



Mimosoideae (Leguminosae) in the Brazilian Chaco of Porto Murtinho, Mato Grosso do Sul

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Abstract

This research consists of the taxonomic-floristic treatment of taxa of Mimosoideae occurring in the Brazilian Chaco. The specimens analyzed were collected from 2004 to 2012 in Chaco remnants located in southwestern Mato Grosso do Sul, Brazil. Mimosoideae is represented by 39 taxa belonging to 14 genera; among the most representative, *Mimosa* (16 taxa) and *Prosopis* (4 taxa) are highlighted. *Chloroleucon chacoense*, *Mimosa centurionis* and *Prosopis alba* are new records for the Brazilian Flora. *Prosopis nigra* has its occurrence expanded. Mimosoideae is the second subfamily in species richness compared with other subfamilies of Leguminosae studied in the Brazilian Chaco. This work includes morphological descriptions, identification keys, illustrations and taxonomic comments.

Key words: biodiversity, chaco formations, Fabaceae, stepic savanna.

Resumo

Este estudo consiste no tratamento florístico-taxonômico de táxons de Mimosoideae ocorrentes no Chaco brasileiro. Os espécimes analisados são oriundos de coletas realizadas de 2004 a 2012, em remanescentes de Chaco localizados no sudoeste de Mato Grosso do Sul, no município de Porto Murtinho. Mimosoideae encontra-se representada por 39 táxons distribuídos em 14 gêneros. Dentre os gêneros mais representativos destacam-se *Mimosa* (16 táxons) e *Prosopis* (quatro táxons). Os registros de *Chloroleucon chacoense*, *Mimosa centurionis* e *Prosopis alba* no Chaco brasileiro configuram dados inéditos de ocorrência para a Flora do Brasil. *Prosopis nigra* tem com este estudo sua ocorrência ampliada. Mimosoideae é a segunda subfamília com elevada riqueza quando comparada às demais de Leguminosae estudadas no Chaco brasileiro. O estudo inclui descrições morfológicas, chaves de identificação, ilustrações e comentários taxonômicos.

Palavras-chave: biodiversidade, formações chaquenhãs, Fabaceae, savana estépica.

Introduction

Leguminosae Juss., the third largest family of Angiosperms, with 727 genera and 19,325 species (Lewis *et al.* 2005) is traditionally divided into three subfamilies: Caesalpinioideae, Papilionoideae and Mimosoideae (Polhill 1981; Lewis *et al.* 2005). The monophyly of Leguminosae and of Papilionoideae is supported by different phylogenetic analyses (Chappill 1995; Doyle 1995; Käss & Wink 1996; Doyle *et al.* 1997; LPWG 2013; Wojciechowski *et al.* 2004); in Mimosoideae the recognition of the group is possible with the exclusion of *Dinizia Ducke*; Caesalpinioideae emerges as paraphyletic in the analyses (Chappill 1995; LPWG 2013; Wojciechowski *et al.* 2004).

Mimosoideae aggregates 3,270 species in 70 genera, predominantly distributed in tropical, subtropical and temperate regions (Lewis *et al.* 2005). In Brazil 798 species in 36 genera are recorded (BFG 2015).

Representatives of Mimosoideae compose the dry forests of South America, distributed in discontinuous vegetation belts (Pennington *et al.* 2006) that often extend into areas of Chaco, *e.g.*, species of certain genera such as *Calliandra* Benth., *Chloroleucon* (Benth.) Britton & J.N. Rose, *Desmanthus* Willd., *Mimosa* R.Br. and *Senegalia* C. S. Rafines (Polhill 1981; Schire *et al.* 2005; Queiroz 2009), many of these also recorded in remnants of the Brazilian Chaco (Noguchi *et al.* 2009).

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The chaquenian formations correspond to probable areas of connection between nuclei of species distribution in South America (Prado 2000), mainly in the adjacencies of Bolivia and Brazil. However, in Argentina, Bolivia and Paraguay where the Chaco occurs, floristic studies are scarce and the data are scattered in ecological reports. Therefore, floristic-taxonomic studies are extremely important for future research aiming to elucidate possible floristic and biogeographic relationships of the Chaco with other Neotropical areas.

The Chaco covers about 800,000 km² in South America, occurring in the plains of northern Argentina, western Paraguay, southeastern Bolivia and western Brazil (Prado 1993). In the Brazilian territory, studies reported by Prado *et al.* (1992) on forest communities in southwestern Mato Grosso do Sul demonstrate that only the chaquenian formations of Porto Murтинho should be classified as Chaco *sensu stricto*, due to the similarities of the physiognomic and floristic characteristics with the vegetation of Paraguay and Argentina.

At a regional scale the Brazilian Chaco is considered a domain of high priority for conservation (Táلامo & Caziano 2003). However, due to the agropastoral expansion in the last decades in southwestern Mato Grosso do Sul (Pott & Pott 2003) the domain is under threat, jeopardizing the local biodiversity.

In Brazil the flora of the Chaco has been studied in the last years. In floristic-taxonomic terms for Leguminosae, some studies were carried out for Caesalpinoideae (Alves 2008) and Papilionoideae (Alves & Sartori 2009; Sinani 2015); however, studies of a floristic-taxonomic nature are lacking for Mimosoideae.

Our objective was to perform a floristic-taxonomic survey of the taxa of Mimosoideae occurring in the Brazilian Chaco including morphological descriptions, identification keys, illustrations and taxonomic comments.

Material and Methods

The Chaco in Brazil covers an estimated area of 70,000 km² (Hueck 1972), mainly in Porto Murтинho, southwestern Mato Grosso do Sul (Fig. 1), the only municipality with extensive areas of the domain. The climate of the region is classified as warm and dry most of the year, with seasonal rains, occasionally concentrated in three or four months, with annual rainfall of 1,200 mm (Furtado *et al.* 1982); it is considered the wettest region

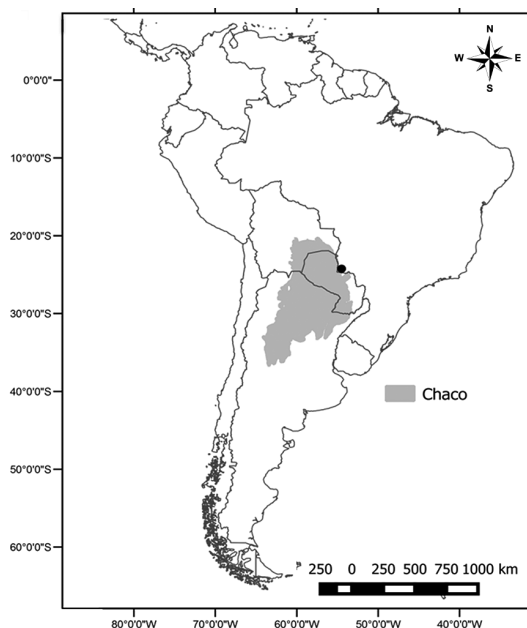


Figure 1 – Location of Chaco in South America including the State Mato Grosso do Sul, Brazil.

of the Chaco (Pennington *et al.* 2000). The soil type is planosol, with high clay and salt content (Furtado *et al.* 1982). The chaquenian formations are classified by IBGE (2012) into: Forested Stepic Savanna (forested chaco), Stepic Woodland Savanna (chaco woodland), Park Stepic Savanna and Grassy-Woody Stepic Savanna, according to the phytophysiology and the floristic elements.

Our floristic-taxonomic study was based on specimens from the CGMS herbarium (acronym according to Thiers, continuously updated), the largest collection of plants from the Brazilian Chaco, gathered after 2004; we also made field collections and observations in 2011 and 2012. The descriptions of the taxa included the range of morphological variation observed in the specimens examined. The terminology utilized for life-forms followed Guedes-Bruni *et al.* (2002), indument and morphology of vegetative and reproductive structures was based on Font Quer (1953), Radford *et al.* (1974), Harris & Harris (1994) and Stearn (2004), and fruits according to Barroso *et al.* (1999). Plant identification was based on specialized taxonomic literature, comparison with herbarium material, and consulting specialists. Information on color of floral parts, fruit and seeds were obtained from the labels of herbarium material; measurements of flowers were taken at pre-anthesis.

Data on geographic distribution and preferred habitat were compiled from labels of the exsiccatae, taxonomic revisions and field observations. The classification of the Chaco vegetation was adapted from IBGE (2012) and Brazilian Biomes followed BFG (2015), where Chaco does not figure.

Results and Discussion

Mimosoideae, with 39 confirmed taxa, is the second richest subfamily in the Brazilian Chaco, according to the most recent studies, when compared with Papilionoideae with 45 taxa (Sinani 2015), and Caesalpinioideae with 12 (Alves & Sartori 2009). Amongst the 14 genera, *Mimosa* is the most representative with 16 taxa, followed by *Prosopis* with four taxa, and *Chloroleucon* and *Senegalia*, both with three.

The current records of *Chloroleucon chacoense*, *Mimosa centurionis* and *Prosopis alba* in the Brazilian Chaco are new occurrences yet unpublished in the Flora of Brasil (BFG 2015). The

occurrence of *P. ruscifolia* is probably restricted to the Central-West region, in the Brazilian Chaco, since this species has been cited with some hesitation for the Caatinga in the Brazilian Northeast (Queiroz 2009). The confirmation of *P. nigra* expands the occurrence of this species in Brazil, cited until now only for the South region (BFG 2015).

Representatives of Mimosoideae occurring in the Brazilian Chaco can be characterized by the bipinnate leaves (Figs. 2-8), with one to many pairs of pinnae, and extrafloral nectaries that can occur on the petiole and on the leaf rachis. The stipules are bristly, foliaceous, and in some genera modified into spines (*Chloroleucon*, *Piptadenia*, *Prosopis* and *Vachellia*); prickles also occur in other genera (*Mimosa* and *Senegalia*). The inflorescences can be capituliform, racemose, spiciform and umbelliform, composed of homomorphic or heteromorphic flowers, with actinomorphic symmetry, and campanulate calyx. The fruit types range from legume, follicle, sacellum, cryptoloment, craspedium and legume-drupaceous.

Identification key for taxa of Mimosoideae in the Chaco of Porto Murtinho

1. Branches armed.
 2. Branches with prickles.
 3. Leaves unijugate.
 4. Shrubs, 2.5 m tall; branches strigose; leaflets with brochidodromous venation 23. *Mimosa sensibilis* var. *sensibilis*
 - 4'. Herbs to subshrubs, 0.4–1.6 m tall; branches glabrous or puberulent; leaflets with hyphodromous, camptodromous or craspedodromous venation.
 5. Herbs, 0.4–0.5 m tall; petioles with glabrous or pubescent surface; leaves with 2 pairs of leaflets per pinna; leaflets with ciliate margin and craspedodromous venation.
 6. Branches with prickles recurved; leaves with pubescent petiole; leaflets obovate, apex obtuse, pubescent on both surfaces 14. *Mimosa debilis* var. *debilis*
 - 6'. Branches with prickles straight; leaves with glabrous petiole; leaflets elliptic, apex acute, glabrous on both surfaces 13. *Mimosa debilis* var. *angusta*
 - 5'. Subshrubs, 0.8–1.6 m tall; petiole with hispid surface; leaves with 16–22 pairs of leaflets per pinna; leaflets with scabrous margin or hirsute margin and hyphodromous or camptodromous venation.
 7. Plants 1.6 m tall; stipules deltoid; leaves with petiole grooved in cross section 21. *Mimosa polycarpa* var. *polycarpa*
 - 7'. Plants 0.8 m tall; stipules narrow-elliptic or narrow-triangular; leaves with petiole semicylindric in cross section.
 8. Branches with prickles straight; stipules narrow-elliptic; leaflets pubescent on the upper surface and hispid on the lower surface, margin scabrous, venation hyphodromous 15. *Mimosa distans* var. *distans*
 - 8'. Branches with prickles recurved; stipules narrow-triangular; leaflets glabrous on both surfaces, margin hirsute, venation camptodromous 22. *Mimosa polycarpa* var. *spgazzinii*

- 3'. Leaves multijugate.
9. Stipules persistent; fruit craspedium.
10. Herbs; leaves with petiole semicylindric in cross section; rachis less than 1.2 mm long 11. *Mimosa candollei*
- 10'. Trees, shrubs or subshrubs; leaves with petiole grooved in cross section; rachis more than 1.3 mm long.
11. Trees; leaves with 12–16 pairs of pinnae per rachis; leaflets with obtuse apex 18. *Mimosa glutinosa*
- 11'. Shrubs or subshrubs; leaves with 2–8 pairs of pinnae per rachis; leaflets with mucronate apex.
12. Subshrubs; leaves with glabrescent petiole, 13–13.5 mm long; rachis glabrous, with 31–39 pairs of leaflets per pinna 24. *Mimosa somnians* var. *somnians*
- 12'. Shrubs; leaves with pubescent or hispid petiole, 6.7–10 mm long; rachis pubescent or hispid with 9–30 pairs of leaflets per pinna.
13. Branches, petioles and foliar rachis hispid; leaves with 5–7 pinnae per rachis; paraphyllidia absent 20. *Mimosa pigra* var. *pigra*
- 13'. Branches puberulent, petioles and foliar rachis pubescent; leaves with 2–4 pinnae per rachis; paraphyllidia present.
14. Foliar rachis with 12.1–20.8 mm long; leaflets with venation eucamptodromous 10. *Mimosa bimucronata*
- 14'. Foliar rachis 8.8 mm long; leaflets with venation brochidodromous 19. *Mimosa hexandra*
- 9'. Stipules caducous; fruit legume.
15. Petiole cylindric in cross section; leaflets 42–60 pairs per pinna, falcate, apex apiculate, base truncate 36. *Senegalia martii*
- 15'. Petiole grooved in cross section; leaflets 17–31 pairs per pinna, narrow-elliptic, apex mucronate, base obliquous.
16. Branches with prickles straight; leaflets tomentose on both surfaces 37. *Senegalia polyphylla*
- 16'. Branches with prickles recurved; leaflets glabrescent on both surfaces 35. *Senegalia lasiophylla*
- 2'. Branches with spines.
17. Shrubs.
18. Leaves with rachis 27–38 mm long; leaflets with obtuse apex, ciliate margin; fruit nucoid legume 38. *Vachellia caven*
- 18'. Leaves with rachis 16 mm long; leaflets with apex slightly apiculate, glabrous margin; fruit non-nucoid legume 39. *Vachellia farnesiana*
- 17'. Trees.
19. Branches with spines recurved; leaves with petiole grooved in cross section, floccose 29. *Piptadenia viridiflora*
- 19'. Branches with spines straight; leaves with petiole cylindric in cross section, glabrous, pubescent or tomentose.
20. Stipules caducous; leaves with spicules on the rachis.
21. Leaves with petiole and rachis glabrous; legume elliptic 4. *Chloroleucon chacoense*
- 21'. Leaves with petiole and rachis tomentose to sparse-tomentose; legume falcate or coiled.
22. Leaves with 4–8 pairs of pinnae per rachis; leaflets oblong, glabrous, margin ciliate; fruit legume, falcate 5. *Chloroleucon foliolosum*
- 22'. Leaves with up to 3 pairs of pinnae per rachis; leaflets narrow-elliptic, villose, margin glabrous; fruit legume, coiled 6. *Chloroleucon tenuiflorum*

- 20'. Stipules persistent; leaves without spicules on the rachis.
23. Petiole without nectary, rachis more than 1.3 mm long 32. *Prosopis rubriflora*
- 23'. Petiole with nectary, rachis less than 1.2 mm long.
24. Leaves with petiole glabrous, 3–5 pairs of pinnae; leaflets with acuminate apex
..... 33. *Prosopis ruscifolia*
- 24'. Leaves with petiole pubescent, 15–68 pairs of pinnae; leaflets with obtuse apex.
25. Leaves with petiole *ca.* 3.2 mm long; seeds 3–10..... 31. *Prosopis nigra*
- 25'. Leaves with petiole 9.3–37 mm long; seeds 14–29 30. *Prosopis alba*
- 1'. Branches unarmed.
26. Trees.
27. Leaves with 1 pair of leaflets per pinna 9. *Microlobius foetidus* subsp. *paraguensis*
- 27'. Leaves with 3–69 pairs of leaflets per pinna.
28. Leaves with petiole velutine, spicule present on rachis; leaflets 3 pairs per pinna, obovate; inflorescence umbelliform..... 34. *Samanea tubulosa*
- 28'. Leaves with glabrous to pubescent petiole, sometimes villose and glandular, spicule absent on rachis; leaflets 8–69 pairs per pinna, oblong or elliptic; inflorescence capituliform or spiciform.
29. Branches tomentose; nectary absent on rachis; inflorescence spiciform
..... 28. *Parapiptadenia rigida*
- 29'. Branches glabrous or hispid; nectary present on rachis; inflorescence capituliform.
30. Leaves with grooved petiole, glabrous or villose-glandular; leaflets with actinodromous venation; fruit cryptoloment or legume.
31. Branches glabrous; stipules triangular; leaves fully glabrous with petiole 37.3–58 mm long; foliar rachis 82–164 mm long, cylindrical in cross section; leaflets 11–12 pairs per pinna, narrow-elliptic, apex acute, paraphyllidia present; fruit cryptoloment 1. *Albizia inundata*
- 31'. Branches hispid; stipules linear; leaves villose-glandular with petiole 16.5–27.6 mm long; foliar rachis 35–40 mm long, grooved in cross section; leaflets 30–41 pairs per pinna, oblong, apex mucronate, paraphyllidia absent; fruit legume 2. *Albizia niopoides*
- 30'. Leaves with cylindrical petiole, pubescent; leaflets with venation hyphodromous or eucamptodromous; fruit follicle or bacoid legume.
32. Leaves with 8–16 pinnae; leaflets with apex mucronate, base oblique, glabrous on both surfaces; follicle.....
..... 3. *Anadenanthera colubrina* var. *cebil*
- 32'. Leaves with 2–3 pinnae; leaflets with apex apiculate, base obtuse, pubescent on both surfaces; bacoid legume
..... 8. *Enterolobium contortisiliquum*
- 26'. Herbs to subshrubs.
33. Stipules awned; petiole less than 3 mm long 7. *Desmanthus virgatus*
- 33'. Stipules cordiform, elliptic, deltoid or triangular; petiole longer than 5 mm.
34. Leaves with 1 pair of pinnae
35. Petiole hispid, 6.7–8.3 mm long; leaflets with scabrous margin, hyphodromous venation; paraphyllidia present 25. *Mimosa xanthocentra* var. *subsericia*
- 35'. Petiole glabrous or hirsute, 12–37 mm long; leaflets with hispid margin, venation eucamptodromous or brochidodromous; paraphyllidia absent.
36. Stipules widely-deltoid; petiole hirsute, grooved in cross section, 34.1–37 mm long; leaflets 5 per pinna, elliptic, venation eucamptodromous
..... 16. *Mimosa dolens* var. *acerba*
- 36'. Stipules narrow-elliptic; petiole glabrous, semicylindric in cross section, 12.3–22.3 mm long; leaflets 14 per pinna, ovate, venation brochidodromous
..... 17. *Mimosa dolens* var. *dolens*

- 34'. Leaves with 2–4 pairs of pinnae.
37. Petiole grooved in cross section, hispid; spicule present; leaflets 7–12 pairs per pinna, obovate, hispid margin..... 12. *Mimosa centurionis*
- 37'. Petiole semicylindric in cross section, never hispid; spicule absent; leaflets 14–48 pairs per pinna, narrow-elliptic, ciliate margin.
38. Branches hispid, stipules cordiform; petiole with nectary; foliar rachis villose; leaflets 14–17 pairs per pinna.....26. *Neptunia plena*
- 38'. Branches glabrous, stipules deltoid; petiole without nectary; foliar rachis glabrous; leaflets 36–48 pairs per pinna.....27. *Neptunia pubescens*

Description of taxa

Albizia Durazz.

Tree; branches unarmed, striate, glabrous or hispid; stipules persistent, triangular or linear. Leaf multijugate, petiole grooved, glabrous or villose and glandular, extrafloral nectary present; rachis cylindric or grooved, glabrous or pubescent, extrafloral nectary present, spicule absent, paraphyllidia absent or present; leaflets opposite, oblong or narrow-elliptic, apex acute or mucronate, base oblique, adaxial and abaxial surface glabrous, margin glabrous or ciliate, venation actinodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent or present. Inflorescence capituliform; flowers not observed. Fruit legume or cryptoloment, dry, oblong, glabrous, apex apiculate.

1. *Albizia inundata* (Mart.) Barneby & J.W.Grimes, Mem. New York Bot. Gard. 74(1): 238. 1996.

Fig. 2a-b

Tree 5–7 m tall; branch glabrous; stipules triangular. Leaf with petiole glabrous, 37.3–58 mm long; rachis cylindric, glabrous, 82–164 mm long, paraphyllidia present; pinnae 3–4 pairs, leaflets 11–12 pairs per pinna, 1.6–23 × 5.4–6.6 mm, narrow-elliptic, apex acute, margin glabrous, paraphyllidia present. Fruit cryptoloment, 120–130 × 12–13 mm; seeds 13–15.

Examined material: urban area, 26.X.2008, fr., *A.L.B. Sartori et al.* (CGMS 23109); Fazenda Flores, 16.XII.2008, fr., *E.P. Seleme & A.L.B. Sartori 190* (CGMS).

Albizia inundata occurs in Argentina, Bolivia and Brazil generally in riparian vegetation of seasonally flooded floodplain, frequent in the northern Paraná-Paraguay-Uruguay basin (Barneby & Grimes 1996). In Brazil it has a wide distribution (BFG 2015). The species can be distinguished by the glabrous petiole and rachis, presence of paraphyllidia, rachis cylindric, 11–12 pairs of leaflets per pinna, margin of leaflets glabrous and the fruit a cryptoloment.

2. *Albizia niopoides* (Spruce ex Benth.) Burkart, Legum. Argent. (ed. 2) 542. 1952.

Fig. 2c

Tree *ca.* 6 m tall; branch hispid; stipules linear. Leaf with petiole villose and glandular, 16.5–27.6 mm long; rachis grooved, pubescent, 35–40 mm long, paraphyllidia absent; pinnae 4–8 pairs, leaflets 30–41 pairs per pinna, 4.7–5.8 × 0.9–1.0 mm, oblong, apex mucronate, margin ciliate, paraphyllidia absent. Fruit legume, 55–90 × 12 mm; seeds 5–9.

Examined material: Fazenda Agro Comercial Aubi, 9.V.2007, fr., *F. Matos-Alves et al. 79* (CGMS); Dique 5, 15.IV.2005, fr., road side, 15.IV.2005, *D.K. Noguchi et al. 173* (CGMS); urban area, 10.V.2007, fr., *F. Matos-Alves et al. 420* (CGMS).

Albizia niopoides has records for southern Mexico, Central America, West Indies and South America, generally associated with Deciduous or Semideciduous Forests, on riversides (Barneby & Grimes 1996). In Brazil it occurs in the Central-West, South and in the states of Pará, Maranhão and São Paulo (BFG 2015). This species differs from *A. inundata* by a set of characteristics such as villose petiole, with glandular trichomes (*versus* glabrous), grooved, pubescent (*versus* cylindric, glabrous) rachis, paraphyllidia absent (*versus* present), 30–41 pairs of leaflets per pinna (*versus* 11–12 pairs per pinna), margin of the leaflets ciliate (*versus* glabrous) and fruit a legume (*versus* cryptoloment).

3. *Anadenanthera colubrina* var. *cebil* (Griseb.) Altschul, Contr. Gray Herb. 193: 53. 1964.

Fig. 2d-e

Tree *ca.* 15 m tall; branch unarmed, striate, glabrous; stipules caducous. Leaf multijugate, petiole cylindric, pubescent, 11.6–25.8 mm long, extrafloral nectary present; rachis grooved, pubescent, 95–140 mm long, extrafloral nectary present, spicule and paraphyllidia absent; pinnae 8–16 pairs, leaflets opposite, 34–69 pairs per pinna, 2.1–6.9 × 0.5–1.3 mm, narrow-elliptic, apex mucronate, base oblique,

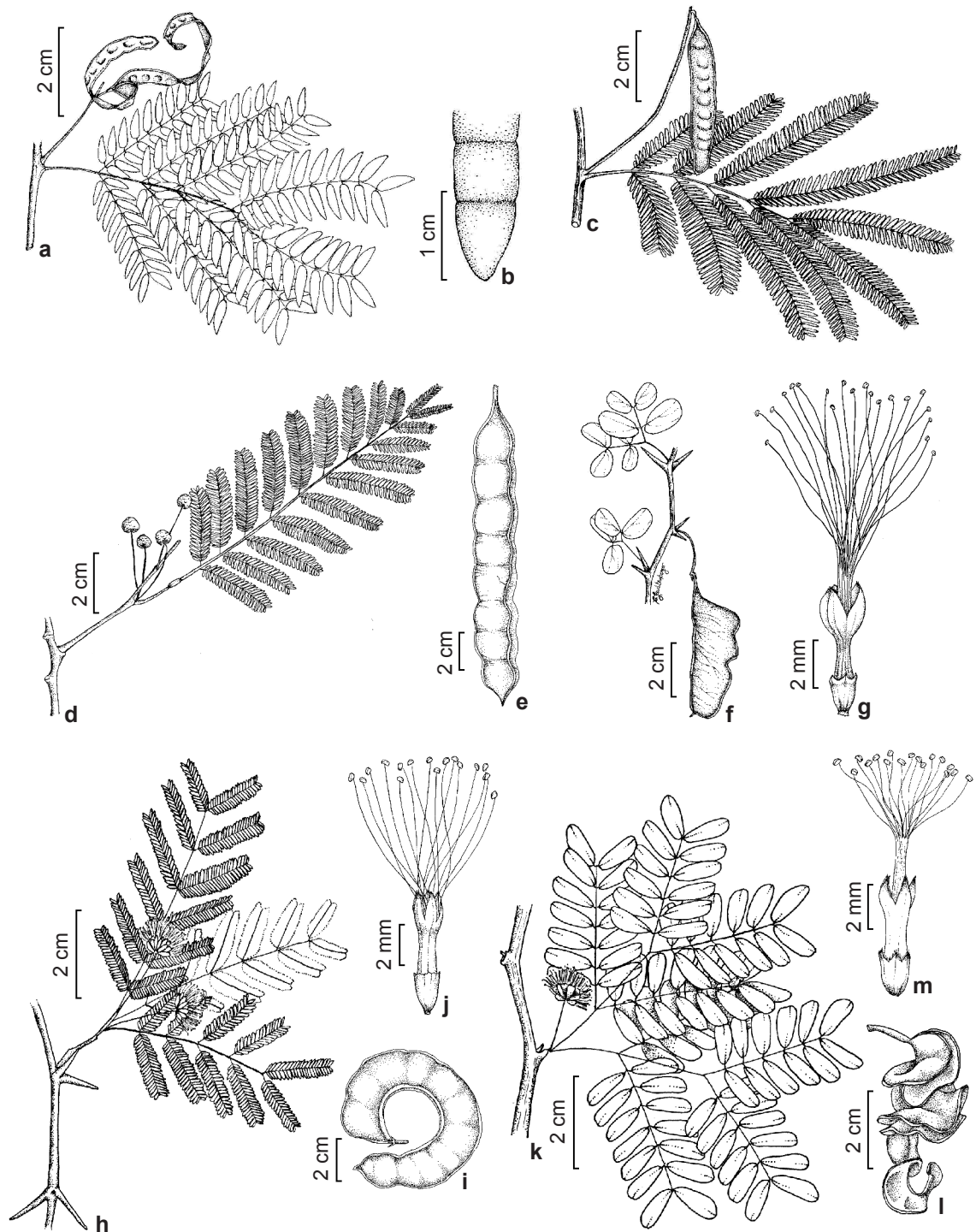


Figure 2 – a-b. *Albizia inundata* (Mart.) Barneby & J.W.Grimes – a. branch with fruit; b. exocarp (E.P.Seleme & A.L.B.Sartori 190). c. *Albizia niopoides* (Spruce ex Benth.) Burkart c. branch with fruit (F.M.Alves et al. 79). d-e. *Anadenanthera colubrina* var. *cebil* (Griseb.) Altschul – d. branch; e. fruit (A. Restel 2). f-g. *Chloroleucon chacoense* (Burkart) Barneby & J.W.Grimes – f. branch with fruit; g. flower (F.M.Alves & A.L.B.Sartori 486). h-j. *Chloroleucon foliolosum* (Benth.) G.P. Lewis – h. branch; i. fruit; j. flower (h.j. F.S.Carvalho et al. 182; i. F.M.Alves et al. 403). k-m. *Chloroleucon tenuiflorum* (Benth.) Barneby & J.W.Grimes – k. branch; l. fruit; m. flower. (k.m. A.L.B.Sartori CGMS 25810; l. A.L.B.Sartori 1112).

adaxial and abaxial surface glabrous, margin ciliate, venation eucamptodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, peduncle 9.1–21.1 mm long, puberulent, axis 12.2–24.9 mm long; flower sessile, pentamerous, homomorphic, hermaphrodite; calyx pubescent, ca. 1.5 mm long; corolla gamopetalous, pubescent, ca. 1.5 mm long; androecium with 8 stamens, apostemonous, yellow, anther glandular; ovary glabrous. Fruit follicle, dry, oblong, glabrous, 100–270 × 17–25 mm, apex apiculate; seeds 4–13. **Examined material:** Fazenda Retiro Conceição, 6.XII.2008, fr., *E.P. Seleme & A.L.B. Sartori 213* (CGMS); Fazenda Agro Comercial Aubi, 9.V.2007, fr., *F. Matos-Alves et al. 405* (CGMS); Fazenda Santa Virginia, 16.XI.2009, fl. e fr., *D.R.C. Padilha 66* (CGMS).

Anadenanthera colubrina var. *cebil* occurs in Argentina, Bolivia, Brazil, Paraguay and Peru (Altschul 1964). In Brazil it has records for the Central-West, Northeast and Southeast regions in Seasonal Semideciduous Forest, Ombrophilous Forest, Cerrado and Caatinga (BFG 2015). *Anadenanthera colubrina* var. *cebil* can be recognized by the unarmed branches, nectary on petiole, rachis and secondary rachis, ca. 8–16 pairs of pinnae, 34–69 pairs of leaflets and fruit a follicle.

Chloroleucon (Benth.) Britton & Rose *ex* Record

Tree; branch armed, striate, glabrous, spines straight; stipules caducous. Leaf uni-multijugate, petiole cylindric, glabrous, sparse-tomentose or tomentose, extrafloral nectary present; rachis cylindric, glabrous, sparse-tomentose or tomentose, extrafloral nectary and spicule present, paraphyllidia absent; leaflets opposite, narrow-elliptic, elliptic, oblong or obovate, apex acute or obtuse, base oblique, adaxial and abaxial surface glabrous or villose, margin glabrous or ciliate, venation brochidodromous or eucamptodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, glabrous or pubescent, axis not observed; flower sessile or subsessile, pentamerous, homomorphic or heteromorphic, hermaphrodite; calyx glabrous, grabrescent or villose; corolla gamopetalous, glabrous; androecium polystemonous, monadelphous, white or yellow, anther eglandular; ovary glabrous. Fruit legume, dry, elliptic, falcate or coiled, glabrous, apex apiculate or not.

4. *Chloroleucon chacoense* (Burkart) Barneby & J.W. Grimes, Mem. New York Bot. Gard. 74(1): 140. 1996. Fig. 2f-g

Tree ca. 3 m tall. Leaf uni-multijugate, petiole glabrous, 10–32 mm long; rachis glabrous, ca. 16.7 mm long; pinnae 1–2 pairs, leaflets 1–2 pairs per pinna, 19 × 14.3 mm, elliptic, obovate, apex obtuse, adaxial and abaxial surface glabrous, margin glabrous, venation eucamptodromous. Inflorescence capituliform, peduncle ca. 21.7 mm long, glabrous; flower sessile, homomorphic; calyx glabrous, ca. 1.2 mm long; corolla glabrous, ca. 5.0 mm long; androecium yellow. Fruit elliptic, 105 × 19 mm, apex apiculate; seeds ca. 7.

Examined material: Fazenda Agro Comercial Aubi, 17.II.2007, fr., *F.M.Alves et al. 35* (CGMS); Fazenda Agro Comercial Aubi, 4.XII.2007, fl. e fr., *F.M.Alves & A.L.B.Sartori 486* (CGMS).

This is the first record of *Chloroleucon chacoense* for Brazil. It occurs in spiny forests (chaco woodland) of Bolivia, Argentina and Paraguay (Barneby & Grimes 1996). Among the species of the genus occurring in the study area it is the only one with 1–2 pairs of pinnae, 1–2 pairs of elliptic or obovate leaflets.

5. *Chloroleucon foliolosum* (Benth.) G. P. Lewis, Leg. Bahia 166. 1987. Fig. 2h-j

Tree ca. 3 m tall. Leaf multijugate, petiole sparse-tomentose, 4.9–14.4 mm long; rachis sparse-tomentose, 23–77 mm long; pinnae 4–8 pairs, leaflets 4–25 pairs per pinna, 3.8–7.9 × 0.8–1.2 mm, oblong, apex acute, adaxial and abaxial surface glabrous, margin ciliate, venation eucamptodromous. Inflorescence capituliform, peduncle 12.5–28 mm long, pubescent; flower heteromorphic, peripheral subsessile, 7.0 mm long, tube stamens included in the corolla; flower central sessile, 5.3–6.9 mm long, tube stamens exerted, calyx glabrescent, 1–1.5 mm long; corolla glabrous, 4.3–5.4 mm long; androecium white. Fruit falcate, 110 × 15 mm, apex not apiculate; seeds 12–17.

Examined material: Fazenda El Dorado, 15.II.2007, fl. e fr., *F.M.Alves et al. 536* (CGMS); Fazenda Agro Comercial Aubi, 9.V.2007, fr., *F.M.Alves et al. 404* (CGMS).

Chloroleucon foliolosum occurs in Argentina, Bolivia and in southwestern Brazil where it is recorded for woody Caatinga and Chaco (Barneby & Grimes 1996). In Brazil it occurs in the North, Northeast, Southeast and Central-West regions in the domains of Amazonia, Caatinga, Cerrado and Atlantic Forest (BFG 2015). *Chloroleucon*

foliolosum can be distinguished by the leaves with 4–8 pairs of pinnae and oblong leaflets, from *C. chacoense* with 1–2 pairs of pinnae, leaflets elliptic or obovate, and from *C. tenuiflorum* with up to 3 pairs of pinnae and narrow-elliptic leaflets.

6. *Chloroleucon tenuiflorum* (Benth.) Barneby & J.W. Grimes, Mem. New York Bot. Gard. 74: 145. 1996. Fig. 2k-m

Tree ca. 5 m tall. Leaf multijugate, petiole tomentose, 9–12 mm long; rachis tomentose, 28.1–45 mm long; pinnae up to 3 pairs, leaflets 7–10 pairs per pinna, 14.3 × 5.7 mm, narrow-elliptic, apex acute, obtuse, adaxial and abaxial surface villose, margin glabrous, venation brochidromous. Inflorescence capituliform, peduncle 17.2–21.2 mm long, glabrous; flower sessile or subsessile, homomorphic; calyx villose, ca. 1.4 mm long; corolla villose, 4.8–6.4 mm long; androecium yellow. Fruit elliptic, coiled, 45.5 × 10 mm, apex not apiculate; seeds ca. 15.

Examined material: Fazenda Retiro Conceição, 30.IX.2010, fl., *F.S. Carvalho et al.* 179 (CGMS); Fazenda Anai, 30.VIII.2008, fl., *M.M. Menegazzo* 3 (CGMS); Fazenda Retiro Conceição, 14.XII.2011, fr., *A.L.B. Sartori* 1112 (CGMS).

Chloroleucon tenuiflorum occurs in Bolivia, Argentina, in Chaco of Paraguay, in Cerrado in Minas Gerais and Goiás, in forests and in sandy plains, rare in seasonally flooded grasslands (Barneby & Grimes 1996). Its occurrence is also recorded for Acre, Tocantins and Mato Grosso do Sul (BFG 2015). The species presents narrow-elliptic leaflets and coiled legumes, characteristics that differ from the two other species of the genus found in the Chaco.

7. *Desmanthus virgatus* (L.) Willd, Sp. Pl. 4 (2): 1047. 1806. Fig. 3a-e

Subshrub ca. 0.5 m tall; branch unarmed, striate, glabrous; stipules persistent, deltoid, awned, prolonged rib. Leaf multijugate, petiole cylindrical, pubescent, 2.3–2.8 mm long, extrafloral nectary present; rachis grooved, pubescent, 8.8–11.7 mm long, extrafloral nectary, spicule and paraphyllidia absent; pinnae 2–3 pairs, leaflets opposite, 9–15 pairs per pinna, 5.8–6.6 × 1.6–1.8 mm, elliptic, apex mucronate, base oblique, adaxial and abaxial surface glabrous, margin ciliate, venation hyphodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, peduncle 58–59.5 mm long, hispid, axis 65.5–74.2 mm long,

hispid; flower heteromorphic, flower peripheral sessile, 2 mm long, with staminodia; flower central sessile, 5.6–7.1 mm long, tetramerous or pentamerous, hermaphrodite; calyx ciliate, 2.3–2.6 mm long; corolla gamopetalous, pubescent, 3.3–4.5 mm long; androecium with 8–10 stamens, apostemonous, yellow, anther eglandular; ovary glabrous. Fruit legume, dry, oblong, glabrous, 57 × 4 mm, apex apiculate; seeds 23–26.

Examined material: urban area, 25.X.2008, fl. e fr., *A.L.B. Sartori et al.* (CGMS 23105).

Desmanthus virgatus occurs in Brazil in the regions Northeast, Central-West, Southeast and South in areas of Caatinga (*stricto sensu*) and Cerrado (*lato sensu*) (BFG 2015). This species can be identified by the subshrubby prostrate habit, with unarmed branches, deltoid stipules with prolonged rib, leaves with 2–3 pairs of pinnae and apiculate legume.

8. *Enterolobium contortisiliquum* (Vell.) Morong, Ann. New York Acad. Sci. 7: 102, 1893. Fig. 3f-h

Tree ca. 10–15 m tall; branch unarmed, striate, glabrous; stipules caducous. Leaf multijugate, petiole cylindrical, pubescent, 50–53 mm long, extrafloral nectary present; rachis cylindrical, glabrous, 15–43 mm long, extrafloral nectary present, spicule absent, paraphyllidia present; pinnae 2–3 pairs, leaflets opposite, 8–13 pairs per pinna, 21.7–25.9 × 5.9–6.7 mm, elliptic, apex apiculate, base obtuse, adaxial and abaxial surface pubescent, margin glabrous, venation hyphodromous, extrafloral nectary present on secondary rachis, paraphyllidia present. Inflorescence capituliform, axillary, peduncle 18.2–22 mm long, pilose, axis not observed; flower pedicellate, pentamerous, homomorphic, hermaphrodite; calyx glabrous, ca. 2.5 mm long; corolla gamopetalous, glabrous, 6.3–7.2 mm long; androecium polystemonous, monadelphous, white, anther eglandular; ovary glabrous. Fruit bacoid legume, fleshy, auriculiform, glabrous, 230–260 × 40 mm, apex not apiculate; seeds 10–14.

Examined material: Fazenda Agro Comercial Aubi, 9.IV.2007, fr., *F. Matos-Alves et al.* 397 (CGMS); 28.VIII.2007, fl. e fr., *Matos-Alves et al.* 456 (CGMS); 28.VIII.2007, fr., *Matos-Alves et al.* 449 (CGMS); Fazenda Andréa, 30.VIII.2008, fl. e fr., *G.G. Pedra* 34 (CGMS).

Enterolobium contortisiliquum occurs in north and northwestern Argentina, southern Bolivia, Colombia, eastern Paraguay, Peru and northwestern Uruguay (Carvalho 2003). In Brazil

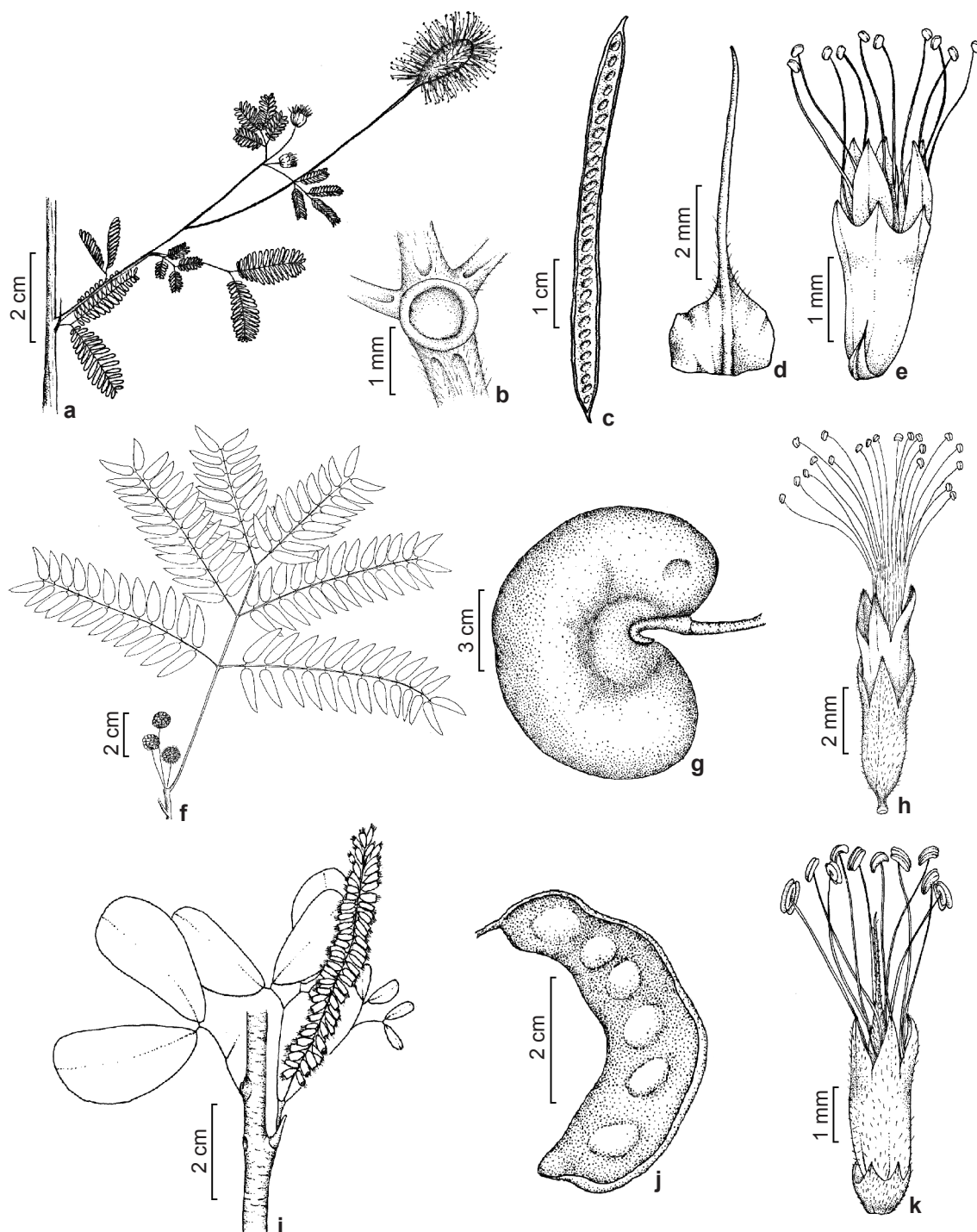


Figure 3 – a-e. *Desmanthus virgatus* (L.) Willd. – a. branch; b. nectary; c. fruit; d. stipule; e. flower (A.L.B.Sartori et al. CGMS 23105). f-h. *Enterolobium contortisiliquum* (Vell.) Morong – f. branch; g. fruit; h. flower (F.M.Alves et al. 456). i-k. *Microlobius foetidus* subsp. *paraguensis* (Benth.) M. Sousa & G. Andrade – i. branch; j. fruit; k. flower (i.k. F.M.Alves et al. 470; j. T.E.Lima et al. 130).

it has wide distribution, with records for Caatinga, Cerrado and Atlantic Forest (BFG 2015). The leaves with elliptic leaflets with apiculate apex, opposite, and auriculiform bacoid legume, allow prompt recognition of the species.

9. *Microlobius foetidus* subsp. *paraguensis* (Benth.) M. Sousa & G. Andrade, *Anales Inst. Bio. Univ. Nac. Autón. México, Bot.* 63 (1): 106.1992.

Fig. 3i-k

Treelet *ca.* 3 m tall; branch unarmed, striate, glabrous; stipules caducous. Leaf multijugate, petiole semicylindric or grooved, pubescent, 7.5–12.8 mm long, extrafloral nectary present; rachis less than 1.2 mm long, extrafloral nectary absent, spicule present, paraphyllidia absent; 1 pair of pinnae, leaflets opposite, 1 pair per pinna, 22.5–42 × 13.6–31 mm, obovate, apex obtuse, base oblique, adaxial and abaxial surface glabrous, margin glabrous, venation brochidodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence spiciform, axillary, peduncle 5–6.5 mm long, pubescent, axis 49.2–49.9 mm long, pubescent; flower sessile, pentamerous, homomorphic, hermaphrodite; calyx pubescent, 1–1.3 mm long; corolla gamopetalous, pubescent, 3.8–4.1 mm long; androecium with 10 stamens, apostemonous, white, anther glandular; ovary puberulous. Fruit follicle, dry, falcate, glabrous, 65–75 × 12–14 mm, apex not apiculate; seeds 4–6. **Examined material:** Fazenda Agro Comercial Aubi, 29.VII.2007, fl. e fr., *F. Matos-Alves et al.* 470 (CGMS); Fazenda Agro Comercial Aubi, 8.V.2007, fr., *F. Matos-Alves et al.* 369 (CGMS); 16.IV.2005, fr., *G.P. Nunes et al.* 225 (CGMS); Fazenda Comercial Agro Aubi, 8.V.2007, fl. e fr., *F. Matos-Alves et al.* 338 (CGMS).

Microlobius foetidus subsp. *paraguensis* in Brazil is cited only for Mato Grosso do Sul in riparian or gallery forest and Seasonal Deciduous Forest (BFG 2015). Leaf with one pair of pinnae, leaflets obovate with nectary on the secondary rachis and fruit in follicles distinguish this taxon from the other Mimosoideae confirmed for the Brazilian Chaco. Fresh leaves and bark have a strong garlic smell.

***Mimosa* L.**

Herb erect or prostrate, subshrub, shrub or tree; branch armed or unarmed, striate, glabrous, puberulent, hispid, scabrous or strigose, prickles straight, recurved or incurved; stipules persistent, widely-deltoid, deltoid, narrow-elliptic or triangular. Leaf uni-multijugate, petiole semicylindric or grooved, glabrous, pubescent

or hispid, extrafloral nectary absent; rachis semicylindric or grooved, glabrous, pubescent or hispid, extrafloral nectary absent, spicule and paraphyllidia absent or present; leaflets opposite, narrow-elliptic, elliptic, obovate or ovate, apex acute, mucronate or obtuse, base oblique, adaxial surface glabrous, glabrescent or pubescent, abaxial surface glabrous, glabrescent hirsute, hispid or pubescent, margin glabrous, ciliate, hirsute, hispid or scabrous, venation brochidodromous, camptodromous, craspedodromous, eucamptodromous or hyphodromous, extrafloral nectary absent or present on secondary rachis, paraphyllidia absent or present. Inflorescence capituliform or spiciform, axillary or terminal (*Mimosa dollens* var. *dollens*), glabrous, glabrescent, hirsute, hispid, pubescent, setose or villose; flower sessile or pedicellate, trimerous, tetramerous or pentamerous, homomorphic, hermaphrodite; calyx glabrous or hispid; corolla gamopetalous, glabrous, glabrescent or pubescent; androecium with 3–10 stamens, apostemonous, white, light yellow, yellow, lilac or brown, anther glandular or eglandular; ovary glabrous, pubescent or tomentose. Fruit sacellum or craspedium, dry, narrow-elliptic, elliptic, linear, quadrangular or obovate, glabrous, pubescent, hispid, hirsute or aculeate, apex apiculate or not.

10. *Mimosa bimucronata* (DC.) Kuntze, Revis. Gen. Pl. 1: 198. 1891.

Fig. 4a

Shrub *ca.* 2 m tall; branch armed, puberulent, prickles straight or incurved; stipules widely-deltoid. Leaf multijugate, petiole grooved, pubescent, 6.7–8.1 mm long; rachis grooved, pubescent, 12.1–20.8 mm long, spicule and paraphyllidia present; pinnae 2–3 pairs, leaflets 9–15 pairs per pinna, 5–11 × 1.4–2.6 mm, elliptic, apex mucronate, adaxial and abaxial surface glabrous, margin ciliate, venation eucamptodromous, extrafloral nectary absent on secondary rachis, paraphyllidia present. Inflorescence capituliform; flowers not observed. Fruit craspedium, narrow-elliptic, glabrous, 25–60 × 5–10 mm, apex apiculate; seeds *ca.* 3.

Examined material: Dique 4, 15.IV.2005, fr., *D.K. Noguchi et al.* 192 (CGMS); Fazenda Agro Comercial-Aubi, 10.V.2007, fr., *F.M. Alves et al.* 426 (CGMS).

Mimosa bimucronata occurs in Brazil, from Alagoas to Rio Grande do Sul, disjunct in the Paraguay-Paraná system and Argentina, mostly in wetlands along water courses (Barneby 1991). In Brazil it is spread in Bahia, Ceará, Distrito Federal, Goiás, Maranhão, Mato Grosso do Sul,

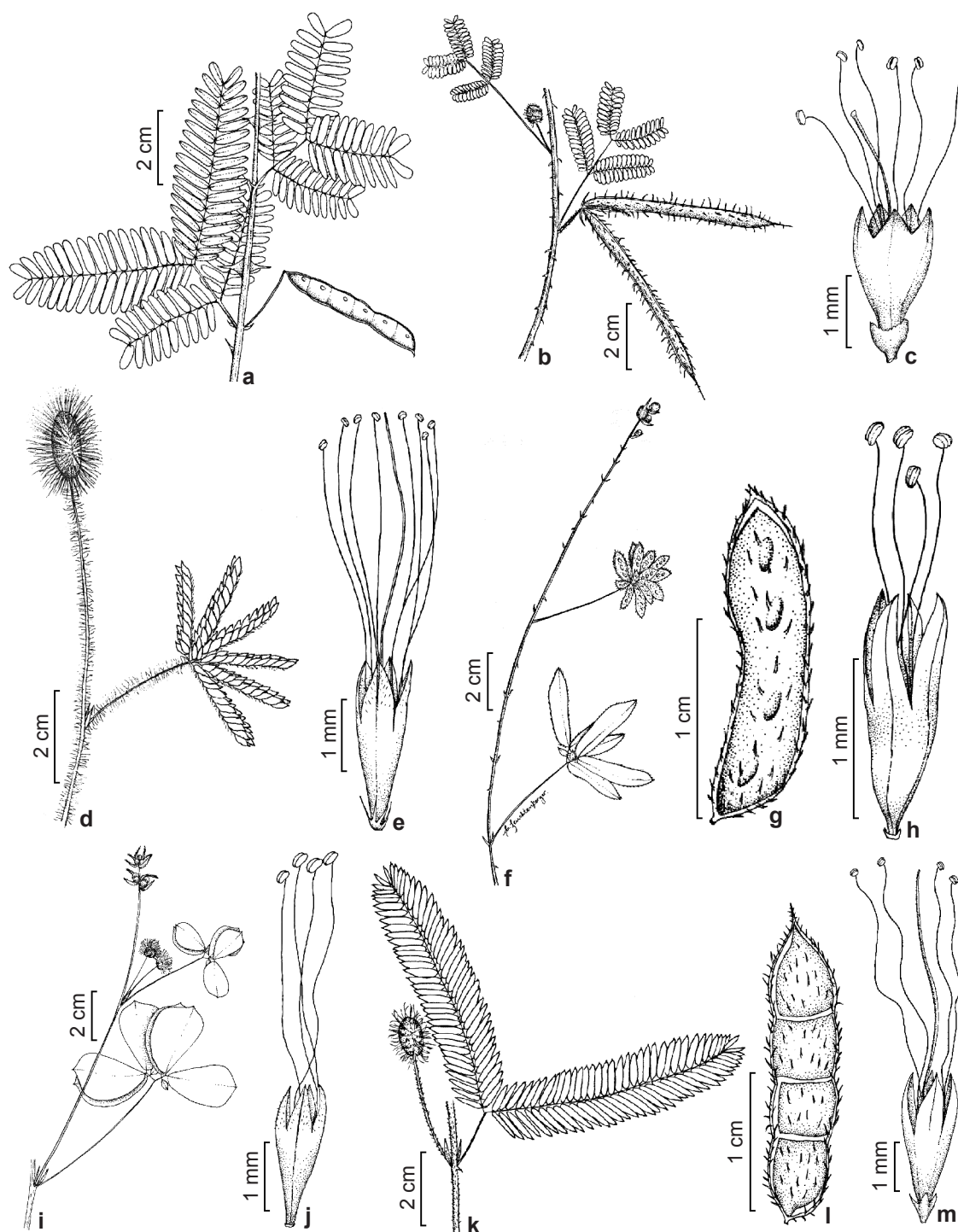


Figure 4 – a. *Mimosa bimucronata* (DC.) Kuntze – branch with fruit (F.M.Alves et al. 426). b-c. *Mimosa candollei* R. Grether – b. branch with fruit; c. flower (F.M.Alves & A.L.B.Sartori 506). d-e. *Mimosa centurionis* Barneby – d. branch; e. flower (F.M.Alves et al. 25). f-h. *Mimosa debilis* var. *angusta* (Benth.) M. Morales & Fortunato – f. branch; g. fruit; h. flower (F.M.Alves et al. 28). i-j. *Mimosa debilis* Humb. & Bonpl. ex Willd. var. *debilis* – i. branch; j. flower (F.M.Alves et al. 51). k-m. *Mimosa distans* Benth. – k. branch; l. fruit; m. flower (F.M.Alves et al. 269).

Minas Gerais and São Paulo, in Cerrado, restinga, grassland and disturbed areas (Dutra & Garcia 2014). This species can be identified by the widely-deltoid stipule, leaflets 5–11 mm long with eucamptodromous venation, and glabrous fruit.

11. *Mimosa candollei* R. Grether, *Novon* 10(1):33. 2000. Fig. 4b-c

Herb prostrate *ca.* 0.5 m tall; branch armed, hispid, prickles recurved; stipules narrow-elliptic. Leaf multijugate, petiole semicylindric, glabrous, (27–)44.5–60.4 mm long; rachis less than 1.2 mm long, spicule and paraphyllidia present; pinnae 2–3 pairs, leaflets 7–18 pairs per pinna, 5.2–12.8 × 1.5–2.2 mm, narrow-elliptic, apex mucronate, adaxial surface glabrous, abaxial surface glabrescent, margin ciliate, venation eucamptodromous, extrafloral nectary absent on secondary rachis, paraphyllidia present. Inflorescence capituliform, axillary, peduncle 6.9–8.4 mm long, pubescent, axis 8–9.8 mm long, glabrous; flower sessile, pentamerous; calyx glabrous, 0.5–0.6 mm long; corolla glabrous, 2.1–2.9 mm long; androecium with 10 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, linear, quadrangular, aculeate, 60 × 5 mm, apex apiculate; seeds 15–21. **Examined material:** Fazenda Agro Comercial Aubi, 5.II.2007, fl. e fr., *F.M. Alves & A.L.B. Sartori* 508 (CGMS); Fazenda Anahí, 27.VII.2004, fr., *G.P. Nunes et al.* 297 (CGMS); Faz. El Dourado, 15.II.2007, fl., *F. M. Alves et al.* 535 (CGMS).

Mimosa candollei is widely dispersed through South America, occurs in the Andes, Colombia, Bolivia, Paraguay, Argentina, Brazil, Venezuela, and in part of Central America in sandy grasslands and savanna (Barneby 1991). In Brazil the species has wide distribution with records for Amazonia, Atlantic Forest, Caatinga and Cerrado (BFG 2015). It presents armed branches, leaves with 2–3 pairs of pinnae and craspedium linear and aculeate outside.

12. *Mimosa centurionis* Barneby, *Mem. New York Bot. Gard.* 65: 644. 1991. Fig. 4d-e

Herb prostrate *ca.* 0.3 m tall; branch unarmed, puberulent; stipules narrow-triangular. Leaf multijugate, petiole grooved, pubescent or hispid, 16–31 mm long; rachis grooved, pubescent, hispid, 1.4–2.4 mm long, spicule present, paraphyllidia absent; pinnae 2–3 pairs, leaflets 7–12 pairs per pinna, 5.6–8.2 × 2.4–2.9 mm, obovate, apex mucronate, adaxial surface glabrous, abaxial surface hispid, margin hispid, venation

eucamptodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, peduncle 44.5–58.3 mm long, hirsute, axis 55.3–65.3 mm long, hirsute; flower sessile, tetramerous; calyx glabrous, 1.7–1.9 mm long; corolla pubescent, 3.1–3.3 mm long; androecium with 4 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, hispid, 2.62–3.83 × 1.33–2.53 mm, apex not apiculate; seeds *ca.* 2.

Examined material: Estrada APA, 16.II.2007, fl., *F. Matos-Alves et al.* 25 (CGMS).

Mimosa centurionis occurs in wet grassland in Paraguay near Rio Apa and its tributaries in adjacent areas of Mato Grosso do Sul (Barneby 1991). The detection of this species in the Brazilian Chaco represents a new occurrence for Flora do Brasil. The species has a herbaceous, prostrate habit, unarmed branches, leaflets with eucamptodromous venation, capituliform inflorescence and androecium with 4 stamens.

13. *Mimosa debilis* Humb. & Bonpl. *ex Willd* var. *angusta* (Benth.) M. Morales & Fortunato, *Candollea* 65(1): 182. 2010.

Fig. 4f-h

Herb erect *ca.* 0.5 m tall; branch armed, glabrous, prickles straight; stipules narrow-elliptic. Leaf unijugate, petiole grooved, glabrous, 29.5–46.9 mm long; rachis less than 1.2 mm long, spicule and paraphyllidia absent; 1 pair of pinnae, leaflets 2 pairs per pinna, 3.2–25.7 × 1.5–5.6 mm, elliptic, the basal pair with one reduced leaflet, narrow-elliptic, apex acute, adaxial and abaxial surface glabrous, margin ciliate, venation craspedodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, peduncle 14–28.8 mm long, glabrescent, axis 15.1–30.8 mm long, glabrous; flower sessile, tetramerous; calyx glabrous, *ca.* 0.5 mm long; corolla pubescent, *ca.* 1.9 mm long; androecium with 4 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, hispid, 16 × 4 mm, apex apiculate; seeds 2–5.

Examined material: Estrada Apa, 16.II.2007, fl. e fr., *F. Matos-Alves et al.* 28 (CGMS).

Mimosa debilis var. *angusta* occurs in Paraguay and in Brazil in Goiás, Minas Gerais, Mato Grosso and Mato Grosso do Sul, in Cerrado and Atlantic Forest of the upper Paraná (Morales & Fortunato 2010). This taxon together with the typical variety are the only ones in the genus,

confirmed in this study, to present one of the leaflets of the basal pair reduced. *Mimosa debilis* var. *angusta* can be identified by the leaflets with acute apex. *Mimosa debilis* var. *debilis* is mainly distinct by leaflets with mucronate apex.

14. *Mimosa debilis* Humb. & Bonpl. ex Willd. var. *debilis*, Sp. Pl. 4(2) 1029. 1893. Fig. 4i-j

Herb erect ca. 0.4 m tall; branch armed, glabrous, prickles recurved; stipules narrow-elliptic. Leaf unijugate, petiole grooved, pubescent, 38–68 mm long; rachis less than 1.2 mm long, spicule present, paraphyllidia absent; 1 pair of pinnae, leaflets 2 pairs per pinna, 5.9–28.1 × 3.2–19.4 mm, obovate, the basal pair with one reduced leaflet, ovate, apex obtuse, mucronate, adaxial and abaxial surface pubescent, margin ciliate, venation craspedodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, peduncle 15.7–18.5 mm long, glabrous, axis 15.9–23.4 mm long, glabrous; flower sessile, tetramerous; calyx glabrous, ca. 0.4 mm long; corolla pubescent, ca. 1.9 mm long; androecium with 4 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, hispid, 11–16 × 3 mm, apex apiculate; seeds 2–4.

Examined material: Fazenda Agro Comercial Aubi, 17.II.2007, fl., *F. Matos-Alves et al.* 51 (CGMS).

Mimosa debilis var. *debilis* occurs in savanna and woody vegetation, gallery forest, rupestrian grasslands, Caatinga, at altitudes from 50 m in Amazonia to 1600 m in Minas Gerais (Barneby 1991). It also occurs in Colombia, Venezuela, Panama, Costa Rica, Suriname, Bolivia, Paraguay, Argentina (Barneby 1991; Dutra & Garcia 2014). *Mimosa debilis* var. *debilis* presents leaflets with mucronate apex. This characteristic helps to identify this taxon and to contrast it with *M.* var. *angusta*, with acute leaflets.

15. *Mimosa distans* Benth. var. *distans*, J. Bot. 4(31): 382. 1841. Fig. 4k-m

Subshrub ca. 0.8 m tall; branch armed, glabrous, prickles straight or incurved; stipules narrow-elliptic. Leaf unijugate, petiole semicylindric, hispid, 7.4–18.5 mm long; rachis less than 1.2 mm long, spicule and paraphyllidia present; 1 pair of pinnae, leaflets 19–22 pairs, 4.5–10.1 × 0.9–2.3 mm, narrow-elliptic, apex mucronate, adaxial surface pubescent, abaxial surface hispid, margin scabrous, venation hyphodromous, extrafloral nectary absent on secondary rachis,

paraphyllidia present. Inflorescence capituliform, axillary, peduncle 25.1–30.8 mm long, hirsute, axis 28.9–32.5 mm long, hirsute; flower sessile, tetramerous; calyx glabrous, ca. 0.5 mm long; corolla glabrous, ca. 2.5 mm long; androecium with 4 stamens, lilac, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, hispid, 23 × 5 mm, apex apiculate; seeds 2–4.

Examined material: Fazenda Agro Comercial Aubi, 16.II.2007, fl. e fr., *F. Matos-Alves et al.* 269 (CGMS); Fazenda Retiro Conceição, 19.I.2010, fl., *B.E.M. Pinto* 635 (CGMS).

Mimosa distans var. *distans* occurs in open sites in Cerrado and Cerrado woodland, sometimes also as a pasture weed and along roadsides. In Brazil it is dispersed throughout Central-West, in Minas Gerais, Bahia, Goiás, Mato Grosso and Paraná (Barneby 1991). Features helping to recognize this taxon are branches with straight to incurved prickles, leaflet with scabrous margin, hyphodromous venation and lilac stamens.

16. *Mimosa dolens* var. *acerba* (Benth.) Barneby, Mem. New York Bot. Gard. 65:583. 1991.

Fig. 5a-b

Subshrub ca. 0.9 m tall; branch unarmed, hispid; stipules widely-deltoid. Leaf unijugate, petiole grooved, hirsute, 34.1–37 mm long; rachis less than 1.2 mm long, spicule and paraphyllidia absent; 1 pair of pinnae, leaflets 5 pairs per pinna, 8.4–11.7 × 2.8–4.1 mm, elliptic, apex mucronate, adaxial surface glabrous, abaxial surface glabrescent, margin hispid, venation eucamptodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, peduncle 87.4–90.7 mm long, hispid, axis 91.7–98.8 mm long, pubescent; flower sessile, tetramerous; calyx hispid, 0.3–0.4 mm long; corolla pubescent, 3–3.1 mm long; androecium with 4 stamens, yellow, anther eglandular; ovary glabrous. Fruit sacellum, obovate, hispid, without measures, apex not apiculate; seeds ca. 4.

Examined material: Fazenda Anahí, 26.VIII.2004, fl., *D.K. Noguchi et al.* 100 (CGMS).

Mimosa dolens var. *acerba* occurs in Argentina, Paraguay, Bolivia and Brazil in Mato Grosso do Sul, Minas Gerais, Paraná, Santa Catarina, São Paulo and Rio Grande do Sul, in Cerrado, grassland (altitude, rupestrian, open), edge of forest or swamp (Dutra & Garcia 2014; BFG 2015). This variety differs from the typical one by the elliptic leaflets and hispid calyx *versus* ovate leaflets and glabrous calyx.

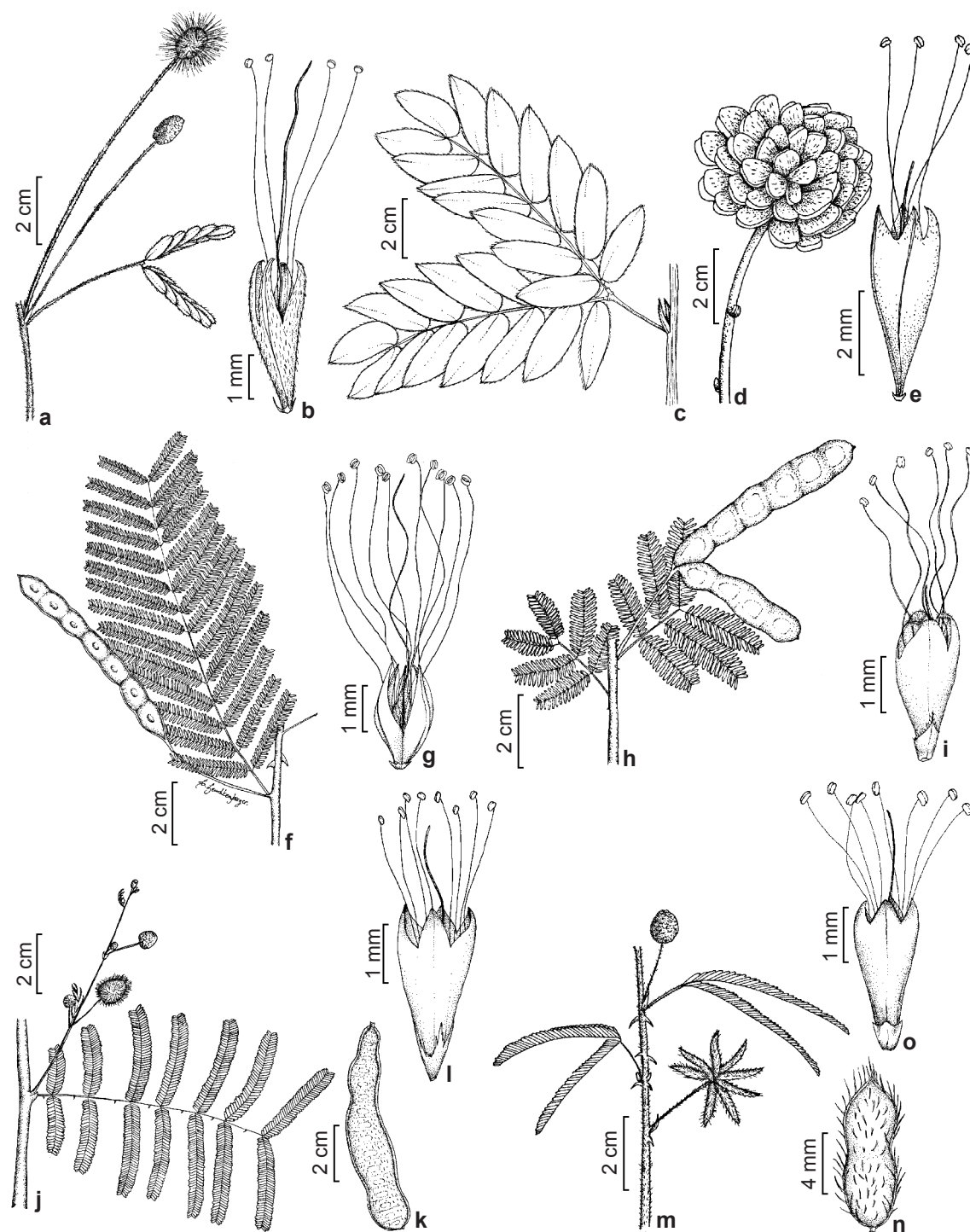


Figure 5 – a-b. *Mimosa dolens* var. *acerba* (Benth.) Barneby – a. branch; b. flower (D. Noguchi et al. 100). c-e. *Mimosa dolens* Vell. var. *dolens* – c. branch; d. fruit; e. flower (G.P. Nunes et al. 76). f-g. *Mimosa glutinosa* Malme – f. branch with fruit; g. flower (f. E.P. Seleme et al. 246; g. D.K. Noguchi et al. 53). h-i. *Mimosa hexandra* Micheli – h. branch with fruit; i. flower. (h. F.S. Carvalho et al. 287, i. F.S. Carvalho et al. 231). j-l. *Mimosa pigra* L. var. *pigra* – j. branch; k. fruit; l. flower. (G.S. Duarte 120). m-o. *Mimosa polycarpa* Kunth var. *polycarpa* – m. branch; n. fruit; o. flower (E.P. Seleme et al. 329).

17. *Mimosa dolens* Vell. var. *dolens*, Fl. Flumin. 11: 34. 1825. Fig. 5c-e

Subshrub *ca.* 0.8 m tall; branch unarmed, hispid; stipules narrow-elliptic. Leaf unijugate, petiole semicylindric, glabrous, 12.3–22.3 mm long; rachis less than 1.2 mm long, spicule present, paraphyllidia absent; 1 pair of pinnae, leaflets 14 pairs per pinna, 11.9–23.4 × 6.1–10.4 mm, ovate, apex mucronate, adaxial and abaxial surface glabrous, margin hispid, venation brochidrodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform, terminal, peduncle 31.1–37 mm long, glabrous, axis 34.7–41.2 mm long, glabrous; flower sessile, tetramerous; calyx glabrous, *ca.* 0.4 mm long; corolla pubescent, 5–5.4 mm long; androecium with 4 stamens, brown, anther eglandular; ovary glabrous. Fruit sacellum, obovate, hispid, 7.6 × 6 mm, apex not apiculate; seeds *ca.* 4.

Examined material: Estrada 1, 25.VIII.2004, fl. e fr., *G.P. Nunes et al.* 76 (CGMS).

According to Barneby (1991), the typical variety of *Mimosa dolens* occurs in Minas Gerais, Goiás, Mato Grosso do Sul, Paraná and São Paulo, in grassland, Cerrado and rupestrian vegetation (Barneby 1991; Dutra & Garcia 2014). This taxon presents a subshrubby habit, unarmed branches and leaflets with hispid margins.

18. *Mimosa glutinosa* Malme, Ark. Bot. 23:51. 1931. Fig. 5f-g

Tree *ca.* 5 m tall; branch armed, puberulent, prickles recurved; stipules deltoid. Leaf multijugate, petiole grooved, glabrous, 10.9–13.5 mm long; rachis grooved, pubescent, 58–107 mm long, spicule and paraphyllidia present; pinnae 12–16 pairs, leaflets 12–26 pairs per pinna, 4.2–4.7 × 1–1.1 mm, narrow-elliptic, apex obtuse, adaxial and abaxial surface glabrous, margin glabrous, venation brochidrodromous, extrafloral nectary absent on secondary rachis, paraphyllidia present. Inflorescence spiciform, axillary, peduncle 5.4–7.1 mm long, glabrous, axis 62.8–85.1 mm long, glabrous; flower sessile, tetramerous; calyx glabrous, *ca.* 0.3 mm long; corolla glabrous, 2.6–2.8 mm long; androecium with 8 stamens, light yellow, anther eglandular; ovary tomentose. Fruit craspedium, oblong, glabrous, 73.3 × 7.6 mm, apex apiculate; seeds 5–11.

Examined material: Estrada 3, 28.III.2004, fr., *G.P. Nunes et al.* 51 (CGMS); Fazenda Flores, 26.I.2009, fl. e fr., *E.P. Seleme et al.* 246 (CGMS); Fazenda Agro Comercial Aubi, 4.XII.2007, fr., *F. Matos-Alves & A.L.B. Sartori* 490 (CGMS).

Mimosa glutinosa occurs along the river Paraguay and its affluents in northern Paraguay near Mato Grosso do Sul (Barneby 1991). This species differs from other species of the genus by a set of characteristics, such as arboreal growth habit, leaflets with obtuse apex and deltoid stipules.

19. *Mimosa hexandra* Micheli, Mém. Soc. Phys. Genève 30(7): 91.1889. Fig. 5h-i

Shrub *ca.* 4 m tall; branch armed, puberulent, prickles recurved; stipules narrow-triangular. Leaf multijugate, petiole grooved, pubescent, 7–7.8 mm long; rachis grooved, pubescent, *ca.* 8.8 mm long, spicule and paraphyllidia present; pinnae in 2–4 pairs, leaflets 11–15 pairs per pinna, 3.4–5.5 × 0.2–1.3 mm, narrow-elliptic, apex mucronate, adaxial and abaxial surface glabrous, margin ciliate, venation brochidrodromous, extrafloral nectary absent on secondary rachis, paraphyllidia present. Inflorescence capituliform, axillary, peduncle 10–18.5 mm long, villose, axis 12–20 mm long, puberulous; flower sessile, trimerous, sometimes tetramerous; calyx glabrous, *ca.* 1.3 mm long; corolla glabrescent, *ca.* 2 mm long; androecium with (5–)6(–7) stamens, white, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, pubescent, 32–45 × 10–12 mm, apex apiculate; seeds 5–7.

Examined material: Fazenda Andréa, 17.IV.2005, fl., *G.P. Nunes et al.* 272 (CGMS); Fazenda Retiro Conceição, 12.01.2010, fl. e fr., *W. Vargas et al.* 4 (CGMS); Fazenda Boa Esperança, 4.IV.2001, fr., *A.L.B. Sartori et al.* 454 (CGMS); Fazenda Retiro Conceição, 16.II.2008, fl. e fr., *E.P. Seleme & A.L.B. Sartori* 205 (CGMS); urban area, 16.I.2005, fr., *D.K. Noguchi et al.* 137 (CGMS).

Mimosa hexandra occurs in seasonally flooded sites in semideciduous or deciduous forest, discontinuous distribution in tropical north and in the tropics and subtropics of South America, abundant in Paraguay, moreover near the Paraguay river and its affluents, extending into the Pantanal of Mato Grosso and Argentina (Barneby 1991). In Brazil it occurs in the Northeast, Central-West and Southeast regions, in Caatinga, Cerrado and Pantanal (Dutra & Morim 2015). This species is distinguished by the narrow-triangular stipule and pubescent craspedium.

20. *Mimosa pigra* L. var. *pigra*, Cent. Pl. I 13–14.1755. Fig. 5j-l

Shrub *ca.* 0.9 m tall; branch armed, hispid, prickles straight or incurved; stipules narrow-triangular. Leaf multijugate, petiole grooved,

hispid, 8.8–10 mm long; rachis grooved, hispid, 57–115 mm long, spicule present, paraphyllidia absent; pinnae in 5–7 pairs, leaflets 14–30 pairs per pinna, 5.8–7.8 × 1.5–1.8 mm, narrow-elliptic, apex mucronate, adaxial surface glabrescent, abaxial surface pubescent, margin hirsute, venation eucamptodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, peduncle 7.9–14 mm long, pubescent and setose, axis 15.5–21.6 mm long, setose; flower sessile, tetramerous; calyx glabrous, 1–1.5 mm long; corolla pubescent, 2.6–2.8 mm long; androecium with 8 stamens, yellow, anther eglandular; ovary pubescent. Fruit craspedium, elliptic, hispid, 60–73 × 8–14 mm, apex apiculate; seeds 14–20.

Examined material: Rio Paraguai, 22.II.2010, sterile, *G.S.V. Duarte & V.J. Pott 120* (CGMS); urban area, 16.I.2005, fl. e fr., *D.K. Noguchi et al. 141* (CGMS).

Mimosa pigra var. *pigra* is abundant along the river Paraná in Paraguay and river la Plata in Argentina (Barneby 1991). The species is characterized by armed, hispid branches, straight and incurved prickles, capituliform inflorescence and hispid craspedium.

21. *Mimosa polycarpa* Kunth var. *polycarpa*, *Mimosas* 8-9, pl. 3. 1819. Fig. 5m-o

Subshrub *ca.* 1.6 m tall; branches armed, puberulent, prickles straight; stipules deltoid. Leaf unijugate, petiole grooved, hispid, 7.6–7.9 mm long; rachis less than 1.2 mm long, spicule and paraphyllidia present; 1 pair of pinnae, leaflets 9–25 pairs per pinna, 6.2–8.2 × 1.4–1.6 mm, narrow-elliptic, apex mucronate, adaxial surface glabrous, abaxial surface glabrescent, margin hispid, venation camptodromous, extrafloral nectary absent on secondary rachis, paraphyllidia present. Inflorescence capituliform, axillary, peduncle 20.7–20.8 mm long, pubescent, hispid, axis *ca.* 25 mm long, pubescent; flower sessile, tetramerous; calyx glabrous, 0.7–0.8 mm long; corolla pubescent, 2.7–2.8 mm long; androecium with 4 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, hispid, 9.8 × 3.3 mm, apex apiculate; seeds 2–4.

Examined material: Fazenda Retiro Conceição, 25.VI.2009, fr., *E.P. Seleme et al. 356* (CGMS); Fazenda Flores, 26.I.2009, fr., *E.P. Seleme et al. 248* (CGMS); Fazenda Retiro Conceição, 17.III.2009, fl. e fr., *E.P. Seleme et al. 339* (CGMS); Fazenda Agro Comercial Aubi, 4.XII.2007, fl. e fr., *F. Matos-Alves et al. 482* (CGMS); Estrada Bocaiuval 1, 15.IV.2005, fl. e fr., *D.K. Noguchi et al. 87* (CGMS).

Mimosa polycarpa var. *polycarpa* occurs near rocky outcrops and in sandy slopes of inter-Andean valleys (Barneby 1991). The branches with straight prickles, deltoid stipules and leaflets 1.4–1.6 mm wide allow the distinction of the typical variety in relation to var. *spgazzinii*.

22. *Mimosa polycarpa* Kunth var. *spgazzinii* (Pirota) Burkart. *Darwiniana* 8: 151. 1948.

Subshrub *ca.* 0.8 m tall; branches armed, puberulent, prickles recurved; stipules narrow-triangular. Leaf unijugate, petiole semicylindric, hispid, 10.3–16.5 mm long; rachis less than 1.2 mm long, spicule and paraphyllidia present; 1 pair of pinnae, leaflets 16–22 pairs per pinna, 2.1–6.5 × 0.4–0.5 mm, narrow-elliptic, apex mucronate, adaxial and abaxial surface glabrous, margin hirsute, venation camptodromous, extrafloral nectary absent on secondary rachis, paraphyllidia present. Inflorescence capituliform, axillary, peduncle 8.9–11.6 mm long, pubescent and setose, axis 12.5–12.8 mm long, pubescent; flower sessile, tetramerous; calyx glabrous, *ca.* 0.3 mm long; corolla pubescent, 1.9–2.2 mm long; androecium with 4 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, hispid to hirsute, without measures, apex apiculate; seeds 2–4.

Examined material: Dique 6, 15.IV.2005, fl. e fr., *G.P. Nunes et al. 184* (CGMS); área urbana, 16.I.2005, fr., *D.K. Noguchi et al. 141* (CGMS).

Mimosa polycarpa var. *spgazzinii* occurs in open woody vegetation, abundant in certain regions of Paraguay, Argentina and in the Pantanal in Mato Grosso do Sul (Barneby 1991). This taxon can be differentiated from the typical variety by recurved prickles on the branches, narrow-triangular stipules and leaflets 0.4–0.5 mm wide *versus* straight prickles on the branches, deltoid stipules and leaflets 1.4–1.6 mm wide.

23. *Mimosa sensibilis* var. *sensibilis* Griseb., *Symb. Fl. Argent.*: 19. 1879 Fig. 6a-c

Shrub *ca.* 2.5 m tall; branch armed, strigose, prickles recurved; stipules narrow-elliptic. Leaf unijugate, petiole grooved, glabrous, 14.9–30.1 mm long; rachis less than 1.2 mm long, spicule present, paraphyllidia absent; 1 pair of pinnae, leaflets 2 pairs per pinna, 14.8–27.6 × 6.1–11.5 mm, elliptic, apex mucronate, adaxial and abaxial surface glabrous, margin ciliate, venation brochidromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform,

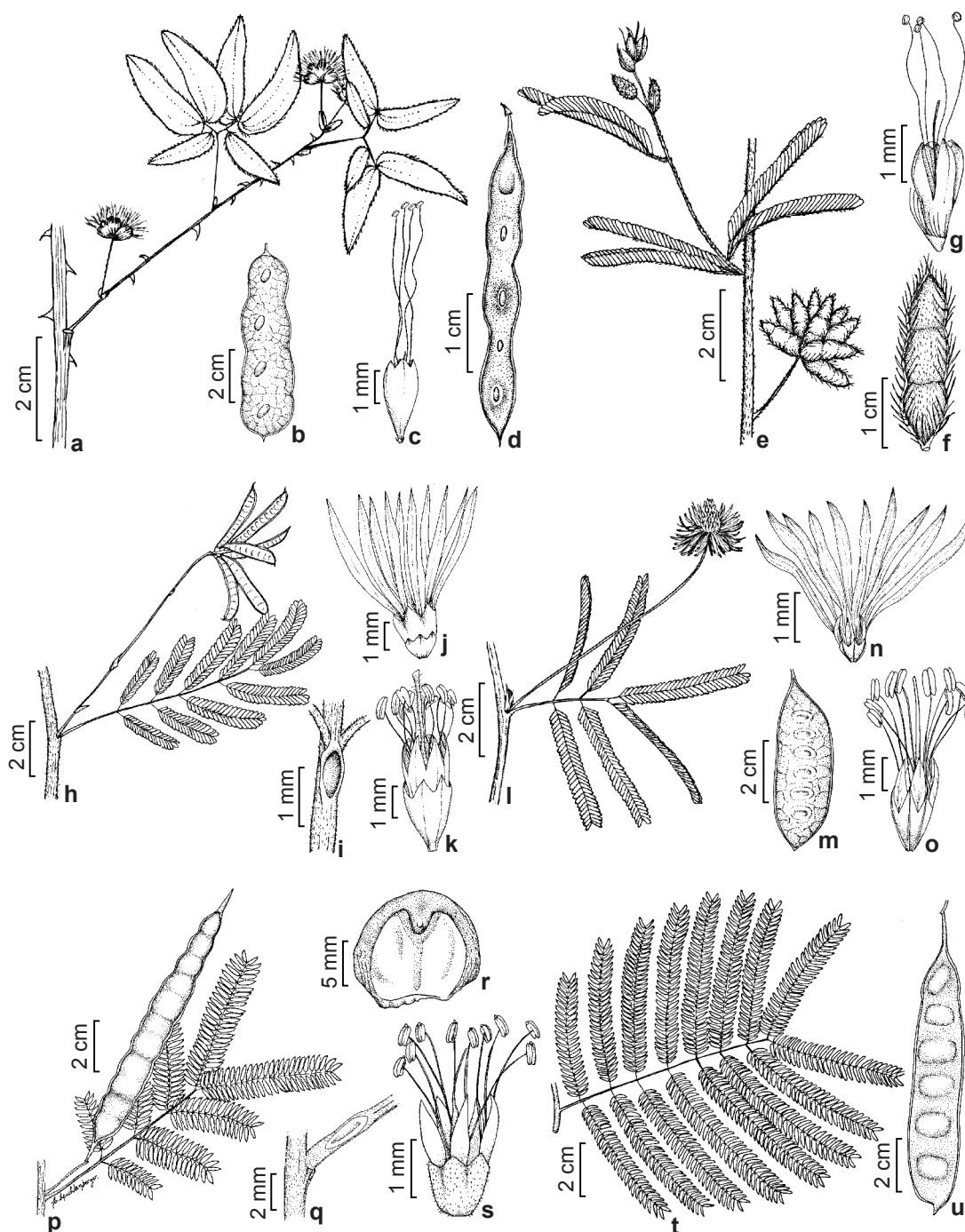


Figure 6 – a-c. *Mimosa sensibilibs* Griseb. var. *sensibilibs*. – a. branch; b. fruit; c. flower (C.S.Souza et al. 47). d. *Mimosa somnians* Humb. & Bonpl. ex Willd. var. *somnians* – fruit (L.E.A.M. Lescano et al. 19). e-g. *Mimosa xanthocentra* var. *subsericea* (Benth.) Barneby – e. branch with fruit; f. fruit; g. flower (G.P.Nunes et al. 143). h-k. *Neptunia plena* (L.) Benth. – h. branch; i. nectary; j. flower with staminodes; k. hermaphrodite flower. (E.Souza-Lima CGMS 41378). l-o. *Neptunia pubescens* Benth. – l. branch; m. fruit; n. flower with staminodes; o. hermaphrodite flower (C.S.Souza et al. 49). p-s. *Parapiptadenia rigida* (Benth.) Brenan. – p. branch with fruit; q. nectary; r. winged seed; s. flower. (p.q.r. E.P. Seleme et al. 267; s. E.P. Seleme & A.L.B. Sartori 104); t-u. *Piptadenia viridiflora* (Kunth) Benth. – t. leaf. u. fruit (A.Restel 1).

axillary, peduncle 3–12.1 mm long, glabrescent, axis 9.9–14.3 mm long, glabrous; flower sessile, tetramerous; calyx glabrous, 0.5–0.7 mm long; corolla pubescent, 1.6–3.1 mm long; androecium with 3–4 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, glabrous, 78 × 20 mm, apex apiculate; seeds 1–5.

Examined material: Fazenda Costa Mesa, 4.IV.2001, fl. e fr., *A.L.B. Sartori et al.* 459 (CGMS); Fazenda Agro Comercial Aubi, 16.II.2007, fr., *F.M. Alves et al.* 80 (CGMS); Faz. El Dorado, 15.II.2007, fl., *F.M. Alves et al.* 532 (CGMS).

Mimosa sensibilis var. *sensibilis* occurs in Bolivia, Paraguay, Argentina and Brazil in open woody formations and forest edges, in Bosque Seco Chiquitano, Pantanal and Andean Yungas (Morales & Fortunato 2010). We followed Morales & Fortunato (2010), who recognize *M. sensibilis* var. *urucumensis* Barneby as synonym of *M. sensibilis* var. *sensibilis*. Characters for identification of this taxon include the branches with recurved prickles, leaf with one pair of pinnae, elliptic leaflets and capituliform inflorescence.

24. *Mimosa somnians* var. *somnians* Humb. & Bonpl. ex Willd., Sp. Pl. 4: 1036. 1806.

Fig. 6d

Subshrub ca. 1.2 m tall; branch armed, hispid, prickles straight; stipules deltoid. Leaf multijugate, petiole grooved, glabrescent, 13–13.5 mm long; rachis semicylindric, glabrous, 75–95 mm long, spicule present, paraphyllidia absent; pinnae 7–8 pairs, leaflets 31–39 pairs per pinna, 5–5.6 × 1–1.3 mm, narrow-elliptic, apex mucronate, adaxial and abaxial surface glabrous, margin ciliate, venation craspedodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform; flowers not observed. Fruit craspedium, narrow-elliptic, glabrous, 30–65 × 4–6 mm, apex apiculate; seeds 10–11.

Examined material: Estrada 1, 25.VIII.2004, fr., *L.E.A.M. Lescano et al.* 19 (CGMS).

The typical variety of *Mimosa somnians* occurs in Mexico, Argentina, Colombia, Venezuela, Bolivia and Brazil (Bahia, Ceará, Minas Gerais, Pernambuco, Tocantins, Distrito Federal) in savannas and slopes, rupestrian grasslands, woody formations at edges of gallery forest and open and disturbed sites (Barneby 1991; Dutra & Garcia 2014). *Mimosa somnians* can be recognized by a set of characteristics such as subshrubby habit, armed branch, straight prickles, deltoid stipules, 7–8 pairs of pinnae and narrow-elliptic leaflet with craspedodromous venation. The subshrubby habit

is predominant in plants collected in the Brazilian Chaco, however it can grow to a shrub, according to Barneby (1991).

25. *Mimosa xanthocentra* var. *subsericia* (Benth.) Barneby, Brittonia 37(2):152-153. 1985.

Fig. 6e-g

Subshrub 0.7–0.9 m tall; branches unarmed, scabrous; stipules narrow-elliptic. Leaf unijugate, petiole semicylindric, hispid, 6.7–8.3 mm long; rachis less than 1.2 mm long, spicule absent, paraphyllidia present; 1 pair of pinnae, leaflets 13–33 pairs per pinna, 6–6.8 × 1.5 mm, narrow-elliptic, apex mucronate, adaxial surface pubescent, abaxial surface hirsute, margin scabrous, venation hypodromous, extrafloral nectary absent on secondary rachis, paraphyllidia present. Inflorescence capituliform, axillary, peduncle ca. 4.4 mm long, hispid, axis ca. 4.4 mm long, hirsute; flower sessile, tetramerous; calyx glabrous, 1.7–1.9 mm long; corolla pubescent, 2.2–2.6 mm long; androecium with 4 stamens, yellow, anther eglandular; ovary glabrous. Fruit craspedium, elliptic, hispid, 27.6 × 6.6 mm, apex apiculate; seeds 3–4.

Examined material: Fazenda Anahí, 20.XII.2004, fl. e fr., *G.P. Nunes et al.* 143 (CGMS); near town, Estrada 3, 25.VIII.2004, fl., *G.P. Nunes et al.* 45 (CGMS); Estrada 1, 25.VIII.2004, fr., *G.P. Nunes et al.* 82 (CGMS).

Mimosa xanthocentra var. *subsericea* occurs in Venezuela, Paraguay, Argentina, Bolivia and Brazil in Distrito Federal, Goiás, Minas Gerais, Mato Grosso, Pará, Paraná, Santa Catarina, São Paulo and Tocantins, in cerrado and rupestrian grassland (Barneby 1991; Dutra & Garcia 2014). This taxon differs from the others by presenting a scabrous cover on the branches.

Neptunia Lour.

Subshrub; branch unarmed, striate, glabrous or hispid; stipules persistent, cordiform or deltoid. Leaf multijugate, petiole semicylindric, glabrous or villose and barbed, extrafloral nectary present or absent; rachis semicylindric, glabrous or villose, spicule and paraphyllidia absent; leaflets opposite, narrow-elliptic, apex mucronate, base oblique, adaxial and abaxial surface glabrous, margin ciliate, venation brochidodromous, extrafloral nectary absent on secondary rachis, paraphyllidia absent. Inflorescence capituliform or in raceme, axillary, glabrous; flower pedicellate, pentamerous, heteromorphic, flower peripheral sterile with staminodia petaloid, without gynoeceum; flower central hermaphrodite, calyx glabrous; corolla

gamopetalous, glabrous; androecium with 10 stamens, apostemonous, yellow, anther glandular; ovary glabrous or sericeous. Fruit legume, dry, narrow-wide-elliptic, glabrous, apex apiculate.

26. *Neptunia plena* (L.) Benth., J. Bot. (Hooker). 4(31): 355. 1841. Fig. 6h-k

Subshrub *ca.* 0.7 m tall; branch hispid; stipules cordiform. Leaf with petiole villose and barbed, 18.6–20.8 mm long, extrafloral nectary present; rachis villose, 34–36 mm long; pinnae 4 pairs, leaflets 14–17 pairs per pinna, 5.8 × 1.3 mm. Inflorescence in raceme, peduncle 67.3–77.1 mm long, axis 70.4–74.4 mm long; flower peripheral 6.2 mm long; flower central 5.7 mm long; calyx 1.7–2 mm long; corolla 3.1–4.2 mm long; ovary sericeous. Fruit narrow-elliptic, 15–25 × 7–9 mm; seeds 5–10.

Examined material: Fazenda Campo Florido 13.XII.2011, fl. e fr., E.S. Souza-Lima & A.L.B. Sartori (CGMS 41378).

Neptunia plena occurs in the coastal to the southern region of North America, in Central America and northern South America and tropical Asia (Windler 1966). In Brazil it occurs in the North, Central-West and Northeast regions, in Caatinga and Cerrado (BFG 2015). *Neptunia plena* has cordiform stipules, villose and barbed petiole, nectary present on petiole, villose rachis, 14–17 pairs of leaflets per pinna, sericeous ovary, narrow-elliptic fruit. Such characteristics are different from *N. pubescens*, with deltoid stipules, glabrous petiole, nectary absent, glabrous rachis, 36–48 pairs of leaflets per pinna, glabrous ovary and wide-elliptic fruit.

27. *Neptunia pubescens* Benth., J. Bot. (Hooker) 4(31): 356. 1841. Fig. 6l-o

Subshrub *ca.* 1.2 m tall; branch glabrous; stipules deltoid. Leaf with petiole glabrous, 25.2–29.1 mm long, extrafloral nectary absent; rachis glabrous, 17.5–40.4 mm long; pinnae 2–3 pairs, leaflets 36–48 pairs per pinna, 5.6–3.5 × 0.9–1.1 mm. Inflorescence capituliform, peduncle 8.2–9.3 mm long, axis 8.4–10.5 mm long; flower peripheral 3.3–3.5 mm long; flower central 5.3–6.9 mm long, calyx 1.8–2.9 mm long; corolla *ca.* 3–4 mm long; ovary glabrous. Fruit wide-elliptic, 56.6 × 20 mm; seeds 6–13.

Examined material: Estrada 12, 16.I.2005, fl., L.E.A.M. Lescano et al. 135 (CGMS); Fazenda Agro-Comercial Aubi, 16.II.2007, fr., F.M. Alves et al. 9 (CGMS); Fazenda Retiro Conceição 27.II.2010, fl. e fr., C.S. Souza

et al. 49 (CGMS); Fazenda Flores, 20.XI.2008, fl., A.K.D. Salomão & F.M. Alves 376 (CGMS).

Neptunia pubescens is distributed from the coastal plain of southern North America, west coast of Central America to northern Argentina (Windler 1966). In Brazil it was recorded only for the Pantanal wetland of Mato Grosso do Sul (BFG 2015). *Neptunia pubescens* presents a set of characteristics which lead to its identification such as deltoid stipules, glabrous petiole, nectary absent, glabrous rachis, 36–48 pairs of leaflets per pinna, glabrous ovary and wide-elliptic fruit, contrasting with *N. plena* described above.

28. *Parapiptadenia rigida* (Benth.) Brenan, Kew Bull. 17(2): 228. 1963. Fig. 6p-s

Tree 6–10 m tall; branch unarmed, striate, tomentose; stipules caducous. Leaf multijugate, petiole grooved, pubescent, 12.4–15.3 mm long, extrafloral nectary present; rachis grooved, pubescent, 23–77 mm long, extrafloral nectary, spicule and paraphyllidia absent; pinnae 5–7 pairs, leaflets opposite or subopposite, *ca.* 17 pairs per pinna, 5.5–9.4 × 1.3–1.7 mm, narrow-elliptic, apex apiculate, base oblique, adaxial surface glabrescent, abaxial surface glabrous, margin glabrous, venation actinodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence spiciform, axillary, peduncle 7.1–8 mm long, pubescent, axis 30.9–38.5 mm long, pubescent; flower sessile, pentamerous, homomorphic, hermaphrodite; calyx glabrous, 0.6–0.9 mm long; corolla dialipetalous, glabrous, 1.7–2.2 mm long; androecium with 10 stamens, apostemonous, yellow, anther glandular; ovary not observed. Fruit legume, dry, oblong, glabrous, 105–107 × 8–9 mm, apex apiculate; seeds 11–13.

Examined material: Fazenda Flores, 19.XI.2008, fl. e fr., E.P. Seleme et al. 104 (CGMS); Fazenda Anai, 30.VIII.2008, A. Restel & A.L.B. Sartori 5 (CGMS); Fazenda Agro Comercial Aubi, 5.XII.2007, fl., F.M. Alves & A.L.B. Sartori 496 (CGMS); Fazenda Retiro Conceição, 16.XII.2008, fr., E.P. Seleme & A.L.B. Sartori 211 (CGMS); Fazenda Santa Verginia, 16.XII.2009, fl., D.R.C. Padilha et al. 44 (CGMS).

Parapiptadenia rigida occurs in Argentina, Paraguay, Uruguay and Brazil (Lima & Lima 1984); in Brazil from São Paulo to Rio Grande do Sul, in Seasonal Deciduous and Ombrophilous Forests (BFG 2015). Our collections in the Brazilian Chaco extend the distribution of this species in Brazil. *Parapiptadenia rigida* could be mistaken for *Piptadenia viridiflora*, but *P. rigida* has unarmed branches, while *P. viridiflora* has armed branches.

29. *Piptadenia viridiflora* (Kunth) Benth., J. Bot. 4(31): 337. 1841. Fig. 6t-u

Tree *ca.* 3 m tall; branch armed, striate, glabrous, spines recurved; stipules caducous. Leaf multijugate, petiole grooved, floccose, 16.7–20 mm long, extrafloral nectary present; rachis grooved, floccose, 40.8–53 mm long, extrafloral nectary present, spicule and paraphyllidia absent; pinnae 6–13 pairs, leaflets opposite, 31–33 pairs per pinna, 2.4–5.5 × 0.9–1.4 mm, oblong, apex obtuse, base oblique, adaxial surface glabrous, abaxial surface glabrescent, margin glabrous, venation brochidodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence spiciform; flowers not observed. Fruit legume, dry, elliptic, glabrous, 95–100 × 20–22 mm, apex apiculate; seeds 4–7.

Examined material: urban area, 30.VIII.2008, fr., *A. Restel 1* (CGMS).

Piptadenia viridiflora occurs in the Central-West, Southeast and Northeast regions, in Seasonal Deciduous Forest (BFG 2015). This plant could be confused with species of *Parapiptadenia* (see comments on previous species).

***Prosopis* L.**

Tree; branch armed, striate, glabrous, spines straight; stipules persistent or triangular. Leaf uni-multijugate, petiole cylindrical, glabrous or pubescent, extrafloral nectary present or absent; rachis cylindrical, puberulent, extrafloral nectary absent or present, spicule and paraphyllidia absent; leaflets opposite, narrow-elliptic, elliptic, apex acuminate or obtuse, base oblique or obtuse, adaxial and abaxial surface glabrous, margin glabrous or ciliate, venation actinodromous or eucamptodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence in raceme, axillary, glabrous or pubescent, glabrous or pubescent; flower pedicellate, pentamerous, homomorphic, hermaphrodite; calyx glabrous or pubescent; corolla dialipetalous, pubescent, velutinous or villose; androecium with 8–10 stamens, apostemonous, white or vinaceous, anther glandular; ovary not observed. Fruit drupaceous loment, fleshy, elliptic, falcate or oblong, inflated, glabrous, apex apiculate.

30. *Prosopis alba* Griseb., Abh. Königl. Ges. Wiss. Göttingen 19: 131. 1874. Fig. 7a-c

Tree 3.5–8 m tall. Leaf uni-multijugate, petiole pubescent, 9.3–37 mm long, extrafloral nectary present; rachis less than 1.2 mm long,

extrafloral nectary absent; pinnae 1–2 pairs, leaflets 23–68 pairs per pinna, 9.2–12 × 2.2–2.3 mm, narrow-elliptic, apex obtuse, base oblique, margin ciliate, venation eucamptodromous. Inflorescence with peduncle 69.4–80 mm long, pubescent, axis *ca.* 69 mm long, pubescent; calyx pubescent, *ca.* 1 mm long; corolla villose, 3–3.5 mm long; androecium with 8 stamens, white. Fruit elliptic, 150–230 × 10–17 mm; seeds 14–29.

Examined material: Fazenda Retiro Conceição, 28.X.2010, fr., *F.M. Alves et al. 600*; Fazenda Retiro Conceição 14.IX.2009, fl., *E.P. Seleme & I.M. Neves 387* (CGMS); Fazenda Comercial Agro Aubi, 29.VIII.2007, fl., *F.M. Alves et al. 181* (CGMS).

Prosopis alba occurs in subtropical plains in Argentina and Uruguay, Paraguay, and in semiarid areas of Bolivia and Peru (Burkart & Simpson 1977). The occurrence of this species in the Brazilian Chaco broadens its distribution limits in South America and Brazil. Among the species confirmed by our study, *P. alba* and *P. nigra* due to the presence of leaves with 1–2 pairs of pinnae, leaflets no longer than 12 mm, could be confused and mislead identification. *Prosopis alba* has a set of characteristics allowing its recognition, such as petiole 9.3–37 mm long, leaflets 9.2–12 × 2.2–2.3 mm, fruit with 14 or more seeds. *Prosopis nigra* presents petiole 3.2 mm long, leaflets 4.8–6 × 1.1–1.8 mm, fruit with 3–10 seeds.

31. *Prosopis nigra* Hieron., Bol. Acad. Nac. Cordova 4: 283. 1881. Fig. 7d-e

Tree 2.5–4 m tall. Leaf uni-multijugate, petiole pubescent, *ca.* 3.2 mm long, extrafloral nectary present; rachis less than 1.2 mm long, extrafloral nectary absent; pinnae 1–2 pairs, leaflets 15–26 pairs per pinna, 4.8–6 × 1.1–1.8 mm, narrow-elliptic, apex obtuse, base oblique, margin ciliate, venation eucamptodromous. Flowers not observed. Fruit elliptic, 81–140 × 13–14 mm; seeds 3–10.

Examined material: Fazenda Santa Verginia, 1.VI.2011, estéril, *T.E. Lima & F.J. Kochanovski 151* (CGMS); Fazenda Ovo de Ema, 5.XII.2011, fr., *A.L.B. Sartori 1108* (CGMS).

Prosopis nigra occurs from southern Bolivia to northern Argentina and Paraguay and western Uruguay (Burkart & Simpson 1977). In Brazil it is cited only for the South region, in Seasonal Deciduous Forest (BFG 2015). The occurrence of this species in the Brazilian Chaco widens its distribution in Brazil. *Prosopis nigra* is characterized by the shorter petiole (3.2 mm long), leaflets 4.8–6 × 1.1–1.8 mm, and fruit with 3–10 seeds.



Figure 7 – a-c. *Prosopis alba* Griseb. – a. branch; b. fruit; c. flower (a.c. E.P. Seleme & I.M. Neves 387; b. F.M. Alves et al. 600). d-e. *Prosopis nigra* Hieron. – d. branch; e. fruit (A.L.B. Sartori 1108). f-h. *Prosopis rubriflora* Hassl. – f. branch; g. fruit; h. flower (f.h. E.P. Seleme et al. 319; g. M.A. Farinaccio et al. 894). i-k. *Prosopis rusCIFolia* Griseb. – i. branch; j. fruit; k. flower. (T.E.Lima et al. 168).

32. *Prosopis rubriflora* Hassler, Repert. Spec. Nov. Regni Veg. 8: 552. 1910. Fig. 7f-h

Tree 2–4 m tall. Leaf multijugate, petiole pubescent, 6.8–14 mm long, extrafloral nectary absent; rachis cylindrical, puberulent, ca. 35 mm long, extrafloral nectary present; pinnae 4–7 pairs, leaflets 21–23 pairs per pinna, 1.9–3.0 × 0.6–0.7 mm, narrow-elliptic, apex obtuse, base oblique, margin ciliate, venation eucamptodromous. Inflorescence with peduncle 10.3–20 mm long, pubescent, axis 72.8–125 mm long, pubescent; calyx pubescent, 1.5–2 mm long; corolla pubescent, 4–4.5 mm long; androecium with 10 stamens, vinaceous. Fruit falcate, 67–140 × 10–12 mm; seeds 5–20.

Examined material: Fazenda Retiro Conceição, 17.II.2009, fl., *E.P. Seleme et al.* 319 (CGMS); Fazenda Santa Vergínia, 6.III.2012, fl. e fr., *M.A. Farinaccio et al.* 894 (CGMS); Fazenda Agro Comercial Aubi, 16.II.2007, fl. e fr., *F.M. Alves et al.* 65 (CGMS); Fazenda Anai, 30.VIII.2008, fr., *A. Restel* 4 (CGMS); Fazenda Anai, 30.VIII.2008, fl. e fr., *M.M. Menegazzo* 1 (CGMS); Fazenda Retiro Conceição, 12.I.2010, fl. e fr., *W. Vargas et al.* 1 (CGMS); Fazenda Amonguijá, 15.II.2007, fl. e fr., *F.M. Alves et al.* 520 (CGMS).

Prosopis rubriflora occurs in northeastern Paraguay and adjacent areas in Brazil (Burkart & Simpson 1977); in Brazil it is referred to the Pantanal (BFG 2015), however, here it is cited for the first time for the Brazilian Chaco. *Prosopis rubriflora* differs from the other species of the genus confirmed in our study by the petiole without extrafloral nectary and the smaller leaflets (1.9–3.0 × 0.6–0.7 mm), and the vinaceous stamens.

33. *Prosopis ruscifolia* Griseb., Abh. Königl. Ges. Wiss. Göttingen 19: 130–131. 1874. Fig. 7i-k

Tree ca. 7 m tall. Leaf unijugate, petiole glabrous, 10.6–35.7 mm long, extrafloral nectary present; rachis less than 1.2 mm long, extrafloral nectary absent; 1 pair of pinnae, leaflets 3–5 pairs per pinna, 31–79 × 13.9–26.4 mm, elliptic, apex acuminate, base oblique, margin glabrous, venation actinodromous. Inflorescence with peduncle ca. 13.2 mm long, glabrous, axis ca. 90 mm long, glabrous; calyx glabrous, 1–1.5 mm long; corolla velutinous, 3–4 mm long; androecium with 10 stamens, white. Fruit oblong, 117–220 × 12 mm; seeds 13–23.

Examined material: urban area, 24.X.2008, fl. e fr., *A.L.B. Sartori* (CGMS 23100); Dique 7, 15.IV.2005, fl., *L.E.A.M. Lescano et al.* 194 (CGMS); Hotel dos Camalotes, 5.IV.2001, fr. *A.L.B. Sartori et al.* 462 (CGMS); Fazenda Flores, 16.XII.2008, fr., *E.P. Seleme*

& *A.L.B. Sartori* 189 (CGMS); Fazenda Agro Comercial Aubi, 3.XII.2007, fr., *F.M.A. & A.L.B. Sartori* 474 (CGMS); Fazenda Quebracho, 30.IX.2011, fl. e fr., *T.E. Lima et al.* 168 (CGMS).

Prosopis ruscifolia is distributed in eastern Bolivia, southern Paraguay, mid northern Argentina, and a small area of Brazil (Burkart & Simpson 1977). In the Brazilian territory it is cited for Central-West and Northeast in Seasonal Deciduous Forest and Cerrado (BFG 2015). The occurrence in the Brazilian Chaco is new and perhaps unique to Brazil, considering that the citation for the Caatinga of the Northeast is doubtful (Queiroz 2009). *Prosopis ruscifolia* is distinct from the other confirmed species for presenting one pair of pinnae, and elliptic leaflets longer than 20 mm.

34. *Samanea tubulosa* (Benth.) Barneby & J. W. Grimes, Mem. New York Bot. Gard. 74(1): 121. 1996. Fig. 8a-c

Tree 3–6 m tall; branches unarmed, striate, velutine; stipules caducous. Leaf multijugate, petiole grooved, velutine, 33.2–48.3 mm long, extrafloral nectary present; rachis cylindrical, pubescent, 12–14 mm long, extrafloral nectary absent, spicule present, paraphyllidia absent; pinnae 3–6 pairs, leaflets opposite, 3 pairs per pinna, 34–45 × 24–27 mm, obovate, apex mucronate, base oblique, obtuse, adaxial surface tomentose, abaxial surface velutine, margin ciliate, venation brochidodromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence umbelliform, axillary, peduncle 5.8–63.4 mm long, velutine, axis not observed; flower sessile, pentamerous, homomorphic, hermaphrodite; calyx velutine, 6.8–8.4 mm long; corolla gamopetalous, velutinous, 8.5–10.8 mm long; androecium polystaminate, monadelphous, brown, anther eglandular; ovary velutine. Fruit bacoid legume, fleshy, semi-cylindric, pubescent, 140–180 × 22–25 mm, apex apiculate; seeds ca. 17. **Examined material:** Fazenda Agro-Comercial Aubi, 10.V.2007, fr., *F. Matos-Alves et al.* 419 (CGMS); idem, 17.II.2007, fl., *F. Matos-Alves et al.* 44 (CGMS); idem, 25.X.2008, fl. e fr., *A.L.B. Sartori et al.* (CGMS 23102); roadside, 25.VIII.2004, fr., *G.P. Nunes et al.* 54 (CGMS).

Samanea tubulosa occurs in the North and Central-West regions of Brazil, in Seasonal Deciduous and Semideciduous Forests and in Cerrado (BFG 2015). The obovate, tomentose and velutinous leaflet, the umbelliform inflorescence and the bacoid legume are characteristics for recognizing this species.

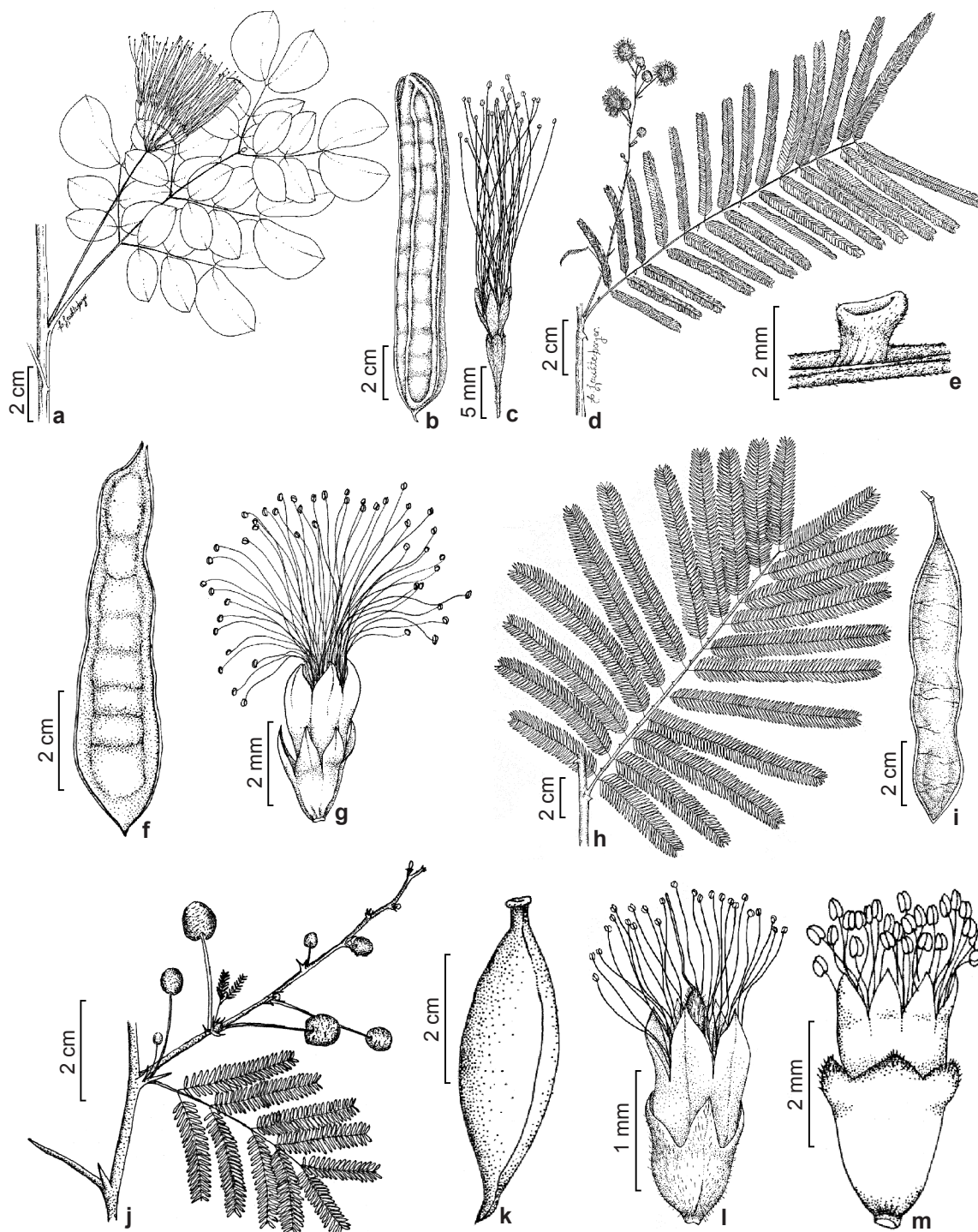


Figure 8 – a-c. *Samanea tubulosa* (Benth.) Barneby & J.W. Grimes – a. branch; b. fruit; c. flower (a.c. *F.M. Alves et al.* 44; b. *F.M. Alves et al.* 419). d-g. *Senegalia lasiophylla* (Benth.) Seigler & Ebinger – d. branch; e. stipitate nectary; f. fruit; g. flower (*F.M. Alves et al.* 406). h-i. *Senegalia martii* (Benth.) Seigler & Ebinger – h. branch; i. fruit (*F.M. Alves et al.* 464). j-l. *Vachellia caven* (Molina) Seigler & Ebinger – j. branch; k. fruit; l. flower (j,l. *T.E. Lima et al.* 150; k. *T.E. Lima et al.* 169). m. *Vachellia farnesiana* (L.) Wight & Arn. – flower (*E.P. Seleme et al.* 367).

Senegalia Raf.

Tree; branches armed, striate, glabrous or glabrescent, prickles straight or recurved; stipules caducous. Leaf multijugate, petiole cylindrical or grooved, pubescent, extrafloral nectary present; rachis grooved, glabrous, extrafloral nectary present, spicule absent, paraphyllidia present; leaflets opposite or subopposite, narrow-elliptic, falcate, apex apiculate or mucronate, base oblique or truncate, adaxial surface glabrous, glabrescent or tomentose, abaxial surface glabrous, glabrescent or tomentose, margin glabrous or ciliate, venation actinodromous or eucamptodromous, extrafloral nectary absent or present on secondary rachis, paraphyllidia present. Inflorescence capituliform, axillary, pubescent, axis not observed; flower sessile, pentamerous, homomorphic, hermaphrodite; calyx glabrous, glabrescent or sericeous; corolla gamopetalous, glabrous or sericeous; androecium polystemonous, apostemonous, yellow, anther eglandular; ovary glabrous. Fruit legume, dry, oboval or elliptic, plane, glabrous, apex apiculate or not apiculate.

35. *Senegalia lasiophylla* (Benth.) Seigler & Ebinger, Phytologia 88 (1): 55. 2006.

Fig. 8d-g

Tree *ca.* 2.5 m tall; branch glabrescent, prickles recurved. Leaf with petiole grooved, 15.6–24 mm long; rachis 3.5–8.2 mm long; pinnae 7–11 pairs, leaflets opposite, 19–31 pairs per pinna, 4.5–6 × 1–1.1 mm, narrow-elliptic, apex mucronate, base oblique, adaxial and abaxial surface glabrescent, margin ciliate, venation eucamptodromous, extrafloral nectary absent on secondary rachis. Inflorescence with peduncle 8.8–9.7 mm long, pubescent; flower sessile; calyx glabrescent, 2.5–2.6 mm long; corolla glabrous, *ca.* 3.3 mm long. Fruit oboval, 70 × 12 mm, apex not apiculate; seeds *ca.* 8. **Examined material:** Fazenda Agro Comercial Aubi, 4.XII.2007, fl., *F. Matos-Alves & A.L.B. Sartori 489* (CGMS); 9.V.2007, fr., *F. Matos-Alves & G.M. Silva 406* (CGMS); 4.XII.2007, fl., *F. Matos-Alves & A.L.B. Sartori 481* (CGMS).

Senegalia lasiophylla, considered endemic to Brazil, has a single record in Seasonal Semideciduous Forest (BFG 2015). This species presents as a diagnostic characteristic the obovate fruit.

36. *Senegalia martii* (Benth.) Seigler & Ebinger, Phytologia 88 (1): 57. 2006.

Fig. 8h-i

Treelet *ca.* 3 m tall; branch glabrous, prickles straight to recurved. Leaf with petiole cylindrical, 27–32.3 mm long; rachis 145–150 mm long; pinnae 11

pairs, leaflets opposite, 42–60 pairs per pinna, 5.9–7 × 1.3–1.6 mm, falcate, apex apiculate, base truncate, adaxial and abaxial surface glabrous, margin ciliate, venation eucamptodromous, extrafloral nectary present on secondary rachis. Peduncle not observed; calyx glabrous, *ca.* 1.5 mm long; corolla glabrous, *ca.* 2 mm long. Fruit elliptic, 100–105 × 15–15 mm, apex apiculate; seeds *ca.* 8.

Examined material: Fazenda Agro Comercial Aubi, 28.VIII.2007, fr., *F. Matos-Alves et al. 464* (CGMS).

Senegalia martii occurs in Argentina, Paraguay and in Brazil (Terra *et al.* 2014) in the Central-West and Southeast regions, in Cerrado (lato sensu) and Seasonal Semideciduous Forest (BFG 2015). The species with falcate leaflets and extrafloral nectary present on the secondary rachis is readily differentiated from *S. lasiophylla* and *S. polyphylla*, both with narrow-elliptic leaflets and secondary rachis without extrafloral nectary.

37. *Senegalia polyphylla* (DC.) Britton & Rose, Ann. New York Acad. Sci. 35(3):142. 1936.

Tree 4–5 m tall; branch glabrescent, prickles straight. Leaf with petiole grooved, 8.1–21.5 mm long; rachis 24–60 mm long; pinnae 3–7 pairs, leaflets opposite or subopposite, 17–40 pairs per pinna, 6–10.2 × 1.9–2.3 mm, narrow-elliptic, apex mucronate, base oblique, adaxial and abaxial surface tomentose, margin glabrous, venation actinodromous, extrafloral nectary absent on secondary rachis. Peduncle not observed; calyx sericeous, 1.5–2.5 mm long; corolla sericeous, 3–5 mm long. Fruit elliptic, 46–79 × 13–16 mm, apex apiculate; seeds 4–10.

Examined material: Fazenda Retiro Conceição, 17.II.2009, fr., *E.P. Seleme et al. 316* (CGMS); Fazenda Andréa I, 30.VIII.2008, fr., *C.A. Barbosa & M.R. Moro 4* (CGMS); Fazenda Flores, 16.II.2009, fr., *E.P. Seleme et al. 288* (CGMS).

Senegalia polyphylla presents a wide distribution in the Neotropics, from Mexico to Colombia, Brazil and Argentina (Burkart 1979). In Brazil it occurs from Amazonas to Paraná (BFG 2015), in Cerrado, Atlantic Forest and Caatinga in Minas Gerais (Terra *et al.* 2014). This species can be distinguished from *S. lasiophylla* by the tomentose leaflets on both surfaces *versus* leaflets glabrescent on both surfaces.

***Vachellia* Wight & Arn.**

Shrub; branches armed, striate, glabrous or puberulent, spines straight; stipules persistent or narrow-triangular. Leaf multijugate, petiole grooved, glabrous or sparse-pubescent, extrafloral

nectary present; rachis cylindric, pubescent or hispid, extrafloral nectary absent or present, spicule and paraphyllidia absent; leaflets opposite, elliptic, apex obtuse or slightly apiculate, base oblique and rounded, adaxial and abaxial surface glabrous, margin glabrous or ciliate, venation hypohydromous, extrafloral nectary present on secondary rachis, paraphyllidia absent. Inflorescence capituliform, axillary, puberulent or hispid, axis not observed; flower sessile, pentamerous or hexamerous, homomorphic or heteromorphic; calyx campanulate, pubescent; corolla gamopetalous, pubescent; androecium polystemonous, apostemonous, yellow, anther eglandular; ovary glabrous. Fruit nuroid legume or legume, inflated, dry, ellipsoid or fusiform, glabrous, apex apiculate or not.

38. *Vachellia caven* (Molina) Seigler & Ebinger, *Phytologia* 87(3): 148. 2006. Fig. 8j-l

Shrub *ca.* 3 m tall; branch puberulent. Leaf with petiole glabrous, 8.3–8.8 mm long; rachis pubescent, 27–38 mm long, extrafloral nectary present; pinnae 3–7 pairs, leaflets 20–24 pairs per pinna, 1.9–3.3 × 0.7–0.9 mm, apex obtuse, margin ciliate. Inflorescence peduncle 15.2 mm long, puberulent; flower pentamerous, heteromorphic, flowers peripheral male, 3.2–4.1 mm long, flowers central hermaphrodite, 3.3–4.0 mm long; calyx 1.3–1.4 mm long; corolla 2–2.2 mm long. Fruit nuroid legume, fusiform, 30–40 mm × 18–20 mm, apex apiculate; seeds *ca.* 13.

Examined material: Fazenda Flores, 4.VII.2009, fl., *E.P. Seleme & M.A. Gonzales 415* (CGMS); Margem do Dique, 24.X.2008, fl. e fr., *A.L.B. Sartori* (CGMS 23093); Fazenda Anahí, 16.I.2005, fl., *D.K. Noguchi et al. 139* (CGMS).

Vachellia caven occurs in Pampa and in the Pantanal of Mato Grosso do Sul (BFG 2015). This species is easily identified by the capituliform inflorescence with hermaphrodite and male flowers, and nuroid fusiform legume. *Vachellia caven* has similarities with *V. farnesiana*, differing by the inflorescence with hermaphrodite and male flowers, *versus* hermaphrodite flowers in the second species.

39. *Vachellia farnesiana* (L.) Wight & Arn., *Prodr. Fl. Ind. Orient.* 1: 272. 1834. Fig. 8m

Shrub *ca.* 2.5 m tall; branch glabrous. Leaf with petiole sparse-pubescent, 9–12 mm long; rachis hispid, *ca.* 16 mm long, extrafloral nectary absent; pinnae 3–5 pairs, leaflets 14–19 pairs per

pinna, 7–8 × 1.8–2 mm, apex slightly apiculate, margin glabrous. Inflorescence with peduncle 4.7–6.2 mm long, hispid; flower hexamerous, homomorphic, hermaphrodite; 3.0–3.3 mm long; calyx *ca.* 1.4 mm long; corolla *ca.* 1.6 mm long. Fruit legume, ellipsoid, 65–75 mm × 9 mm, apex not apiculate; seeds *ca.* 10.

Examined material: Fazenda Flores, 16.VII.2009, fl., *E.P. Seleme et al. 367* (CGMS); Fazenda São Manoel, 30.V.2011, fl., *T.E. Lima et al. 133* (CGMS).

Additional material: Ponte do Rio Perdido, 6.IX.2005, fl. e fr., *G.A. Damasceno Jr. et al. 3770* (CGMS).

Vachellia farnesiana presents a wide distribution in the Neotropics, generally associated with seasonal climates (Queiroz 2009). In Brazil it occurs in the Amazon, Caatinga and Atlantic domains (BFG 2015), and as pasture weed and secondary vegetation of dry forest. *Vachellia farnesiana* has inflorescences with hermaphrodite flowers and ellipsoid fruit, characteristics that differ from *V. caven* with inflorescences composed of male and hermaphrodite flowers and fusiform fruit.

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