
**New species and combinations in *Coussapoa* (Cecropiaceae),
and keys to its species**

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ABSTRACT

The 42 recognized species of *Coussapoa* are listed with their synonyms and distribution. Eleven new species are described: *C. argentea* Akkermans & Berg, *C. arachnoidea*, Akkermans & Berg, *C. batavorum* Akkermans & Berg, *C. cupularis* Akkermans & Berg, *C. echinata* Akkermans & Berg, *C. floccosa* Akkermans & Berg, *C. longepedunculata* Akkermans & Berg, *C. macerrima* Akkermans & Berg, *C. napoënsis* Akkermans & Berg, *C. pachyphylla* Akkermans & Berg, and *C. scabra* Akkermans & Berg. Some new combinations are made. Keys to the species of 8 regions are presented.

INTRODUCTION

The genus *Coussapoa* comprises 42 species occurring in the rainforest areas of tropical America, except for the West Indies. Many species have relatively small areas; a few, very variable species (*C. asperifolia* and *C. villosa*) are widely distributed. The keys presented below serve to key out the species from certain areas within tropical America.

Most species are epiphytic trees or shrubs, a few (e.g., *C. trinervia*) seem to be always terrestrial. Differences in indument play an important part in the separation of the taxa, as well as variations in the venation of the lamina. All species are dioecious. The dichotomously branched inflorescences bear small, sessile flowers in terminal, usually globose heads. In the pistillate inflorescence the number of flower heads is relatively small, in several species even reduced to one. Notably the differences in the pistillate inflorescence are taxonomically important. The absence or presence of interfloral bracts is constant in most of

the species. Interfloral bracts can be (very) small and/or (very) scarce. The staminate flowers contain one stamen or 2 or 3 entirely connate stamens.

1. *Coussapoa angustifolia* Aublet, Pl. Gui. 2: 956, t. 363 (1775).

Distribution: the Guianas and Brazil (Amapá).

2. *Coussapoa arachnoidea* Akkermans & Berg spec. nov. (Fig. 1).

Arbor. Lamina elliptica vel ovata vel lanceolata, 6–16 cm longa, 2–7 cm lata, apice acuta, basi obtusa vel acuta, facie inferiore villosa, pilis albis, arachnoideis. Venae laterales pro latere 5–8, par basale eramosum; nervatura



Fig. 1. *Coussapoa arachnoidea*. Leafy twig with pistillate inflorescences (Pires et al. 50656).

intercostalis prominula; petiolus 3–6 cm longus; stipulae 5–8 cm longae, villosae. Inflorescentia pistillata capitulis 2–4, ea diam. circ. 0.5 cm; pedunculus communis 1.5–2 cm longus, villosus; bractee interflorales carentes.

Epiphytic trees up to 35 m tall. Leafy twigs 3–8 mm thick, with sparse, long, stiff hairs and arachnoid hairs, especially on the nodes; internodes solid. Leaves elliptic to ovate or to lanceolate, (6)–9–16 × (2)–3–7 cm, coriaceous, apex acute, base obtuse to acute, margin entire; upper surface glabrous; lower surface (densely) villous with white arachnoid hairs, sometimes mixed with shorter hairs, glabrescent; lateral veins 5–8 pairs, almost straight, basal pair unbranched, reaching the margin in or just below the middle of the leaf, intercostal venation prominent; petiole 3–6 cm long, villous with white arachnoid hairs; glabrescent; stipules 5–8 cm long, villous with white arachnoid hairs, mixed with long, straight, stiff, appressed hairs and with reddish-brown, granular hairs. Pistillate inflorescence poorly branched, with 2–4 heads, these globose, ca. 4–5 mm in diameter; common peduncle 1.5–2 cm long, densely villous with white to yellowish arachnoid hairs, mixed with long, straight, stiff, appressed hairs and with reddish-brown granular hairs; perianth ca. 1 mm high, minutely puberulous; interfloral bracts absent.

Typus: *Pires, Rodrigues & Irvine 50656*, Brazil, Amapá, Rio Araguari (holotype: IAN; isotypes: M, MG, NY, OXF, US, VEN).

This species is reminiscent of *C. orthoneura*, from which it differs in the persistent arachnoid indument on the leaves and the prominent intercostal venation.

3. *Coussapoa argentea* Akkerman & Berg spec. nov. (Fig. 2).

Arbor. Lamina obovata vel elliptica, 2–12 cm longa, 1–6 cm lata, apice obtusa vel acuminata, basi obtusa; facie inferiore sparse et appresse puberula; initialiter etiam pilis arachnoideis sericeis; venae laterales pro latere 2 vel 3 (vel 4), par basale eramosum; nervatura intercostalis subplana; petiolus 2–4 cm longus; stipulae 1–5 cm longae, pilis densis, fuscis, arachnoideis. Inflorescentia staminata capitulis multis, ea diam. 0.2–0.3 mm; pedunculi communes 2–3 cm longi, hirtelli vel tomentelli; stamina bina; bractee interflorales adsunt. Inflorescentia pistillata eramosa; capitulum diam. circ. 0.4 cm, pedunculus 2–3.5 cm, hirtellus vel tomentellus; bractee interflorales adsunt.

Epiphytic or terrestrial trees up to 30 m tall. Leafy twigs 3–5 mm thick, with dense, curled hairs, mixed with long, straight, stiff, appressed hairs and occasionally also with whitish arachnoid hairs; internodes solid or hollow. Leaves obovate to elliptic 2–12 × 1–6 cm, occasionally ovate or oblong, coriaceous, apex obtuse to acute or acuminate, base obtuse, margin entire; upper surface glabrous, lower surface with dense, short, brown, appressed



Fig. 2. *Coussapoa argentea*. Leafy twig with pistillate inflorescences (Steyermark & Nilsson 487); leafy with staminate inflorescences (Steyermark & Nilsson 388).

hairs, covered by sparse to dense, silvery, arachnoid hairs, disappearing with age; lateral veins 2–3(–4) pairs, slightly curved, basal pair unbranched, reaching the margin above the middle of the leaf, intercostal venation slightly prominent to almost plane; petiole 1–2 cm long, with dense to sparse, curled hairs, mixed with longer, straight, stiff hairs, glabrescent; stipules 1–5 cm long, with dense, curled yellowish-brown hairs, mixed with longer, straight, stiff hairs. Staminate inflorescences repeatedly branched, heads numerous, globose, ca. 2–3 mm in diameter; common peduncle 2–3 cm long, with long white straight stiff hairs and also with sparse, granular, hairs; perianth ca. 1 mm high, 3-lobed, glabrous; stamens 2, filaments exceeding the perianth. Pistillate inflorescence unbranched, head globose, ca. 4 mm in diameter; peduncle 2–3.5 cm long, with curled hairs, covered by silvery arachnoid hairs; perianth ca. 1 mm high, glabrous; interfloral bracts present, although sometimes very few, stipitate-obdeltate to subpeltate.

Typus: *Steyermark, Dunsterville & Dunsterville* 92991 ♂, Venezuela, Bolívar, 19 km S of El Dorado, 1030 m (holotype: VEN; isotypes: NY, U, US).

Paratypus: *Steyermark & Nilsson* 487 ♀, Venezuela, Bolívar, NE of Luepa, 1300 m (holotype VEN; isotype NY).

Additional collections: *Bernardi* 7238 ♂, Venezuela, Bolívar, km 109 on road El Dorado – Santa Elena, 450 m (G); *Maguire, Steyermark & Maguire* 46879 ♂, Venezuela, Bolívar, Alto Río Cuyuni, Cumbre de La Escalera, 1000 m (U, US, VEN); *Steyermark & Nilsson* 388 ♂, Venezuela, Bolívar, near Cerro Uei, between Luepa and Cerro Venamo, 1100 m (NY, US, VEN).

The species is rather close to *C. microcephala*, from which it differs in, e.g., the smaller number of lateral veins.

4. *Coussapoa asperifolia* Trécul, Ann. Sci. Nat. Bot. Sér. 3, 8: 96 (1847).

4a. *Coussapoa asperifolia* Trécul ssp. *asperifolia*.

Synonyms: *C. cayennensis* Hawkes, *C. ficina* Standley

Distribution: Suriname, French Guiana, and Brazil (Amazonas, Roraima and Pará).

4b. *Coussapoa asperifolia* Trécul ssp. *magnifolia* (Trécul) Akkermans & Berg comb. et stat. nov.

Based on *Coussapoa magnifolia* Trécul, Ann. Sci. Nat. Bot. Sér. 3, 8: 98 (1847).

Synonyms: *C. cardonaei* Pittier, *C. chagresiana* Hawkes, *C. hypochlora* Standley, *C. magnifolia* Trécul, *C. ruizii* Klotzsch

Distribution: Upper Amazon Basin (Bolivia, Brazil, Peru, Ecuador) through Colombia to Panamá.

4c. *Coussapoa asperifolia* Trécul ssp. *ramnoides* (Standley) Akkermans & Berg comb. et stat. nov.

Based on *Coussapoa rhamnoides* Standley, Publ. Field Mus. Bot. 17: 166 (1937).

Distribution: Amazon Basin: Brazil (Amazonas and western Pará) and Peru (Loreto).

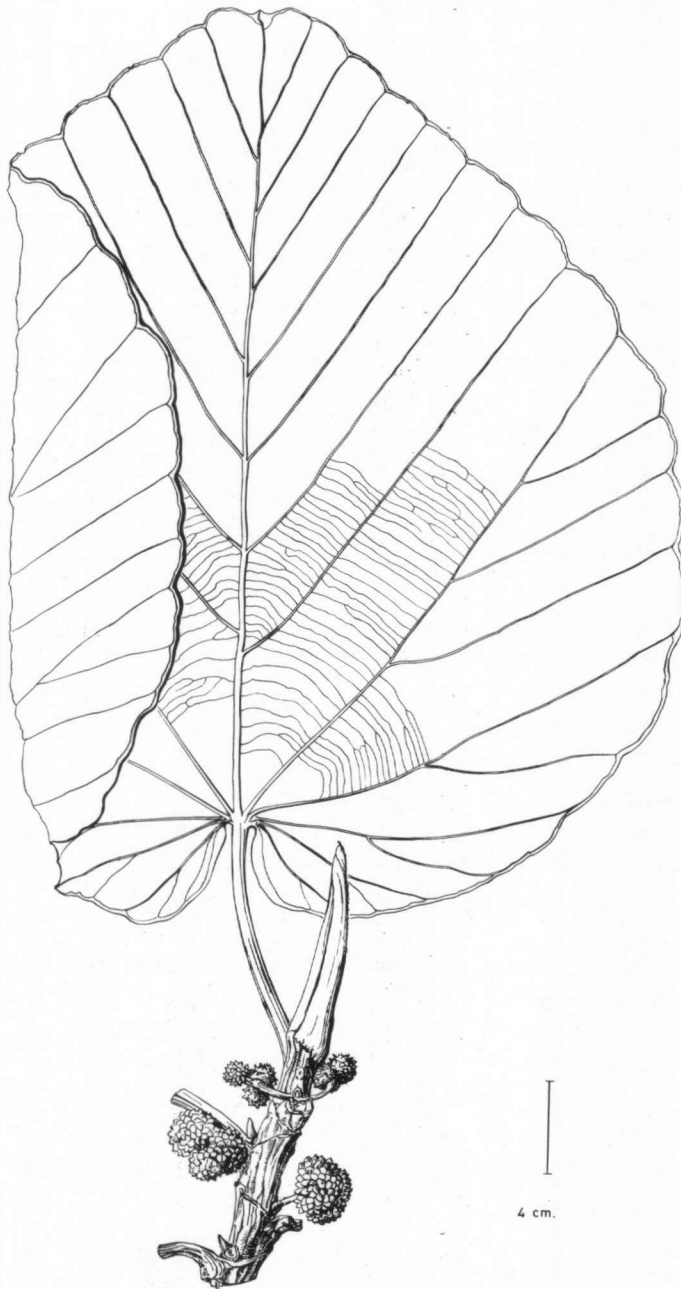


Fig. 3. *Coussapoa batavorum*. Leafy twig with pistillate inflorescences (Van Rooden et al. 700).

5. *Coussapoa batavorum* Akkermans & Berg spec. nov. (Fig. 3).*

Arbor. Lamina late ovata, 36–40 cm longa, 34–37 cm lata, apice obtusa vel rotundata, basi cordata, facie inferiore glabra; venae laterales pro latere 10–13, par basale ramosum; nervatura intercostalis subplana; petiolus 10–12 cm longus; stipulae 8–10 cm longae, puberulae. Inflorescentia pistillata capitulis duobus vel tribus, diam. ea 1–2.5 cm; pedunculus communis 0.5–2 cm longus, puberulus; perianthium fructiferum apice acuto; bracteae interflorales carentes.

Terrestrial tree, up to 16 m tall. Leafy twigs 10–19 mm thick, glabrous; internodes hollow. Leaves broadly ovate, 36–40 × 34–37 cm, coriaceous, apex obtuse to emarginate, base cordate, margin slightly crenate; both surfaces glabrous; lateral veins 10–13 pairs, straight, main basal pair branched, reaching the margin in or above the middle of the leaf, intercostal venation almost plane to slightly prominent; petioles 10–12 cm long, distinctly ribbed, with (dense) minute, patent hairs; stipules 8–10 cm long with dense to sparse, short reddish-brown, curled hairs, mixed with longer, straight, stiff hairs. Pistillate inflorescence unbranched or poorly branched, heads 1 or 2(–3) and often more or less fused, globose to ovoid, ca. 8–10 mm, in fruit up to 27 mm in diameter; common peduncle 0.5–2 cm long, with rather dense, minute, patent hairs, mixed with longer, straight, stiff, more or less patent, white hairs; perianth 1(–3) mm high, with rather dense, straight, stiff, white hairs; fruiting perianth acute, brown; interfloral bracts absent.

Typus: *Van Rooden, Ter Welle & Topper* 700, Colombia, El Valle, near Buenaventura (holotype: COL; isotypes: AAU, K, NY, U, US).

This species resembles *C. cinnamomea*, but diverges in its glabrous lower leaf surface and the acute apex of the fruiting perianth. It also resembles *C. asperifolia* ssp. *magnifolia*, from which it differs in having only the basal pair of lateral veins branched, having more lateral veins and longer stipules, and lacking interfloral bracts.

6. *Coussapoa brevipes* Pittier, Contr. U.S. Natl. Herb. 18: 225 (1917).

Distribution: Panamá.

7. *Coussapoa chocoënsis* Cuatrecasas, Caldasia 7: 287 (1956).

Distribution: Colombia (Chocó).

8. *Coussapoa cinnamomea* Cuatrecasas, Caldasia 7: 288 (1956).

Distribution: Colombia (Amazonas).

9. *Coussapoa cinnamomifolia* Mildbread, Notizbl. Bot. Gart. Berlin 15: 783 (1942).

Distribution: Bolivia (La Paz) and Ecuador (Pastaza).

* To honor the three Dutch collectors of the type material.

10. *Coussapoa contorta* Cuatrecasas, *Caldasia* 7: 289 (1956).

Distribution: Pacific coastal area of Colombia and Ecuador.

11. *Coussapoa crassivenosa* Mildbread, *Notizbl. Bot. Gart. Berlin* 15: 784 (1942).

Synonym: *C. steyermarkii* Cuatrecasas

Distribution: Brazil (Roraima), Venezuela (Bolívar), Ecuador (Pastaza and Zamora-Chinchipe), Peru (Loreto), and Bolivia (La Paz).

12. *Coussapoa cupularis* Akkermans & Berg spec. nov. (Fig. 4).

Arbor. Lamina ovata vel elliptica, 5–10 cm longa, 3–7 cm lata, apice acuta vel acuminata, basi obtusa vel subcordata, facie inferiore strigillosa; venae



Fig. 4. *Coussapoa cupularis*. Leafy twig with pistillate inflorescences (J.F. Silva 69).

laterales pro latere 5–7, par basale eramosum; nervatura intercostalis plana; petiolus 2–5 cm longus; stipulae 2–5 cm longae, subsericeae. Inflorescentia pistillata capitulis tribus vel quattuor, ea diam. circ. 0.5 cm, pedunculis ad capitula manifeste expansis more cupulae; pedunculus communis 2–4 cm longus, appresse puberulus; bracteae interflorales carentes.

Terrestrial trees. Leafy twigs 3–7 mm thick, with dense, patent to appressed, short soft, curled hairs, mixed with longer, straight, stiff, patent hairs; internodes solid. Leaves ovate to elliptic, 5–10×3–7 cm, coriaceous, apex acute to acuminate, base obtuse to (sub)cordate, margin entire or tending to crenate; upper surface glabrous; lower surface with dense, short, appressed to patent, more or less stiff hairs; lateral veins 5–7 pairs, slightly curved, basal pair unbranched, reaching the margin in or below the middle of the leaf, intercostal venation plane; petiole 2–5 cm long, with dense, short, more or less curled, appressed hairs, mixed with longer, straight, stiff appressed hairs; stipules 2–5 cm long, with dense, short, appressed hairs, covered by longer, straight, stiff, appressed hairs. Pistillate inflorescence branched, with 3 or 4 heads, these globose, ca. 4–6 mm, in fruit up to 10 mm in diameter; common peduncle 2–4 cm long, with dense, short, straight to curled appressed hairs, mixed with longer, straight, stiff, appressed hairs; branches of the inflorescence cupula-like broadened towards the heads; perianth ca. 1–2 mm high, subpapillate; interfloral bracts absent.

Typus: *J.F. Silva 69*, Brazil, Rondônia, Porto Velho (IAN).

Additional collection: *J.F. Silva 211*, Brazil, Rondônia, Porto Velho (IAN).

This species is reminiscent of *C. microphala* ssp. *cornifolia* and *C. latifolia*. It differs in its dense, short indument on the leaves and the larger flower heads.

13. *Coussapoa curranii* Blake, Contr. U.S. Natl. Herb. 20: 237 (1919).

Synonyms: *C. incomitata* Standley, *C. warburgiana* Mildbread

Distribution: Eastern Brazil (Bahia to Rio de Janeiro).

14. *Coussapoa duquei* Standley, Publ. Field Mus. Bot. 22: 71 (1940).

Synonym: *C. apoda* Mildbread

Distribution: Ecuador (Napó and Pastaza) and Colombia (Caldas and Cesar).

15. *Coussapoa echinata* Akkermans & Berg spec. nov. (Fig. 5).

Arbor. Lamina elliptica vel ovata, 9–20 cm longa, 4–10 cm lata, apice acuta vel acuminata, basi acuta, facie inferiore ad venas majores sparse puberula; venae laterales pro latere 4 vel 5, par basale eramosum vel indistincte ramosum; nervatura intercostalis subplana; petiolus 2–6 cm longus; stipulae 1.5–2.5 cm longae, sparse et appresse puberulae. Inflorescentia pistillata capitulis 3–8, ea diam. circ. 0.5 cm; pedunculus communis 1–3.5 cm longus, sparse et minute puberulus; perianthium anguste ovoideum, apice acutum; bracteae interflorales adsunt.



Fig. 5. *Coussapoa echinata*. Leafy twig with pistillate inflorescences (Dressler 4636).

Trees, mostly epiphytic. Leafy twigs 4–6 mm thick, glabrous or with sparse, short, appressed hairs; internodes solid or hollow. Leaves elliptic to ovate, 9–20 × 4–10 cm, coriaceous, apex acute to acuminate, base acute, margin entire; upper surface glabrous, lower surface with sparse, short hairs on the main veins; lateral veins 4–5 pairs, slightly curved, basal pair unbranched or faintly branched, reaching the margin in or above the middle of the leaf, intercostal venation almost plane to slightly prominent; petiole 2–6 cm long, glabrous; stipules 1.5–2.5 cm long, with sparse, short, appressed hairs. Pistillate inflorescence poorly branched, with 3–8 heads, these globose, ca. 4–6 mm, in fruit up to 8 mm in diameter; common peduncle 1–3.5 cm long, with sparse, patent, short hairs, occasionally mixed with some longer hairs; perianth ca. 1–2 mm high, narrowly ovoid with an acute apex, glabrous, turning orange in fruit; interfloral bracts narrowly spatulate, sparsely and minutely puberulous.

Typus: *Gentry & Mori 13408*, Panamá, Panamá, Cerro Jefe, Altos de Pacora (holotype: U; isotype: MO).

Additional collection: *Dressler 4636*, Panamá, Panamá, ca. 18 km N of El Llano (F).

This species resembles somewhat *C. parviceps*, but diverges in the presence of interfloral bracts and a sparse indument, and furthermore in the pistillate flower heads (when dry) being echinate due to the acute apices of the perianths.

16. *Coussapoa ferruginea* Trécul, Ann. Sci. Nat. Bot. Sér. 3, 8: 93 (1847).

Distribution: French Guiana and Brazil (Amapá).

17. *Coussapoa floccosa* Akkermans & Berg spec. nov. (Fig. 6).

Arbor. Lamina ovata vel obovata, 10–25 cm longa, 6–17 cm lata, apice rotundata vel obtusa vel emarginata, basi obtusa vel cordata, facie superiore indumento floccoso, arachnoideo, inferiore tomentella; venae laterales pro latere 7–9, par basale eramosum; nervatura intercostalis valde prominula; petiolus 1.5–5 cm longus; stipulae 1–2.5 cm longae, subsericeae. Inflorescentia staminata capitulis multis, ea diam. circ. 0.4 cm; pedunculus communis 1.5–4 cm longus, puberulus, stamina dua. Inflorescentia pistillata capitulis duobus vel tribus, ea diam. circ. 0.7 cm; pedunculus communis 1–3 cm longus, puberulus; bracteae interflorales adsunt.

Trees, mostly epiphytic. Leafy twigs 10–15 mm thick, with long, straight, stiff, white hairs, mixed with brown, granular hairs, glabrescent; internodes solid to hollow. Leaves ovate to obovate, 10–25 × 6–17 cm, coriaceous, apex rounded or obtuse to emarginate, base obtuse or rounded to cordate, margin entire; upper surface floccose with long, white, arachnoid hairs, glabrescent, lower surface on the intercostal venation with straight, stiff, patent hairs, mostly covered with sparse to dense, white, arachnoid hairs; lateral veins 7–9 pairs, main basal pair branched, reaching the margin in or above the middle of

the leaf, intercostal venation very prominent; petiole 1.5–5 cm long, with dense, minute, white, mixed with longer, white, straight and stiff and brown granular hairs; stipules 1–2.5 cm long, with dense, minute, white, appressed hairs, mixed with longer, straight, stiff, white hairs and mostly also with brown, granular hairs. Staminate inflorescence repeatedly branched; heads numerous, globose, ca. 4 mm in diameter; common peduncle 1.5–4 cm long, with short, white, appressed hairs, mixed with brown, granular hairs, glabrescent; perianth ca. 1 mm high, 3-lobed, apex puberulous; stamens 2, filament exceeding the perianth. Pistillate inflorescence poorly branched; heads 2 or 3, partly fused, (sub)globose, ca. 7 mm in diameter; common peduncle 1–3 cm long, with short, white, patent to appressed hairs, mixed with brown, granular hairs; perianth 1–2 mm high, glabrous. Interfloral bracts stipitate-obtrullate.



Fig. 6. *Coussapoa floccosa*. Leafy twig with pistillate inflorescences (Irwin 2058).

Typus: *Kuhlmann 2074* (HJBR 2210) ♀, Brasil, Minas Gerais, Viçosa (holotype: RB; isotypes: RB, U, US).

Paratype: *Schwacke* (in herb. Glaziou) 11895 ♂, Brazil, Minas Gerais, Rio Novo (holotype: B; isotype: P).

This species (known from eight collections made in Minas Gerais) is distinct by the floccose arachnoid indument of the upper leaf surface, which is not found in any other *Coussapoa* species.

18. *Coussapoa glaberrima* Burger, *Phytologia* 26: 422 (1973).

Distribution: Costa Rica (Puntarenas) and Nicaragua (Zelaya).

19. *Coussapoa herthae* Mildbread, *Notizbl. Bot. Gart. Berlin* 14: 29 (1938).

Distribution: Western Ecuador.

20. *Coussapoa latifolia* Aublet, *Pl. Gui.* 2: 955, t. 362 (1775).

Synonyms: *C. froësii* Standley, *C. latifolia* Trécul var. *obovata* (Miquel) Miquel, *C. obovata* Miquel

Distribution: the Guianas and Brazil (Amapá, Pará, Maranhão, Amazonas, and Roraima).

21. *Coussapoa leprieurii* Benoist, *Bull. Mus. Hist. Nat. Paris* 30: 103 (1924).

Distribution: French Guiana and Brazil (Pará).

22. *Coussapoa longepedunculata* Akkermans & Berg spec. nov. (Fig. 7).

Arbor. Lamina oblonga vel elliptica, 25–35 cm longa, 13–19 cm lata, apice obtusa vel acuminata, basi cordata; facie superiore sparse hispidula, inferiore dense albo-arachnoideo-hirsuta venisque principalibus brunneo-hirsutis, venulis sparse hirtellis; venae laterales pro latere 9–10, saltem inferiores ramosae; petiolus 3–6.5 cm longus; stipulae 6–7 cm longae, brunneo-hirsutae vel -subsericeae. Inflorescentia mascula ramis in glomerulos duos aggregatis, omnibus vel plurimis brevissimis; pedunculus communis 7–16 cm longus; stamina tria; bractee interflorales adsunt.

Tree 10 m tall. Leafy twigs 1–1.5 cm thick, brown hirsute. Leaves oblong to elliptic, 25–35 × 13–19 cm, coriaceous, apex obtuse to shortly acuminate, base (shallowly) cordate, margin repand to faintly lobed; upper surface scabridulous, sparsely hispidulous, lower surface densely brown to hirsute on the main veins, sparsely hirtellous on the veinlets, moreover the whole surface between the lateral veins with rather dense white arachnoid hairs; lateral veins 9–10 pairs, more or less curved, at least the lower ones branched, basal pair reaching the margin far below the middle of the leaf, intercostal venation prominent; petiole 3–6.5 cm long, brown hirsute; stipules 6–7 cm long, hirsute to subsericeous, with brown hairs of different length. Staminate inflorescences rather poorly branched; common peduncle 7–16 cm long, the branches in 2

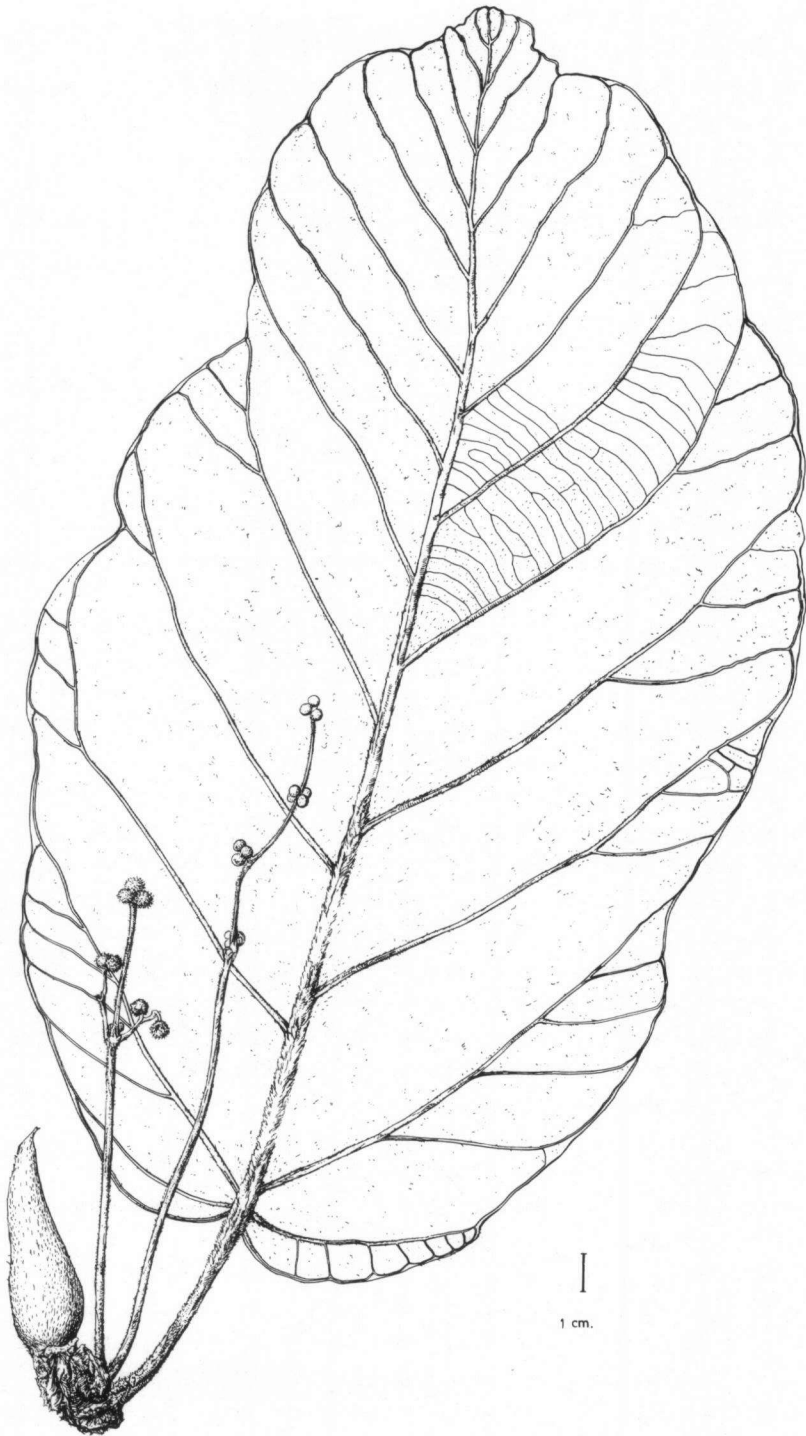


Fig. 7. *Coussapoa longepedunculata*. Leafy twig with staminate inflorescences (Gentry et al. 27566).

clusters and all or most of them very short, peduncle and branches brown hirtellous to pubescent; heads ca. 12–28, these 3–5 mm in diameter, (sub-)globose; perianth ca. 1 mm high, 3-lobed, the lobes imbricate and cucullate; stamens 3, filaments exceeding the perianth. Interfloral bracts ca. 1 mm long, spatulate, cucullate to subpeltate, the upper part puberulous.

Typus: *Gentry, Díaz, Aronson & Jaramillo 27566*, Peru, Loreto, Maynas, Quebrado Sucusari, Llachapa camp of Explorama, N side of Río Napo below Mazan (holotype: U; isotype: MO).

This new species matches *C. asperifolia* ssp. *magnifolia* in that most (or all) lateral veins are branched. The two species are quite different in the indument of the leaves, etc. Another characteristic feature of the new species is the long peduncle of the staminate inflorescence.

23. *Coussapoa macerrima* Standley & Williams ex Akkermans & Berg spec. nov. (Fig. 8).

Arbor. Lamina elliptica vel oblonga vel subobovata, 5–13 cm longa, 4–7 cm lata, apice acuminata, basi acuta vel obtusa, facie inferiore in venis majores appresse puberula vel strigosa, venae laterales pro latere 7–13, par basale eramosum; nervatura intercostalis plana; petiolus 2–5 cm longus; stipulae 1–2 cm longae, breviter subsericeae. Inflorescentia pistillata capitulis multis, ea diam. circ. 0.1–0.2 cm; pedunculus communis 2–3 cm longus, appresse puberulus vel strigosus; stamina dua; bractee interflorales carentes.

Epiphytic or terrestrial trees up to 25 m tall. Leafy twigs 2–4 mm thick, with sparse, appressed hairs; internodes solid. Leaves elliptic or oblong or tending to obovate, 5–13 × 4–7 cm, subcoriaceous, apex acuminate, base acute to obtuse, margin entire; upper surface glabrous, lower surface with sparse, straight, stiff, appressed hairs on the main veins; lateral veins 7–13 pairs, straight, basal pair unbranched reaching the margin below the middle of the leaf, intercostal venation plane; petiole 2–5 cm long, glabrous or with sparse, short, appressed hairs; stipules 1–2 cm long, with dense, short, appressed hairs, mixed with longer, straight, stiff hairs. Staminate inflorescence repeatedly branched, heads numerous, globose, ca. 1–2 mm in diameter; common peduncle 2–3 cm long, with short, appressed hairs mixed, with sparse longer hairs; perianth ca. 1 mm high, 3-lobed, glabrous; stamens 2, filaments far exceeding the perianth; interfloral bracts absent.

Typus: *Allen 5949*, Costa Rica, Puntarenas, Palmar Norte de Osa (holotype F; isotypes F, GH).

This species differs from *C. contorta* in the absence of interfloral bracts and the presence of two stamens.

24. *Coussapoa microcarpa* (Schott) Rizzini, *Duseniana* 1(5): 295 (1950).

Synonyms: *Brosimum microcarpon* Schott, *C. fontanesiana* Trécul, *C.*

schottii Miquel, *C. schottii* Miquel var. *lanceolata* Miquel, *C. schottii* Miquel var. *longifolia* Miquel.

Distribution: Eastern Brazil (Santa Catarina to Pernambuco).

25. *Coussapoa microcephala* Trécul, Ann. Sci. Nat. Bot. Sér. 3, 8: 96 (1847).

25a. *Coussapoa microcephala* Trécul ssp. *microcephala*.

Synonyms: *C. cuneata* Miquel, *C. fagifolia* Klotzsch

Distribution: the Guianas.

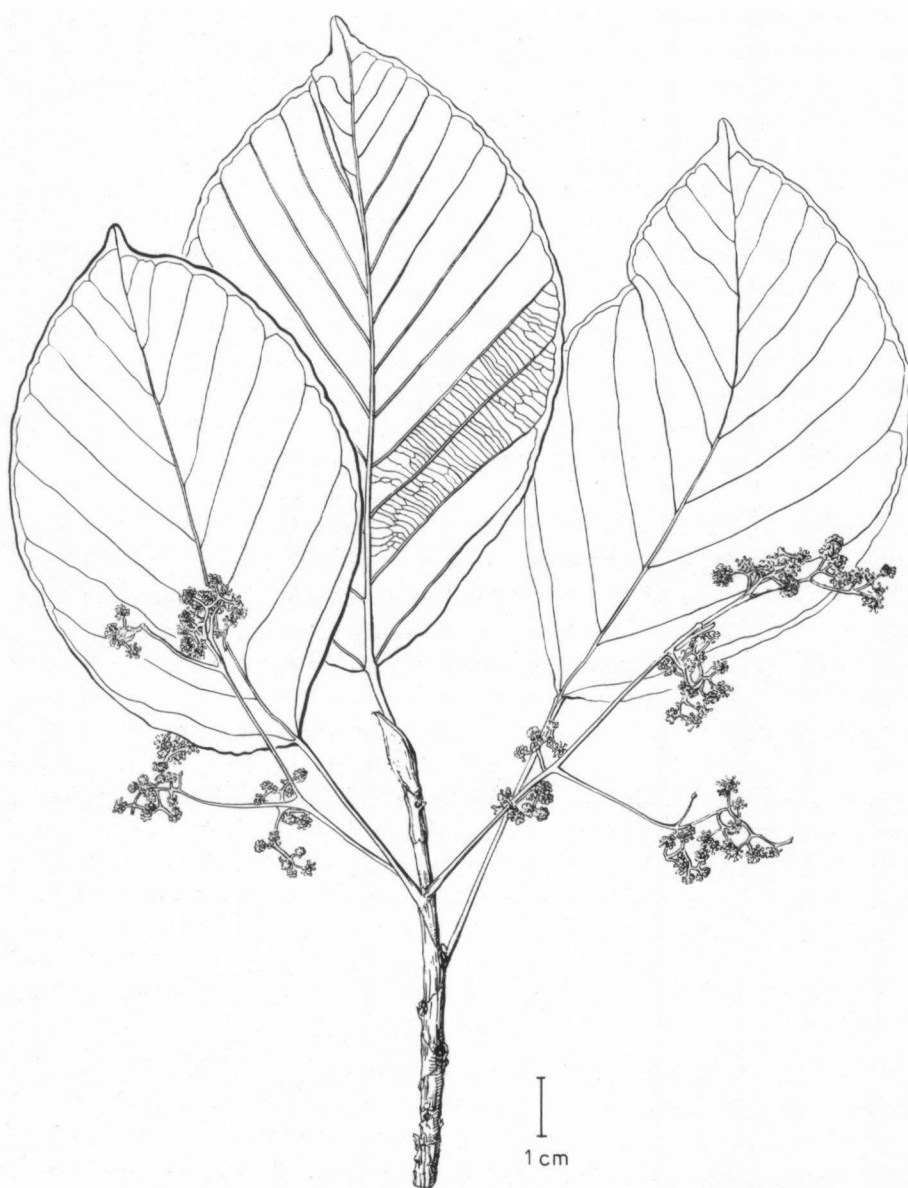


Fig. 8. *Coussapoa macerrima*. Leafy twig with staminate inflorescences (Allen 5949).

25b. *Coussapoa microcephala* Trécul ssp. *cornifolia* (Standley) Akkermans & Berg comb. et stat. nov.

Based on *Coussapoa cornifolia* Standley, Publ. Field. Mus. Bot. 17: 160 (1937).

Distribution: Brazil (Amazonas), Venezuela (Amazonas), and southern Guyana.

26. *Coussapoa napoënsis* Akkermans & Berg spec. nov. (Fig. 9).

Arbor. Lamina late elliptica vel late ovata, 7–25 cm longa, 6–20 cm lata,



Fig. 9. *Coussapoa napoënsis*. Leafy twig with staminate inflorescences (Lugo 2857).

apice obtusa vel mucronata, basi obtusa vel acuta, facie inferiore ad venas majores substrigosa et pilis sparsis arachnoideis; venae laterales pro latere 5–10, par basal indistincte ramosum; nervatura intercostalis leviter prominula; petiolus 3–10 cm longus; stipulae 4–8 cm longae, subsericeae. Inflorescentia staminata capitulis multis, ea diam. 0.1–0.3 cm; pedunculus communis 2.5–6 cm longus, appresse puberulus vel strigosus, stamen unum; bracteae interflorales carentes.

Terrestrial or epiphytic trees up to 25 m tall. Leafy twigs 5–12 mm thick, with sparse, short, patent to appressed hairs and mostly also with sparse, longer, straight, stiff hairs; internodes solid or hollow. Leaves broadly ovate to broadly elliptic, 7–25 × 6–20 cm, coriaceous, apex obtuse occasionally acuminate, base obtuse to acute, margin in the upper half surface glabrous; lower surface only with sparse, long, straight and stiff hairs and sparse arachnoid especially on younger leaves, glabrescent; lateral veins 5–10 pairs, almost straight, basal pair faintly branched or unbranched, reaching the margin below the middle of the leaf, intercostal venation slightly prominent; petiole 3–10 cm long, with (dense), short, appressed hairs, mixed with longer, straight, stiff hairs, glabrescent; stipules 4–8 cm long, with dense, short, appressed hairs, mixed with longer, straight, stiff hairs. Staminate inflorescence repeatedly branched, heads numerous, globose, 1–3 mm in diameter; common peduncle 2.5–6 cm long, with dense, short, appressed hairs, mixed with longer, straight, stiff hairs; perianth to 1 mm high, 3-lobed, glabrous; stamen 1, filament far exceeding the perianth; interfloral bracts absent.

Typus: *Lugo 2820*, Ecuador, Napo, Coca (GB).

Additional collections: *Cuatrecasas 10714*, Colombia, Putumayo, Río Putumayo, near Pinuna Negro (F, US); *Little & Campuzo 43*, Ecuador, Napo, Shushufindi (Q); *Lugo 2857*, Ecuador, Napo, Río Payamino, near Payamino (GB); *Lugo 2909*, Ecuador, near Coca (GB); *Lugo 3563*, Ecuador, Napo, 16 km W of Lago Agrio (GB).

This species resembles *C. ovalifolia*, from which it differs in the smaller number of lateral veins and in the shape of the lamina.

27. *Coussapoa nitida* Miquel in Martius, Fl. Bras. 4(1): 133 (1853).

Synonyms: *C. intermedia* Miquel, *C. schunkei* Standley

Distribution: Amazon Basin: Brazil (Amazonas and Pará), Peru (Loreto), and Colombia (Amazonas).

28. *Coussapoa nymphaeifolia* Standley, Proc. Biol. Soc. Wash. 37: 50 (1924).

Distribution: Costa Rica (Alajuela).

29. *Coussapoa oligocephala* Donnell Smith, Bot. Gaz. 40: 11 (1905).

Distribution: Guatemala, Honduras and Mexico (Campeche).

30. *Coussapoa orthoneura* Standley, Publ. Field Mus. Bot. 17: 165 (1937).

Synonyms: *C. prancei* C.C. Berg, *C. williamsii* Cuatrecasas

Distribution: Upper Amazon Basin: Brazil, Peru, Ecuador, Colombia and Venezuela; also in Santander (Colombia).

31. *Coussapoa ovalifolia* Trécul, Ann. Sci. Nat. Bot. Sér. 3, 8: 95 (1847).

Synonyms: *C. acutifolia* Klotzsch, *C. hirsuta* Trécul, *C. puberula* Klotzsch, *C. setosa* Klotzsch

Distribution: Upper Amazon Basin: Bolivia, Brazil, Peru and Colombia.

32. *Coussapoa pachyphylla* Akkermans & Berg spec. nov. (Fig. 10)

Frutex. Lamina ovata vel elliptica vel obovata, 6–16(–24) cm longa, 3.5–10(–19) cm lata, crasse coriacea, apice acuta vel acuminata, basi acuta vel obtusa (vel subcordata), facie inferiore puberula et ad marginem pilis sparsis fuscis arachnoideis, venae laterales pro latere 5–7, par basale eramosum; nervatura intercostalis leviter prominula; petiolus 0.5–3(–5) cm longus; stipulae 1–1.5 cm longae, fuscescentes, pilosae. Inflorescentia pistillata eramosa vel capitulis duobus vel tribus, ea diam. 0.5–0.8 cm; pedunculus communis 2.5–4 cm longus, puberulus; bractee interflorales adsunt.

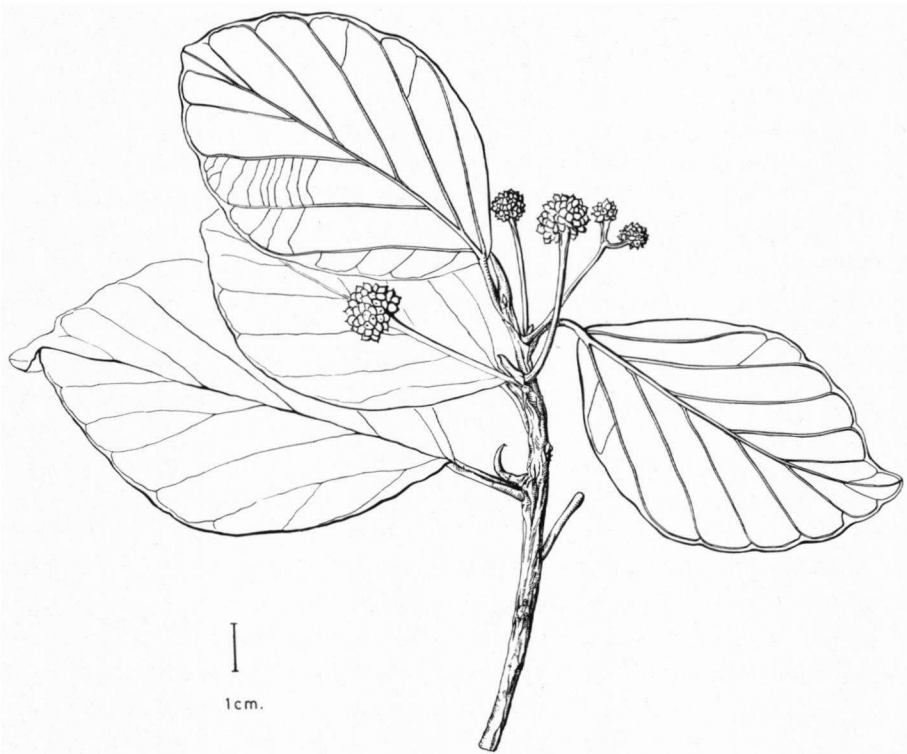


Fig. 10. *Coussapoa pachyphylla*. Leafy twig with pistillate inflorescences (Mori & dos Santos 11655).

Shrubs, often epiphytic, up to 5 m tall. Leafy twigs 4–8 mm thick, with rather dense to sparse, almost appressed, short, stiff brownish hairs, mixed with longer, straight and stiff, more or less patent, white hairs, glabrescent; internodes hollow. Leaves ovate to elliptic (or obovate), 6–16(–24) × 3.5–10(–19) cm, thickly coriaceous, apex acute to subacuminate, base acute or acuminate to obtuse (or subcordate), margin tending towards being crenate; upper surface glabrous; lower surface with dense to sparse, appressed, short hairs, mixed with more or less patent, straight and stiff hairs on the intercostal venation, and often with sparse brownish, arachnoid hairs along the margin; lateral veins 5–7 pairs, basal pair (faintly) branched, reaching the margin below the middle of the leaf, intercostal venation slightly prominent; petiole 0.5–3(–5) cm long, with rather dense to sparse, short, more or less curled hairs, often mixed with longer, straight and stiff hairs; stipules 1–1.5 cm long, with dense, short, reddish-brown, curled hairs. Pistillate inflorescence unbranched or poorly branched, heads 1 or 2–3 and sometimes more or less fused, globose, ca. 5–8 mm, in fruit up to 13 mm in diameter; common peduncle 2.5–4 mm long with rather dense, short, stiff hairs; perianth 1(–2) mm high, glabrous; interfloral bracts, present but scarce, subpeltate to stipitate-obtrullate.

Typus: *Mori & dos Santos 11655*, Brazil, Bahia, Santa Cruz de Cabrália (holotype: CEPEC; isotype: U).

Additional collection: *Berg, Mattos Silva & dos Santos 1153*, Bahia, km 21 on road Una – Ilhéus (CEPEC, K, NY, RB, U).

This species is reminiscent of *C. microcarpa*, but is distinct, e.g., in the indument of the leaves and the greater number of lateral veins.

33. *Coussapoa parviceps* Standley, Proc. Biol. Soc. Wash. 37: 51 (1924).

Synonyms: *C. brenesii* Pittier, *C. oligoneura* Mildbread

Distribution: Guatemala to western Ecuador.

34. *Coussapoa parvifolia* Standley, Publ. Field Mus. Bot. 17: 165 (1937).

Distribution: Upper Amazon Basin: Brazil (Amazonas) and Peru (Loreto).

35. *Coussapoa purpusii* Standley, Publ. Field Mus. Bot. 7: 6. 1930.

Distribution: Mexico (Chiapas, Guerrero, Jalisco, Veracruz) and Guatemala.

36. *Coussapoa scabra* Akkermans & Berg spec. nov. (Fig. 11).

Arbor. Lamina elliptica vel ovata vel obovata, 4–10 cm longa, 2.5–7 cm lata, apice vel acuminata, basi obtusa vel acuta, facie superiore scabra, inferiore puberula vel hirtella; venae laterales pro latere 6–13, par basale eramosum; nervatura intercostalis leviter prominula; petiolus 1–3 cm longus; stipulae 0.5–0.7 cm longae, hirsutae vel substrigosae. Inflorescentia pistillata eramosa vel capitulis 2–5, ea diam. 0.2–0.4 cm, pedunculus communis 1–3 cm longus, puberulus; bractee interflorales adsunt.

Trees, epiphytic or terrestrial. Leafy twigs 2–5 mm thick, with mostly long, curled to straight, appressed hairs; internodes solid. Leaves elliptic to ovate or obovate, 4–10 × 2.5–7 cm, subcoriaceous to chartaceous, apex acute to acuminate, base obtuse to acute, margin entire; upper surface, scabrous, with stiff, patent hairs on the veins, lower surface, smooth to scabridulous, with sparse to dense, short, patent to appressed, straight to curled hairs, mostly mixed with sparse longer whitish, straight, stiff hairs; lateral veins 6–13 pairs, straight, basal pair unbranched and reaching the margin far below the middle of the leaf, intercostal venation almost plane; petiole 1–3 cm long, with dense long, straight and stiff, patent hairs; stipules 5–7 mm long, with short hairs, covered by longer, dense, white, stiff, straight hairs. Pistillate inflorescence unbranched or poorly branched, heads 1–5, globose, 2–4 mm, in fruit up to 6 mm in diameter; common peduncle 1–3 cm long, with long, straight and stiff, appressed hairs, mixed with distinctly shorter hairs; perianth ca. 1 mm high, glabrous; interfloral bracts stipitate-obtrullate, apex minutely puberulous.

Typus: *Kuhlmann 470 (HJBR 19836)*, Brazil, Rondônia, Rio Ouro Preto, affluent of Rio Pacaás Novos (holotype: RB; isotypes: RB, U).



Fig. 11. *Coussapoa scabra*. Leafy twig with pistillate inflorescences (*Kuhlmann 470*).

This species shares the scabrous upper leaf surface with *C. asperifolia*, but differs distinctly from it in the indument, the greater number of lateral veins and the much smaller flower heads of the pistillate inflorescence.

37. *Coussapoa sprucei* Mildbread, Notizbl. Bot. Gart. Berlin 10: 415 (1928).

Distribution: Brazil (Amazonas and Pará).

38. *Goussapoa tessmannii* Mildbread, Notizbl. Bot. Gart. Berlin 10: 413 (1928).

Distribution: Amazon Basin: Brazil (Amazonas and Pará), Peru (Amazonas and Loreto) and Colombia (Vaupes).

39. *Coussapoa trinervia* Spruce ex Mildbread, Notizbl. Bot. Gart. Berlin 10: 416 (1928).

Distribution: Amazon Basin: Colombia (Vaupes), Ecuador (Napo), Peru (Loreto), Venezuela (Amazonas) and Brazil (Amazonas, Mato Grosso, Pará and Maranhão).

40. *Coussapoa vannifolia* Cuatrecasas, Caldasia 7: 296 (1956).

Synonym: *C. rotunda* Little

Distribution: Colombia (Cauca) and north-western Ecuador.

41. *Coussapoa villosa* Poeppig & Endlicher, Nov. Gen. et Spec. 2: 33, t. 147 (1838).

Synonyms: *C. araneosa* Standley, *C. boliviana* Standley, *C. danielis* Cuatrecasas, *C. donnell-smithii* Mildbread, *C. eggertii* Standley, *C. embirana* Standley, *C. grandiceps* Macbride, *C. lawrencei* Standley, *C. lehmannii* Standley, *C. macarenensis* Cuatrecasas, *C. macarenensis* Cuatrecasas var. *antioquiensis* Cuatrecasas, *C. martiana* Miquel, *C. mutisii* Killip & Cuatrecasas, *C. panamensis* Pittier, *C. planitiensis* Cuatrecasas, *C. standleyi* Macbride, *C. subcrenata* Standley, *C. subincana* Miquel, *C. vellera* Klotzsch.

Distribution: From Guatemala to Ecuador and through Colombia and Venezuela to the Upper Amazon Basin (Brazil, Peru and Bolivia).

42. *Coussapoa viridifolia* Cuatrecasas, Fieldiana Bot. 28 (1): 212 (1951).

Synonym: *C. viridifolia* Cuatrecasas var. *tenuifolia* Cuatrecasas

Distribution: Venezuela (Bolívar and Amazonas), Brazil (Roraima) and Guyana.

Other names of *Coussapoa* species have to be referred to species of other genera (*C. emarginata* Macbride = *Pourouma minor* Benoist; *C. krukovii* Standley = *Pourouma tomentosa* Miquel; *C. rekoii* Standley = *Poulsenia armata* (Miquel) Standley) or are *nomina nuda*.

The type of *C. dolichandra* Cuatrecasas consists of discordant elements.

The type of *C. laevigata* Poeppig & Endlicher is lost; it probably belongs to *C. villosa*.

KEYS

To the species in:

1. Central America and Mexico
2. Colombia
3. Venezuela
4. Guyana, Suriname and French Guiana
5. Ecuador
6. Peru and Bolivia
7. Amazonian Brazil
8. Eastern Brazil (Santa Catarina to Pernambuco)



1. Key to the species in Central America and Mexico

1 Interfloral bracts absent.

2 Lower leaf surface glabrous or with sparse indument.

- 3 Lateral veins 3–6 pairs, basal pair reaching the margin in or above the middle of the leaf 33. *C. parviceps*
- 3 Lateral veins 7–13 pairs, basal pair reaching the margin below the middle of the leaf.
 - 4 Stipules 1–2 cm long; leaf 5–13 × 4–7 cm 22. *C. macerrima*
 - 4 Stipules 2–3 cm long; leaf 13–20 × 9–13 cm *C. spec. ? aff. ovalifolia**

2 Lower leaf surface with dense indument.

- 5 Intercostal venation very prominent beneath; stipules 0.5–4 cm long 28. *C. nymphaeifolia*
- 5 Intercostal venation (almost) plane beneath; stipules 3–7 cm long 6. *C. brevipes*

1 Interfloral bracts present.

6 All or most lateral veins branched.

- 7 Lower leaf surface with sparse indument 4b. *C. asperifolia* ssp. *magnifolia*
- 7 Lower leaf surface with dense indument 41. *C. villosa*

6 All lateral veins unbranched or only the basal pair(s) branched.

- 8 Lower leaf surface with dense indument.
 - 9 Basal pair of lateral veins unbranched and reaching the margin above the middle of the leaf 29. *C. oligocephala*
 - 9 Basal pair of lateral veins branched and reaching the margin below the middle of the leaf.
 - 10 Peduncle of the pistillate inflorescence 1–2 cm long; pistillate heads obovoid; stamens 3 (connate!) 28. *C. nymphaeifolia*
 - 10 Peduncle of the pistillate inflorescence 2–13 cm long; pistillate heads (sub)globose; stamens 2 (connate!) 41. *C. villosa*

8 Lower leaf surface glabrous or with sparse indument.

- 11 Leafy twigs and lower leaf surface (mainly on the veins) with sparse hairs 15. *C. echinata*
- 11 Leafy twigs and lower leaf surface glabrous.

* This refers to the collection *Gentry & Mori 14011*, Panamá, Cerro Tacaruna, which may be a new species or perhaps an aberrant form of *C. ovalifolia*.

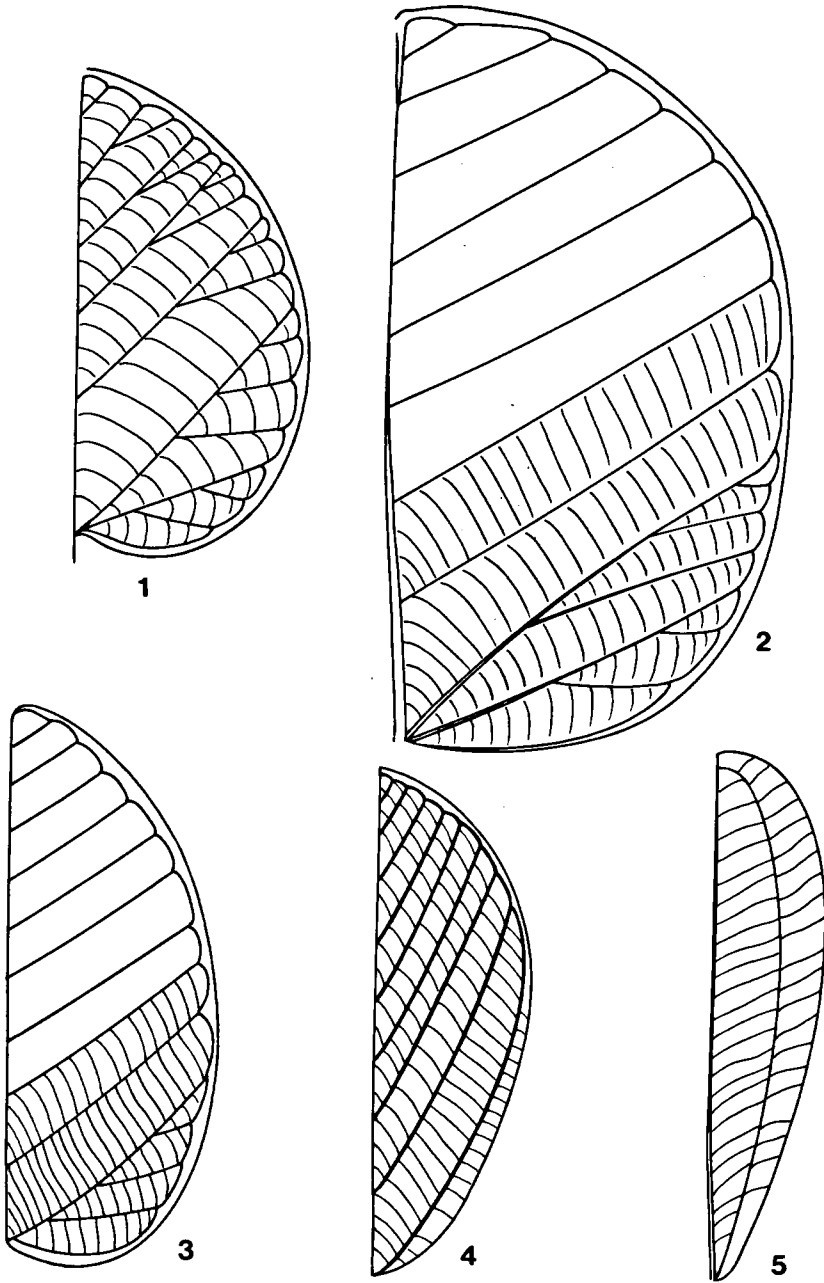


Fig. 12. Schematic drawings of types of venation in *Coussapoa*: 1, most lateral veins branched; 2 and 3, only the basal pair of lateral veins branched; 4, lateral veins unbranched, the basal pair reaching the margin above the middle of the leaf; 5, three-nerved.

- 12 Lateral veins 2–3 pairs, basal pair reaching the margin near the apex of the leaf
 18. *C. glaberrima*
- 12 Lateral veins 4–5 pairs, basal pair reaching the margin in or below the middle of the
 leaf 35. *C. purpusii*

2. Key to the species in Colombia

- 1 All or most lateral veins branched.
 - 2 Lower leaf surface with sparse indument 4b. *C. asperifolia* ssp. *magnifolia*
 - 2 Lower leaf surface with dense indument 41. *C. villosa*
- 1 All lateral veins unbranched or only the basal pair(s) branched.
 - 3 Interfloral bracts absent.
 - 4 Basal pair of lateral veins reaching the margin at or above the middle of the leaf.
 - 5 Lateral veins 9–13 pairs 5. *C. batavorum*
 - 5 Lateral veins 2–8 pairs.
 - 6 Stipules (almost) glabrous; basal pair of lateral veins branched 33. *C. parviceps*
 - 6 Stipules with sparse to dense indument, often with long, stiff, straight hairs; basal pair
 of lateral veins unbranched 30. *C. orthoneura*
 - 4 Basal pair of lateral veins reaching the margin below the middle of the leaf.
 - 7 Lower leaf surface with sparse indument or glabrous.
 - 8 Leafy twigs 9–22 mm thick; lower leaf surface with hairs concentrated in the areoles . . .
 8. *C. cinnamomea*
 - 8 Leafy twigs 5–12 mm thick; lower leaf surface glabrous or with hairs evenly distrib-
 uted 26. *C. napoënsis*
 - 7 Lower leaf surface with dense indument.
 - 9 Pistillate inflorescence unbranched; stamens 3 (connate!); petiole 2–4 mm thick
 6. *C. brevipes*
 - 9 Pistillate inflorescence branched, with 2–7 heads; stamens 1, or if 2 or 3 (connate!),
 then the petiole 5–7 mm thick.
 - 10 Lateral veins 14–22 pairs; lower leaf surface with hairs concentrated in the areoles . .
 8. *C. cinnamomea*
 - 10 Lateral veins 8–15 pairs; lower leaf surface with evenly distributed hairs
 27. *C. nitida*
 - 3 Interfloral bracts present.
 - 11 Leaf three-nerved 39. *C. trinervia*
 - 11 Leaf venation pinnate or (sub)palmate.
 - 12 Leaf venation (sub)palmate due to the presence of several basal lateral veins; leaves
 cordiform to ovate 40. *C. vannifolia*

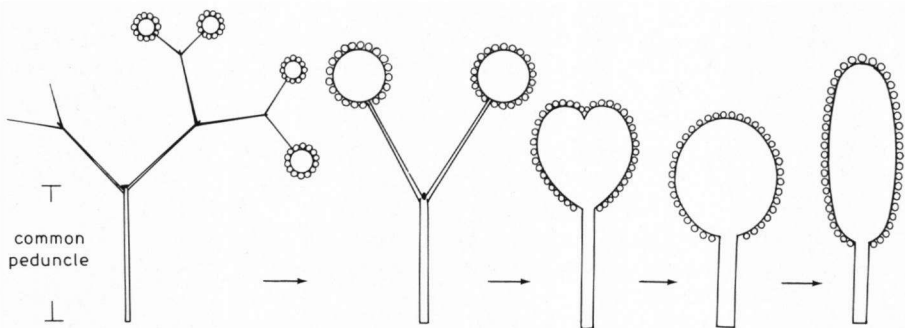


Fig. 13. Schematic drawings of types of pistillate inflorescences in *Coussapoa*.

- 12 Leaf venation pinnate; leaves ovate to obovate.
 - 13 Lower leaf surface glabrous or with sparse indument.
 - 14 Intercostal venation very prominent beneath 19. *C. herthae*
 - 14 Intercostal venation plane beneath 10. *C. contorta*
 - 13 Lower leaf surface with dense indument.
 - 15 Intercostal venation plane beneath.
 - 16 Lateral veins 7–15 pairs; pistillate inflorescence with 1–4 heads, these in fruit up to 4 cm in diameter; stamens 2 (connate!) 41. *C. villosa*
 - 16 Lateral veins 7–24 pairs; pistillate inflorescence with 2–7 heads, these in fruit up to 2 cm in diameter; stamen 1 27. *C. nitida*
 - 15 Intercostal venation prominent beneath.
 - 17 Lateral veins distinctly loop-connected.
 - 18 Petiole 1–3 cm long; stipules 1–2.5 cm long; pistillate inflorescence unbranched 7. *C. chocoensis*
 - 18 Petiole 3–9 cm long; stipules 2–6 cm long; pistillate inflorescence with 6–10 heads 19. *C. herthae*
 - 17 Lateral veins not or only faintly loop-connected.
 - 19 Common peduncle of the pistillate inflorescence up to 1 cm long; peduncle of the staminate inflorescence up to 2 cm long; stamens 2 (connate!) 14. *C. duquei*
 - 19 Common peduncle of the pistillate inflorescence at least 2 cm long; peduncle of the staminate inflorescence at least 2 cm long and stamens 2 (connate!), or if the peduncle shorter than 2 cm, then only 1 stamen.
 - 20 Common peduncle of pistillate and staminate inflorescences 2–13 cm long; pistillate inflorescence with 1–4 heads, these in fruit up to 4 cm in diameter; stamens 2 (connate!) 41. *C. villosa*
 - 20 Common peduncle of pistillate and staminate inflorescences 1–3 cm long; pistillate inflorescence with 2–7 heads, these in fruit up to 1 cm in diameter; stamen 1 38. *C. tessmannii*

3. Key to the species in Venezuela

- 1 Leaf three-nerved 39. *C. trinervia*
- 1 Leaf venation pinnate.
 - 2 All or most lateral veins branched.
 - 3 Lower leaf surface with sparse indument 4b. *C. asperifolia* ssp. *magnifolia*
 - 3 Lower leaf surface with dense indument 41. *C. villosa*
 - 2 All lateral veins unbranched or only the basal pair(s) branched.
 - 4 Lower leaf surface with reddish-brown hairs 11. *C. crassivenosa*
 - 4 Lower leaf surface with yellow to whitish hairs.
 - 5 Lower leaf surface with dense persisting indument.
 - 6 Basal pair of lateral veins reaching the margin below the middle of the leaf; lateral veins 7–12 pairs 41. *C. villosa*
 - 6 Basal pair of lateral veins reaching the margin in or above the middle of the leaf; lateral veins 2–7 pairs.
 - 7 Pistillate inflorescence unbranched; stamens 2 (connate!) 3. *C. argentea*
 - 7 Pistillate inflorescence branched, with 2–10 heads; stamen 1 30. *C. orthoneura*
 - 5 Lower leaf surface with sparse persisting indument.
 - 8 Young leaves with dense (disappearing) arachnoid hairs.
 - 9 Interfloral bracts present (sometimes only a few); pistillate inflorescence unbranched; stamens 2 (connate!) 3. *C. argentea*
 - 9 Interfloral bracts absent; pistillate inflorescence branched; stamen 1 30. *C. orthoneura*
 - 8 Young leaves without or with sparse (disappearing) arachnoid hairs.

- 10 Interfloral bracts present.
 - 11 Leaves ovate to elliptic; terminal buds swollen 25b. *C. microcephala* ssp. *cornifolia*
 - 11 Leaves obovate to elliptic; terminal buds slender 42. *C. viridifolia*
- 10 Interfloral bracts absent.
 - 12 Stipules 0.5–1 cm long; pistillate inflorescence with 1–3 heads; stamens 2 (connate!) 42. *C. viridifolia*
 - 12 Stipules (0.5–)1–7 cm long; pistillate inflorescence with 2–10 heads; stamen 1 30. *C. orthoneura*

4. Key to the species in Guyana, Suriname and French Guiana

- 1 Upper leaf surface scabrous.
 - 2 Basal pair of lateral veins reaching the margin below the middle of the leaf; stamens 3 (connate!) 21. *C. lepreurii*
 - 2 Basal pair of lateral veins reaching the margin above the middle of the leaf; stamen 1 4a. *C. asperifolia* ssp. *asperifolia*
- 1 Upper leaf surface smooth.
 - 3 Leafy twigs 8–20 mm thick, internodes distinctly hollow.
 - 4 Pistillate inflorescence with 1(–6) heads, these 0.8–3 cm in diameter; stamen 1 4b. *C. asperifolia* ssp. *magnifolia*
 - 4 Pistillate inflorescence with 2–5 heads, these 0.3–0.8 cm in diameter; stamens 2 (connate!) 20. *C. latifolia*
 - 3 Leafy twigs 3–6 mm thick and internodes hollow or 3–9 mm thick and internodes solid.
 - 5 Indument of lower leaf surface reddish-brown.
 - 6 Leaves lanceolate to narrowly elliptic 16. *C. ferruginea*
 - 6 Leaves ovate to obovate or to orbicular 11. *C. crassivenosa*
 - 5 Indument of lower leaf surface white to yellow to brown.
 - 7 Lateral veins 2–4 pairs.
 - 8 Lower leaf surface with white arachnoid hairs 3. *C. argentea*
 - 8 Lower leaf surface without arachnoid hairs.
 - 9 Stipules with dense, short, appressed hairs, often mixed with longer, straight, stiff hairs 42. *C. viridifolia*
 - 9 Stipules glabrous or with sparse, short, appressed hairs 1. *C. angustifolia*
 - 7 Lateral veins 5–10 pairs.
 - 10 Young leaves with arachnoid hairs.
 - 11 Stipules 0.4–1 cm long; basal part of the leaf margin revolute 25b. *C. microcephala* ssp. *cornifolia*
 - 11 Stipules 1–5 cm long; basal part of the leaf margin plane 25a. *C. microcephala* ssp. *microcephala*
 - 10 Young leaves without arachnoid hairs.
 - 12 Terminal buds swollen 25b. *C. microcephala* ssp. *cornifolia*
 - 12 Terminal buds slender.
 - 13 Leafy twigs 4–9 mm thick; basal pair of lateral veins reaching the margin at or below the middle of the leaf; stipules only with short hairs 20. *C. latifolia*
 - 13 Leafy twigs 2–5 mm thick; basal pair of lateral veins reaching the margin at or above the middle of the leaf; stipules usually also with long, straight, stiff hairs 42. *C. viridifolia*

5. Key to the species in Ecuador

- 1 Leaf three-nerved.
 - 2 Intercostal venation prominent beneath 39. *C. trinervia*
 - 2 Intercostal venation plane beneath 9. *C. cinnamomifolia*

- 1 Leaf venation pinnate to (sub)palmate.
 - 3 Interfloral bracts absent.
 - 4 Basal pair of lateral veins reaching the margin above the middle of the leaf.
 - 5 Basal pair of lateral veins branched 33. *C. parviceps*
 - 5 Basal pair of lateral veins unbranched 30. *C. orthoneura*
 - 4 Basal pair of lateral veins reaching the margin below the middle of the leaf.
 - 6 Lateral veins (7–)9–21 pairs; leaves ovate to ovato-lanceolate, apex acute 31. *C. ovalifolia*
 - 6 Lateral veins 5–10 pairs; leaves broadly ovate to broadly elliptic, apex obtuse 26. *C. napoënsis*
 - 3 Interfloral bracts present.
 - 7 Leaf venation (sub)palmate due to the presence of several equally thick basal lateral veins; leaves cordiform to ovate 40. *C. vannifolia*
 - 7 Leaf venation pinnate; leaves ovate to obovate.
 - 8 All or most lateral veins branched.
 - 9 Lower leaf surface with sparse indument 4b. *C. asperifolia* ssp. *magnifolia*
 - 9 Lower leaf surface with dense indument 41. *C. villosa*
 - 8 All lateral veins unbranched or only the basal pair(s) branched.
 - 10 Lower leaf surface glabrous or with sparse indument.
 - 11 Intercostal venation prominent beneath 19. *C. herthae*
 - 11 Intercostal venation plane beneath 10. *C. contorta*
 - 10 Lower leaf surface with dense indument.
 - 12 Basal pair of lateral veins reaching the margin above the middle of the leaf 11. *C. crassivenosa*
 - 12 Basal pair of lateral veins reaching the margin below the middle of the leaf.
 - 13 Pistillate inflorescence with 6–10 heads; stamens 3 (connate!) .. 19. *C. herthae*
 - 13 Pistillate inflorescence with 1–4 heads; stamens 2 (connate!).
 - 14 Common peduncle of the staminate inflorescence up to 2 cm long and that of the pistillate one up to 1 cm long 14. *C. duquei*
 - 14 Common peduncle of the staminate and pistillate inflorescences at least 2 cm long 41. *C. villosa*

6. Key to the species in Peru and Bolivia

- 1 Leaf three-nerved.
 - 2 Intercostal venation prominent beneath 39. *C. trinervia*
 - 2 Intercostal venation plane beneath 9. *C. cinnamomifolia*
- 1 Leaf venation pinnate.
 - 3 All or most lateral veins branched.
 - 4 Lower leaf surface with sparse indument 4b. *C. asperifolia* ssp. *magnifolia*
 - 4 Lower leaf surface with dense indument.
 - 5 Upper leaf surface glabrous; leaves (normally) ovate; lower leaf surface with white to yellowish hairs on the main veins; stamens 2 (connate!) 41. *C. villosa*
 - 5 Upper leaf surface sparsely hispidulous; leaves elliptic; lower leaf surface with (long) brown hairs on the main veins; stamens 3 (connate!) 22. *C. longepedunculata*
 - 3 All lateral veins unbranched or only the basal pair(s) branched
 - 6 Interfloral bracts absent.
 - 7 Lateral veins 2–7 pairs, basal pair reaching the margin in or above the middle of the leaf .. 30. *C. orthoneura*
 - 7 Lateral veins 7–22 pairs, basal pair reaching the margin below the middle of the leaf.
 - 8 Leafy twigs 9–22 mm thick; lower leaf surface with hairs concentrated in the areoles ... 8. *C. cinnamomea*
 - 8 Leafy twigs 3–9 mm thick; lower leaf surface glabrous or with evenly distributed hairs . 31. *C. ovalifolia*

- 6 Interfloral bracts present.
 - 9 Lower leaf surface glabrous or with sparse indument.
 - 10 Lateral veins 4–6 pairs, basal pairs reaching the margin in or above the middle of the leaf 4c. *C. asperifolia* ssp. *rhamnoides*
 - 10 Lateral veins 7–10 pairs, basal pair reaching the margin below the middle of the leaf 34. *C. parvifolia*
 - 9 Lower leaf surface with dense indument.
 - 11 Arachnoid indument of lower leaf surface reddish-brown 11. *C. crassivenosa*
 - 11 Arachnoid indument of lower leaf surface white to yellowish.
 - 12 Intercostal venation (almost) plane beneath.
 - 13 Pistillate inflorescence with 1(–4) heads, these at fruit up to 4 cm in diameter; stamens 2 (connate!) 41. *C. villosa*
 - 13 Pistillate inflorescence with 2–7 heads, these at fruit up to 2 cm in diameter; stamen 1 27. *C. nitida*
 - 12 Intercostal venation prominent beneath.
 - 14 Common peduncle 2–13 cm long; pistillate inflorescence with 1(–4) heads, these at fruit up to 4 cm in diameter; stamens 2 (connate!) 41. *C. villosa*
 - 14 Common peduncle 1–3 cm long; pistillate inflorescence with 2–7 heads, these at fruit up to 1 cm in diameter; stamen 1 38. *C. tessmannii*

7. Key to the species in Amazonian Brazil

- 1 Interfloral bracts absent.
 - 2 Lateral veins at least 8 pairs.
 - 3 Lower surface with sparse indument or glabrous.
 - 4 Leafy twigs 9–22 mm thick; lower leaf surface with hairs concentrated in the areoles 8. *C. cinnamomea*
 - 4 Leafy twigs 3–9 mm thick; lower leaf surface glabrous or with evenly distributed hairs ... 31. *C. ovalifolia*
 - 3 Lower leaf surface with dense indument.
 - 5 Lower leaf surface without arachnoid hairs.
 - 6 Lateral veins 14–22 pairs; lower leaf surface with hairs concentrated in the areoles 8. *C. cinnamomea*
 - 6 Lateral veins 8–15 pairs; lower leaf surface with evenly distributed hairs .. 27. *C. nitida*
 - 5 Lower leaf surface with arachnoid hairs.
 - 7 Lateral veins 5–8 pairs; leaves 6–16 × 2–7 cm 2. *C. arachnoidea*
 - 7 Lateral veins at least 10 pairs; leaves 17–26 × 11–19 cm 27. *C. nitida*
 - 2 Lateral veins at most 7 pairs.
 - 8 Lower leaf surface with sparse indument.
 - 9 Stipules 0.5–1 cm long; pistillate inflorescence with 1–3 heads; stamens 2 (connate!) 42. *C. viridifolia*
 - 9 Stipules 0.5–7 cm long; pistillate inflorescence with 2–10 heads; stamen 1 30. *C. orthoneura*
 - 8 Lower leaf surface with dense indument.
 - 10 Intercostal venation prominent beneath; old leaves still with arachnoid hairs 2. *C. arachnoidea*
 - 10 Intercostal venation plane beneath; old leaves without arachnoid hairs.
 - 11 Basal pair of lateral veins reaching the margin in or below the middle of the leaf; leaves ovate to elliptic 12. *C. cupularis*
 - 11 Basal pair of lateral veins reaching the margin in or above the middle of the leaf; leaves obovate to elliptic 30. *C. orthoneura*
- 1 Interfloral bracts present.
 - 12 Leaf three-nerved 39. *C. trinervia*

- 12 Leaf venation pinnate.
- 13 All or most lateral veins branched.
- 14 Upper leaf surface scabrous; lower leaf surface with dense indument but lacking arachnoid hairs 4a. *C. asperifolia* ssp. *asperifolia*
- 14 Upper leaf surface smooth, or if scabridulous, then the lower leaf surface with sparse indument.
- 15 Lower leaf surface with dense, partly arachnoid indument 41. *C. villosa*
- 15 Lower leaf surface with sparse indument and without arachnoid hairs
..... 4b. *C. asperifolia* ssp. *magnifolia*
- 13 All lateral veins unbranched or only the basal pair(s) branched.
- 16 Upper leaf surface scabrous 36. *C. scabra*
- 16 Upper leaf surface smooth.
- 17 Lower leaf surface with reddish-brown indument.
- 18 Leaves lanceolate to narrowly elliptic 16. *C. ferruginea*
- 18 Leaves ovate or obovate to orbicular 11. *C. crassivenosa*
- 17 Lower leaf surface with white to yellow or to brown indument.
- 19 Intercostal venation very prominent beneath.
- 20 Lateral veins 4–7 pairs, basal pair reaching the margin in or above the middle of the leaf; lower leaf surface with sparse indument 42. *C. viridifolia*
- 20 Lateral veins 5–24 pairs, basal pair reaching the margin in or below the middle; lower leaf surface with (rather) dense indument.
- 21 Stipules up to 2 cm long; perianths glabrous 37. *C. sprucei*
- 21 Stipules at least 2 cm long; perianths (mostly) puberulous.
- 22 Common peduncle 1–3 cm long; pistillate inflorescence with 2–7 heads, these at fruit up to 1 cm in diameter; stamen 1 38. *C. tessmannii*
- 22 Common peduncle 2–13 cm long; pistillate inflorescence with 1 (–4) heads, these at fruit up to 4 cm in diameter; stamens 2 (connate!). ...
..... 41. *C. villosa*
- 19 Intercostal venation (almost) plane beneath.
- 23 Basal pair(s) of lateral veins distinctly branched.
- 24 Pistillate inflorescence with 1(–6) head(s), these 0.8–3 cm in diameter; stamen 1 4b. *C. asperifolia* ssp. *magnifolia*
- 24 Pistillate inflorescence with 2–5 heads, these ca. 0.3–0.4 cm in diameter; stamens 2 (connate!) 20. *C. latifolia*
- 23 Basal pair of lateral veins unbranched or faintly branched.
- 25 Stipules glabrous or with sparse indument.
- 26 Basal pair of lateral veins reaching the margin in or below the middle of the leaf; stamens 2 (connate!) 20. *C. latifolia*
- 26 Basal pair of lateral veins reaching the margin in or above the middle of the leaf; stamen 1.
- 27 Base of the leaf acute (to subobtuse); lateral veins 2–4 pairs
..... 1. *C. angustifolia*
- 27 Base of the leaf obtuse to subcordate; lateral veins 4–6 pairs
..... 4c. *C. asperifolia* ssp. *rhmnoides*
- 25 Stipules with dense indument.
- 28 Stipules at most 2 cm long.
- 29 Terminal buds swollen 25b. *C. microcephala* ssp. *cornifolia*
- 29 Terminal buds slender.
- 30 Basal lateral veins reaching the margin in or above the middle of the leaf.
- 31 Leafy twig 3–12 mm thick; petiole 2–7 cm long; stamen 1; fruiting heads up to 1.5 cm in diameter
..... 4c. *C. asperifolia* ssp. *rhmnoides*

- 31 Leafy twig at most 5 mm thick; petiole at most 3 cm long; stems 2 (connate!); fruiting heads up to 0.4 or 0.8 cm in diameter.
- 32 Stipules 0.3–0.6 cm long; lower leaf surface with long, more or less patent hairs; (species of the Amazonian lowlands) 25b. *C. microcephala* ssp. *cornifolia*
- 32 Stipules 0.5–1 cm long; lower leaf surface with short, appressed hairs; (species of the Guiana highlands) 42. *C. viridifolia*
- 30 Basal pair of lateral veins reaching the margin (in or) below the middle of the leaf.
- 33 Young leaves (beneath) with arachnoid hairs.
- 34 Leafy twig 2–4 mm thick; stipules at most 1 mm long; fruiting heads up to 0.4 cm in diameter 25b. *C. microcephala* ssp. *cornifolia*
- 34 Leafy twig 4–9 mm thick; stipules at least 1 cm long; fruiting heads up to 1 cm in diameter 25a. *C. microcephala* ssp. *microcephala*
- 33 Young leaves without arachnoid hairs.
- 35 Leafy twig 2–4 mm thick; fruiting heads up to 0.4 cm in diameter; filaments far exceeding the perianth 25b. *C. microcephala* ssp. *cornifolia*
- 35 Leafy twig 4–9 mm thick; fruiting heads up to 1 cm in diameter; filaments just exceeding the perianth 20. *C. latifolia*
- 28 Stipules at least 2 cm long.
- 36 Young leaves without arachnoid hairs 20. *C. latifolia*
- 36 Young leaves (beneath) with arachnoid hairs.
- 37 Indument of the leaves disappearing with age 25b. *C. microcephala* ssp. *microcephala*
- 37 Indument of the leaves persisting.
- 38 Pistillate inflorescence with 1 (–4) head(s); stamens 2 (connate!) 41. *C. villosa*
- 38 Pistillate inflorescence with 2–7 heads; stamen 1 27. *C. nitida*

8. Key to the species in Eastern Brazil (Santa Catarina to Pernambuco)

- 1 Upper leaf surface with long, white, floccose, arachnoid hairs 17. *C. floccosa*
- 1 Upper leaf surface glabrous.
- 2 Stipules up to 1 cm long; young leaves with arachnoid hairs beneath 13. *C. curranii*
- 2 Stipules at least 1 cm long; young leaves without arachnoid hairs.
- 3 Internodes hollow; intercostal venation more or less prominent beneath; leafy twigs 4–8 mm thick 32. *C. pachyphylla*
- 3 Internodes solid; intercostal venation plane beneath; leafy twigs 2–5 mm thick 24. *C. microcarpa*

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