

Leguminosae: Biodiversity and Taxonomy for the Northeast Region of Brazil

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Abstract— *The research aimed to know the diversity of Leguminosae in vegetational fragments of Cerrado in the state of Maranhão. Monthly expeditions were carried out in the period between September from 2016 and June 2017 for observation, collection, and identification of botanical material. A total of 68 specimens, 31 genera, and 45 species were cataloged. Of all the specimens collected, the subfamilies Papilionoideae and Caesalpinoideae were the most representative of 21 species each. As for the Life form, was observed that the prevailing growth habit was the bush type (20). Concerning to the physiognomies of the Cerrado, was observed the predominance of the species in the gallery forest environment (28). Taxonomic keys, descriptions and photo plates were elaborated with all the studied species, composing a taxonomic treatment. In this way, it can be established that the Cerrado of Maranhão possesses a diversity of species for the Leguminosae family and that the research carried out has provided a basis for later studies, since these are few for Maranhão.*

Keywords— *Shrubs, Cerrado, Floristic, Papilionoideae, Vigna lasiocarpa.*

I. INTRODUCTION

Within the large diversity of angiosperms, Leguminosae is one of the largest botanical families, with 770 genera and 19.500 species (LEWIS et al., 2005, 2013, LPWG, 2017) and divided into six subfamilies (Caesalpinoideae, Cercidoideae, Detarioideae, Dialioideae, Duparquetioideae, and Papilionoideae) (LPWG, 2017). In Brazil, there are 2.837 species (1.535 endemics) grouped in 222 genera (FLORA DO BRASIL 2020. 2019).

Leguminosae is a family of great economic importance being nourishing cultures important which provides high nourish sources of proteins and micronutrients that can profit the health and the ways of subsistence, especially the developing countries. (GRAHAM & VANCE 2003; YAHARA et al., 2013). Taking up the importance of ecological, are organism good adapted to first colonization an exploration of the several environments, changeovers incurred by the

association of fixative bacteria of nitrogen or with ectomycorrhiza.

The Cerrado has more than 4.800 species of endemic plants and vertebrates, being considered as a global biodiversity *hotspot*. This phytogeographical domain covers three of the largest hydrographic basins in South America, accounting for 43% of Brazil's surface waters outside the Amazon Rainforest (STRASSBURG et al., 2017). Due to its considerable biodiversity, this phytogeographical domain has been the focus of several botanical studies, and therefore, work on the Leguminosae family in the Cerrado is necessary due to its floristic richness (BATALHA, 2011), in addition to the fact that this Phytogeographical Domain is endangered of extinction (STRASSBURG et al., 2017). In the state of Maranhão, there is an ecotone with the Amazon Rainforest and Caatinga (MARANHÃO, 2011). In Maranhão, the São João do Sóter City, it is on this

phytogeographic domain, possessing fragments not touched by man, conserving its biodiversity.

The state of Maranhão has large extensions of the Cerrado, with forest formations of significant extensions (standing out deciduous rainforests and, to a lesser extent, dense ombrophilous forests), as well as a large area of ecological tension with the Amazon Rainforest Phytogeographical Domain (MARANHÃO, 2011).

Thus, the research had as objective to know the diversity of Leguminosae in vegetative fragments of Cerrado in the state of Maranhão, specifying: to demonstrate the morphological aspects of the family Leguminosae; to elaborate taxonomic keys for the species studied; to determine the types of growth habits,

phytogeographic domains and environments of occurrence of the species and contribute to the knowledge of the flora Cerrado from Maranhão.

II. MATERIAL AND METHODS

Location and Characterization of the Study Area

The municipality of São João do Sóter (5 ° 6 '28' 'S. and 43 ° 48' 34 "W), located in Maranhão, carry over 1.438.1 km² and has 17,238 inhabitants in the last census. The population density is 11.9 inhabitants per km² in the municipality territory Located at 108 meters altitude. In the Municipality, three cerrado areas were sampled: Pedras Village, Redondo Village, and Serra do Cajú Village (IBGE, 2010).

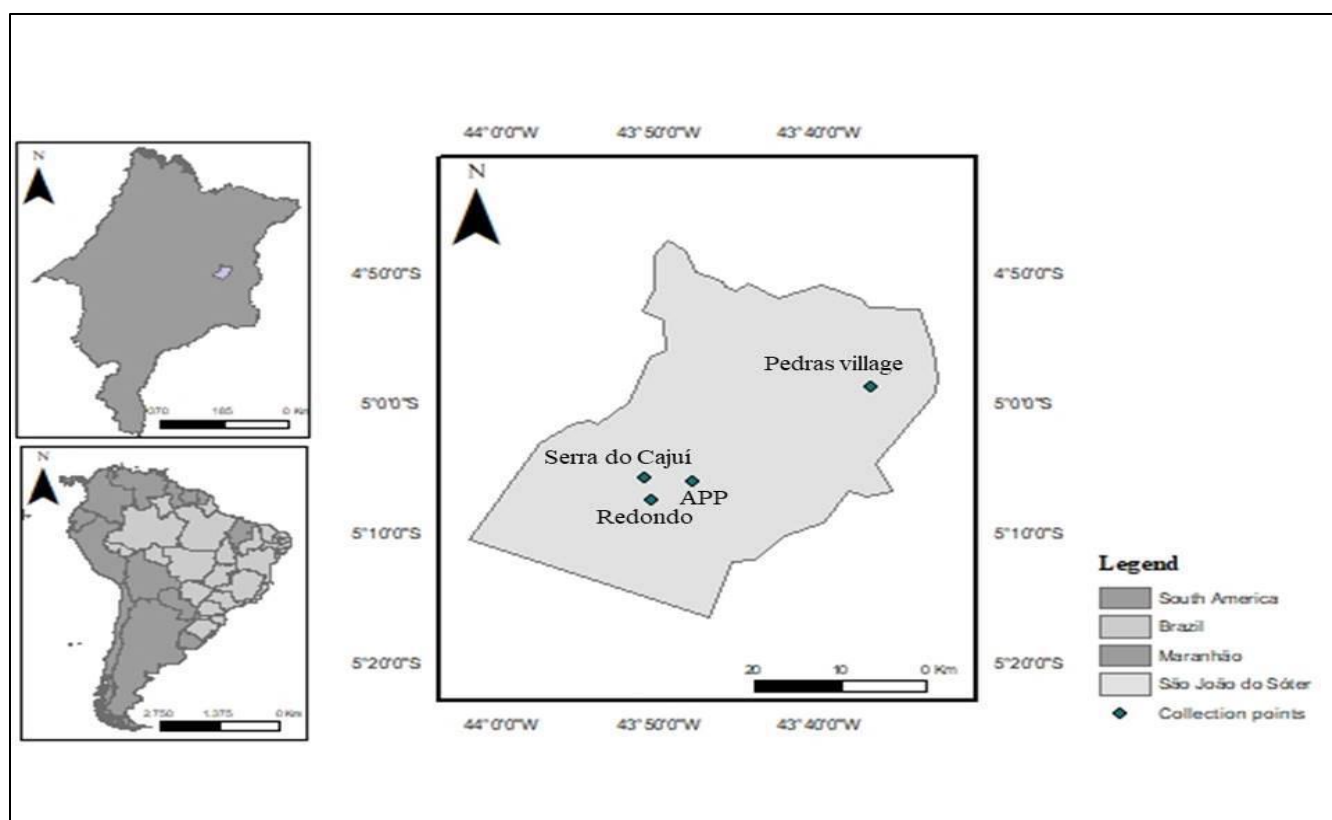


Fig.1: Map of the Municipality of São João do Sóter, Maranhão/Brazil, Collection area of the species of Leguminosae.
Source: IBGE; 2006, Google Earth 2014.

The vegetational fragments sampled are composed of physiognomies of galleries forest, coconut forest and dirty cerrado of herbaceous and perennial plants. The floristic survey comprised three stages: fieldwork, preparation and analysis, and identification of collected material. The collection of the botanical material was carried out from September 2016 to June 2017, through the active search method, with a monthly visit in the study area, comprising the dry and rainy months.

In the fieldwork, the specimens were collected in the fertile state, following the protocol Bononi; Fidalgo (1989). In the preparation of the botanical material, it was herborized and processed, being conditioned as exsiccates in Aluizio Bittencourt Herbarium (HABIT), State University of Maranhão/UEMA. In the identification stage, the specimens were recognized at the species level taking into account the comparison with the specialized material, specific bibliographies (LPWG, 2017),

taxonomic keys, and/or determined and confirmed by a family taxonomist. For the taxonomic treatment, all information and morphological characteristics of each species were observed and recorded. These characteristics formed a description of the plant along with the information of the author of the species, main work, geographical distribution and phytogeographical domains where the species occurs in the Brazilian territory. For the data of the author and main work of all species, was used the Tropicos (2019) (<https://www.tropicos.org/>); and SpeciesLink, CRIA (2019) (<http://www.splink.org.br/>). With the botanical description, dichotomous taxonomic keys of the described species were elaborated, using the taxonomic criteria already presented in the botanical description that better identifies the studied species.

III. RESULTS AND DISCUSSION

Taking into account floristic aspects, Leguminosae is one of the families among the angiosperms that have the richest species in the different phytogeographic domains of Brazil according to Queiroz (2009); Flora do Brasil 2020 (2019). From the obtained data were listed 68 specimens, distributed in 31, genera and 45 species. The representation of species of the Leguminosae subfamilies sampled in this research shows that of the 68 specimens studied, 21 species belong to the subfamily Papilionoideae, 21 belong to the subfamily Caesalpinioideae, 2 species belong to the subfamily Cercidoideae and 1 species belongs to the subfamily Detarioideae, as shown in table.

As for species richness, the subfamilies Papilionoideae and Caesalpinioideae were the most representative, sampled 21 and 19 species respectively (table.1). Papilionoideae is a monophyletic subfamily, with high reliability of phylogenetic reconstruction. The subfamily includes many species of economic importance (TOZZI, 2016). Caesalpinioideae in its present circumscription contains 148 genera and 4.400 species. With pantropical distribution, being common in dewy and dry regions, with a handful of species that extend to the temperate zone (LPWG, 2017). In terms of Brazil distribution, is represented by about 52 genera and 810 species (FLORA DO BRASIL 2020. 2019).

In the physiognomy of occurrence, the specimens were collected, mainly in gallery forests, with 28 species,

Clean Field 7 and Open field 6. Among the plant formations of the Cerrado, the gallery forest, also known as riparian forest or riparian forest by some researchers, is characterized by being associated with watercourses, and this formation, although small, possesses richness, genetic diversity, and acts in the protection of water resources (RIBEIRO, 1998). The two most representative genera in the survey were *Aeschynomene* and *Mimosa* with four species each.

The genus *Aeschynomene* L. has a pantropical distribution, with about 180 species (LEWIS et al., 2005). *Mimosa* L. comprises 540 species, being the second largest genus of the mimosoid clade (SIMON et al., 2011). It is distributed mainly in the neotropical region, counting on approximately 496 endemic taxa of the neotropics and 40 native species of the old world (SIMON et al., 2011; BARNEBY, 1991).

Regarding the life-form, was observed that the predominant habit of growth was the Shrub type with 18 species, after Tree 14 and herb 13. The life-form this family is assorted, from trees, shrubs, sub-bushes to upright herbs, creeping or even climbing (JUDD et al., 1999). Shrubs are characterized by woody structures of varying size, but not more than 6 m in height, and stem with branches much close to the ground (ORMOND, 2006). The bushes are outreached of woody plants, in which the support and stem tissues form layers that are added year after year (BONONI; FIDALGO, 1989).

As for the number of specimens of each species, the species *Phanera variegata* (L.) Benth., *Aeschynomene histrix* Poir., *Libidibia ferrea* (Mart. Ex Tul.) L.P. Queiroz and *Chamaecrista flexuosa* (L.) Greene. were the most representative in the survey, being *P. variegata* the most representative with 5 specimens, and the other 3 specimens each. *P. variegata* is planted in the tropics and hot regions of the world (ISELY, 1990). *P. variegata* is distributed in Amazon Rainforest phytogeographical domain, is found in Colombia, French Guiana and Suriname. In Brazil, it is native throughout the North Region, in the State of Maranhão and Atlantic Rainforest, in the São Paulo State (DOMINGOS, CARPELARI JR, 2016).

Table: Representation of Leguminosae species within each subfamily and Phytogeographical Domains sampled.

°	Subfamily	Species	Phytogeographical Domains
1.		<i>Caesalpinia pulcherrima</i> (L.) Sw.	Amazon Rainforest, Cerrado, Atlantic Rainforest
2.		<i>Cenostigma macrophyllum</i> Tul.	Amazon Rainforest, Caatinga, Cerrado

3.		<i>Chamaecrista flexuosa</i> (L.) Greene.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pampa, Pantanal	
4.	CAESALPINIOIDEAE	<i>Chamaecrista nictitans</i> (L.) Moench.	Amazônia, Caatinga, Cerrado, Atlantic Rainforest, Pantanal	
5.		<i>Chamaecrista rotundifolia</i> (Pers.) Greene.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pampa, Pantanal	
6.		<i>Delonix regia</i> (Bojer ex Hook.) Raf.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pantanal	
7.		<i>Dimorphandra gardneriana</i> Tul.	Caatinga, Cerrado	
8.		<i>Inga edulis</i> Mart.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest	
9.		<i>Inga thibaudiana</i> DC.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest	
10.		<i>Mimosa caesalpinifolia</i> Benth.	Amazônia, Caatinga, Cerrado, Atlantic Rainforest	
11.		<i>Mimosa pudica</i> L.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest	
12.		<i>Mimosa sensitiva</i> L.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest	
13.		<i>Mimosa xanthocentra</i> Mart.	Amazon Rainforest, Cerrado, Atlantic Rainforest	
14.		<i>Parkia platycephala</i> Benth.	Amazon Rainforest, Caatinga, Cerrado	
15.		<i>Stryphnodendron adstringens</i> (Mart.) Coville.	Caatinga, Cerrado	
16.		<i>Libidibia ferrea</i> (Mart. Ex Tul.) L.P Queiroz	Caatinga, Cerrado, Atlantic Rainforest	
17.		<i>Plathymenia reticulata</i> Benth.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest	
18.		<i>Senna multijuga</i> (Rich.) H.S. Irwin & Barneby.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest	
19.	<i>Senna reticulata</i> (Willd.) H.S. Irwin & Barneby.	Amazon Rainforest, Caatinga, Cerrado		
20.	<i>Bauhinia dubia</i> G. Don.	Amazon Rainforest, Cerrado		
21.	CERCIDOIDEAE	<i>Bauhinia pulchella</i> Benth.	Amazon Rainforest, Caatinga, Cerrado	
22.		<i>Phanera variegata</i> (L.) Benth.	Amazon Rainforest, Cerrado	
23.	DETARIOIDEAE	<i>Tamarindus indica</i> L.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest	
24.		<i>Hymenaea stigonocarpa</i> Mart. ex Hayne.	Amazon Rainforest, Caatinga, Cerrado, Pantanal	
25.		<i>Abrus fruticulosus</i> Wight & Arn.	Amazon Rainforest, Cerrado	
26.		<i>Aeschynomene brasiliiana</i> (Poir.) DC.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pantanal	
27.		PAPILIONOIDEAE	<i>Aeschynomene histrix</i> Poir.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pantanal
28.		<i>Aeschynomene paniculata</i> Willd. ex Vogel	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pantanal	
29.	<i>Aeschynomene viscidula</i> Michx.	Caatinga, Cerrado, Atlantic Rainforest		
30.	<i>Centrosema brasiliiana</i> (L.) Benth.	Amazônia, Caatinga, Cerrado, Atlantic Rainforest, Pantanal		
31.	<i>Clitoria guianensis</i> (Aubl.) Benth.	Amazon Rainforest, Caatinga, Cerrado, Atlantic		

		Rainforest, Pantanal
32.	<i>Crotalaria retusa</i> L.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pampa.
33.	<i>Crotalaria stipularia</i> Desv.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pantanal
34.	<i>Desmodium barbatum</i> (L.) Benth.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pampa, Pantanal
35.	<i>Desmodium incanum</i> (Sw.) DC.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pampa, Pantanal
36.	<i>Desmodium subsecundum</i> Vogel.	Amazon Rainforest, Cerrado, Atlantic Rainforest
37.	<i>Dioclea bicolor</i> Benth.	Amazon Rainforest, Caatinga, Cerrado
38.	<i>Galactia jussiaeana</i> Kunth.	Amazon Rainforest, Caatinga, Cerrado
39.	<i>Indigofera suffruticosa</i> Mill.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest
40.	<i>Macropodium atropurpureum</i> (Sessé & Moc. ex DC.) Urb.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pantanal
41.	<i>Macropodium lathyroides</i> (L.) Urb.	Amazon Rainforest, Cerrado, Atlantic Rainforest, Pantanal
42.	<i>Periandra heterophylla</i> Benth.	Amazon Rainforest, Cerrado
43.	<i>Phaseolus vulgaris</i> L.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest
44.	<i>Stylosanthes viscosa</i> (L.) Sw.	Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest, Pampa, Pantanal
45.	<i>Vigna lasiocarpa</i> (Mart. ex Benth.) Verdc.	Amazon Rainforest, Cerrado, Atlantic Rainforest, Pantanal

Key of Subfamily Caesalpinioideae

1. Herbs, shrub or tree with leaves always bipinnate with inflorescence of the glomerulus or raceme type.....2
 2. Trees with more than 10 m, always woody stem.....3
 3. Puberulent rusty branches, a lower crown, 30-45 leaflets per leaf, the apex of the rounded leaflet, a leaflet with 0.4 x 0.1 cm1 *Stryphnodendron adstrigens*
 3. Grayish, not pubertal branches, high crown, 35-50 leaflets per leaf, the apex of the acute leaflet, a leaflet with 0.6 x 0.2 cm2 *Parkia platycephala*
 2. Herbs or sub-shrub less than 10 m high, woody or herbaceous stem.....4
 4. Individuals < 1m in height, small leaflets < 1cm and < 0.5cm in width.....5
 5. Symmetrical lanceolate leaflets, dry fruit type crusty, 1.5 cm x 0.3 cm3 *Mimosa pudica*
 5. Leaflets oblong-lanceolate, fruit vegetable dry with indumentum, indiscriminate, with 9 x 0.3cm.....4 *Mimosa xanthocentra*
 4. Individuals > 1m, large leaflets larger > 1cm and > 0.5cm of width 6
 6. Leaflets tetrafoliolates, asymmetric, 2 pairs of leaflets for leaf, dry fruit of the type craspedium, with approximately 2,5x 0.3 cm.....5 *Mimosa sensitiva*
 6. Leaflets bipinnates, symmetrical, with 6-12 pairs of leaflets per leaf, legume fruit, with 5x0.3cm6 *Mimosa caesalpiniiifolia*
1. Herb, shrub, or trees with leaves bipinnates or imparipinnates with inflorescences type raceme, never glomerulus.....7
 7. Tree or shrub, with woody stem.....8

8. Trees with pubertal branches.....9
9. Stipules rudimentary or without the presence of nectary, fruit of the legume type with falcate apex.....7*Cenostigma macrophyllum*
9. Sticks not rudimentary or with the presence of nectary, legume fruit without falcate apex.....10
10. Winged petiole with petiole nectary.....11
11. Nectary greater than 2mm rounded longitudinal at the base of the rachis petioles.....8*Inga edulis*
11. Nectary less than 2mm rounded not longitudinal at the base of the rachis petiole.....9*Inga thibaudiana*
10. Absence of winged petiole, absence of nectary petiole.....12
12. Presence of long stipules in the shape of an orange sickle, with leaflets 10 x4.2 cm10*Senna reticulata*
12. Presence of small elongated stipules, leaflets 6.7 x2.6 cm11*Senna multijuga*
8. Trees with glabrous branches a little puberulent.....13
13. Inflorescence raceme with red or yellow flowers.....14
14. Flowers with red petals, lush banner, legume with 10 cm.....12*Delonix regia*
14. Flowers with yellow petals with reddish banner.....13*Libidibia ferrea*
13. Inflorescence not raceme with green or white flowers.....15
15. Inflorescence with >10 racemes, green with the presence of stamens and staminoids.....14*Dimorphandra gardneriana*
15. Inflorescence with <10 racemes, white without the presence of stamens and staminoids.....15*Plathymenia reticulata*
7. Subshrub or grass herb.....16
16. Presence of aculeus in the branches, showy red flowers, legume fruit with long apex.....16*Caesalpinia pulcherrima*
16. Absence of aculeus in the branches, exuberant flowers, legume fruit without long apex.....17
17. Prostrate growth, bipinnate leaves, legume fruit with 2-3 items.....17*Chamaecrista nictitans*
17. Growth creep or erect decumbent, bifoliolate leaves, legume fruit >3 items.....19
18. Creeping growth leaflets 3.2 x 3 cm, linear fruit with 2.2 cm and fruit petiole extended with 1.5 cm.....18*Chamaecrista rotundifolia*
18. Decumbent erect growth, leaflets with 4 x 1.2 cm, a linear legume fruit type of 4.5 cm with fruit petiole not very extended with 0.5 cm19*Chamaecrista flexuosa*

Description of Subfamily Caesalpinioideae

1. *Stryphnodendron adstringens* (Mart.) Coville (Century Dict.) 11: 111, 1910.

Description: Tree with woody trunk fissured with approximately 10 m of height, sympodial growth, branches blackish parts, absence of stipules, inermis, cylindrical, glabrescent branches, glandular trichomes in the branches with 0.3 x 0.4 cm, inches composites bipinnate leaves, alternating between 5.5 x 0.3 cm, deciduous, presence of 30-45 pairs of leaflets, leaflets with 0.4 x 0.1 cm, rounded apex, smooth margin, parallelveined vein, absent flower, absent fruit.

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23/VI/17, G. S. GOMES; G. M. CONCEIÇÃO, 43 (HABIT).

2. *Parkia platycephala* Benth. J. Bot. (Hooker) 4 (30): 329, 1841.

Description: Tree with woody stem, sympodial growth of tall crown with 15 m, grayish branches, abstract stipules, composite bipinnate leaves, presence of 35-50 pairs of leaflets, spiral alternate phyllotaxy, diminutive lanceolate leaflets, 6 x 0.2 cm, petiole with 7 cm, long leaves with 19.5 cm showing pulvinus, whole margin, acute leaf apex, penninerved vein, cuminous inflorescence, dry fruit type legume, with 10 x 2.5 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Permanent Protection Area, 08 / X / 16, G. S. GOMES; G. M. CONCEIÇÃO, 4 (HABIT).

3. *Mimosa pudica* L. Gard. Dict. (Ed. 8) no. 4, 1768.

Description: Shrub with woody stem, 20 cm, aculeous in the form of sickle with 0,5 0.2 cm long, bipinnates composites leaves with 6-10 pairs of leaflets, 3,2 cm pinnae, phyllotaxy alternate distal, lanceolate leaflet, with 0.9 x 0.2 cm, 2.3 cm petiole, 3.9 cm leaf, whole margin, lanceolate leaf apex, paraleinnerved vein, glomerulus cymose inflorescence, dichlamydeous, heterochlamydeous, zygomorphic symmetry, polystemonous free stamens, pink color, fruit legume craspedium type, 1.5 cm long and 0.3 cm .

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO 42 (HABIT).

4. *Mimosa xanthocentra* Mart. Flora 21 (2, Biebl.): 50.1838.

Description: Subshrub with approximately 60 cm, woody stem, prostrate sympodial growth, inermous, cylindrical branches, aculeous of 0,2 x 0.2 cm, on the stem; stipules with 0.3 x 0.2 cm, triangular, alternate composite sheets with 2 x 0.4 cm, bipinnates, with 10-5 pairs of leaflets, petioles 0.2 cm, absent extraphleic nectaries; leaflets 0.7 x 0.4 cm, oblong-lanceolate, flower absent, legume fruit with indumentum, indescend, with 9 x 0.3 cm.

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 41 (HABIT).

5. *Mimosa Sensitiva* L. Sp. Pl. 1: 518, 1753.

Description: Shrub with 2 m, branched sympodial growth, woody stem, rudimentary aculeous branches present in every branch of the shrub with 0.2 x 0.1 cm, greenish branches, tetrafoliolate composites leaves, alternate phyllotaxy, asymmetrical leaflets, unbalanced, 2.6 x 1.0 cm, petiole with 3.0 x 5.6 cm, whole leaf margin, acute leaf apex, penninerved vein, cymose , spiky, white, flower absent, fruit craspedium type, with approximately 2,5 x 0.3 cm.

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 15, 39 (HABIT).

6. *Mimosa caesalpiniiifolia* Benth. (J. Bot. (Hooker) 4 (31): 392, 1841.

Description: Shrub with woody stem, with 3m, branched sympodial growth, prostrate, grayish branches to blackened form embira, aculeous in sickle were present with 0.8 x 0.2 cm. bipinnates composite leaves with 6-12 pairs of pinnae, alternate phyllotaxy, ovate leaflet, 2.6 x 1.6 cm, petiole with 0.2 cm, leaf approximately 8.0 cm,

whole margin, rounded leaf apex, penninerved grove, cumin-shaped, spiky inflorescence, white coloring, absent flower, legume fruit, with 5 x 0.3 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Permanent Protection Area, 08 / X / 16, G. S. GOMES; G. M. CONCEIÇÃO, 13, 14 (HABIT). **Geographical Distribution:** North (Amazonas, Pará, Rondônia); Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte); Center-West (Federal District, Goiás, Mato Grosso do Sul); Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo); South (Paraná, Santa Catarina) (FLORA DO BRASIL 2020. 2019). **Phytogeographical Domain:** Amazon Rainforest, Caatinga, Cerrado, Atlantic Rainforest (FLORA DO BRASIL 2020. 2019).

7. *Cenostigma macrophyllum* Tul. Ann. Sci. Nat., Bot., Ser. 2, 20: 141, pl. 3, 1843.

Description: Tree with woody stem with approximately 10m of height, sympodial growth; rudimentary stipules present with 0.3 cm , with puberulent garments; petiole with approximately 3.0 x 0.4 cm; bipinnates composite leaves with 5-8 pairs of leaflets, alternate phyllotaxy, absence of nectaries, 13 cm; ovate leaflets, 9.7 x 2.6 cm, whole leaf margin, mucronate leaf apex; flower absent and cymose inflorescence with floral buds with 0.9 cm of ; fruit of the fallow legume type, 12.7 x 1.2 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 27 (HABIT).

8. *Inga edulis* Mart. Flora 20 (2, Beibl.): 113-114, 1837.

Description: Trees of 7 m, sympodial growth of low branch, woody stem, branches with attached structures, tomentose stipules, cylindrical pebbles of 0,2 x 0,2 cm. winged deciduous, bipinnates composite leaves, with 3-8 pairs of leaflets, smooth margin, acute apex, penninerved vein, petioles with 0.4 x 0.2cm, petiolate with 13.5 x 8 cm. winged leaf 4.6 cm, nectary leaves of 0.1 cm. an d 0.1 of width. broad, concave, sessile in the circular shaped stem, absent flowers, and absent fruits. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 37, 38 (HABIT).

9. *Senna reticulata* (Willd.) H. S. Irwin & Barneby. Mem. New York Bot. Gard. 35: 458, 1982.

Description: Tree with woody stem, approximately 5m high, sympodial growth, puberulent blackish branches, sickle type stipules, orange, present with 0.8 x 0.3 cm,

composite leaves with 15-20 pairs of pinnae, spiral alternating phyllotaxy, oblong leaflets, 10 cm and 4.2 cm, petiole with 4.5 cm, leaf with approximately 18 cm, whole margin with emarginated leaf apex, penninerved vein, raceme inflorescence with several racemes produced, dioecious, complete, heterochlamydeous, dialystemonous, free stamens, fruit dehiscent legume, with 14 x 2.2 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Serra do Cajuí Village, 14 / II / 17, G. S. GOMES; G. M. CONCEIÇÃO, 22 (HABIT).

10. *Senna multijuga* (Rich.) H.S. Irwin & Barneby Mem. New York Bot. Gard. 35: 492, 1982.

Description: Tree with woody stem, 7m high with sympodial growth, with grayish parts about 10m, grayish branches, composite leaves, 8-12 pairs of pinnae, petiole with up to 2 cm of, and 0.9 cm, leaflets of 6.7 x 2.6 cm. petiolate, oblong, glabrous or puberulent tops, nectary 0.2 cm, the raceme spinal cord at the base of the petiole in the first jug; canaliculate petiole with 0.2 x 0.1, yellow dioecious flower, complete (sepals and petals), dichlamydeous, heterochlamydeous, dialystemonous, free stamens, absent fruit. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 25, 26 (HABIT).

11. *Dimorphandra gardneriana* Tul. Arch. Mus. Hist. Nat., 4: 185, 1844.

Description: Tree with stem trunk with 12m long, sympodial growth, woody stem, shape embira, obtipate stipules, composite leaves with 30 x 14 cm, bipinnates, opposite phyllotaxy, oblong leaflet shape, with 1.8 x 1.0 cm, presents about 15-25 pairs of leaflet, whole leaf margin, rounded leaf apex, truncated base, diminutive petiole with approximately 0.2 cm of, raceme inflorescence, with approximately 10 racemes, with approximately 10 x 3 cm, shows a light greenish color with a crescent, showing stamens and tiny staminoids, absent fruit. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 32, 33 (HABIT).

12. *Plathymania reticulata* Benth. J. Bot. (Hooker) 4 (30): 334, 1841.

Description: Tree with woody stem, sympodial growth, 12 m, form embira, abstract stipules, absent nectary, leaves composed of approximately 20-30 pairs of leaflets, bipinnates with pulvinus, alternate Phyllotaxy, oblong

leaflet, 2 x 0.6 cm, petiole with 3.0 cm, long leaves with 14 cm, whole margin, emarginated leaf apex, penninerved vein, raceme inflorescence approximately 4 x 0.3 cm, single racemes, miniature white flowers, absent fruit.

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Permanent Protection Area; Redondo Village; Populated Stones, 08 / X / 16; 13 / II / 2016; 23 / VI / 2017, G. S. GOMES; G. M. CONCEIÇÃO, 16, 24, 68 (HABIT).

13. *Delonix regia* (Bojer ex Hook.) Raf. Fl. Tellur. 2: 92, 1836 [1837].

Description: Tree with sympodial growth, woody stem, approximately 15m, shape embira, obtipate stipules, composite bipinnates leaves with 30 x 15 cm, alternate Phyllotaxy, oblong leaflet shape, with 30-50 pairs of leaflets, with 0.7 x 0.2 cm, rounded apex, smooth margin, symmetrical base, petiole with 2.5 x 0.4 cm, petiole with 0.3 x 0.1 cm, absent flower, fruit of the dehiscent type, with 15 x 3 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 40 (HABIT).

14. *Libidibia ferrea* (Mart. Ex Tul.) LP Queiroz Legum. Caatinga 130, 2009.

Description: Tree with woody stem, 5m high, sympodial growth, absent stipules, puberulent branches rusty, bipinnates composite leaves with approximately 10-15 pairs of leaflets, alternate phyllotaxy, leaflets oblong, with 3.6 x 1.0 cm, petiole with 1.1 x 0.3 cm, leaf with approximately 6.5 cm, whole leaf margin, rounded leaf apex, penninerved vein, glabrous leaflets, indeterminate inflorescence, flower with approximately 1.0 x 0.5 cm, yellow flowers, complete, dichlamydeous, heterochlamydeous, showy standard, dialystemonous, legume fruit dry type, with 7.3 x 2.0 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 28, 29, 30 (HABIT).

15. *Caesalpinia pulcherrima* (L.) Sw. Observ. Bot. 166, 1791.

Description: Woody trunk tree, 4 m, shows sympodial growth, presence of aculeus in the trunk with 0.4 x 0.2 cm, composite leaves bipinnates with 5 pairs of pinnae, 30 cm, phyllotaxy alternates, without stipules, petiole with 0.5 x 0.3 cm, green leaflets of 7-11 pairs, with 6.1 x 3.4 cm, red flower with long stamens of 4 cm. zygomorphic symmetry. legume fruit dry type with 9.3 x 2.5 cm. **Material Examined:** BRAZIL. MARANHÃO:

São João do Sóter, Pedras Village, 13 / II / 17, G. S. GOMES; G. M. CONCEIÇÃO, 31 (HABIT).

16. *Inga thibaudiana* DC. Prodr. 2: 434-435, 1825.

Description: Shrub with 3 m, woody stem, sympodial growth, with cylindrical root, presents indumentum in the branches, form embira, compound leaves with 11,1 x 9.5 cm, with 3 to 8 pairs of leaflets, alternating leaflets with 4.9 x 3.8 cm. The larvae are broad and narrow in the abaxial surface, with a smooth margin, penninerved vein, petiole with tiny extraphalic nectaries, at the base of the leaflets, with a rounded nectary, fruit absent. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 34, 35 (HABIT).

17. *Chamaecrista nictitans* (L.) Moench. Methodus 272, 1794.

Description: Herb with approximately 40 cm, herbaceous stem, prostrate growth, branches of 28 x 16.5 cm. stipules on the petiole with approximately 0.4 x 1 cm. composite leaves, bipinnates, oblong leaflets of approximately 0.1 x 0.1 cm. rachis with 0.3 cm. absent flower and legume fruit with 3.5 x 0.3 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 58 (HABIT).

18. *Chamaecrista rotundifolia* (Pers.) Greene. Pittonia 4 (20D): 31, 1899.

Key of Subfamily Cercidoideae

- 1 Grass or shrubs with grampiform branches scandante, single leaves with split limb.....**1Phanera variegata**
 1 Grass, shrub or tree without grampiform branches, single leaves with or without split limb..... 2
 2. Bilobed simple leaf, small 3.5 cm, 2.6 cm, legume fruit type, 6 cm long, 2 cm**2Bauhinia pulchella**
 2. Single cordiform leaf, uncut in limbus, large 7.5 x4.3 cm; legume fruit with 14,5 x 1,5cm**3Bauhinia dubia**

Description of Subfamily Cercidoideae

1. *Phanera variegata* (L.) Benth. Pl. Jungh. 2: 262, 1852.

Description: Shrub with approximately 2 m, sympodial growth, woody stem, blackened branches, leaves with tinystipules to absent, single leaves with 7,0 x 4.6 cm, bilobate simple leaflets, rounded apex, petiole with 4.3 cm x 0.8 cm phyllotaxy alternate, vein cunninerved, absence of nectarines, presence of grampiform branches, scandants with approximately 6x 0.3 cm, absent flower and absent fruits. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Permanent Protection Area; Redondo Village; Pedras Village, 08 / X / 16; 13 /

II / 2016; 23 / VI / 2017, G. S. GOMES; G. M. CONCEIÇÃO, 2, 3, 20, 21, 36 (HABIT).

Description: Herb stem, triangular stipules present with 0.1 x 0.2 cm. bifoliate composite leaves, alternate phyllotaxy, 3.2 cm obovate leaf, and 3 cm, whole leaf margin, obtuse apex, yellow zygomorphic flower, achlamydeous, legume fruit dry type with 2.2 cm and fruit petiole extended with 1.5 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 66 (HABIT).

19. *Chamaecrista flexuosa* (L.) Greene Pittonia 4 (20D): 27, 1899.

Description: Shrubs with woody stem, erect to decumbent growth, approximately 20 cm, perennial, erect, with triangular stipules of 5 x 3.2 cm, bilobate leaves with 4cm of. leaflets, with 5 to 10 pairs, with 4 x 1,2 cm long, extrafollicular nectary leaflets linear-lanceolate to linear-oblong or closely oblong-elliptic, straight to slightly distally falcate, persistent, heteromorphic and asymmetric stipules, lanceolate acuminate or ovate-acuminate, absent flower, legume fruit with 4.5 x 0.5 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 48, 49, 50 (HABIT).

2. *Bauhinia pulchella* Benth. Fl. Bras. 15 (2): 190, 1870.

Description: Shrub with woody stem, approximately 3m, with sympodial growth, presents rudimentary stipules with 0.3cm of, branches glabrous; petiole with 0.6 x 0.2 cm, single sheets, 6.0 x4.3 cm, spiral alternating phyllotaxy, absence of nectary; leaflet with bilobate limb, 3.5 x 2.6 cm, whole margin, rounded leaf apex; inflorescence cyanotic, monoecious, dichlamydeous, heterochlamydeous, zygomorphic, calice gamosepalous, with 1.0cm, glabrous, linear peduncle; corolla linear dialypetalous with 1,5 x 2,5 cm, free stamens; dried legume fruit type, with 6,0 x 2,0 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Redondo Village, 13 / II / 17, G. S. GOMES; G. M. CONCEIÇÃO, 17 (HABIT).

3. *Bauhinia dubia* G. Don Gen. Hist. 2: 463, 1832.

Description: Shrub with woody stem of sympodial growth with approximately 3m, rudimentary stipules present with 0.2 cm; glabrous branch; petiole of 4 cm long and 0.2 cm; sheet 7.5 x 4.3 cm width, alternate phyllotaxy, absence of nectaries; simple leaflets

cordiform to sagittate, 3.4 x 3.6 cm, cm, whole leaf margin, rounded apex; inflorescence raceme; floral bud with 0.8 x 2.5 cm, dried fruit, dehiscent legume type with 14.5 x 1.5 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Village Redondo 13 / II / 17, G. S. GOMES; G. M. CONCEIÇÃO, 23 (HABIT).

Key of Subfamily Detarioideae

1. Composite bipinnates leaves, presents 28 to 40 pairs of leaflets, alternating phyllotaxy.....**1Tamarindus indica**
1. Composite bifoliolate leaves, not dystonic alternate phyllotaxy.....**2Hymenaea stigonocarpa**

1. *Tamarindus indica* L. (Sp. Pl.)1: 34, 1753.

Description: Tree with 12 m, woody stem, symmetrical growth, high crown, brownish branches, rudimentary stipules present with 0.2 cm, composite leaves bipinnates, presents 28 to 40 pairs of leaflets, oblong leaflet with 1.0 x 0.3 cm, petiole with 3.0 cm leaf with approximately 8.0 cm, whole leaf margin, rounded leaf apex, paraleinnerved vein, flower absent, absent fruit. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Permanent Protection Area, 08 / X / 16, G. S. GOMES; G. M. CONCEIÇÃO, 5 (HABIT).

Description: Tree with 15m height, woody stem, elongated sympodial growth, glabrous branches, bifoliolate composite leaves, alternate phyllotaxy, asymmetrical leaflet form ovate, without indumentum, leaflet with 11 x 5cm, petiole with 2.0 cm, leaf with 8.0 cm, presence of leaf blade limbs, whole margin, emarginated leaf apex, penninerved veins to cunninerved, absent flower, legume fruit dry type, with approximately 7.0 x 4 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Redondo Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 19 (HABIT).

2. *Hymenaea stigonocarpa* Mart. Getreue Darstell. Gew. 11: sub pl. 13, 1830.

Key of Subfamily Papilionoideae

1. Liana, fruit type vegetable with 3 seeds, without forming of articles, with 4 cm, margin revolute of legume.....**1Dioclea bicolor**
1. Herb or Subshrub, legume fruit with 3 more seeds or with the formation of articles, without revolute margin..... 2
 2. Subshrub with height equal to or greater than 1m, only erect growth3
 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**2Indigoferasuffruticosa**
 3. Leaves simple or trifoliolate, fruit legume lomentum type, not form clusters in the main branch..... 4
 4. Leaves simple large ovate, with 20 x 10 cm long, long fruit forming branches, arranged alternately.....**3Desmodium subsecundum**
 4. Small trifoliolate leaves, small fruit forming branches, arranged not alternate leaves form.....5
 5. Elliptic leaflets, 2.4 x 1.1 cm, fruit type lomentum, 1.1 cm, with 3-5 articles.....**4Desmodium incanum**
 5. Elliptic leaflets, 7 x 3.6 cm, fruit type lomentum, 3.3 x 0.8 cm, has 3-6 items dressed.....**5Desmodium barbatum**
 2. Climbing or herbaceous herb with height equal to or >1,5m, erect, decumbent or prostrate growth.....6
 6. Decoding growth climbing herbs.....7
 7. Leaves composed of 8-15 pairs of leaflets, bipinnates with 2.3 x 0.9 cm, pseudo-raceme inflorescence.....**6 Abrus fruticulosus**
 7. Leaves trifoliolate, inflorescence raceme or cymose, not raceme.....8
 8. Long lanceolate leaflet..... 9

9. Leaflet with 5,2 x 3 cm long, papilionaceous flower, lilac dark to purple petals.....**7***Centrosema brasiliana*
9. Leaflets with 5,0 x 1,0 cm, papilionaceous flower petals light to whitish lilac.....**8***Clitoria guianensis*
8. Leaflets ovate or obovate..... 10
10. Leaflets ovate, with 10 x 6.1 cm, mucronate leaf apex, marked penninerved vein, red papilionaceous flower.....**9** *Periandra heterophylla*
10. Leaflets obovate 4.5 x 3 cm, acute leaf apex, unmarked penninerved vein, yellow papilionaceous flower.....**10***Vigna 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**11** *Crotalaria stipularia*
12. Leaflet with 4,2 x 1.5cm, not winged petiole with 0.3 cm, fruit with 3.0 cm**12***Crotalaria retusa*
11. Composite leaves, typical legume fruit or lomentum..... 13
13. Compound leaves bipinnates, legume lomentum..... 14
14. Leaflets with up to 6 pairs of pinnas, equal to or < 0,5cm, lomentum with up to 3 articles.....**13***Aeschynomene viscidula*
14. Leaflets with more than 6 pairs of pinnas, > 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 a maximum of 12 pairs of pinnas.....**14***Aeschynomene brasiliana*
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 with 7,0 x 0.2 cm, apex acuminate, legume with up to 7 articles.....**15***Aeschynomene histrix*
16. Leaflets 1.0 cm long, 0.3 cm, rounded leaf apex, legume with up to 5 articles.....**16***Aeschynomene paniculata*
13. Composite leaves trifoliolate, fruit legume type..... 17
17. Leaf lobes lateral, leaflet equal to or > 4cm 18
18. Leaflets with 8cm, truncated rachis**17***Phaseolus vulgaris*
18. Leaflets, 4 cm, not truncated rachis..... 19
19. Lateral leaflets with diminutive petiole to sessile, fruit legume type with 6 cm, indehiscent.....**18***Macroptilium atropurpureum*
19. Side leaflets with elongated petiole, fruit legume type with 5.6cm of**19***Macroptilium lathyroides*
17. Not lobulated lateral leaflets, leaflet smaller than 4cm 20
20. Leaf apex emarginate, leaflet with 3x1.7cm.....**20***Galactia jussiaeana*
20. Acute leaf apex, a leaflet with 1.9 x 0.6cm, elliptical.....**21***Stylosanthes viscosa*

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

Description: Liana with woody stem, presents approximately 2 m, erect growth, shape embira, present linear stipules with 0.6 cm, trifoliolate composite leaves, deistical alternate phyllotaxy, large oblong lanceolate leaflet with 8, 4 cm long and 5.0 cm, petiole with 4.6 cm, and leaf with approximately 13.1 cm, whole leaf margin, rounded leaf apex, penninerved vein, raceme inflorescence, fruit legume type, with 4 cm long, ridge,

hairy, 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).

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

Description: Shrub with woody stem, 2m long, symmetrical erect growth, present linear stipules with 0.5 cm, unequipped composite leaves, with 8-12 pairs of

leaflets, alternate phyllotaxy, lanceolate-oblong leaflet, with 3.0 x 1.2 cm, petiole with 2.0 cm, leaf 9.3 cm, crenellated leaf margin, mucronate leaf apex, penninerved vein, symmetric leaflet, raceme Inflorescence, curved legume type dry fruit, forming in bunches in the main branch, with 8.0 cm, fruit with 1.5 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO 56 (HABIT).

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

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

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

Description: Herbaceous subshrub, decumbent erect growth, is approximately 1m, triangular stipules present with 0.6 cm, basis of the petiole, composite trifoliolate leaf, alternating phyllotaxy, elliptic leaflets, 2.4 x 1.1 cm, 1.5 cm petiole, approximately 4.0 cm, 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. Possessing 3-5 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).

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

Description: Subshrub with 80 cm, woody stem, erect growth, triangular stipules present with 0.6 cm, composite leaves trifoliolates, phyllotaxy distal alternate, leaflets elliptic symmetrical, with 7 x 3,6 cm of width, petiole with 1.5 cm, leaf with approximately 4.0 cm, whole leaf margin, rounded apex, hairiness with whitish trichomes,

penninerved vein, raceme inflorescence, absent flower, dried fruit lomentum type, 3 x 0.8 cm, 3-6 items, clingy.

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 67 (HABIT).

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

Description: Herb with approximately 1 m, with herbaceous stem, indumentum in the present branch. Persistent, tiny linear stipules at the base of the petiole, petiole with 3.5 x 2 cm; leaves composed of 8-15 pairs of leaflets, bipinnates with 2.3 x 0.9 cm, obovate, linear leaflets; legume, rounded apex, symmetrical limbus, Inflorescence: position of the pseudo-raceme inflorescence, flower absent, typical fruit with 3.5 x 1 cm. 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).

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

Description: Herb, herbaceous stem, approximately 1.5 m, presents triangular ocrea stipules at the base of the petiole of 0.3x0.2 cm, 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 x 3 cm 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 x 0.4 cm, 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).

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

Description: Herb, approximately 50 cm, herbaceous stem, ovate stipules, striated, at the base of the petiole with 0.3 x 0.1 cm, composite leaf trifoliolate with 5 x 1 cm, lanceolate leaflet, alternates phyllotaxy, acute apex, penninerved veins, symmetric, present trichomes, axillary inflorescence, flower, monoecious, subsessile; long tubular calyx whitish, striated, papilionaceous corolla, unguiculated petals, lilac, orbicular banner, lato; free wings, obovate, keel falcated, lato unguiculate, 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).

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

Description: Herbaceous, climbing vine, 1.20 m, decumbent erect growth, presence of linear stipules with 0.4 cm of , absence of nectary, composite leaves, trifoliolate, alternate , leaflet ovate-lanceolate, 10 x 6.1 cm , 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 and aramos, homogeneous pilosity, cymose inflorescence with 0.8 cm of , 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).

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

Description: Herb with approximately 30 cm, erect decumbent growth, herbaceous stem, greenish branches, triangular stipules 0,3x 0,1 cm at the base of the petiole. Leaves composite trifoliolate, alternate, adaxial structure with secondary penninerved vein marked in leaflets, leaflets obovate with 4.5 x 3 cm, acute leaf apex, petiole with 4 x 0,1 cm, 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 x 0.2 cm . with trichomes. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Permanent Protection Area, 08 / X / 16, G. S. GOMES; G. M. CONCEIÇÃO, 63 (HABIT).

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

Description: Herb stem-like stem herb, decumbent erect growth, 65cm long, linear stipules present with 0.3 x 0.1 cm, nectaries absent, single leaves, alternate phyllotaxy, leaflets oblong-lanceolate, with 4,7 x 2,0 cm, winged petiole with 0.3 cm, leaf approximately 5.1 x 3 cm , leaf margin whole, apex emarginate, penninerved vein, symmetric, presence of white trichomes, quite hairy, yellow papilionaceous flower with 0.3 x 0.3 inches. with zygomorphic symmetry inflorescence cymose, heterochlamydeous, dichlamydeous, dialystemonous, dry fruit, capsule, with approximately 2.3 cm. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 47 (HABIT). 12.

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

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

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

Description: Herb with approximately 50 cm of height, herbaceous stem, prostrate growth, branches with 32 x 19 cm, triangular stipules with 0.4 x 0.2cm, is found at the base of the petiole, composites bipinnates leaves, with 3-pairs of leaflets, leaflet with 1.7 x 1 cm , petiole 0.5 x 0.1 cm , obovate leaflets 0.5 x 0.6 cm , trichomes, flower with campanulate calyx, papilionaceous, yellow cream, showy standard, heterochlamydeous, dialystemonous, dialypetalous, Fruit type lomentum legume, with articles joined by isthmus with 1 x 0.3 cm , features 3 hairpieces. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 59 (HABIT).

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

Description: Herb with approximately 50 cm, woody stem, erect growth to decumbent, branches with gray parts, triangular stipules with 1 x 0.3 cm, composite bipinnates leaves have 6 -12 pairs of leaflets, with 6 cm of , and 1.4 cm , leaflets obovate with 0.8 x 0.4 cm , leaflets of the base larger than the leaflets of the apex of the pinnas, petiole with 1 x 0.2 cm , presence of trichomes with 1 mm of , smooth margin, apex of rounded leaflet, symmetrical, with penninerved veins, inflorescence raceme, flower absent, fruit legume with 0.3 x 0.2 inches long, arranged in the petiole with 0.3 cm, 3-6 articles. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 64 (HABIT).

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

Description: Herb, presents on average 45 cm, erect decumbent growth, triangular stipules present with 0.3 x 0.1 cm, it presents at the base of the petiole, striated,

composite leaves bipinnates with 10-18 pairs of leaflets, alternate phyllotaxy; petiole 4 x 0.4 cm, leaflets 0.7 x 0.2 cm, opposite, oblong, whole leaf margin, apex acuminate, with whitish trichomes; flower absent; dry fruit, lomentum legume, with about 3cm . presents from 4 -7 items dressed.

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Permanent Protection Area, 08 / X / 16, G. S. GOMES; G. M. CONCEIÇÃO, 6, 7, 8 (HABIT).

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

Description: Herb, with 60 cm , decumbent erect growth, grayish branches, presence of triangular stipules with 0.1 x 0.1 cm ; garment with few whitish trichomes; 0.6cm petiole; leaves approximately 6,5 x 3 cm composed of 12-25 pairs of leaflets, bipinnates, alternating phyllotaxy, absence of nectaries; oblong leaflet, 1.0 x 0.3 , whole margin, rounded leaf apex; median leaflets larger than the base and apex, cymose inflorescence with 0.3 cm , 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).

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

Description: Herb stems climbing herb, prostrate erect growth, 20cm long, greenish branches, absent stipules, trifoliolate composite leaves, alternating, leaflets with sagittarius, 8 x 4.3 cm, petiole with 0.2 x 0.1 cm, leaves 8.2 cm, whole wavy margin, penninerved vein, acute leaf apex, symmetrical, reduced pulvinus, truncated rachis, 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).

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

Description: Herb with approximately 60 cm, Herbaceous stem, erect decumbent growth, green branches with 21,5 cm of, and 16 cm. triangular stipules of approximately 0.2 cm, and 0.1 cm, composite leaves, alternate, trifoliolate with 6 x 4 cm, leaflets oblong-lanceolate to sagittal of 4 x 1.8cm. wavy margin, rounded apex, penninerved vein, symmetrical, slightly pilose, lobed lateral leaflets sessile and main leaflet extended by rachis, absent flower, dry fruit legume type with 6 x 0.4 cm, indecipherable. **Material Examined:** BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI

/ 17, G. S. GOMES; G. M. CONCEIÇÃO, 61, 62 (HABIT).

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

Description: Herb, decumbent erect growth, approximately 30cm , greenish branches, tiny triangular stipules present with 0.5 x 0.2 cm , presence of nectary rounded in the petiole, composite leaves trifoliolate, phyllotaxy distal alternate, leaflet lanceolate to linear, with 4 x 2.6 cm , petiole 5 x 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.

Material Examined: BRAZIL. MARANHÃO: São João do Sóter, Pedras Village, 23 / VI / 17, G. S. GOMES; G. M. CONCEIÇÃO, 54 (HABIT).

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

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

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

Description: Herb, 30 cm, decumbent erect growth, greenish branches, with triangular stipules of 0.5 cm , at the base of the petiole, composite leaves trifoliolate, phyllotaxy distal alternate, leaflets elliptical, with 1.9 x 0.6 cm, petiole with 0.5 x 0.2 cm , leaf with approximately 2.5 cm, whole margin, acute leaf apex, penninerved vein, presence of glandular trichomes in all branches, homogeneous pilosity, symmetrical leaflets, cymose inflorescence with 4,5 cm, dichlamydeous, heterochlamydeous, gamosepalous with 0.4., gamopetalous with zygomorphic 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).

IV. CONCLUSION

In this research, three new occurrences were obtained to the Maranhão with *Desmodium subsecundum* (Papilionoideae), *Aeschynomene viscidula* (Papilionoideae) and *Vigna lasiocarpa* (Papilionoideae), with *V. lasiocarpa* being a new ledger to the Northeast. This research is relevant for the Northeastern flora, through the increase of knowledge of the Leguminosae family characteristics and the expansion of the geographic distribution of the species in the region. proved to be very diverse in Cerrado Maranhense, making the work the largest survey in the family's geographical area for the State through a pioneering research for the area, building an important knowledge in the field of botanical study, thus offering taxonomic keys that will serve as recognition and identification of the species for the Cerrado of the state.

Producing taxonomic works on Leguminosae is of extreme importance, so it is possible to understand several characteristics which are still unknown. The morphological and taxonomic diversity of Leguminosae is expressed in its high number of taxa that is distributed in almost all regions of the world.

Leguminosae proved to be very diverse in Cerrado Maranhense, making the work the largest survey in the family's geographical area for the State through a pioneering research for the area, building an important knowledge in the field of botanical study, where the taxonomic keys produced will serve as recognition and identification of the species for the State Cerrado.

The importance of the research is also evidenced by providing information for the conservation and management of these new occurrences from taxonomic data. It can be mentioned that the species indexed as a new occurrence will contribute to the construction of the Brazilian Flora, through the REFLORA 2020 Project, which intends to index all Brazilian plant species until the year 2020, fortifying the data of Maranhão and the Northeast region, thus guaranteeing greater representation of Brazilian biodiversity.

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