Allemão) Ducke	Tree	Fernando 358
<i>Macropsychanthus grandiflorus</i> (Mart. ex Benth.) L.P.Queiroz & Snak	Liana	Fernando 370
<i>Macroptilium atropurpureum</i> (Sessé & Moc. ex DC.) Urb.	Herb	Fernando 309
<i>Macroptilium gracile</i> (Poepp. ex Benth.) Urb.	Liana	Fernando 452
<i>Mimosa borboremae</i> Harms	Herb	Fernando 451
<i>Mimosa candollei</i> R.Grether	Shrub	Fernando 116
<i>Mimosa ophthalmocentra</i> Mart. ex Benth.	Subshrub	Fernando 118
<i>Mimosa tenuiflora</i> (Willd.) Poir.	Tree	Fernando 149
<i>Neptunia plena</i> (L.) Benth.	Subshrub	Fernando 362
<i>Parkinsonia aculeata</i> L.	Tree	Fernando 430
<i>Peltogyne pauciflora</i> Benth.	Tree	Fernando 233
<i>Piptadenia retusa</i> (Jacq.) P.G.Ribeiro, Seigler & Ebinger	Shrub	Fernando 142
<i>Pithecellobium diversifolium</i> Benth.	Tree	Fernando 463
<i>Poecilanthe grandiflora</i> Benth.	Tree	Fernando 464
<i>Prosopis juliflora</i> (SW.) DC.	Tree	Fernando 352
<i>Rhynchosia minima</i> (L.) DC.	Liana	Fernando 446
<i>Senna macranthera</i> (DC. ex Collad.) H.S.Irwin & Barneby	Shrub	Fernando 152
<i>Senna spectabilis</i> (DC.) H.S.Irwin & Barneby	Shrub	Fernando 327
<i>Stylosanthes viscosa</i> (L.) Sw.	Subshrub	Fernando 338
<i>Tephrosia purpurea</i> (L.) Pers.	Subshrub	Fernando 347
<i>Vachellia farnesiana</i> (L.) Wight & Arn.	Tree	Fernando 374
Loasaceae		
<i>Mentzelia aspera</i> L.	Herb	Fernando 316
Loganiaceae		
<i>Spigelia anthelmia</i> L.	Herb	Fernando 278
Lomariopsidaceae		
<i>Nephrolepis biserrata</i> (Sw.) Schott	Herb	Fernando 348
Lythraceae		
<i>Cuphea brachiata</i> Martius ex Koehne	Herb	Fernando 404
<i>Cuphea circaeoides</i> Sm. ex Sims	Herb	Fernando 372
<i>Cuphea impatientifolia</i> A.St.-Hil.	Herb	Fernando 298
Malpighiaceae		
<i>Bronwenia megaptera</i> (B.Gates) W.R.Anderson & C.C.Davis *	Liana	Fernando 368
<i>Diplopterys lutea</i> (Griseb.) W.R.Anderson & C.C.Davis	Liana	Fernando 169
<i>Diplopterys pubipetala</i> (A.Juss.) W.R.Anderson & C.C.Davis	Liana	Fernando 458
<i>Galphimia brasiliensis</i> (L.) A.Juss.	Subshrub	Fernando 405
<i>Heteropterys grandiflora</i> A.Juss. *	Liana	Fernando 208
<i>Niedenzuella multiglandulosa</i> (A.Juss.) W.R.Anderson **	Liana	Fernando 301

Table 1 (continued)

Family/Species	Habit	Voucher
<i>Ptilochaeta nudipes</i> Griseb. *	Shrub	Fernando 349
Malvaceae		
<i>Briquetiastrum spicatum</i> (Kunth in H.B.K.) Bovini	Shrub	Fernando 294
<i>Ceiba erianthos</i> (Cav.) K.Schum.	Tree	Fernando 607
<i>Corchorus argutus</i> Kunth *	Subshrub	Fernando 407
<i>Corchorus hirtus</i> L.	Subshrub	Fernando 222
<i>Helicteres andersonii</i> Cristóbal *	Tree	Fernando 387
<i>Helicteres baruensis</i> Jacq.	Shrub	Fernando 313
<i>Helicteris</i> sp.	Tree	Fernando 247
<i>Herissantia crispa</i> (L.) Brizicky *	Subshrub	Fernando 297
<i>Herissantia tiubae</i> (K.Schum.) Brizicky	Shrub	Fernando 409
<i>Malvastrum coromandelianum</i> (L.) Garcke	Subshrub	Fernando 379
<i>Melochia pyramidata</i> L.	Herb	Fernando 389
<i>Melochia tomentosa</i> L.	Shrub	Fernando 175
<i>Pavonia cancellata</i> (L.) Cav	Herb	Fernando 305
<i>Pseudobombax marginatum</i> (A.St.-Hil., Juss. & Cambess.) A.Robyns	Tree	Fernando 608
<i>Sida harleyi</i> Krapov.	Subshrub	Fernando 290
<i>Sida cordifolia</i> L.	Subshrub	Fernando 440
<i>Sida galheirensis</i> Ulbr.	Subshrub	Fernando 212
<i>Waltheria operculata</i> Rose	Shrub	Fernando 448
<i>Waltheria rotundifolia</i> Schrank	Subshrub	Fernando 114
Molluginaceae		
<i>Mollugo verticillata</i> L.	Herb	Fernando 191
Myrtaceae		
<i>Eugenia flavescens</i> DC. *	Tree	Fernando 414
<i>Eugenia stictopetala</i> Mart. ex DC.	Tree	Fernando 199
<i>Eugenia</i> sp.	Tree	Fernando 315
Nyctaginaceae		
<i>Boerhavia coccinea</i> Mill. *	Herb	Fernando 449
<i>Boerhavia diffusa</i> L.	Herb	Fernando 204
<i>Guapira laxa</i> (Netto) Furlan *	Tree	Fernando 216
Onagraceae		
<i>Ludwigia erecta</i> (L.) H.Hara	Shrub	Fernando 317
<i>Ludwigia octovalvis</i> (Jacq.) P.H.Raven	Herb	Fernando 132
Oxalidaceae		
<i>Oxalis corniculata</i> L.	Herb	Fernando 223
<i>Oxalis cratensis</i> Oliv. ex Hook.	Herb	Fernando 408
<i>Oxalis divaricata</i> Mart. ex Zucc.	Herb	Fernando 236
<i>Oxalis latifolia</i> Kunth *	Herb	Fernando 390
<i>Oxalis psoraleoides</i> Kunth	Shrub	Fernando 229
Passifloraceae		
<i>Passiflora cincinnata</i> Mast.	Liana	Fernando 445

Table 1 (continued)

Family/Species	Habit	Voucher
<i>Passiflora foetida</i> L.	Liana	Fernando 135
<i>Piriqueta dentata</i> Arbo *	Subshrub	Fernando 256
<i>Piriqueta racemosa</i> (Jacq.) Sweet	Herb	Fernando 198
<i>Piriqueta viscosa</i> Griseb.	Herb	Fernando 257
<i>Piriqueta</i> sp.	Shrub	Fernando 420
<i>Turnera subulata</i> Sm.	Shrub	Fernando 308
Phyllanthaceae		
<i>Astrocasia jacobinensis</i> (Müll.Arg.) G.L.Webster *	Tree	Fernando 314
<i>Phyllanthus caroliniensis</i> Walter *	Herb	Fernando 241
<i>Phyllanthus niruri</i> L.	Herb	Fernando 178
<i>Phyllanthus tenellus</i> Roxb. *	Herb	Fernando 441
<i>Phyllanthus</i> sp.	Herb	Fernando 322
Phytolaccaceae		
<i>Microtea scabrida</i> Urb.	Herb	Fernando 284
<i>Microtea celosioides</i> Moq. ex Sennikov & Sukhor.	Herb	Fernando 406
<i>Microtea</i> sp.	Herb	Fernando 221
Plantaginaceae		
<i>Angelonia biflora</i> Benth.	Herb	Fernando 141
<i>Angelonia campestris</i> Nees & Mart.	Subshrub	Fernando 266
<i>Scoparia dulcis</i> L.	Herb	Fernando 189
<i>Stemodia maritima</i> L.	Herb	Fernando 108
Plumbaginaceae		
<i>Plumbago scandens</i> L.	Herb	Fernando 122
Poaceae		
<i>Cenchrus echinatus</i> L.	Herb	Fernando 274
<i>Digitaria insularis</i> (L.) Fedde	Herb	Fernando 207
<i>Digitaria</i> sp.	Herb	Fernando 131
<i>Echinochloa crus-galli</i> (L.) Link. & Schult.	Herb	Fernando 254
<i>Melinis</i> sp.	Herb	Fernando 128
<i>Panicum stramineum</i> Hitchc. & Chase	Herb	Fernando 273
<i>Tripogon spicatus</i> (Nees) Ekman	Herb	Fernando 393
<i>Urochloa mutica</i> (Forssk.) T.Q.Nguyen	Herb	Fernando 255
<i>Urochloa plantaginea</i> (Link) R.D.Webster	Herb	Fernando 269
Polygalaceae		
<i>Asemeia violacea</i> (Aubl.) J.F.B.Pastore & J.R.Abbott	Herb	Fernando 249
<i>Polygala paniculata</i> L.	Herb	Fernando 271
Pontederiaceae		
<i>Heteranthera oblongifolia</i> Mart. ex Schult. & Schult.f.	Herb	Fernando 447
Portulacaceae		
<i>Portulaca elatior</i> Mart. ex Rohrb.	Herb	Fernando 211
<i>Portulaca halimoides</i> L.	Herb	Fernando 239

Table 1 (continued)

Family/Species	Habit	Voucher
Rhamnaceae		
<i>Sarcomphalus joazeiro</i> (Mart.) Hauenschild	Tree	Fernando 150
Rubiaceae		
<i>Borreria spinosa</i> Cham. & Schltldl.	Herb	Fernando 112
<i>Hexasepalum gardneri</i> (K.Schum.) J.H.Kirkbr & Delprete	Herb	Fernando 117
<i>Hexasepalum redula</i> (Willd.) Delprete & J.H.Kirkbr.	Subshrub	Fernando 237
<i>Guettarda angelica</i> Mart. ex Müll. Arg.	Shrub	Fernando 353
<i>Guettarda sericea</i> Müll. Arg.	Shrub	Fernando 413
<i>Mitracarpus</i> sp.	Herb	Fernando 359
<i>Richardia grandiflora</i> (Cham. & Schltldl.) Steud.	Subshrub	Fernando 277
<i>Richardia scabra</i> L.	Herb	Fernando 261
<i>Ricardia</i> sp.	Shrub	Fernando 231
Santalaceae		
<i>Phoradendron quadrangulare</i> (Kunth) Griseb.	Parasite	Fernando 120
<i>Phoradendron mucronatum</i> (DC.) Krug & Urb.	Parasite	Fernando 401
<i>Phoradendron perrottetii</i> (DC.) Eichler	Parasite	Fernando 159
Sapindaceae		
<i>Cardiospermum corindum</i> L.	Liana	Fernando 164
<i>Serjania glabrata</i> Kunth	Liana	Fernando 609
Sapotaceae		
<i>Sideroxylon obtusifolium</i> (Roem. & Schult.) T.D.Penn.	Tree	Fernando 375
Selaginellaceae		
<i>Selaginella convoluta</i> (Arn.) Spring	Herb	Fernando 157
Solanaceae		
<i>Nicotiana glauca</i> Graham	Shrub	Fernando 179
<i>Physalis angulata</i> L.	Herb	Fernando 423
<i>Schwenckia americana</i> Rooyen ex L.	Herb	Fernando 183
Talinaceae		
<i>Talinum paniculatum</i> (Jacq.) Gaertn.	Herb	Fernando 318
<i>Talinum fruticosum</i> (L.) Juss.	Herb	Fernando 296
Verbenaceae		
<i>Lantana camara</i> L.	Shrub	Fernando 171
<i>Lantana radula</i> Sw.	Shrub	Fernando 324
<i>Lippia organoides</i> Kunth	Subshrub	Fernando 468
<i>Lippia</i> sp.	Shrub	Fernando 388
<i>Stachytarpheta cayennensis</i> (Rich.) Vahl	Subshrub	Fernando 265
<i>Stachytarpheta coccinea</i> Schauer	Subshrub	Fernando 281
<i>Stachytarpheta microphylla</i> Walp. *	Subshrub	Fernando 265
Vitaceae		
<i>Cissus decida</i> Lombardi	Liana	Fernando 165
Zygophyllaceae		
<i>Kallstroemia tribuloides</i> (Mart.) Steud.	Shrub	Fernando 213



Figure 3. a. *Mesosphaerum caatingense* Harley & J.F.B.Pastore. b. *Cochlospermum vitifolium* (Willd.) Spreng. c. *Mesosphaerum suaveolens* (L.) Kuntze. d. *Tanaecium dichotomum* (Jacq.) Kaehler & L.G.Lohmann. e. *Xiquexique gounellei* (F.A.C.Weber) Lavor & Calvente. f. *Erythrina velutina* Willd. g. *Mollugo verticillata* L. h. *Cardiospermum corindum* L.



Figure 4. a. *Harpochilus paraibanus* F.K.S.Monteiro, J.I.M Melo & E.M.P.Fernando. b. *Distimake aegyptius* (L.) A.R.Simões & Staples. c. *Allamanda blanchetii* A.DC. d. *Chamaecrista duckeana* (P.Bezerra & Afr.Fern.) H.S.Irwin & Barneby. e. *Eclipta próstata* (L.) L. f. *Commiphora leptophloeos* (Mart.) J.B.Gillett. g. *Cenostigma pyramidale* (Tul.) Gagnon & G.P.Lewis. h. *Handroanthus impetiginosus* (Mart. ex DC.) Mattos.

The farm's riparian forest has a rich vegetation, with the most frequent species being *Microdesmia rigida* (Benth.) Sothers & Prance (Oiticica), *Erythrina velutina* Willd. (Mulungu), *Tabebuia aurea* (Silva Manso) Benth. & Hook.f. ex S.Moore (Craibeira), *Lonchocarpus sericeus* (Poir.) Kunth ex DC. (Ingazeira) and *Sapium glandulosum* (L.) Morong. (Leiteiro). Less frequently, the species *Sebastiania riparia* Schrad can be found near the water streams.

Some floristic studies were carried out in Caatinga areas in the interior of Paraíba (Santos *et al.* 2010, Lucena *et al.* 2015, Silva *et al.* 2015, Gadelha-Neto *et al.* 2018), which in terms of vegetation have a similarity of species with this study. As in previous studies, the most representative family in species number in the ABA Farm is Fabaceae, which reaffirms it as one of the most abundant plant families in the Caatinga.

There is a potential for preservation in the study area due to its rates of endemism, with 94 species for Brazil, with the species *Trianthema portulacastrum* L., *Ruellia bahiensis* (Nees) Morong e *Harporchilus paraibanus* F.K.S. Monteiro, J.I.M. Melo & E.M.P. Fernando corresponding to species exclusive to the Caatinga area (BFG 2021).

Furthermore, in this floristic survey, herbs are the predominant habit (108 spp.), which differs from other plant surveys (Silva *et al.* 2015, Gadelha-Neto *et al.* 2018) that have woody plants as the predominant habit. Several factors may indicate why this habit prevailed: the environment may be favorable, which favors the number of species or it may be due to the scarcity of collections focused on the herbaceous stratum in other studies with similar environments.

Conclusions

ABA farm is highly preserved area, with exotic species found only in the vicinity of the residences. It has a high expressiveness in species richness (322 species), besides presenting 38 new records. The area is classified by the MMA (Ministry of the Environment) as an Caatinga area prone to desertification, which makes it an area of high importance for conservation. The data from this research will support the implementation of an RPPN (Particular Reserve from the Natural Property) on the farm and its management plan.

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Conflicts of interest

There is no conflict of interest.

Autor contributions

Emanoel Messias Pereira Fernando: Contribution to the study design; Data collection; Data analysis and manuscript preparation.

Ketley Gomes Campos: Contribution to manuscript preparation; Critiques and addition of intellectual content.

Mickaelly de Lucena Mamede: Contribution in manuscript preparation; Critiques and addition of intellectual content.

Maria de Fátima de Araújo Lucena: Substantial contribution to the study's design and concept; Revision and addition of intellectual content.

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