



Papilionoideae of an Area of Vegetation in Northeast from Brazil

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Authors' contributions

This work was carried out in collaboration between all authors. Authors GSG, GSS and GMC collected, herborized and identified the botanical material. Authors DLSS, PRPM and MFVA carried out the scientific writing and correction of the manuscript. Authors GSG and RRO performed the translation and final correction of the manuscript.

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ABSTRACT

The research had as objective to carry out taxonomic treatment of the subfamily Papilionoideae (Fabaceae) for a fragment of Cerrado in Northeast of Brazil. For the knowledge of the plant species, were carried monthly in a field in a period from September 2016 to February 2017. The botanical material was collected at the reproductive stage and identified by comparison with type material, specialised bibliography, virtual herbarium and taxonomic keys. Were found 21 species,

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distributed in 14 genera. The study presents a description, geographic distribution and phytogeographical domain for each species and key identification of the taxa. The species listed have a wide geographic distribution in Brazil, occurring in several phytogeographic domains. Thus, the research contributed to the knowledge of the species of Fabaceae, which can be used in other scientific areas, as well as, help in the elaboration of the management plan and the knowledge on the conservation status of the species.

Keywords: *Aeschynomene*; *Fabaceae*; *Brazilian vegetation*.

1. INTRODUCTION

With 770 genera and 19,500 species, Fabaceae (Lind.) constitute one of the largest families of Angiosperms, with widely distributed representatives throughout the globe [1,2], represented by six subfamilies: Duparquetioideae (1 genus and 1 species); Cercidoideae (12 genera and 335 species); Dialioideae (17 genera and 85 species); Detarioideae (84 genera and 760 species); Caesalpinioideae (146 genera and 4400 species) and Papilionoideae (503 genera and 14,000 species) [2], being the family with the most significant number of trees in the world [3].

In Brazil are recognised 2,848 species (1,539 endemic) grouped in 222 genera [4], found in most regions and distributed by almost all vegetation formations [5]. Papilionoideae is a subfamily Monophyletic, being largest of the subfamilies of Fabaceae, [6,2]. In Brazil, are recognized approximately 100 genera and 1,100 species [5]. It differs from the other subfamilies through foliar, floral and fruit characters such as pinnate leaves, never bipinnates, in most trifoliolates, Papilionaceous flowers with generally zygomorphous symmetry, corolla with disceding imbricate prefloration or vexilar, and seeds with well-delimited hilum region and root axis of the inflated embryo [7,8].

The subfamily includes representatives herbaceous, shrub, liane or arboreal, the fruits vary greatly, including legume, lomentum, samara or drupe. The seeds vary in morphology and colouration, and possess conspicuous hilum and curved radicle axis [9,1]. It has ample distribution, occurring in diverse plant formations, damp forests to dry and cold deserts [5,6]. Floristics surveys of Fabaceae indicate Papilionoideae as the most representative subfamily in a number of species [1,10,8]. The state of Maranhão occupies a significant area of the Cerrado, forming an area of contact with the Amazonian domain in the Western region and specifically in the East region suffers strong

influence of the Caatinga [11], possessing a unique biodiversity, but it should be considered that the Cerrado is conditioned to a strong anthropic pressure indicating the danger of extinction of the plant species of this phytogeographical domain [12].

Thus, considering the high representativeness of Papilionoideae, it is assumed that the low number of species catalogued for this region is due to the shortage of collections for the state, which implies the low level of botanical knowledge for the Maranhão. The research aimed to make a taxonomic treatment of the subfamily Papilionoideae (Fabaceae) for a Cerrado fragment to the East of the Northeast Brazilian.

2. MATERIALS AND METHODS

Located in the Northeastern region of Brazil, The state of Maranhão has a surface area of 331,983.29 km², It is located between the parallels 01° 01' and 10°21' South and the meridians 41°48' and 48°50' West. The state has five Geographical Mesoregions, subdivided into 21 Geographic Microregions, where its 217 municipalities are inserted [13]. The flora of Maranhão is extremely rich and diversified, but it is observed that there is little information about the total of species [14].

Flora of Maranhão reflects climate and soil in conditions of structural transition environments. The vegetation is very similar to the Amazon rainforest, with dominant species, little abundance serving as indicative of high diversity [15,13]. The municipality of São João do Sóter extends for 1,438.1 km². Situated at 108 meters of altitude, at the following geographical coordinates: 5° 6' 28 "s. and 43° 48' 34" W (Fig. 1). In the municipality, four areas of Cerrado were sampled: Pedras Village, Redondo Village, Serra do Cajú and the APP (Permanent Protection Area) [16].

Were realised monthly excursions in the period from September 2016 to February 2017 following

the free collection method and the collected material was processed according to the usual methodology in vegetal taxonomy. In the fieldwork were collected the specimens through hiking trails in the interior of the vegetation. The collection of botanical material in the field was carried out in the reproductive stage, following the protocol of [17]. After collection, the material was herborized and started identification process of the taxa.

The specimens collected were identified by comparison with the type material, specialised bibliography such as [18,19,1,8,20,21], books, herbariums Virtual and taxonomic keys, following the classification of [22,2] and sending samples to a specialist in the group for confirmation and/or identification of specimens. After the identification of the species and assembly of the exsiccates, they were deposited in the herbarium Professor Aluizio Bittencourt (HABIT).

For the descriptions of the species was used morphological terminology of [23] and [9], being adopted the classification of [2] for the subfamily Papilionoideae. The data of the geographical distribution and domain phytogeographical were obtained by the [4], besides the indication of physiognomy and habit of the species according to the collection data.

3. RESULTS AND DISCUSSION

In the Cerrado fragment in the studied area, were found 14 genera distributed in 21 species (Table

1), four theirs to the genus *Aeschynomene*, three to *Desmodium*, two to *Crotalaria*, two to *Macroptilium*, beside of *Abrus*, *Centrosema*, *Clitoria*, *Dioclea*, *Galactia*, *Indigofera*, *Periandra*, *Phaseolus*, *Stylosanthes* and *Vigna*, that present only one specie. About growth habit, the shrub type presented the largest number with 12 species, followed for herb with nine species.

Considering the geographic distribution of the taxa, 14 species presented the habit of life shrubs and herbs and found only in gallery forest. Species as *Abrus fruticosus*, *Centrosema brasiliana*, *Crotalaria retusa*, *Dioclea bicolor*, *Aeschynomene histrix* e *Phaseolus vulgaris*, occurred only in open field and only *Galactia jussiaeana* occurred in Cerrado limpo. Species as *Centrosema brasiliana*, *Abrus fruticosus*, *Crotalaria retusa* and *Macroptilium lathyroides* were listed for [22] for the municipality of Coelho Neto/ Brasil, that is one the municipalities of East of Maranhão.

For the Northeast region, are recognized approximately 170 genera distributed in 1108 species, being for the State of Maranhão 111 genera and 408 species [4]. The survey is representative for sampling more than 5% of the species and 8% of the genera that occur in Maranhão, considering than the Fabaceae family, has a greater number of species when restricted to the subfamily Papilionoideae, mainly due to the few surveys of the group in the East of Maranhão.

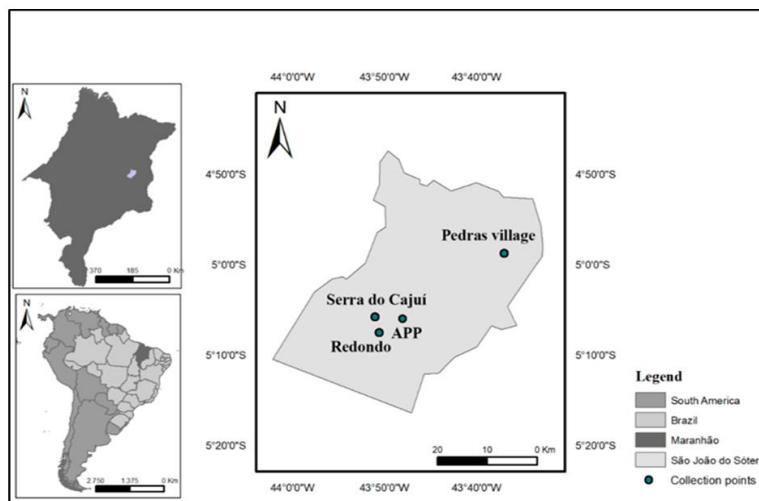


Fig. 1. Map of the Municipality of São João do Sóter, Maranhão
 Source: IBGE; 2006, Google Earth 2014.

Table 1. Representation of the species of Fabaceae with their respective physiognomies, growth habits, phytogeographical domains and geographical distribution

N°	Species	Geographical distribution	Phytogeographical domains	Collect physiognomy	Habit
1	<i>Abrus fruticulosus</i> Wight & Arn.	AM, AP, PR, RR, AL, BA, CE, MA, PB, PE, PI, RN, SE, DF, GO, MS, MT, ES, MG, RJ, SP, PR, SC.	Amazon forest and Cerrado.	Open Field	Herb
2	<i>Aeschynomene brasiliiana</i> (Poir.) DC.	AM, AP, PA, RO, RR, TO, AL, BA, CE, MA, PB, PE, PI, DF, GO, MS, MT, ES, MG, RJ, SP, PR.	Amazon forest, Caatinga, Cerrado, Atlantic forest and Pantanal.	Gallery forest	Shrub
3	<i>Aeschymoneme histrix</i> Poir.	AC, AM, AP, PA, RR, TO, AL, BA, CE, MA, PB, PE, PI, SE, DF, GO, MS, MT, MG, SP, PR	Amazon forest, Caatinga, Cerrado, Atlantic forest and Pantanal.	Open Field	Shrub
4	<i>Aeschynomene paniculata</i> Willd. ex Vogel	AC, AM, AP, PA, RO, RR, TO, BA, CE, MA, PI, SE, DF, GO, MS, MT, MG, RJ, SP, PA.	Amazon forest, Caatinga, Cerrado, Atlantic forest and Pantanal.	Gallery forest	Shrub
5	<i>Aeschynomene viscidula</i> Michx.	TO, AL, BA, CE, PB, PB, PI, RN, SE, MS, ES, MG.	Caatinga, Cerrado and Atlantic forest.	Gallery forest	Herb
6	<i>Centrosema brasiliiana</i> (L.) Benth.	AM, AP, PA, RR, AL, BA, CE, MA, PB, PE, PI, RN, SE.	Amazon forest, Caatinga, Cerrado Atlantic forest and Pantanal.	Open Field	Herb
7	<i>Clitoria guianensis</i> (Aubl.) Benth.	AM, AP, PA, RR, TO, BA, CE, MA, PE, PI, DF, GO, MS, MT ES, MG, SP, PR.	Amazon forest, Caatinga, Cerrado, Atlantic forest and Pantanal.	Gallery forest	Herb
8	<i>Crotalaria retusa</i> L.	PA, BA, MA, PI, MG, RJ, SP, PR, RS, SC.	Amazon forest, Caatinga, Cerrado, Atlantic forest and Pampa.	Open Field	Shrub
9	<i>Crotalaria stipularia</i> Desv.	AC, PA, RR, AL, BA, CE, MA, PB, PE, PI, SE; DF, GO, MS, MT, ES, MG, RJ, SP.	Amazon forest, Caatinga, Cerrado, Atlantic forest and Pantanal.	Gallery forest	Shrub
10	<i>Desmodium barbatum</i> (L.) Benth.	AC, AM, AP, PA, RO, RR, TO, AL, BA, CE, MA, PB, PE, PI, RN, SE, DF, GO, MS, MT, ES, MG, RJ, SP, PR, RS, SC.	Amazon forest, Caatinga, Cerrado, Atlantic forest, Pampa and Pantanal.	Gallery forest	Shrub

N°	Species	Geographical distribution	Phytogeographical domains	Collect physiognomy	Habit
11	<i>Desmodium incanum</i> (Sw.) DC.	AC, AM, AP, PA, RO, RR, TO, AL, BA, MA, PB, PE, PI, RN, DF, GO, MS, MT, ES, MG, RJ, SP, PR, RS, SC.	Amazon forest, Caatinga, Cerrado, Atlantic forest, Pampa and Pantanal.	Gallery forest	Shrub
12	<i>Desmodium subsecundum</i> Vogel.	AC, PA, TO, BA, DF, GO, MS, ES, MG, RJ, SP, PR, RS, SC.	Amazon forest, Cerrado and Atlantic forest.	Gallery forest	Shrub
13	<i>Dioclea bicolor</i> Benth.	AC, AM, PA, CE, MA, GO, MT.	Amazon forest, Caatinga and Cerrado.	Open Field	Herb
14	<i>Galactia jussiaeana</i> Kunth.	AM, AP, PA, RO, RR, BA, MA, PI, GO.	Amazon forest, Caatinga and Cerrado.	Cerrado limpo	Herb
15	<i>Indigofera suffruticosa</i> Mill.	AC, AM, AP, PA, TO, RR, TO, AL, BA, CE, MA, PB, PE, PI, RN, SE, DF, GO, MT, ES, MG, RJ, SP, PR, RS, SC.	Amazon forest, Caatinga, Cerrado and Atlantic forest.	Gallery forest	Shrub
16	<i>Macroptilium atropurpureum</i> (Sessé & Moc. ex DC.) Urb.	AM, PA, RR, AL, BA, MA, PB, PE, RN, SE, DF, GO, MS, MT, ES, MG, RJ, SP, PR, RS, SC.	Amazon forest, Caatinga, Cerrado, Atlantic forest and Pantanal.	Gallery forest	Herb
17	<i>Macroptilium lathyroides</i> (L.) Urb.	AM, PA, RR, AL, BA, CE, MA, PB, PE, PI, DF, GO, MS, MT, ES, MG, RJ, SP, PR.	Amazon forest, Cerrado, Atlantic forest and Pantanal.	Gallery forest	Herb
18	<i>Periandra heterophylla</i> Benth.	PA, TO, BA, MA, PI, GO, MS, MT, MG, SP.	Amazon forest e and Cerrado.	Gallery forest	Shrub
19	<i>Phaseolus vulgaris</i> L.	PA, AL, BA CE, MA, PB, PE, PI, SE, DF, MS, MT, ES, MG, RJ, SP, PR, RS, SC.	Amazon forest, Caatinga, Cerrado and Atlantic forest.	Open Field	Shrub
20	<i>Stylosanthes viscosa</i> (L.) Sw.	AC, AM, AP, PA, RO, RR, TO, AL, BA, CE, MA, PB, PE, PI, RN, SE, DF, GO, MS, RJ, SP, PR, RS, SC.	Amazon forest, Caatinga, Cerrado, Atlantic forest, Pampa and Pantanal.	Gallery forest	Shrub
21	<i>Vigna lasiocarpa</i> (Mart. ex Benth.) Verdc.	AM, AP, PA, RR, MS, MT, PR, RS, SC.	Amazônia, Cerrado, Atlantic forest and Pantanal.	Gallery forest	Herb

Meanings of the acronyms of brazilian geographical distribution: Acre-AC; Alagoas-AL; Amapá-AP; Amazonas-AM; Bahia-BA; Ceará-CE; Distrito Federal-DF; Espírito Santo-ES; Goiás-GO; Maranhão-MA; Mato Grosso-MT; Mato Grosso do Sul-MS; Minas Gerais-MG; Pará PA; Paraíba-PB; Paraná-PR; Pernambuco-PE; Piauí-PI; Rio de Janeiro-RJ; Rio Grande do Norte-RN; Rio Grande do Sul-RS; Rondônia-RO; Roraima-RR; Santa Catarina-SC; São Paulo-SP; Sergipe-SE; Tocantins-TO.

Key of Subfamily Papilionoideae

1. Liane, fruit type vegetable with 3 seeds, without forming of articles, with 4 cm in length, margin revolute of legume.....**1Dioclea bicolor**
1. Herb or Subshrub, legume fruit with 3 more seeds or with formation of articles, without revolute margin.....2
 2. Sub-shrub with height equal to or greater than 1m, only erect growth.....3
 3. Composite leaves imparipinnates, with 8 to 12 pairs of leaflets, fruit legume type curved, forming in bunches in the main branch, with 8,0 cm of length.....**2Indigofera suffruticosa**
 3. Leaves simple or trifoliolate, fruit legume lomentum type, not form clusters in the main branch.....4
 4. Leaves simple large ovate, with 20 cm of length. and 10 cm long fruit forming branches, arranged alternate.....**3Desmodium subsecundum**
 4. Small trifoliolate leaves, small fruit forming branches, arranged not alternate leaves form.....5
 5. Leaflets 2.4 cm long and 1.1 cm wide, fruit type lomentum, 1.1 cm long, with 3 to 5 articles.....**4Desmodium incanum**
 5. Leaflets 7 cm long and 3.6 cm wide, fruit lomentum type, 3.3 cm long. and 0.8 cm long, has 3 to 6 articles.....**5Desmodium barbatum**
 2. Climbing or herbaceous herb with height equal to or less than 1,5m, erect, decumbent or prostrate growth.....6
 6. Growth climbing herbs.....7
 7. Leaves composed of 8 to 15 pairs of leaflets, bipinnates with 2.3 cm of length and 0.9 cm wide, pseudo-raceme inflorescence.....**6Abrus fruticulosus**
 7. Leaves trifoliolate, inflorescence raceme or cymose.....8
 8. Long lanceolate leaflet..... 9
 9. Leaflet with 5,2 cm of length and 3 cm width, papilionaceous flower, lilac dark to purple petals.....**7Centrosema brasiliانا**
 9. Leaflets with 5 cm of length and 1 cm wide, papilionaceous flower, petals light to whitish lilac.....**8Clitoria guianensis**
 8. Leaflets ovate or obovate..... 10
 10. Leaflets ovate, with 10 cm of length and 6.1 cm wide, mucronate leaf apex, marked penninerved vein, red papilionaceous flower.....**9Periandra heterophylla**
 10. Leaflets obovate 4.5 cm long and 3 cm wide, acute leaf apex, unmarked penninerved vein, yellow papilionaceous flower.....**10Vigna lasiocarpa**
 6. Herbaceous herb of erect or prostrate growth.....11
 11. Simple leaves, legume fruit capsule type.....12
 12. Leaflet with 4.7 cm. and 2.0 cm long, winged petiole with 0.3 cm,fruit with 2.3 cm in length.....**11Crotalaria stipularia**
 12. Leaflet with 4,2 cm of length and 1.5 cm wide, not winged petiole with 0.3 cm, fruit with 3.0 cm in length.....**12Crotalaria retusa**
1. Composite leaves, typical legume fruit or lomentum.....1
13. Compound leaves bipinnates, legume lomentum.....14

- 14. Leaflets with up to 6 pairs of pinnas, equal to or less than 0, 5cm in length, lomentum with up to 3 articles.....**13Aeschynomene viscidula**
- 14. Leaflets with more than 6 pairs of pinnas, greater than 0.5 cm long, legume lomentum with more than 3 articles.....15
 - 15. Leaflets of the base of the pinna bigger than the apex, obovate, with the maximum of 12 pairs of pinnas.....**14Aeschynomene brasiliiana**
 - 15. Leaflets of the base never greater than the one of the apex, oblong, with the maximum of more than 12 pairs of pinnas.....16
 - 16. Leaflets 0.7 cm long, 0.2 mm wide, acuminate leaf apex, legume with up to 7 articles.....**15Aeschynomene histrix**
 - 16. Leaflets 1.0 cm long, 0.3 mm wide, rounded leaf apex, legume with up to 5 article....**16Aeschynomene paniculata**
- 13. Composite leaves trifoliolate, fruit legume type.....17
 - 17. Leaf lobes lateral, leaflet equal to or greater than 4cm in length....18
 - 18. Leaflets with 8cm in length, truncated raquer com 8cm de length, rachis truncated.....**17Phaseolus vulgaris**
 - 18. Leaflets, 4 cm long, not truncated raquer..... 19
 - 19. Lateral leaflets with diminutive petiole to sessile, fruit legume type with 6 cm of length. indehiscent.....**18Macroptilium atropurpureum**
 - 19. Side leaflets with elongated petiole, fruit legume type with 5.6cm of length.....**19Macroptilium lathyroides**
 - 17. Not lobulated lateral leaflets, leaflet smaller than 4cm in length.....20
 - 20. Leaf apex emarginate, leaflet with 3cm of length. and 1.7cm wide, oblong.....**20Galactia jussiaeana**
 - 20. Acute leaf apex, leaflet with 1.9 cm of length. and 0.6cm wide, elliptical.....**21Stylosanthes viscosa**

1. Dioclea bicolor Benth. (Comm. Legum. Gen.) 69, 1837

Common Name: Mucuna

Specie Description: Liane with woody stem, presents approximately 2m high, erect growth, shape rope, present linear stipules with 0.6cm of length., trifoliolate composite leaves, distichous alternate phyllotaxy, large oblong lanceolate leaflet with 8,4 cm long and 5.0 cm wide, petiole with 4.6 cm and leaf with approximately 13.1 cm, whole leaf margin, rounded apex, penninerved vein, raceme inflorescence, fruit legume type, with 4 cm long, pilose, with 2 to 5 seeds.

Material Examined: Brazil. Maranhão: São João do Sóter, Permanent Protection Area, 08/X/16, G. S. Gomes; G. M. Conceição, 10 (HABIT).

Geographical Distribution: North (Acre, Amazonas, Pará); Northeast (Ceará, Maranhão); Center-West (Goiás, Mato Grosso) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado (Flora do Brasil 2020).

2. Indigofera suffruticosa Mill. Gard. Dict. (Ed. 8) Indigofera no. 2,1768.

Common Name: Anil, Indigo, Anileira

Specie Description: Shrub with woody stem, 2m long, symmetrical erect growth, present linear stipules with 0.5cm of length, imparipinnates composite leaves, with 8 to 12 pairs of leaflets, alternate phyllotaxy, lanceolate oblong leaflet, with 3.0 cm in length. and 1.2 cm wide, petiole with 2.0 cm, leaf 9.3 cm long, crenulate leaf margin, mucronate apex, penninerved vein, symmetric leaflet, raceme Inflorescence, curved legume type dry fruit, forming in bunches in the main branch, with 8.0 cm of length, legume with 1.5 cm of length approximately.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição 56 (HABIT).

Geographical Distribution: North (Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, Tocantins); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe); Center-West (Distrito Federal), Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domains: Amazon forest, Caatinga, Cerrado, Atlantic forest (Flora do Brasil 2020).

3. *Desmodium subsecundum* Vogel. (Linnaea) 12: 99, 1838.

Common Name: Unknown.

Specie Description: Subshrub with approximately 1 m of height, erect growth, woody stem, triangular stipules with approximately 0.4 cm of comp. and 0.1 cm wide, single large ovate leaves with some 3.4 cm in length. and 2 cm long. others with 20 cm of length. and 10 cm wide, trichomes on the stem of approximately 0.1 cm long, and 0.1 long, rather, 3 cm long petiole. and 0.4 cm wide. rachis measuring 0.4 cm wide. whole margin, rounded apex, ovate leaflet, symmetrical, penninerved vein, absent flower, fruit legume type of approximately 0.1 cm of length. and 0.1 cm wide. arranged alternately no petiole, having 3 to 5 articles with adherent trichomes.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 65 (HABIT).

Geographical Distribution: North (Acre, Pará, Tocantins); Northeast (Bahia); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil, 2017). This species is a new occurrence for the State of Maranhão.

Phytogeographical Domains: Amazon forest, Cerrado, Atlantic forest (Flora do Brasil, 2020).

4. *Desmodium incanum* (Sw.) DC. Prodr. 2: 332,1825.

Common Name: Pega-pega, mata-pasto, amor-do-campo

Specie Description: Herbaceous subshrub, decumbent erect growth, is approximately 1m high, triangular stipules present with 0.6cm of compost. at the base of the petiole, composite trifoliolate leaf, alternating phyllotaxy, elliptic leaflets, 2.4 cm long and 1.1 cm wide, 1.5 cm petiole, approximately 4.0 cm long leaf, whole leaf margin, apex rounded, symmetrical, penninerved vein, presence of trichomes, medium pilosity, inflorescence raceme, absent flower, dry fruit lomentum type, with 1,1 cm in length. possessing 3 to 5 articles with adherent trichomes.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 51, 52 (HABIT).

Geographical Distribution: North (Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, Tocantins); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domains: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pampa, Pantanal (Flora do Brasil 2020).

5. *Desmodium barbatum* (L.) Benth. Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 1853 (1-2): 18,1853.

Common Name: Pega-pega.

Specie Description: Subshrub with 80 cm of height, woody stem, erect growth, triangular stipules present with 0.6cm of length., composite leaves trifoliolates, phyllotaxy distical alternate, leaflets elliptic symmetrical, with 7 cm of length and 3,6 cm of width, petiole with 1.5 cm length, leaf with approximately 4.0 cm of length, whole leaf margin, rounded apex, pilosity with whitish trichomes, penninerved vein, inflorescence raceme, absent flower, dried fruit lomentum type, 3 cm of length, and 0.8 cm width, has 3 to 6 article, clingy.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 67 (HABIT).

Geographical Distribution: North (Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, Tocantins); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio

Grande do Norte, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domains: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pampa, Pantanal (Flora do Brasil 2020).

6. *Abrus fruticulosus* Wight & Arn. (Prod. Fl. Ind. Orient.) 1: 236, 1834.

Common Name: Unknown.

Specie Description: Herb with approximately 1m of length, with herbaceous stem, indumentum in the present branch. Persistent, tiny linear stipules at the base of the petiole, petiole with 3.5 cm of length. and 2 cm width; leaves composite of 8 to 15 pairs of leaflets, bipinnates with 2.3 cm of length. and 0.9 cm wide. obovate, linear leaflets; rounded apex, symmetrical limb, pseudo-raceme inflorescence, flower absent, typical fruit with 3.5 cm of length. and 1 cm wide. apex sharp to curved.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 57 (HABIT).

Geographical Distribution: North (Amazonas, Pará, Rondônia); Northeast (Maranhão); Center-West (Mato Grosso do Sul, Mato Grosso) (Flora do Brasil 2020).

Phytogeographical Domains: Amazon forest, Cerrado (Flora do Brasil 2020).

7. *Centrosema brasiliana* (L.) Benth Comm. Legum. Gen. 54,1837.

Common Name: Feijão bravo.

Specie Description: Herb, herbaceous stem, approximately 1.5m in length, presents triangular ochrea stipules at the base of the petiole of 0.3 cm in length. and 0.2 mm long, trifoliolate composite leaves, with an opposite pair at the base and one elongated by the rachis, 7 cm long leaf, alternate phyllotaxy, leaflets 5.2 cm long. and 3 cm width. lanceolate to linear, smooth margin, acute apex, penninerved vein, little evident trichomes, papilionaceous flower, purple petals, with heterochlamydeous axillary inflorescence, dichlamydeous, dialystemonous,

complete, typical legume fruit 7,0 cm length. and 0.3-0.4 cm wide, linear.

Material Examined: Brazil. Maranhão: São João do Sóter, Permanent Protection Area; Populated Stones, 08/X/16; 23/VI/2017, G. S. Gomes; G. M. Conceição, 9, 44, 45 (Habit).

Geographic Distribution: North (Amazonas, Amapá, Pará, Roraima); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domains: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

8. *Clitoria guianensis* (Aubl.) Benth. J. Proc. Linn. Soc., Bot. 2: 40,1858.

Common Name: Feijão do Campo

Specie description: Herb, approximately 50 cm tall, herbaceous stem, ovate stipules, striated, at the base of the petiole with 0.3 cm of length. and 0.1 mm long, composite leaf trifoliolate with 5 cm of length. and 1 cm wide, lanceolate leaflet, alternates phyllotaxy, acute apex, penninerved veins, symmetric, present trichomes, axillary inflorescence, flower, monoecious, subsessile; long tubular calyx whitish, striated, papilionaceous corolla, unguiculate petals, lilac, orbicular banner, lato; free wings, obovados, keel falcates, heterochlamydeous, dichlamydeous, dialystemonous, absent fruit.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 60 (HABIT).

Geographic Distribution: North (Amazonas, Amapá, Pará, Roraima, Tocantins) Northeast (Bahia, Ceará, Maranhão, Pernambuco, Piauí) Southeast (Espírito Santo, Minas Gerais, São Paulo) South (Paraná) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

9. *Periandra heterophylla* Benth. (Comm. Legum. Gen.) 57, 1837.

Common Name: Unknown.

Specie Description: Herbaceous stem-type climbing, 1.20 m long, decumbent erect growth, presence of linear stipules with 0.4 cm of length, absence of nectary, composite leaves, trifoliolate, alternate, leaflet ovate-lanceolate, 10 cm long and 6.1 cm wide, petiole with 5.0 cm, leaf with approximately 8.0 cm, whole margin, mucronate leaf apex, marked penninerved vein, symmetrical leaflet, presence of trichomes in leaflets, homogeneous pilosity, cimose inflorescence with 0.8 cm of length, flower absent, fruit absent.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 53 (HABIT).

Geographic Distribution: North (Pará, Tocantins); Northeast (Bahia, Maranhão, Piauí); Center-West (Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Minas Gerais, São Paulo) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Cerrado (Flora do Brasil, 2017).

10. *Vigna lasiocarpa* (Mart.ex Benth.) Verdc. (Kew Bull.) 24 (3): 539.1970.

Common Name: Feijãozinho-do-brejo.

Specie Description: Herb with approximately 30 cm in length, erect decumbent growth, herbaceous stem, greenish branches, triangular stipules of 3 mm of length and 1 mm wide at the base of the petiole. Leaves composite trifoliolate, alternate, adaxial structure with secondary penninerved vein marked in leaflets, leaflets obovate with 4.5 cm of length and 3 cm width, acute leaf apex, petiole with 4 cm of length, 1 mm wide, full margin, symmetrical, presence of trichomes in leaflets. Inflorescence raceme, axial, yellow flower, zygomorph, achlamydeous, papilionaceous, dry fruit of the long legume type with 3 cm of length and 0.2 cm wide, with trichomes.

Material Examined: Brazil. Maranhão: São João do Sóter, Permanent Protection Area, 08/X/16, G. S. Gomes; G. M. Conceição, 63 (HABIT).

Geographic Distribution: North (Amazonas, Amapá, Pará, Roraima); Center-West (Mato Grosso do Sul, Mato Grosso); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020). This species is a new occurrence for the Northeast region and the State of Maranhão.

Phytogeographical Domain: Amazon forest, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

11. *Crotalaria stipularia* Desv. J. Bot. Agric. 3: 76, 1814.

Common Name: Xique-xique.

Specie Description: Herb stem-like stem herb, decumbent erect growth, 65cm long, linear stipules present with 0.3 cm of length and 0.1 cm wide. nectaries absent, single leaves, alternate phyllotaxy, leaflets oblong lanceolate, with 4,7 cm of length and 2,0 cm wide, winged petiole with 0.3 cm, leaf approximately 5.1 cm and 3 cm wide, leaf margin whole, apex emarginated, penninerved vein, symmetric, presence of white trichomes, pilose, yellow papilionaceous flower with 0.3 cm of length and 0.3 width. with zygomorphic symmetry inflorescence cimose, heterochlamydeous, dichlamydeous, dialystemonous, dry fruit, capsule, with approximately 2.3 cm in length.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 47 (HABIT).

Geographical Distribution: North (Acre, Pará, Roraima); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo) (Flora do Brasil 2020).

Phytogeographical Domains: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

12. *Crotalaria retusa* L. Sp. Pl. 2: 715, 1753.

Common Name: Chocalho de Cascavel, Guizo de cascavel, xique-xique.

Specie Description: Herb stem-type, 50 cm high, decumbent erect growth, linear stipules present with 0.4 cm of length, absent nectaries, single leaves, alternate phyllotaxy, obovate leaflets, 4.2 cm and 1.5 cm wide, 0.3 cm petiole, 4.6 cm long leaf and 4 cm wide, whole leaf margin, emarginated apex, penninerved vein, racemose inflorescence, absent flower, dried fruit, capsule, with approximately 3.0 cm of length, and 0.8 cm wide. with legume acute terminal.

Material Examined: Brazil. Maranhão: São João do Sóter, Permanent Protection Area, 08/X/16, G. S. Gomes; G. M. Conceição, 12 (Habit).

Geographic Distribution: North (Pará); Northeast (Bahia, Maranhão, Piauí); Southeast (Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pampa (Flora do Brasil 2020).

13. *Aeschynomene viscidula* Mich. Fl. Bor.Amer. 2: 74-75, 1803.

Common Name: Unknown

Specie Description: Herb with approximately 50 cm of height, herbaceous stem, prostrate growth, branches with 32 cm of length. and 19 cm wide, triangular stipules with 0.4 mm of length. and 0.2 mm wide, are found at the base of the petiole, composites bipinnates leaves, with 3 to 6 pairs of leaflets subopposed, leaflet with 1.7 cm of length. and 1 cm wide, petiole of 0.5 cm of length, and 0.1 mm wide, obovate leaflets 0.5 mm long, and 0.6 mm wide, trichomes, flower with campanulate calyx, papilionaceous, yellow cream, showy standard, heterochlamydeous, dialytemones, dialypetalous, Fruit lomentum legume type, with articles joined by isthmus with 10 mm of length. and 0.3 mm in length.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 59 (HABIT).

Geographical Distribution: North (Tocantins); Northeast (Alagoas, Bahia, Ceará, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe); Center-West (Mato Grosso do Sul); Southeast (Espírito Santo, Minas Gerais) (Flora do Brasil 2020). This species is a new occurrence for the State of Maranhão.

Phytogeographical Domains: Caatinga, Cerrado, Atlantic forest (Flora do Brasil 2020).

14. *Aeschynomene brasiliana* (Poir.) DC. Prodr. 2: 322, 1825.

Common Name: Unknown.

Specie Description: Herb with approximately 50 cm of height, woody stem, erect growth to

decumbent, branches with gray parts, triangular stipules with 1 cm of length. and 0.3 cm wide, composite bipinnates leaves have 6 to 12 pairs of leaflets, with 6 cm of length, and 1.4 cm wide, leaflets obovates with 0.8 cm of length, and 0.4 cm wide, leaflets of the base larger than the leaflets of the apex of the pinnas, petiole with 1 cm of length, and 0.2 cm wide, presence of trichomes with 1 mm of length, smooth margin, apex of rounded leaflet, symmetrical, with penninerved veins, inflorescence raceme, flower absent, fruit legume with 0.3 cm of length. and 0.2 inches width, arranged in the petiole with 0.3 cm of length. e has 3 to 6 articles.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 64 (HABIT).

Geographic Distribution: North (Amazonas, Amapá, Pará, Rondônia, Roraima, Tocantins); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná) (Flora do Brasil, 2017).

Phytogeographical Domains: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

15. *Aeschynomene histrix* Poir. Encycl., Suppl. 4 (1): 77-78, 1816.

Common Name: Lentilha do Campo; sensitiva modesta.

Specie Description: Herb, presents on average 45 cm in height, erect decumbent growth, triangular stipules present with 0.3cm of length. to 0.1cm wide. it presents at the base of the petiole, striated, composite leaves bipinnates with 10 to 18 pairs of leaflets, alternate phyllotaxy; petiole 4-7 cm long and 0.4 cm wide; leaflets 0.7 cm. and 0.2 cm wide, opposite, oblong, whole leaf margin, apex acuminate, with whitish trichomes; flower absent; dry fruit, lomentum legume, with about 3cm length. presents from 4 to 7 article.

Material Examined: Brazil. Maranhão: São João do Sóter, Permanent Protection Area, 08/X/16, G. S. Gomes; G. M. Conceição, 6, 7, 8 (Habit).

Geographic Distribution: North (Acre, Amazonas, Amapá, Pará, Roraima, Tocantins);

Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Minas Gerais, São Paulo); South (Paraná) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

16. *Aeschynomene paniculata* Willd. ex Vogel (Linnaea) 12: 95-96, 1838.

Common Name: Cortiça.

Specie description: Herb, with 60 cm height, decumbent erect growth, grayish branches, presence of triangular stipules with 0.1 cm of length. and 0.1 cm wide; indument with few whitish trichomes; 0.6 cm length petiole; leaves approximately 6,5 cm long. and 3 cm long. composed of 12 to 25 pairs of leaflets, bipinnates, alternating phyllotaxy, absence of nectaries; oblong leaflet, 1.0 cm long, 0.3 wide, whole margin, rounded leaf apex; median leaflets larger than the base and apex, cimoso inflorescence with 0.3 cm of length, absent flower, fruit legume lomentum with 5 articles.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição 55 (HABIT).

Geographical Distribution: North (Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, Tocantins); Northeast (Bahia, Ceará, Maranhão, Piauí, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

17. *Phaseolus vulgaris* L. Sp. Pl. 2: 723, 1753.

Common Name: Feijão-base, feijão-comum, feijoeiro

Specie description: Herb stem-type climbing, prostrate erect growth, 20cm long, greenish branches, absent stipules, trifoliolate composite leaves, alternating, leaflets cordate to sagittate, 8cm in length, and 4.3 cm wide, petiole with 0.2 cm of length. and 0.1 cm in length, leaves 8.2 cm

in length, entire undulate margin, penninerved vein, acute leaf apex, symmetrical, reduced pulvin, truncated raquer, absent fruit and flower absent.

Material Examined: Brazil. Maranhão: São João do Sóter, Permanent Protection Area, 08/X/16, G. S. Gomes; G. M. Conceição, 01 (HABIT).

Geographic Distribution: North (Pará); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domains: Amazon forest, Caatinga, Cerrado, Atlantic forest (Flora do Brasil 2020).

18. *Macroptilium atropurpureum* (Sessé & Moc. ex DC.) Urb. Symb. Antill. 9 (4): 457, 1928.

Common Name: Leucena, Siratro

Specie description: Herb with approximately 60 cm of length, Herbaceous stem, erect decumbent growth, green branches with 21,5 cm of length, and 16 cm wide. triangular stipules of approximately 0.2 cm in length, and 0.1 cm width, composite leaves, alternate, trifoliolate with 6 cm of length. and 4 cm long. leaflets oblong-lanceolate to sagittate of 4 cm of length. and 1.8 cm wide. undulate margin, rounded apex, penninerved vein, symmetrical, slightly pilose, lateral leaflets sessile and main leaflet extended by rachis, absent flower, dry fruit legume type with 6 cm of length, and 0.4 cm wide, indehiscent.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 61, 62 (HABIT).

Geographic Distribution: North (Amazonas, Pará, Roraima); Northeast (Alagoas, Bahia, Maranhão, Paraíba, Pernambuco, Rio Grande do Norte, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

19. *Macroptilium lathyroides* (L.) Urb. Symb. Antill. 9 (4): 457, 1928.

Common Name: Feijão-de-rola.

Specie description: Herb, decumbent erect growth, approximately 30cm in length, greenish branches, triangular stipules present with 0.5cm of length. and 0.2 cm wide, presence of nectary rounded in the petiole, composite leaves trifoliolate, phyllotaxy distical alternate, leaflet lanceolate to linear, with 4cm of length. and 2.6 cm wide, 5 cm petiole, 7.0 cm long leaf, whole leaf margin, acute leaf apex, symmetrical, leaf apex obtuse to codiform, presence of scattered trichomes, absent flower, dry fruit type legume long, approximately 5.6cm length.

Material Examined: Brazil. Maranhão: São João do Sóter, Pedras Village, 23/VI/17, G. S. Gomes; G. M. Conceição, 54 (HABIT).

Geographic Distribution: North (Amazonas, Pará, Roraima); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Cerrado, Atlantic forest, Pantanal (Flora do Brasil 2020).

20. *Galactia jussiaeana* Kunth. Mimos. 196-200, pl. 55, 1824.

Nome Vulgar: Unknown.

Specie Description: Herb, decumbent erect growth, 1m long, the presence of triangular stipules with 0.4cm, trifoliolate composite leaves, alternate phyllotaxy, oblong leaflets with trichomes, leaflet with 3cm of length. and 1.7 cm wide, petiole 3.0 cm, leaf approximately 6,0 cm, whole leaf margin, emarginated leaf apex, penninerved vein, trichomes on leaflets and branches, pilose, symmetrical leaflet, absent flower, fruit dry legume type with 6cm of length. and 0.3 cm wide, terminal apex of falcate fruit.

Material Examined: Brazil. Maranhão: São João do Sóter, Serra do Cajuí Village, 14/II/17, G. S. Gomes; G. M. Conceição, 18 (HABIT).

Geographic Distribution: North (Amazonas, Amapá, Pará, Rondônia, Roraima); Northeast (Bahia, Maranhão, Piauí); Center-West (Goiás) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado (Flora do Brasil 2020).

21. *Stylosanthes viscosa* (L.) Sw. Prodr. 108,1788.

Common Name: Unknown.

Specie Description: Herb, 30cm long, decumbent erect growth, greenish branches, with triangular stipules of 0.5 cm length in the base of petiole, composite leaves trifoliolate, phyllotaxy distical alternate, leaflets elliptical, with 1.9 cm in length. and 0.6 cm wide, petiole with 0.5cm of length, and 0.2 cm wide, leaf with approximately 2.5 cm, whole margin, acute leaf apex, penninerved vein, presence of glandular trichomes in all branches, homogeneous pilosity, symmetrical leaflets, cimous inflorescence with 4,5 cm of length, dichlamydeous, heterochlamydeous, gamossepals with 0.4 cm of comp., gamopetal with zygomorph symmetry, papilionaceous yellow flowers with, striated standard marked with red coloration. Fruit absent.

Material Examined: Brazil. Maranhão: São João do Sóter, Permanent Protection Area, 08/X/16, G. S. Gomes; G. M. Conceição, 46 (HABIT).

Geographical Distribution: North (Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, Tocantins); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe); Center-West (Distrito Federal, Goiás, Mato Grosso do Sul, Mato Grosso); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Rio Grande do Sul, Santa Catarina) (Flora do Brasil 2020).

Phytogeographical Domain: Amazon forest, Caatinga, Cerrado, Atlantic forest, Pampa, Pantanal (Flora do Brasil 2020).

4. CONCLUSION

The subfamily Papilionoideae totalized for the study area, 21 species and 14 genera for the state Maranhão. The species listed presents ample geographical distribution in Brazil, with occurrence in vary phytogeographical domains Brazilian. Thus, the research contributes for the filling of gaps on knowledge of the Fabaceae species, which may contribute in other scientific fields, an assist in the elaboration of the management plan and the knowledge on the status of conservation of species.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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