

A revision of *Clematis* sect. *Aspidanthera* s.l. (Ranunculaceae)

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Abstract In this paper *Clematis* sect. *Aspidanthera* s.l. is revised. Seventy-two species and 15 varieties are recognized. They are keyed, described, and in most cases illustrated, and are classified into six subsections. Of them, one series, five species, and two varieties are described as new, and two new ranks are proposed. Brief taxonomic history and geographical distribution of the section are given, the evolutionary trends of several important morphological characters observed are enumerated, and the relationships of its subsections are discussed. As a result, subsect. *Dioicae*, which shows striking resemblance in both habit and floral structure to sect. *Clematis* subsect. *Clematis*, is regarded as the primitive group, while subsect. *Insidiosae*, bearing pistillate flower with erect sepals and no staminodes, is regarded as the advanced group within the section.

Key words *Clematis* L., *Clematis* sect. *Aspidanthera* s.l., Ranunculaceae, taxonomic revision.

1 Brief taxonomic history

In the first revision of the genus *Clematis* L. made by de Candolle (1818), some 17 unisexual species were recognized and all put in the large heterogeneous section *Flammula* DC., and together with other bisexual species were classified into five groups: *C. peruwiana* DC. and *C. caracasana* H. B. K. (= *C. guadeloupeae* Pers.) with 14 species of sect. *Clematis*, sect. *Brachiatae*, sect. *Meclatis*, and sect. *Viorna* subsect. *Connatae* were placed into the first group, which was diagnosed as "Floribus paniculatis, foliis pinnatim bipinnatimve sectis"; *C. virginiana* L., *C. dioica* L., *C. bonariensis* Juss. ex DC., *C. catesbyana* Pursh, *C. sericea* H. B. K. ex DC., *C. brasiliensis* DC. (subsect. *Dioicae*), *C. microphylla* DC. (subsect. *Microphyllae*), *C. glycinoides* DC., *C. aristata* R. Br. ex Ker Gawler (subsect. *Aristatae*), *C. indivisa* Willd. (= *C. paniculata* Gmelin) and *C. hexasepala* DC. (= *C. fosteri* Gmelin) (subsect. *Hexapetalae*) with six species of sect. *Clematis*, sect. *Naraveliopsis*, and sect. *Viorna* subsect. *Connatae* were placed into the second group, which was diagnosed as "Floribus paniculatis, foliis ternatim biternatimve sectis"; *C. dominica* Lam. (= *C. polygama* Jacq.) and *C. plukenetii* DC. (subsect. *Dioicae*) with seven species of sect. *Clematis*, sect. *Brachiatae*, and sect. *Viorna* subsect. *Connatae* were placed into the third group, which was diagnosed as "Pedunculis trifidis 3-floris seu ternis 1-floris, foliis ternatim rarius pinnatim sectis"; *C. clitorioides* DC. (subsect. *Aristatae*) with 11 species of sect. *Clematis*, sect. *Viorna* subsect. *Crispae*, and sect. *Pseudanemone* were placed into the fourth group, which was diagnosed as "Pedunculis solitariis unifloris, foliis pinnatim sectis"; and *C. gentianoides* DC. (subsect. *Aristatae*) with three species of sect. *Viorna* subsect. *Crispae* was placed into the fifth group, which was diagnosed as "Pedunculis solitariis unifloris,

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foliis indivisis , caulibus herbaceis erectis ”.

In the classification of the tribe Clematideae made by Spach(1839), the genus *Clematis* consists of three sections. The first section , sect. *Vitalba* , which is mainly characterized by its inap- pendiculate anthers and narrowly rimmed achenes , contains an European bisexual species , *C. vitalba* L. , and an American unisexual species , *C. virginiana* L. , which belongs to sect. *Aspidan- thera* subsect. *Dioicae* in the present revision. The second section , sect. *Flammula* , differs from sect. *Vitalba* mainly in its broadly and thickly rimmed achenes , and contains three bisexual species , *C. flammula* L. , *C. angustifolia* Jacq. , and *C. erecta* All.(= *C. recta* L.). On the basis of the single Australian unisexual species *C. aristata* , which belongs to sect. *Aspidanthera* subsect. *Aristatae* in the present revision , the third section , sect. *Aspidanthera* , was founded , which is characterized by its long appendiculate anthers.

In his monograph of the genus *Clematis* , for the classification of the species Kuntze(1885) utilized a series of important morphological characters , such as sexuality of flower , extending direc- tions of sepals , indumentum of stamens , anther shape and length , connective projections , and ori- gin of inflorescence. On the basis of these characters , the American unisexual *C. dioica* group and the New Zealand unisexual *C. paniculata* group were placed under Sect. 1. *Scandentes eperulatae* characterized by the inflorescences arising from leaf axils of hornotinous branch , and the American unisexual *C. lasiantha* group under Sect. 2. *Scandentes perulatae* characterized by the inflores- cences or hornotinous flowering branch with several leaves arising from an axillary bud of old branch. Unfortunately , the American unisexual species *C. peruviana* DC. , *C. seemannii* Kuntze , *C. millefoliolata* Eichler , and the Australian unisexual species *C. glycinoides* DC. , *C. aristata* , *C. gentianooides* DC. and *C. clitorioides* DC. , in which the inflorescences all arise from the leaf axils of hornotinous branch , were also put in Sect. 2. Besides , in Sect. 1 , the Madagascar unisex- ual *C. edentata* Baker(= *C. insidiosa* Baill.) was erroneously treated as an infraspecific taxon of the Madagascar bisexual species *C. ibarensis* Baker(Wang , 2001) , and this incorrect treatment has caused a taxonomic confusion in the flora of Madagascar for a long time(Perrier , 1950 ; Tamu- ra , 1995 ; Johnson , 1997 ; Grey-Wilson , 2000).

In the comprehensive classification of the *Clematis* proposed by Prantl(1888) , just like in that proposed by Kuntze mentioned above , various important morphological characters were utilized for the classification of the species , and based on these characters they were classified into various groups at different levels. The unisexual species of that genus were all put in sect. *Flammula*. Un- der subsect. *Vitalbae* of this section , next to the bisexual series *Euvitalbae* , three other unisexual series , i. e. ser. *Saxicolae* , ser. *Dioicae* , and ser. *Hexapetalae* , were founded to accommodate the Madagascar unisexual *C. saxicola* Bojer(= *C. insidiosa* Baill.) , the American unisexual *C. dioica* group , and the New Zealand unisexual *C. paniculata* group respectively. Laying stress on the stamen connective projections , Prantl established subsect. *Aristatae* which includes the Aus- tralian unisexual *C. aristata* group. Prantl ’s treatment of the unisexual species was afterwards adopted by Schneider(1906) , Rehder(1940) , Eichler(1958) , and Tamura(1967) , though of- ten with some modifications.

In the classification proposed by Snoeijer(1992) , under sect. *Clematis* Prantl ’s ser. *Dioicae* and ser. *Hexapetalae* were recognized and all elevated to subsectional rank , and sect. *Lasiantha* , which was established by Tamura(1967) on the basis of the North American *C. lasiantha* Nutt. , and sect. *Aspidanthera* , which had been neglected for a long time , were also recognized.

In the revised classification published by Tamura(1995) , sect. *Aspidanthera* was recognized and strikingly amplified to include all the American , Australasian , and Madagascar unisexual species. Next to it stands the small North American unisexual sect. *Lasiantha*. I(Wang , 2000) agreed to Tamura ’s above treatment , and proposed a classification in detail for the enlarged section ,

in which even sect. *Lasiantha* was included but relegated to subsectional rank , “ in the belief that these species might originate from a common ancestral group ” , i. e. sect. *Clematis* subsect. *Clematis* .

In his monograph of *Clematis* , on the basis of the New Zealand unisexual species Johnson (1997) founded a new section , sect. *Novae-Zelandiae* , and placed it between the African bisexual sect. *Pseudanemone* which is characterized by having imbricate sepal aestivation and hairy stamens , and the bisexual sect. *Atragene* of the Northern Hemisphere which is characterized by having petaloid staminodes and hairy stamens . In sect. *Clematis* , the subsection *Dioicae* consists of the American unisexual *C. dioica* group . Following sect. *Clematis* are the unisexual sect. *Lasiantha* and sect. *Aspidanthera* , of which the latter is subdivided into two subsections , i. e. subsect. *Aspidanthera* accommodating the Australian unisexual *C. aristata* group , and subsect. *Papuasicae* accommodating the eastern Malasian and New Guinean *C. papuasica* group . Johnson followed Perrier (1950) to treat the Madagascar unisexual *C. edentata* Baker (= *C. insidiosa* Baill.) as a variety of the Madagascar bisexual *C. ibarensis* Baker under the bisexual subsect. *Africanae* of sect. *Meclatis* . Johnson ’ s treatment of the unisexual species mentioned above was nearly entirely adopted by Grey-Wilson (2000) , though with sect. *Novae-Zelandiae* being moved to behind sect. *Aspidanthera* .

Brandenburg (2000) proposed a new classification of the genus *Clematis* on the basis of his cladistic study . In his classification , ser. *Dioicae* Prantl , subsect. *Aristatae* Prantl , and subsect. *Papuasicae* H. Eichler were all elevated to sectional rank , but sect. *Aspidanthera* Spach was not included .

2 Relationships of the subsections

In the present revision of sect. *Aspidanthera* , the classification I proposed in 2000 remains to be used with addition of a new series (ser. *Gentianoides*). Sect. *Aspidanthera* here defined is subdivided into six subsections based on the sum total of sepal , anther , staminode , and inflorescence characters . After examining the herbarium material of the section , the following trends of some important morphological characters of this section have been observed : the sepal number per flower changes from four to eight ; the sepals in extending direction from spreading to erect , in outline from oblong to narrowly linear , and in length from slightly to 2 – 4 times longer than stamens ; the sepal aestivation from valvate to imbricate ; the anther connective from not projected to shortly or long projected at apex ; the staminode number from numerous to definite , few , or zero eventually ; and the inflorescence from arising alone from leaf axils of homotinous branch to together with several leaves arising from an axillary bud of old branch (Wang , 2000) .

Of the six subsections the largest American subsection *Dioicae* , which is characterized by its usually 4-sepalled flower , valvate oblong or narrowly oblong sepals slightly longer than stamens , not projected anther connectives , numerous staminodes , and the inflorescences arising from leaf axils of homotinous branch and showing striking resemblance to the bisexual sect. *Clematis* subsect. *Clematis* (Wang , 2003) in both habit and floral structure , is regarded as the primitive group of sect. *Aspidanthera* (Wang , 2000) , and might have originated from the latter .

The small North American subsection *Lasianthae* is closely related to subsect. *Dioicae* , differing from the latter only in its inflorescence or homotinous flowering branch arising from an axillary bud of old branch together with several leaves , and may be derived from the latter .

In having 4-sepalled flower and not projected anther connective the Australian subsection *Microphyllae* is also closely related to the American subsection *Dioicae* , differing from the latter in its usually elongate and narrowed sepals which are usually 2 – 4 times longer than the more or less shortened stamens , and diminished number of staminodes which are 16 to 2 per flower . In subsect. *Microphyllae* , only *C. rhodocarpoides* Rose possesses the floral structure similar to that of subsect.

Dioicae, and may be regarded as the primitive species of this subsection.

The subsection *Aristatae*, in which the flowers are 4-sepalled, the sepals are often narrowly oblong in outline and often two or more times longer than stamens, and the staminodes are decreased in number (18–3 per flower), is closely related to subsect. *Microphyllae*, but differs in having the peculiar anther connectives variously projected at apex, and may be derived from the latter.

The New Zealand subsection *Hexapetalae* is characterized by its imbricate aestivation of sepals (Godley, 1977; Webb et al., 1988). However, according to Godley (1977), in *C. affoliata* Buchan., two pairs of sepals of the flower are nearly valvate, and in *C. paniculata*, two of the six sepals of the flower are induplicate-valvate, and the other four are imbricate. These phenomena appear to indicate that the imbricate aestivation of sepals of subsect. *Hexapetalae*, just like that of *C. williamsii* Gray, a member of sect. *Cheiropsis* (Wang, 2002), "may not necessarily be a precursory condition toward valvate aestivation" (Tobe, 1980), and on the contrary might be derived from the valvate aestivation of its ancestral group, i. e. subsect. *Dioicae*. In having sepals often two times longer than the more or less shortened stamens, not projected anther connectives, and decreased staminodes (13–2 per flower), this subsection shows certain resemblance to subsect. *Microphyllae*, and may be together with the latter derived from subsect. *Dioicae*. The New Zealand species have been differentiated into four groups in both vegetative and floral characters. Of them, the monotypic series *Marmorariae* is distinct enough in its low suffrutescent habit, simple palmately dissected leaves, and obovate-elliptic sepals to be obviously divorced from the other three series of the subsection, in which all plants are woody vines, the leaves are once to twice ternate, and the sepals are oblong, lanceolate, or linear in outline.

The Madagascar small subsection *Insidiosae* is characterized by its four erect sepals of the pistillate flower, and the absence of staminodes. However, the structure of its staminate flower is strikingly similar to that of subsect. *Dioicae* and *C. rhodocarpoides* of subsect. *Microphyllae*, and on the basis of this similarity I would hazard the guess that subsect. *Insidiosae* may be derived from subsect. *Microphyllae* with the decrease of the number of staminodes.

The putative relationships among the six subsections mentioned above are shown in Fig. 1.

3 Geographical distribution

The section *Aspidanthera* here defined consists of 72 species and 15 varieties, which are classified into six subsections widespread in North America, South America, Australia, eastern Indonesia of Asia, and Madagascar of Africa (Fig. 2).

The first subsection, subsect. *Dioicae*, is the largest and primitive group of sect. *Aspidanthera*, containing 34 species and 6 varieties widespread in North America and South America. In southern Canada and the U. S. A., there are four species, of which three species are endemic; in Central America, 14 species, 7 endemic; in the West Indies, 6 species, 4 endemic; and in South America, 14 species, 12 endemic. According to Moreno (1993), the ancestral population of the subsection may be situated in western North America and northern Mexico. The advanced small group of the subsection, ser. *Millefoliolatae*, occurs in the alpine regions of the Andes in Peru and eastern Bolivia.

The second subsection, subsect. *Lasianthae*, the close ally of subsect. *Dioicae*, consists of two species confined in geographical distribution to southwestern U. S. A. and northwestern Mexico.

The primitive group of the Australian *Clematis*, subsect. *Microphyllae*, with seven species and one variety, is endemic to Australia including the island Tasmania. The two primitive species with once ternate leaves, *C. rhodocarpoides* and *C. queenslandica* W. T. Wang, are endemic to southeastern and eastern Queensland respectively; the two species with 2-pinnate leaves, *C. fauvcettii* Muell. and *C. microphylla* DC., are distributed in the eastern part of the mainland Australia, with one variety, *C. microphylla* var. *microphylla*, extending southward to the island Tasmania; the

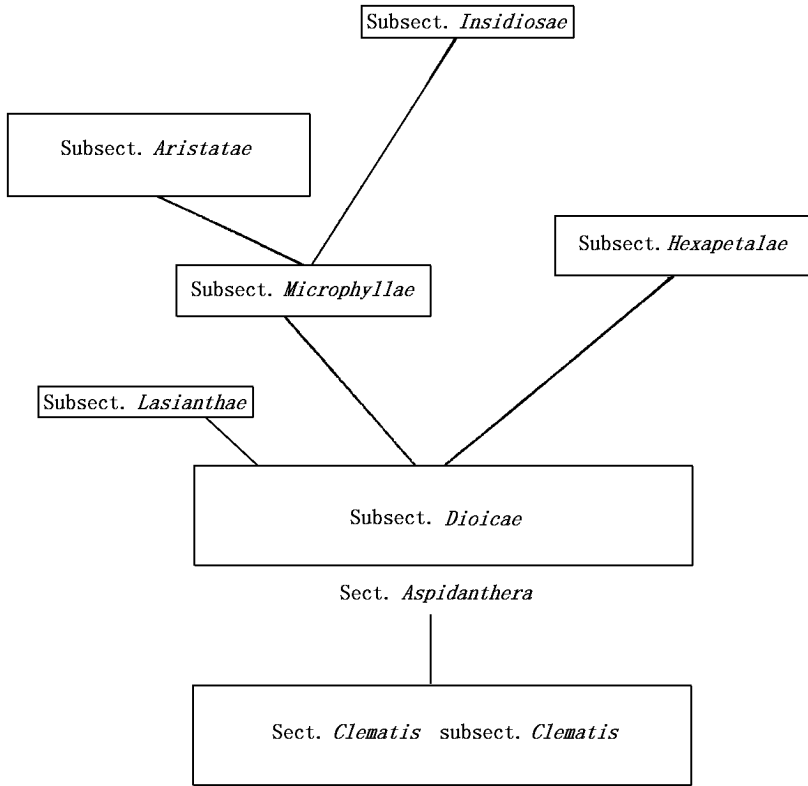


Fig. 1. Diagram showing the putative evolutionary relationships of the subsections of sect. *Aspidanthera*.

other two species which are closely allied to *C. microphylla*, *C. linearifolia* Steud. and *C. delicata* H. Eichler ex W. T. Wang, occur in western part of the mainland Australia; and the last one, *C. brachystemon* Gunn ex W. T. Wang, also a close ally of *C. microphylla*, is endemic to the island Tasmania.

Subsect. *Aristatae*, which may be derived from the Australian subsection *Microphyllae*, contains 16 species and 9 varieties widespread in Australia and adjoining islands. Of them, six species are endemic to New Guinea, four species to Australia, two species to Celebes (Indonesia), and one species each to New Guinea plus Solomon Islands, to New Caledonia, and to Norfolk Island respectively. *C. pickeringii* Gray is rather widespread transversely, ranging from Fiji westward through New Caledonia, Solomon Islands, New Guinea, northern Australia and islands of eastern Indonesia to eastern Java.

In New Zealand occur about 11 species of the genus *Clematis*, which are all unisexual and form the curious group, subsection. *Hexapetaeae*, which is characterized by its imbricate aestivation of sepals. Of them none is closely allied to any species of Australia. This phenomenon might have resulted from a long time separation of New Zealand from Australia (Raven & Axelrod, 1974; Barlow, 1981). According to Ziman & Keener (1989), "the initial species of the genera *Anemone*, *Clematis*, and *Ranunculus* arrived in New Zealand from South America in the Late Pliocene or later".

The small advanced group of sect. *Aspidanthera*, subsection. *Insidiosae*, consists of two species restricted in geographical distribution to Madagascar, and far remote from the American and

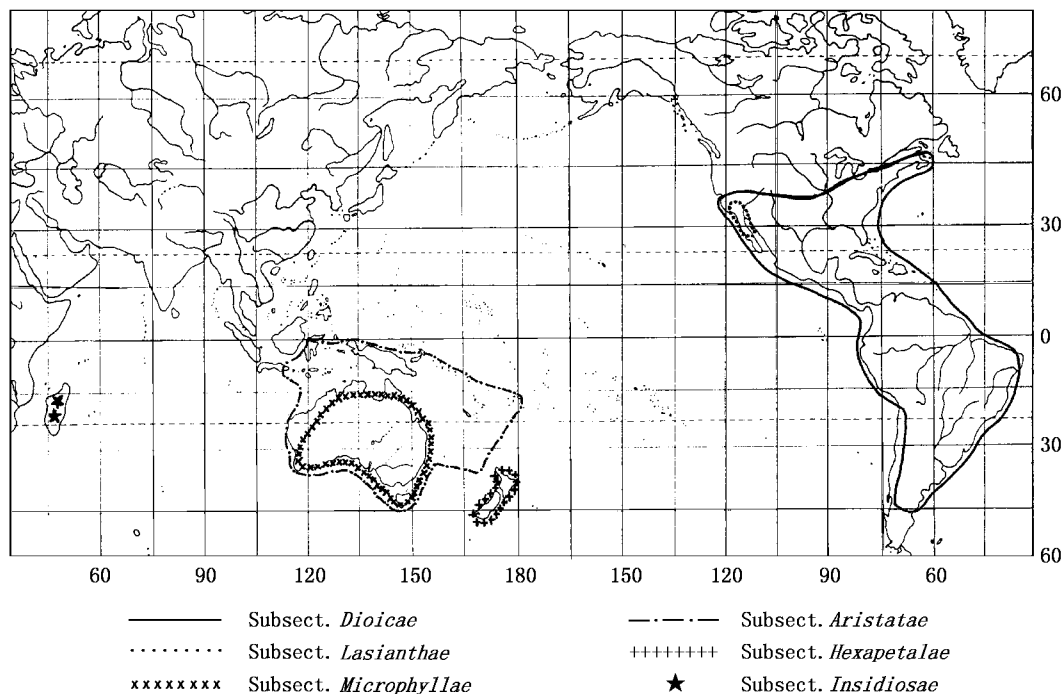


Fig. 2. Map showing distribution of the six subsections of sect. *Aspidanthera*.

Australasian subsections. Raven & Axelrod (1974) pointed out that some plant genera passed between Madagascar and Australasia by long-distance dispersal. However, I suspect if the disjunctive distribution of subsect. *Insidiosae* from its Australasian allied groups might have resulted from that way, and feel difficult to interpret this interesting disjunction.

4 Taxonomic treatment

Clematis L. sect. **Aspidanthera** Spach, Hist. Nat. Veg. Phan. 7:283. 1839; Tamura in Acta Phytotax. Geobot. 38:41. 1987; et in Hiepko, Engler's Nat. Pflanzenfam., ed. 2, 17(4):380. 1995, s.l.; Snoeijer in Clematis 1992:16. 1992; M. Johnson, Clematis 49. 1997; Grey-Wils., Clematis 58. 2000; W. T. Wang in Acta Phytotax. Sin. 38:505. 2000, s.l. Lectotype: *C. aristata* R. Br. ex Ker Gawler.

Woody or herbaceous vines, rarely erect small suffrutescent plants (*C. gentianoides*, *C. mamoraria* Sneddon). Seedling leaves alternate (*C. drummondii*, *C. catesbyana*, *C. ligusticifolia*, *C. campestris*) or opposite (*C. microphylla*) (Essig, 1991). Leaves opposite, compound, rarely simple. Flowers unisexual, usually dioecious. Sepals 4(-5-8), valvate, rarely imbricate, usually spreading, white, sometimes yellow or yellow-greenish, oblong to linear, rarely narrowly obovate, outside on margin velutinous, rarely puberulous. Stamens glabrous, rarely with pilose filaments (*C. pauciflora*); filaments linear or narrowly linear; anthers oblong or narrowly oblong, rarely linear (*C. aristata*, *C. australis* Kirk), connective not projected (anthers at apex obtuse) or at apex very slightly projected or projected into a globose to subulate appendage. Achenes compressed, but not flattened, not or narrowly rimmed; persistent styles elongate, plumose.

About 72 species, widespread in North and South America, Oceania, SE Asia, and Madagascar.

Key to subsections and series

1. Sepals of pistillate flower spreading ; staminodes present.
 2. Sepals 4 (- 5 - 6), valvate , outside on margin velutinous , rarely densely puberulous (*C. microphylla*).
 3. Stamen connectives not projected at apex.
 4. Sepals obovate-oblong , oblong , oblanceolate , or narrowly ovate , slightly longer or nearly as long as stamens ; staminodes numerous.
 5. Inflorescences arising alone from leaf axils of hornotinous branch Subject. 1. **Dioicae** spp. 1 - 34
 6. Leaves once to twice ternate or pinnate , rarely thrice pinnate (*C. ulbrichiana*), then leaflets 1.2 - 5.2 cm long ; sepals white , rarely yellowish Ser. 1. **Dioicae** spp. 1 - 32
 6. Leaves thrice or twice pinnate , leaflets smaller , 2 - 15 (- 22) mm long ; sepals usually yellowish Ser. 2. **Millefoliolatae** spp. 33 - 34
 5. Inflorescence or hornotinous flowering branch with several leaves together arising from an axillary bud of old branch Subject. 2. **Lasianthae** spp. 35 - 36
 4. Sepals lanceolate-linear , linear , or narrowly linear , rarely oblanceolate-oblong (*C. rhodocarpoides*), usually 2 - 4 times longer than stamens ; staminodes fewer , 16 - 2 (unknown in *C. rhodocarpoides*)... Subject. 3. **Microphyllae** spp. 37 - 43
3. Stamen connectives distinctly projected at apex Subject. 4. **Aristatae** spp. 44 - 59
 7. Woody vines ; leaves ternate , biternate , or pinnate , rarely simple ; sepals 4.
 8. Connective projections globose-conic , 0.1 - 0.2 (- 3) mm long Ser. 1. **Pickeringianae** spp. 44 - 50
 8. Connective projections thinly columnar or subulate , 0.3 - 4.5 mm long Ser. 2. **Aristatae** spp. 51 - 58
 7. Low erect or procumbent suffrutescent plants ; leaves simple or ternate ; sepals 4 - 6 Ser. 3. **Gentianoides** sp. 59
2. Sepals 4 - 8 , imbricate , sometimes partly valvate , outside on margin not velutinous , usually 2 - 3 times longer than stamens ; staminodes 13 - 2 Subject. 5. **Hexapetalae** spp. 60 - 70
 9. Sepals 4.
 10. Leaf blades usually wanting ; pedicels without conspicuous bracteoles Ser. 1. **Afoliatae** sp. 60
 10. Leaf blades well developed ; pedicels with conspicuous opposite bracteoles Ser. 2. **Maratae** spp. 61 - 62
 9. Sepals (4 - 5 - 8).
 11. Woody vines ; leaves once or twice ternate ; sepals lanceolate or narrowly oblong Ser. 3. **Hexapetalae** spp. 63 - 69
 11. Low subshrubs ; leaves simple , palmately dissected ; sepals obovate-elliptic Ser. 4. **Marmorariae** sp. 70
1. Sepals of pistillate flower 4 , erect ; staminodes absent Subject. 6. **Insidiosae** spp. 71 - 72
 12. Leaves pinnate , 5-foliolate ; leaflets 3 - 6 cm long Ser. 1. **Insidiosae** sp. 71
 12. Leaves thrice or twice pinnate , many-foliolate ; leaflets smaller , 0.3 - 2.2 cm long Ser. 2. **Rutoides** sp. 72

Subject. 1. **Dioicae** (Prantl) W. T. Wang in Acta Phytotax. Sin. 38 : 506. 2000. — Sect. *Flammula* DC. 10. *Vitalbae* Prantl c. *Dioicae* Prantl in Bot. Jahrb. 9 : 260. 1888 ; Schneid. , Ill. Handb. Laubh. 1 : 291. 1906. — Sect. *Clematis* subsect. *Dioicae* (Prantl) Tamura in Sci. Rep. Osaka Univ. 16 (2) : 33. 1967 ; et in Acta Phytotax. Geobot. 38 : 41. 1987 ; Snoeijer in *Clematis* 1992 : 15. 1992 ; M. Johnson , *Clematis* 471. 1997 ; Grey-Wils. , *Clematis* 47. 2000. — Sect. *Dioicae* (Prantl) Brandenb. , *Meclatis* in *Clematis* 38. 2000. Type : *C. dioica* L.

Woody , rarely herbaceous vines. Leaves once to twice ternate or pinnate , sometimes simple or

thrice pinnate. Flowering hornotinous branches arising alone from axillary buds of old branch. Inflorescences arising from leaf axils of hornotinous branch. Sepals 4, valvate, obovate-oblong, oblong, or oblanceolate, outside on margin velutinous. Stamens slightly shorter than or nearly as long as sepals; anthers oblong, sometimes narrowly oblong; connectives not projected. Staminodes usually numerous.

About 34 species in two series, widespread in North and South America.

Key to species and varieties

1. Leaves simple or once to twice ternate or pinnate.
 2. On the same branch the lower or lowermost leaves simple, upper ones ternate or pinnate.
 3. Upper leaves all ternate 1. **C. dimorphophylla**
 3. Upper leaves ternate and 5-foliolately pinnate 10. **C. variifolia**
 2. Leaves all compound.
 4. Ovaries and achenes glabrous 24. **C. alborosea**
 4. Ovaries and achenes hairy.
 5. Sepals inside glabrous or only on apical margin puberulous, elsewhere glabrous (flowers unknown in *C. subtriloba*).
 6. Leaves ternate 5. **C. dioica**
 6. Leaves once to twice pinnate, sometimes ternate.
 7. Leaflets glabrous, rarely near base sparsely puberulous, quickly glabrescent 13. **C. plukenetii**
 7. Leaflets abaxially densely or sparsely puberulous.
 8. Branches 16-sulcate; staminate flower ca. 7 mm in diam.; sepals 3.4–3.8 mm long, inside on apical margin puberulous, elsewhere glabrous; stamens 1.5–2.5 mm long; leaves once to twice pinnate 26. **C. flammulastroides**
 8. Branches 4–8-sulcate; staminate flower larger, 1.1–2 cm in diam.; sepals larger, 5–10 mm long, inside glabrous; stamens 3–7 mm long; leaves once to twice ternate or pinnate 25. **C. flammulastrum**
 9. Branches sparsely puberulous or subglabrous; leaflets papery, abaxially sparsely puberulous, not reticulate, often entire, undivided, rarely 2–3-lobulate or 2–3-lobed 25a. var. **flammulastrum**
 9. Branches densely puberulous; leaflets subcoriaceous or coriaceous, abaxially densely or sparsely puberulous, laxly reticulate, usually 3-lobed 25b. var. **fuertesii**
 5. Sepals inside hairy.
 10. Leaves ternate.
 11. Branches and leaflets glabrous or subglabrous; leaflets at margin entire, rarely 1–2-dentate per side (*C. dioica*).
 12. Leaflets broadly ovate or ovate, not reticulate.
 13. Uppermost nodes of cyme usually not umbellate; achenes narrowly elliptic ... 5. **C. dioica**
 13. Uppermost nodes of cyme umbellate; achenes ovate 8a. **C. populifolia** var. **populifolia**
 12. Leaflets narrowly ovate or lanceolate, on both surfaces finely reticulate ... 9. **C. bonariensis**
 11. Branches and leaflets abaxially densely or sparsely puberulous.
 14. Leaflets at apex long acuminate or subcuspidate, at margin coarsely and sharply few-dentate (teeth triangular), abaxially very densely snowwhite puberulous 2. **C. malacocoma**
 14. Leaflets at apex acuminate or shortly acuminate, at margin entire, or dentate or denticulate (teeth not triangular), abaxially sparsely or densely puberulous, with hairs whitish, yellowish or fulvous.
 15. Carpels fewer than 25; leaflets usually undivided.
 16. Leaflets at margin sparsely dentate or denticulate, or entire; upper nodes of cyme not

- umbellate ; achenes narrowly oblong or narrowly elliptic.
17. Branches , petioles , and peduncles spreading-puberulous ; leaflets broadly elliptic or ovate-elliptic , at margin coarsely 1-dentate per side 4. **C. subtriloba**
17. Branches , petioles , and peduncles appressed-puberulous ; leaflets ovate , at margin 1 – 4-dentate per side or entire 6. **C. rhodocarpa**
16. Leaflets at margin entire ; upper nodes of cyme usually umbellate ; achenes ovate or orbicular-ovate 8. **C. populifolia**
18. Branches sparsely puberulous ; leaflets broadly ovate or ovate , abaxially subglabrous or sparsely puberulous ; achenes ovate 8a. var. **populifolia**
18. Branches densely fulvous-puberulous or velutinous ; leaflets narrowly ovate or elliptic-ovate , abaxially densely fulvous-pubescent or velutinous ; achenes orbicular-ovate ...
..... 8b. var. **goudotiana**
15. Carpels 25 or more ; achenes narrowly elliptic.
19. Leaflets abaxially usually sparsely puberulous ; staminate cymes few – many-flowered ; staminate pedicels 3 – 10 mm long 3. **C. virginiana**
19. Leaflets abaxially usually densely puberulous ; staminate cymes 5 – 8-flowered ; staminate pedicels 12 – 20 mm long 7. **C. polygama**
10. Leaves once to twice pinnate , or twice ternate.
20. Leaves once pinnate , sometimes ternate.
21. Leaflets adaxially puberulous and fulvous-furfuraceous 20. **C. fulvofurfuracea**
21. Leaflets not furfuraceous.
22. Sepals 13 – 15 (– 20) mm long 11. **C. uruboensis**
22. Sepals smaller , 5 – 11 (– 12) mm long.
23. Leaflets 1 – 4.5 × 1 – 4 cm , usually 3-parted , often with elongate central lobe and smaller lateral lobes 21. **C. drummondii**
23. Leaflets often larger , undivided or 3-lobed or 3-lobulate.
24. Branches glabrous or very sparsely puberulous ; leaflets subglabrous or only on veins sparsely puberulous , glabrescent.
25. Leaflets not reticulate ; carpels 25 – 60 ; achenes fusiform or narrowly elliptic , 1.5 – 2 mm broad 17. **C. guadeloupae**
25. Leaflets abaxially often reticulate ; carpels 8 – 20 ; achenes ovate or suborbicular , 2.5 – 3 mm broad 19. **C. caleoides**
24. Branches puberulous or velutinous.
26. Leaflets abaxially usually velutinous or densely puberulous.
27. Leaflets herbaceous or membranous , narrowly ovate
..... 30b. **C. campestris** var. **malacophylla**
27. Leaflets thicker in texture , papery or subcoriaceous.
28. Leaflets thickly papery or subcoriaceous , broadly ovate or cordate , at margin 3 – 5-dentate per side 14. **C. grossa**
28. Leaflets papery , elliptic-ovate or lanceolate-oblong.
29. Leaflets elliptic-ovate 15. **C. thalictroides**
29. Leaflets lanceolate-oblong 23b. **C. ligusticifolia** var. **californica**
26. Leaflets abaxially sparsely or slightly densely puberulous.
30. Leaflets subcoriaceous or coriaceous , 2 – 5 (– 6) cm long 12. **C. coahuilensis**
31. Sepals of staminate flower oblanceolate , 9 – 11 mm long 12a. var. **coahuilensis**
31. Sepals of staminate flower rhombic or obovate , smaller , 4.5 – 5 mm long
..... 12b. var. **brevisepala**
30. Leaflets papery , larger , up to 7 – 13 cm long.
32. Upper nodes of inflorescence umbellate.
33. Leaflets usually broadly ovate , at margin entire , sometimes few-dentate ; cymes panicle-like ; achenes 2 – 2.8 mm broad 16. **C. haenkeana**

33. Leaflets ovate or narrowly ovate, at margin usually few-dentate; cymes not panicle-like; achenes smaller, 1.5–1.8 mm broad 23a. **C. ligusticifolia** var. **ligusticifolia**
32. Uppermost nodes of inflorescence usually not umbellate.
34. Leaflets usually lanceolate or narrowly ovate, at apex attenuate, at margin entire or few-dentate, veinlets not conspicuous; anthers 0.8–1 mm long 18. **C. grahamii**
34. Leaflets ovate, broadly ovate, or elliptic, at apex acuminate or acute, at margin few-dentate, veinlets conspicuous; anthers larger, 1–1.2 mm long 22. **C. catesbyana**
20. Leaves twice, sometimes once pinnate.
35. Sepals yellow, 4–6, 13–20 × 3–11 mm 31. **C. peruviana**
35. Sepals white, 4, smaller, 4.2–14 × 1.5–5 mm.
36. Leaflets at margin dentate.
37. Leaflet veinlets conspicuous; nodes of inflorescence not umbellate 22. **C. catesbyana**
37. Leaflet veinlets obscure; upper nodes of inflorescence umbellate. 23. **C. ligusticifolia**
38. Leaflets abaxially puberulous 23a. var. **ligusticifolia**
38. Leaflets abaxially densely puberulous or velutinous 23b. var. **californica**
36. Leaflets at margin entire, rarely 1–2-dentate.
39. Leaflets or ultimate lobes linear-lanceolate or linear.
40. Sepals of staminate flower 5–6 × 1.6–2.5 mm 23c. **C. ligusticifolia** var. **angustifoliola**
40. Sepals of staminate flower larger, 6–11 × 3–3.5 mm 30a. **C. campestris** var. **campestris**
39. Leaflets ovate or elliptic.
41. Pistillate cymes usually many-flowered; pedicels 0.7–2 mm long; sepals of pistillate flower 4.2–9 × 1.8–3.2 mm; leaflets ovate or elliptic, usually undivided.
42. Leaflets abaxially subglabrous 27. **C. acapulcensis**
42. Leaflets abaxially puberulous or densely sericeous.
43. Leaflets abaxially appressed-puberulous 28. **C. brasiliana**
43. Leaflets abaxially densely sericeous 29. **C. affinis**
41. Pistillate cymes (1–3–10)-flowered; pedicels 1.5–6 cm long; sepals of pistillate flower larger, 10–11(–14) × 4–5(–6) mm; leaflets usually narrowly ovate, undivided or 3-lobed 30a. **C. campestris** var. **campestris**
1. Leaves thrice or twice pinnate.
43. Leaflets papery, ovate or lanceolate, 1.2–5.2 × 0.7–3.5 cm; pistillate cymes ca. 15-flowered; sepals 4, white 32. **C. ulbrichiana**
43. Leaflets subcoriaceous or coriaceous, smaller, up to 1–2.2 × 0.8–2 cm.
44. Leaflets ovate to suborbicular, 5–15(22) × 3–12(–20) mm, on both surfaces glabrous or sometimes very sparsely puberulous, undivided or 2–3-lobulate; sepals 4–6, white 33. **C. seemannii**
44. Leaflets smaller, ovate or rhombic, 2–10 × 3–8 mm, adaxially sparsely puberulous, abaxially densely sericeous, 3-parted or 3-sect; sepals 4, yellowish 34. **C. millefoliolata**
- Ser. 1. **Dioicae** W. T. Wang in Acta Phytotax. Sin. 38:507. 2000. Type: *C. dioica* L. Leaves once to twice ternate or pinnate, sometimes simple, rarely thrice pinnate, then leaflets larger, 1.2–5.2 cm long. Sepals white, rarely yellow.

About 32 species, with the distribution area just as that of subsect. *Dioicae*.

1. Clematis dimorphophylla W. T. Wang in Acta Phytotax. Sin. 39:318, fig. 3:3–5. 2001. Type: Mexico. Prov. Huasteca: Wartenberg, near Tantoyuca, 1858, L. C. Ervenberg 214 (holotype, P!; isotype, G-Bois!).

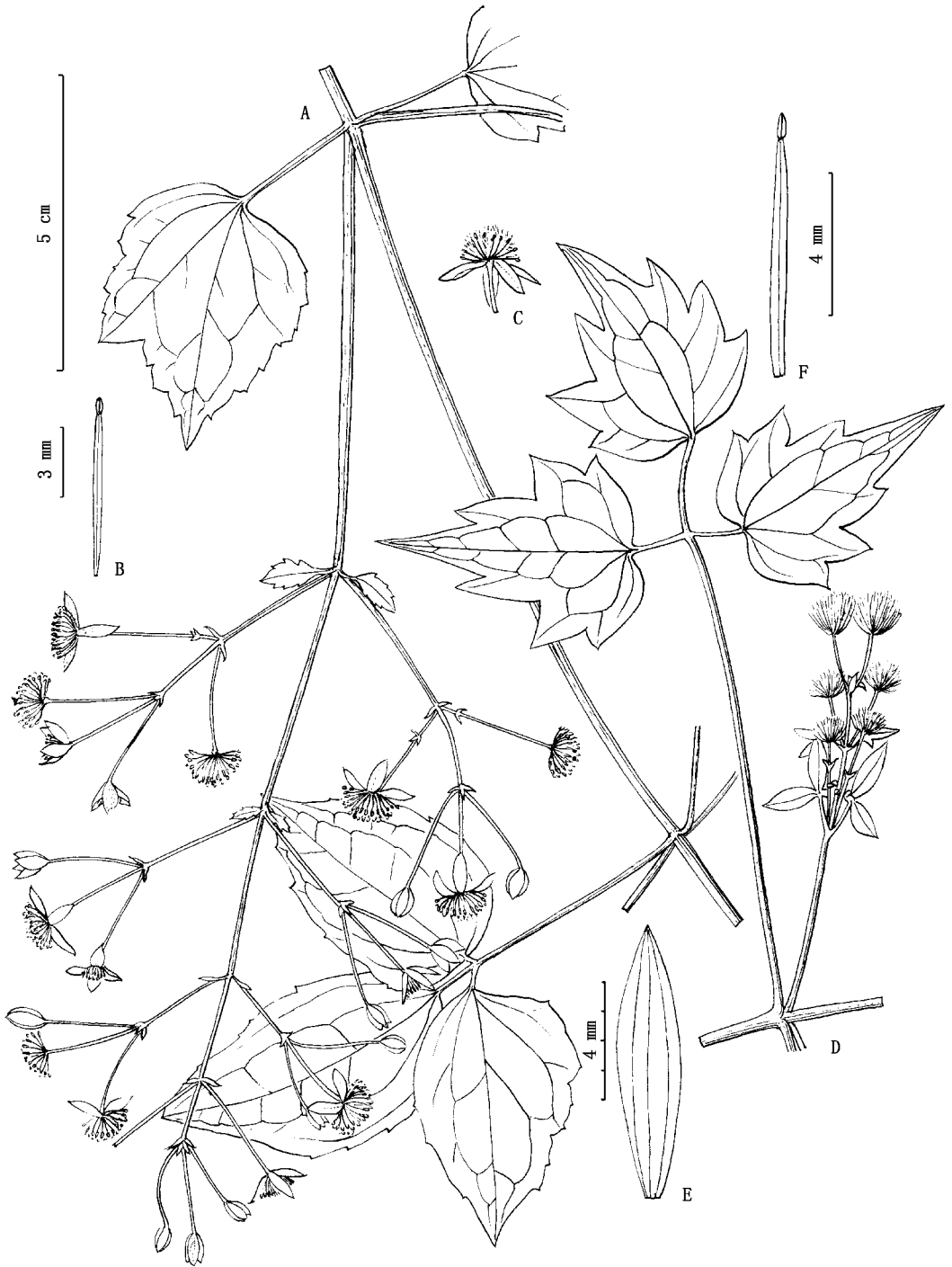


Fig. 3. A - C, *Clematis dimorphophylla* W. T. Wang. A, staminate flowering branch; B, stamen; C, pistillate flower (from Ervendberg 214). D - F, *C. malacocoma* W. T. Wang. D, pistillate flowering branch; E, sepal; F, staminode (from Salinas 7510).

Herbaceous vine. Branches slender, ca. 2 mm in diam., shallowly 8-10-sulcate, puberulous. Leaves simple and ternate; simple leaves herbaceous, inaequilateral, broadly ovate or deltoid, 3.4-4.2 × 3.2-4.4 cm, apex acute or shortly acuminate, base subtruncate, margin denticulate, 3-lobulate, appressed-puberulous on both surfaces, basal veins abaxially nearly flat; leaflets of the ternate leaves ovate or narrowly ovate, 3-6 × 1.5-2.8 cm, apex acuminate, base rounded, margin repand-dentate or denticulate; petioles of the simple leaves 1.5-2 cm long, of the ternate leaves 4-5 cm long. Staminate cymes axillary, 9-27-flowered, often panicle-like; peduncles 3.5-8.2 cm long; bracts petiolate, ovate, 0.9-1.5 cm long, sparsely denticulate, or sessile, obovate, ca. 4.5 cm long, apex 3-dentate. Staminate flower 1.2-1.4 cm in diam.; pedicel 1.4-2 cm long, puberulous; sepals 4, narrowly oblong or obovate-oblong, 6-7 × 1.6-2.8 mm, apex obtuse, on both surfaces puberulous, outside on margin velutinous; stamens 3-5.5 mm long, glabrous; anthers oblong, 0.6-0.9 mm long, apex obtuse. Pistillate cymes axillary, 7-11-flowered, panicle-like; peduncles 4-8.2 cm long; bracts sessile, obovate-linear, 3-4 mm long, apex 3-denticulate. Pistillate flower 1.1-1.4 cm in diam.; pedicel 1.4-2.4 cm long, puberulous; sepals 4, similar to those of the staminate flower, 6-7.5 × 1.5-2.5 mm; staminodes 6-7 mm long, glabrous; ovaries puberulous; styles 6-7 mm long, densely villous.

S Mexico.

Additional specimens examined.

Mexico. Oaxaca, 1842, Franco s. n. (G-Bois); without precise locality, Karwinsky 1 (LE), Linden 1090 (G-Bois).

2. Clematis malacocoma W. T. Wang in Acta Phytotax. Sin. 39: 5, fig. 1: 3-5. 2001. Type: Mexico. Chila, 1940 m, 1993-09-08, A. Salinas T. 7510 (holotype, K!).

Fig. 3: D-F

Subwoody vine. Branches slender, ca. 2 mm in diam., shallowly 8-sulcate, appressed-puberulous. Leaves ternate; leaflets subcoriaceous, cordate-ovate or narrowly ovate, 2-4 × 1.3-3 cm, apex subcuspidate or long acuminate, base subcordate or cordate, margin sparsely coarsely dentate (teeth triangular), 3-lobed or 3-lobulate, adaxially appressed-puberulous, abaxially very densely white-puberulous, basal veins 5, abaxially prominent; petioles 5.4-8.2 cm long. Staminate cymes and staminate flowers unknown. Pistillate cymes axillary, shorter than leaves, 5-7-flowered; peduncles 1.7-2.8 cm long, densely appressed-puberulous; bracts petiolate, ovate, 0.8-1.5 cm long, unequally 2-3-lobed or 2-3-parted; bracteoles similar to bracts, but smaller. Pistillate flower ca. 1.6 cm in diam.; pedicel 7-13 mm long, densely appressed-puberulous; sepals 4, white, narrowly oblong, ca. 8 × 2 mm, apex acute, inside appressed-puberulous, outside densely appressed-puberulous, margin subvelutinous; staminodes 5-7 mm long; ovaries densely puberulous; styles ca. 6 mm long, densely villous. Fl. Sept.

S Mexico. 1940 m.

3. Clematis virginiana L., Cent. Pl. 1: 15. 1755; et Amoen. Acad. 4: 275. 1759; Willd., Sp. Pl. 2: 1290. 1800; Pursh., Fl. Amer. Sept. 2: 384, sphalm. *virginica*. 1814; DC., Syst. 1: 142. 1818; et Prodr. 1: 4. 1824; Torr. & Gray, Fl. N. Amer. 8. 1838, excl. syn. *C. catesbyana* Pursh; Koch, Dendr. 426. 1869; James in J. Cincinn. Soc. Nat. Hist. 6: 124. 1883, excl. syn. *C. catesbyana* Pursh; Gray, Synop. Fl. N. Amer. 1(1): 4. 1895; Britton & Brown, Ill. Fl. N. U.S. 2: 67, fig. 1582. 1897; Rydb. in Britton, Man. Fl. N. Stat. 421. 1901; Mohr, Pl. Life Alabama 512. 1901; Small, Fl. SE U.S. 437. 1903; Robinson & Fernald, Gray's New Man. Bot., ed. 7, 402. 1908; Pepon, Ann. Fl. Chicago 311. 1927; Palmer & Steyer. in Ann. Missouri Bot. Gard. 22: 542. 1935; Deam, Fl. Indiana 463. 1940; Rehd.,

Man. Cult. Tr. & Shr. , ed. 2 , 218. 1940 ; Gleason & Cronquist , Man. Vasc. Pl. NE U.S. 318. 1963 ; Steyer. , Fl. Missouri 705. 1963 ; Lakela , Fl. NE Minnesota 191. 1965 ; Radford et al. , Man. Vasc. Fl. Carolina 459. 1968 ; Roland & E. C. Smith , Fl. Nova Scotia 395 , fig. 75a. 1969 ; Correll & Johnston , Man. Vasc. Pl. Texas 651. 1970 ; Strau. & Core , Fl. West Virginia , ed. 2 , 392. 1971 ; Gleason , New Ill. Fl. NE U.S. 2 : 184. 1974 ; Keener in Sida 6 : 36. 1975 ; Scoggan , Fl. Canada 3 : 730. 1978 ; Voss , Michigan Fl. 202 , fig. 94. 1985 ; Essig & Jarvis in Taxon 38 : 271 , fig. 4. 1989 ; Essig in Sida 14 : 64. 1990 ; E. B. Smith , Keys Fl. Arkansas 41. 1994 ; Moreno & Essig in Morin , Fl. N. Amer. 3 : 163. 1997 ; M. Johnson , *Clematis* 486. 1997 ; Grey-Wils. , *Clematis* 48. 2000. — *C. dioica* L. ssp. *virginiana* (L.) Kuntze in Verh. Bot. Ver. Brand. 26 : 102. 1885. — *C. virginiana* var. *genuina* Kuntze , Rev. Gen. 1 : 2. 1891. Type : U.S.A. " Habitat in Pennsylvania " , an unnumbered specimen (lectotype , Linn. Herb. UPS — Essig & Jarvis , 1989).

C. canadensis Mill. , Gard. Dict. , ed. 8 , no. 5. 1768. Type : no type specimen designated.

C. holosericea Pursh , Fl. Amer. Sept. 2 : 384. 1814 ; DC. , Syst. 1 : 145. 1818 ; et Prodr. 1 : 5. 1824 ; Torr. & Gray , Fl. N. Amer. 8. 1838 ; James in J. Cincinn. Soc. Nat. Hist. 6 : 124. 1883. Type : U.S.A. " In Carolina. v. s. in Herb. Walter. ".

C. pennsylvanica Donn , Hort. Cantab. , ed. 4 , 129. 1807 ; Turcz. in Bull. Soc. Nat. Mosc. 27 : 273. 1854. Type : unknown.

C. virginiana L. f. *paucidentata* Kuntze , Rev. Gen. 1 : 2. 1891. Type : unknown.

C. missouriensis Rydb. in Britton , Man. Fl. N. U.S. 421. 1901. — *C. virginiana* var. *missouriensis* (Rydb.) Palmer & Steyer. in Ann. Missouri Bot. Gard. 22 : 542. 1935 ; Rehd. , Man. Cult. Tr. & Shr. , ed. 2 , 218. 1940 ; Gleason & Cronquist , Man. Vasc. Pl. NE U.S. 318. 1963 ; Gleason , New Ill. Fl. NE U.S. 2 : 184. 1974. — *C. virginiana* f. *missouriensis* (Rydb.) Fernald in Rhodora 39 : 309. 1937 ; Steyer. , Fl. Missouri 706. 1963 ; Scoggan , Fl. Canada 3 : 730. 1978. Type : U.S.A. Nebraska : Lincoln , 1886-09 , Webber s. n. (lectotype , NY ! — Essig , 1990).

Clematis bracteata Moench , Suppl. Method. Pl. 103. 1802. — *Clematis virginiana* L. var. *bracteata* (Moench) DC. , Prodr. 1 : 4. 1824 ; Loudon , Arbor. Frutic. Brit. 1 : 237. 1844. Type : no type specimen designated.

C. cordifolia Moench , l. c. 104. Type : no type specimen designated.

Fig. 11 : F-1 (see p. 39)

Woody vine. Branches shallowly 4 - 8-sulcate , appressed-puberulous , often glabrescent. Leaves ternate ; leaflets papery , narrowly to broadly ovate or narrowly obovate , 3 - 10 × 1.5 - 12 cm , apex acuminate , base rounded or subcordate , margin few-dentate , rarely entire , undivided or 3-lobed , adaxially sparsely puberulous or subglabrous , abaxially sparsely or densely puberulous , basal veins abaxially slightly prominent ; petioles 2 - 8 cm long. Staminate cymes axillary , few - many-flowered , the uppermost nodes often umbellate ; peduncles 1.5 - 8 cm long ; bracts obovate-rhombic or linear , 0.3 - 3 cm long. Staminate flower 1.2 - 1.8 cm in diam. ; pedicel 3 - 13 mm long , densely puberulous ; sepals 4 , white , oblanceolate , 6 - 9 × 2 - 4.5 mm , apex acute or obtuse , inside above sparsely puberulous , outside densely puberulous , margin velutinous ; stamens 4 - 6.5 mm long , glabrous ; anthers oblong , 0.8 - 1 mm long , apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower 1.1 - 2.2 cm in diam. ; pedicel 0.7 - 1.8 cm long , densely puberulous ; sepals 4 , white , obovate-oblong , 5.5 - 11 × 3 - 4 mm , apex obtuse , inside sparsely and outside densely puberulous , margin velutinous ; staminodes 3 - 5 mm long ; ovaries densely

puberulous ; styles 4 – 6 mm long , densely villous . Achenes compressed , oblong-elliptic or narrowly obovate , $3 - 4 \times 1.2 - 2$ mm , puberulous , slightly rimmed ; persistent styles 2.5 – 4.5 cm long , plumose . Fl. Jun. – Sept.

SE Canada and C & E U.S.A. In grassy places , bushes or thickets ; 1 – 1500 m.

Additional specimens examined.

Canada. Ontario : Bacroft , Senn 5116 (UPS) ; Marmore , Gillett 7132 (G) ; New Liskeard , Baldwin 5315 (GH) ; Thunder Bay , Garton s. n. (GH) ; York Co. , Soper 4161 (GH). **Quebec** : Cascades , Skottsberg s. n. (UPS) ; La Tropepe , Louis-Maire s. n. (GH) ; Martane , Fernald 25766 (GH) ; Sherbrooke , Chamberlin s. n. (GH).

U.S.A. Alabama : Clarke Co. , Kral 41126 (MO) ; Jackson Co. , Kral 40714 (MO). **Arkansas** : Lonoke Co. , Domaree 22455 (GH) ; Newton Co. , Palmer 42077 (GH) ; Saline Co. , Palmer 8477 (GH , K) ; Sevier Co. , Demaree 9885 (GH , MO). **Connecticut** : New London Co. , Hill 21784 (GH). **Georgia** : Clayton Co. , Harper 232 (K) ; Hall Co. , Adams 70 (G) ; Rabun Co. , Correll 6674 (GH). **Illinois** : Alexander Co. , Palmer 16488 (GH , MO) ; Rock River , Spongberg 64-274 (GH) ; Woodford Co. , Chase 10201 (S). **Indiana** : Wells Co. , Deam 5307 (GH). **Iowa** : Emmet Co. , Hayden 2097 (GH , MO) ; Grinnell , Jones s. n. (GH). **Kansas** : Pottawatomie Co. , Norton 601 (GH). **Kentucky** : Estill Co. , Anderson 126 (GH) ; Harlan Co. , Kearney 153 (GH , MO) ; Powell Co. , Gleason 140 (MO). **Louisiana** : Parish , Thomas 107049 (MO) ; Warnerton , Stone 451 (GH). **Maryland** : Prince Georges Co. , Hill 17447 (GH , MO). **Massachusetts** : Berkshire Co. , Parkins 113 (G) ; Boston , Faxon s. n. (GH) ; Hampden Co. , Seymour 350 (GH , MO). **Michigan** : Bay Co. , Hamilton 4217 (MO) ; Chippewa Co. , McVaugh 8798 (MO) ; Marquette Co. , Harrison s. n. (GH). **Minnesota** : Clay Co. , Churchill 6530 (MO) ; Goodhue Co. , Ballard s. n. (GH) ; Houston Co. , Rosendall 5375 (GH). **Missouri** : Butler Co. , Bush 3710 (GH , MO) ; Harrison Co. , Palmer 41357 (GH) ; Pettis Co. , Palmer 26322 (GH , MO). **Nebraska** : Cuming Co. , Churchill 3920 (MO). **New Hampshire** : Cheshire Co. , Palmer 44890 (GH) ; Merrimack Co. , Rousseau 1981 (MO). **New Jersey** : Barlington Co. , Long 9823 (GH) ; Hunterton Co. , Forsberg 14356 (MO). **New York** : Essex Co. , House 10742 (GH) ; Orange Co. , Raup 7690 (GH) ; Tompkins Co. , Palmer 505 (GH , MO). **North Carolina** : Cherokee Co. , Wilbur 4571 (GH) ; Haywood Co. , Kral 3175 (GH) ; Swain Co. , Solomon 3937 (MO). **North Dakota** : Jackson Co. , Horsey 1741 (GH) ; Scioto Co. , Demaree 10829 (GH). **Ohio** : Cincinnati , Lloyd s. n. (UPS) ; Pikaway Co. , Demaree 11600 (US) ; Scioto Co. , Demaree 10829 (MO). **Pennsylvania** : Bucks Co. , Adams 4529 (GH) ; Columbia Co. , Fosberg 16027 (GH) ; Lehigh Co. , Churchill 402 (MO). **Rhode Island** : Providence Co. , Palmer 44968 (GH). **South Carolina** : Pickens Co. , Wiegand 1210 (GH) ; without precise locality , Fraser s. n. (G-DC). **Tennessee** : Lewis Co. , Kral 51438 (MO) ; Morgan Co. , Svenson 4057 (GH). **Texas** : San Augustine Co. , Palmer 10622 (GH , K , MO). **Virginia** : Arlington , Allard 11749 (G) ; Amelia Co. , Fernald 9053 (GH) ; Caroline Co. , Fernald 9054 (GH , MO) ; Randolph Co. , Williams 349 (GH , MO) ; Tucker Co. , Allard 10981 (GH). **West Virginia** : without precise locality , Steele s. n. (G) , Allard 9138 (US). **Wisconsin** : Ashland Co. , Fassett 8289 (GH) ; Grant Co. , H. H. Smith 7722 (GH) ; Sank Co. , Palmer 27656 (GH) ; Shawano Co. , Palmer 28739 (GH , MO).

4. Clematis subtriloba G. Don , Gen. Hist. Dichlam. Pl. 1 : 7. 1831 ; M. Johnson , Klematis 486. 1997. — *C. subtriflora* Walp. , Rep. Bot. Syst. 1 : 8. 1842 , sphalm. Type : Mexico. Field notes wanting , N. E. Herb. Lamb. s. n. (holotype , G ! ; phototype , PE !).

Woody vine. Branches ca. 6-sulcate , puberulous . Leaves ternate ; leaflets papery , broadly

elliptic or ovate-elliptic, $5 - 6 \times 3.5 - 5.5$ cm, apex shortly acuminate or acute, base rounded, margin slightly above the middle coarsely 1-dentate per side, on both surfaces sparsely puberulous, basal veins 5, abaxially slightly prominent; petioles 3.8 - 6 cm long, spreading-puberulous. Staminate cymes and flowers unknown. Pistillate cymes axillary, few-flowered; peduncles ca. 2.6 cm long, with pedicels densely spreading-puberulous; bracts narrowly oblong, $4 - 4.5 \times 2 - 2.5$ mm long. Pistillate flower unknown; pedicel ca. 2 cm long. Achenes compressed, narrowly oblong, $5 - 5.5 \times 2 - 2.5$ mm, sparsely puberulous, rimmed; persistent styles ca. 6 cm long, plumose.

Mexico. Known only from the fruiting type specimen.

5. *Clematis dioica* L., *Syst.*, ed. 10, 1084. 1759; et *Amoen. Acad.* 5:398. 1760; *Mill.*, *Dict. Gard.*, ed. 8, no. 13. 1768; *Willd.*, *Sp. Nov.* 2:1291. 1800; *Pers.*, *Syn. Pl.* 2:99. 1807; *DC.*, *Syst.* 1:143. 1818; et *Prodr.* 1:4. 1824; *Macfa.*, *Fl. Jamaica* 2. 1837; *Griseb.*, *Cat. Pl. Cub.* 1. 1866. p. p.; *Hemsl.* in *Godman & Salvin, Biol. Centr.-Am. Bot.* 1:2. 1879; *Kuntze* in *Verh. Bot. Ver. Brand.* 26:102. 1885; *Goyena*, *Fl. Nicarag.* 168. 1909; *Fawcett & Rendle*, *Fl. Jamaica* 190. 1914, p. p. excl. syn. *C. caripensis* H. B. K.; *Barker & Dardeau*, *Fl. Haiti* 116. 1930; *Standley*, *Fl. Yucatan* 265. 1930, p. p.; *Stahl*, *Fl. Puerto Rico* 1:67. 1936, p. p.; *Moscoso*, *Cat. Fl. Doming.* 1:192. 1943; *Leon & Alain*, *Fl. Cuba* 2:162. 1951, p. p.; *Lourt.* in *Mém. Soc. Cien. Nat. Salle* 16:36. 1956; *Liogier*, *Fl. Espanola* 2:237, fig. 77-1. 1983; *Kellog* in *Howard*, *Fl. Less. Antill.* 4:222, fig. 81. 1988; *M. Johnson*, *Klematis* 476. 1997, p. p. excl. syn. *C. barrancae* Jones, *C. guadeloupae* Pers., *C. havanensis* H. B. K. ex *DC.*, *C. mociniana* G. Don, *C. polygama* Jacq., *C. rhodocarpa* Rose et *C. rufa* Rose; *Grey-Wils.*, *Clematis* 49. 2000, p. p. Type: Jamaica, Browne s. n. (holotype, LINN 712-8! — *Lourteig*, 1956).

C. americana Mill., *Gard. Dict.*, ed. 8, no. 14. 1778. — *C. dioica* ssp. *americana* (Mill.) *Kuntze* in l. c. 103. Type: Mexico. Campachy, 1730 - 1731, Houston 78 (holotype, BM!).

C. glabra DC., *Syst.* 1:143. 1818; et *Prodr.* 1:5. 1824. Type: Dominican Republic. Santo Dominique, 1796 - 1801, Poiteau s. n. (holotype, G!; isotype, P!).

C. dioica L. ssp. *normalis* *Kuntze* in l. c. 102. Type: Jamaica, plate in *Sloan*, *Cat. Pl. Jamaica* 1:199, t. 128. 1696.

C. virginiana L. f. *paucidentata* *Kuntze*, *Rev. Gen. Pl.* 1:2. 1891. Type: unknown.

Fig. 4 : A - C

Woody vine. Branches shallowly 10 - 14-sulcate, glabrous or sparsely puberulous. Leaves ternate; leaflets chartaceous or subcoriaceous, broadly ovate or ovate, $2 - 8.5 \times 1.3 - 7$ cm, apex acuminate or acute, base rounded or subcordate, margin entire, rarely 1-dentate per side, on both surfaces glabrous or very sparsely puberulous, basal veins abaxially slightly prominent; petioles 1.3 - 8.5 cm long. Staminate cymes axillary and terminal, 7 - many-flowered, often panicle-like; peduncles 1.2 - 6 cm long; bracts sessile, triangular or subulate, 3 - 7 mm long, or shortly petiolate, narrowly ovate or elliptic, 0.4 - 2 cm long. Staminate flower 1.2 - 3 cm in diam.; pedicel 0.7 - 2.5 cm long, puberulous or glabrous; sepals 4, white, oblanceolate-oblong or obovate-oblong, $6.5 - 15 \times 2 - 6$ mm, apex slightly obtuse, on both surfaces glabrous or puberulous, margin velutinous; stamens 5 - 8(-10) mm long, glabrous; anthers narrowly oblong or oblong, 0.9 - 1.2 mm long, apex obtuse. Pistillate cymes axillary and terminal, 3 - many-flowered; peduncles 0.6 - 6 cm long; bracts often petiolate, obovate or elliptic, 0.4 - 3 cm long. Pistillate flower 1.3 - 1.5 cm in diam.; pedicel 1.4 - 2.2(-3) cm long, glabrous or puberulous; sepals 4, white, oblong or narrowly oblong, $7 - 8.8 \times 1.6 - 4$ mm, apex slightly obtuse, on both surfaces glabrous or

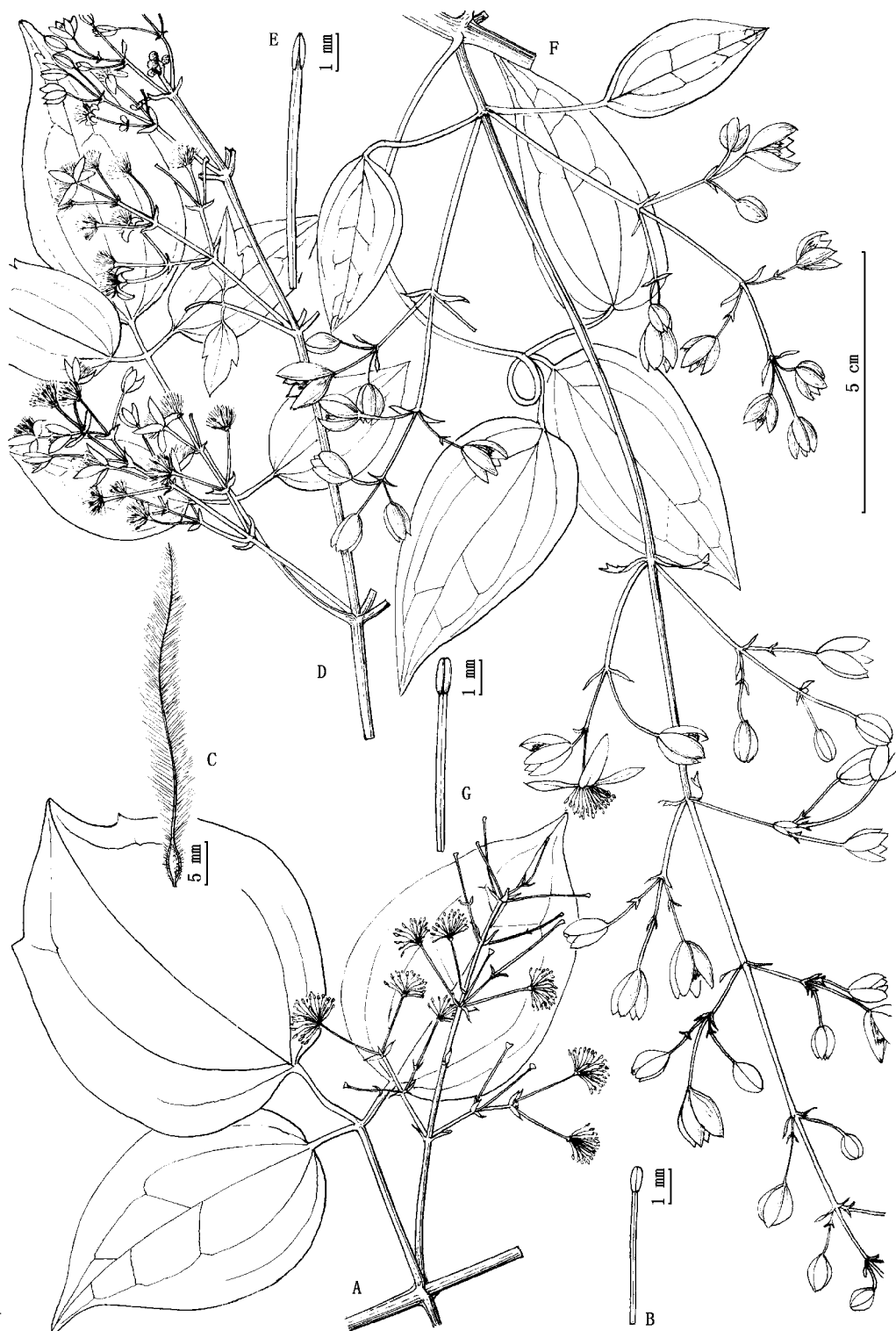


Fig. 4. A - C, *Clematis dioica* L. A, staminate flowering branch; B, stamen (from Proctor 11235); C, achene (from Hart 557). D, E, *C. grahamii* Benth. D, staminate flowering branch; E, stamen (from Palmer 193). F, G, *C. bonariensis* Juss. ex DC. F, staminate flowering branch; G, stamen (from Gabrera 3371).

puberulous, margin velutinous; staminodes 3–5 mm long; ovaries puberulous; styles 5–6 mm long, densely villous. Achenes compressed, long elliptic, ca. 4.5 × 2 mm, puberulous, narrowly rimmed; persistent styles ca. 4 cm long, plumose. Fl. Jul. – Jan.

Belize, Costa Rica, Cuba, Dominican Republic, Guadeloupe, Haiti, Honduras, Jamaica, Mexico, and Puerto Rico. In forests; 0–1800 m.

Additional specimens examined.

Belize. Arvigo 717 (US), Dwyer & Liesner 12014 (US).

Costa Rica. Heredia, John & Utley 4194 (MO).

Cuba. Habana, Clemente 7364 (GH); Pico Turquino, Seifriz 1059 (US); Santa Clara: Cuabaire, Jack 6906 (GH, LE, US); Sierra Maestra, Clemente 5046 (US).

Dominican Republic. Constanza, Jimenez 1570 (US), Liogier 17787 (GH); Los Cayetanos, Mejia 8869 (MO); Jarabacoa, Lavastre 1717 (GH); Santo Domingo, Ekman 13943 (GH, US).

Guadeloupe. Without precise locality, Badier 138 (G-DC).

Haiti. Dondon, Leonard 8716 (MO); Seguin, Zaroni 24534 (MO); Morne Pabaio, Ekman 1565 (US); Port de Paix, Ekman 4879 (US).

Honduras. Freshwater Creek, Castillo 45 (GH); Honey Camp, Lundell 143 (US).

Jamaica. Clarendon, Harris 12832 (MO, US); Gordon, Hart 557 (US); Dolphin Head, Adams 8603 (MO); Hopewell, Proctor 11255 (US); Kingston, Harris 8844 (US); Mac Fadyen, W. J. Hooker s. n. (GH); St. Andrew, Harris 12318 (GH, MO), Yuncker 17305 (G); St. Thomas, Proctor 37608 (MO); Stewart, Powell 630 (GH); without precise locality, Chamill s. n. (LE), Delessert s. n. (G-DC).

Mexico. Champache, Martinez 3009 (MO); Champton, Cabrera 15194 (MO); Leona Viario, Sousa 10853 (MO); Puerto Morelos, Sousa 10908 (MO); Yucatan, Bredburn 1165 (MO), Cabrera 10354 (MO), Gaumer 387 (G, LE, US), Lindell 969 (US), Schubert 1643 (GH).

Puerto Rico. Earco, Sintenis 5843 (G, MO); Callejonco, Sintenis 5843 (GH, LE); Guayama, Urban 2255 (US).

6. *Clematis rhodocarpa* Rose, Contr. U. S. Nat. Herb. 10(3):95. 1906; Vazquez et al., Fl. Manantlan 219. 1995. Type: Mexico. Oaxaca: Sierra de San Felipe, 7500–9000 ft., 1894-08-07, Pringle 4770 (holotype, US!; isotypes, G!, GH!, K!, LE!, MO!, P!).

C. pubescens Benth., Pl. Hartw. 5. 1839, non Hugel, 1837; M. Johnson, Klematis 484. 1997. Type: Mexico. Guanajuato, 1837, Hartwig 3 (holotype, K!; isotypes, BM!, G!, GH!, LE!, P!).

C. grossa auct. non Benth.: Sanohez, Fl. Valle Mexico 1:171, fig. 120:c. 1969.

C. dioica auct. non L.: M. Johnson, Klematis 476. 1997, p. p. quoad syn. *C. rhodocarpa* Rose.

C. goudotiana auct. non Planch. & Triana: W. T. Wang in Acta Phytotax. Sin. 38:313. 2000, p. p. quoad syn. *C. pubescens* Benth. et *C. rhodocarpa* Rose.

Fig. 5: A–C

Woody vine. Branches shallowly 4–10-sulcate, appressed-puberulous, rarely subglabrous. Leaves ternate; leaflets papery, ovate or narrowly ovate, sometimes broadly lanceolate, 2.5–10 × 1–5 cm, apex acuminate or attenuate, base rounded or subcordate, margin entire or unequally 1–2(–4)-dentate per side, adaxially sparsely puberulous, abaxially densely or sparsely appressed-puberulous, basal veins abaxially slightly prominent; petiole 2–7 cm long. Staminate cymes axillary, 5–many-flowered, often panicle-like; peduncles 1–3 cm long; bracts linear or leaflet-like, 0.5–3 cm long. Staminate flower 1.2–1.6 cm in diam.; pedicel 6–17 mm long, densely

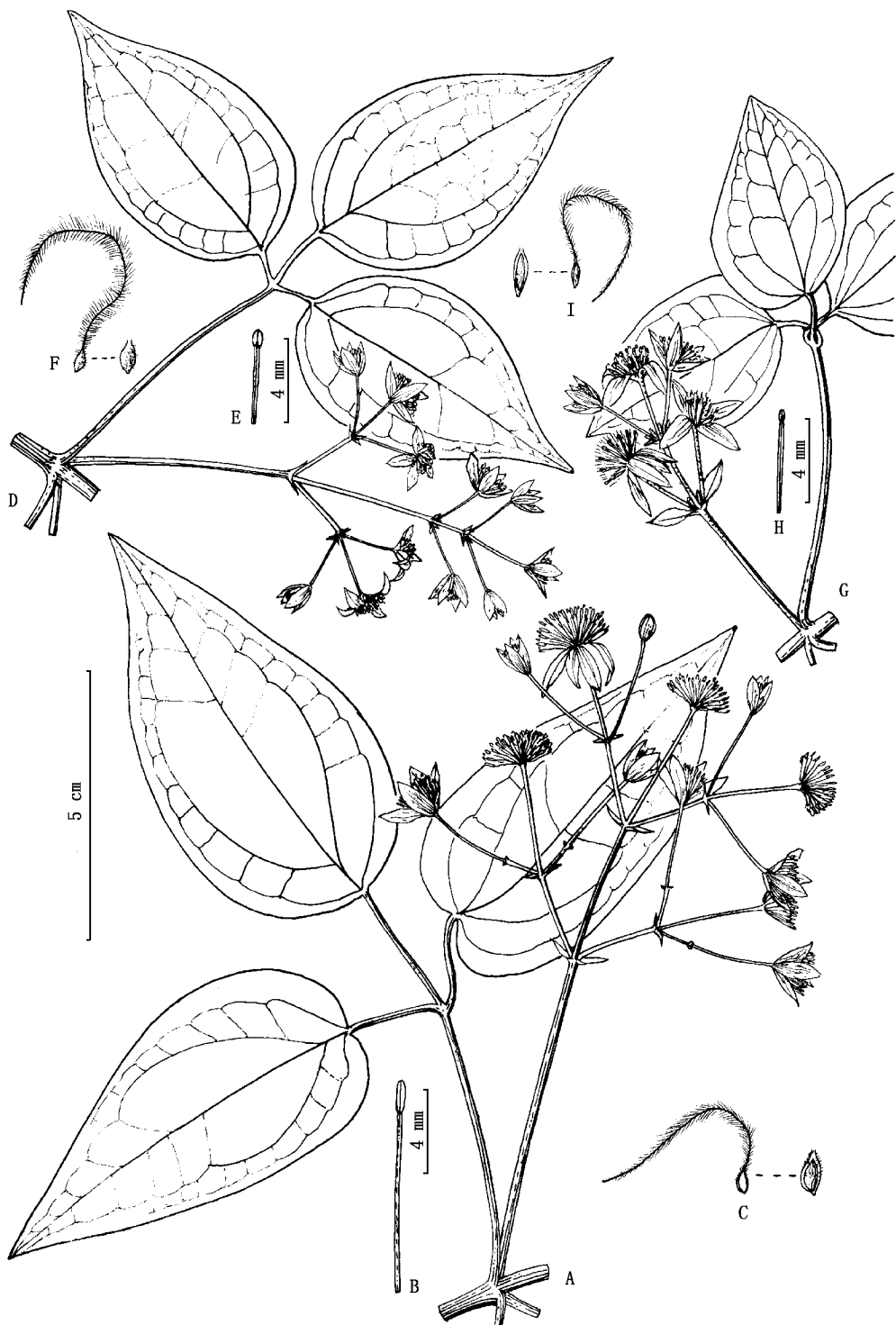


Fig. 5. A - C, *Clematis rhodocarpa* Rose. A, staminate flowering branch; B, stamen (from Hinton 11505); C, achene (from Ton 527). D - F, *C. populifolia* Turcz. var. *populifolia*. D, staminate flowering branch; E, stamen (from Skutch 3483); F, achene (from Breteler 4540). G - I, *C. polygama* Jacq. G, pistillate flowering branch; H, staminode (from Shafer 11690); I, achene (from Palmer & Riley 233).

puberulous ; sepals 4 , white , obovate-oblong or oblong , 6 – 9 × 2 – 3 mm , apex slightly obtuse , on both surfaces densely puberulous , outside on margin velutinous ; stamens 3 – 9 mm long , glabrous ; anthers oblong , 0.8 – 1 mm long , at apex obtuse. Pistillate cymes axillary , sometimes terminal , 3 – many-flowered ; peduncles 0.5 – 3.2 cm long ; bracts linear , oblanceolate , or lanceolate , 4 – 12 mm long. Pistillate flower 1.2 – 1.7 cm in diam. ; pedicel 7 – 10 mm long , densely puberulous ; sepals 4 , oblong , narrowly oblong , or oblanceolate , 6 – 9 (– 12) × 2 – 3.2 (– 4) mm , apex obtuse , on both surfaces densely puberulous , margin velutinous ; staminodes 5 – 7 mm long ; ovaries puberulous ; styles ca. 5 mm long , densely villous. Achenes compressed , narrowly elliptic or ovate , 3.5 – 4 × 1.8 – 2 mm , puberulous , indistinctly rimmed ; persistent styles 1.6 – 4.5 cm long , plumose. Fl. Jun. – Oct.

Guatemala , Honduras , Mexico , and Nicaragua. In thickets ; 200 – 3000 m.

Additional specimens examined.

Guatemala. Chiantha , Cook 46 (US) ; near city of Guatemala , Hayes 176 (US) ; Huchuetenango , Seler 2839 (US).

Mexico. Amatenango , Breedlove 14441 (US) ; Apam , West s. n. (US) ; Cajones , Hinton 1680 (MO) ; Chiapas , Breedlove 11757 (GH , US) , Ton 527 (GH) ; Chihuahua , Goldman 328 (US) ; Chimatis , Andrieng s. n. (G) ; Huajuapán , Nelson 1983 (US) ; Huasteeu , Ervendberg 214 (G) ; Lomas de Santa Fe , Lyonnet 128 (US) ; Morella , Arséne 2510 (MO , US) , 6669 (GH , MO) ; Miradores , Linden 965 (G) ; Oaxaca , Bartholomew et al. 3290 (GH) , Pringle 6057 (G) , C. L. Smith 659 , 660 (MO , US) ; Orizaba , Bourgeau 277 (G , US) ; Plateado , Rose 2790 (GH , US) ; Puebla , Arséne 1882 (US) ; San Enrique , Stewart 1398 (GH) ; San Antonio , Hinton 11505 (US) ; San Juanico , Arséne 8807 (US) ; Santa Fe , Bourgeau 277 (LE) , Pringle 8461 (G , US) , Rose 8637 (GH , US) ; Santa Maria , Arséne s. n. (G) ; Tamaulipas , F. G. Meyer 2617 (GH) ; Temascaltepec : Sierrita , Hinton et al. 6397 (G , GH) ; Tezuantle , Medina 939 (MO) ; Vera Cruz , Linden 469 (G) , Sumichrast 829 (G) ; Zempoala , Ventura 1767 (MO).

7. *Clematis polygama* Jacq. , Enum. Pl. Craib. 24. 1760 ; Pool in Stevens et al. , Fl. Nicaragua 3 : 2192. 2001. — *Atragene polygama* (Jacq.) Jacq. , Select. Stirp. Amer. Hist. 171. 1763. Type : Cuba. Havana , “ Herbar. Dui Jacquin ” s. n. (lectotype , BM ! — designated by Moreno , 1993).

C. dominica Lam. , Encycl. 2 : 45. 1786. — *C. dioica* L. var. *dominica* (Lam.) Kuntze in Verh. Bot. Ver. Brand. 26 : 102. 1885. Type : Hispaniola , type specimen unknown.

C. havanensis H. B. K. ex DC. , Syst. 1 : 152. 1818 ; et Prodr. 1 : 6. 1824 ; A. Rich. , Hist. Phys. Cuba Bot. Pl. Vasc. 8. 1845. — *C. dioica* L. var. *havanensis* (H. B. K. ex DC.) Kuntze in l. c. Type : Cuba. Havana , 1801 , Bonpland 1299 (holotype , P !).

C. mociniana G. Don , Gen. Hist. 1 : 5. 1831. Type : Mexico , Mocino s. n. (holotype , BM !).

C. polycephala Berto. , Nov. Comment. Bonon. 4 : 424. 1840. Type : Guatemala. “ Vulcano d'acqua ” , 1837 , Velazquez s. n. (holotype).

C. pallida A. Rich. , Hist. Phys. Cuba Bot. Pl. Vasc. 10. 1845. Type : Cuba. Gunabo , Sagra s. n. (holotype).

C. rufa Rose in Contr. U. S. Nat. Herb. 10 : 95. 1906. Type : Mexico. Chiapas , between Tenejapa and Yatalon , 400 – 1500 m , 1895-10-13 , Nelson 3243 (holotype , US !).

C. dioica auct. non L. : Griseb. , Cat. Pl. Cub. 1. 1866 , p. p. quoad syn. *C. havanensis* H. B. K. ex DC. ; Stahl , Fl. Puerto Rico 1 : 67. 1936 , p. p. quoad syn. *C. havanensis* H. B. K. ex DC. ; ? Standley , Fl. Costa Rica 434. 1937 ; Standley & Steyerl. , Fl. Guatemala

246. 1946, p. p.; Leon & Alain, Fl. Cuba 2:1. 1951, p. p. excl. syn. *C. havanensis* H. B. K. ex DC.; Boldo & Estevez in Fontqueria 29:90. 1990.

C. haenkeana auct. non Presl: Duke in Ann. Missouri Bot. Gard. 49:458. 1962, p. p., quoad Allen 2062.

Fig. 5: G-I

Woody vine. Branches shallowly 6-8-sulcate, appressed-puberulous. Leaves ternate; leaflets papery, ovate or broadly ovate, 3-9(-13) × 1.5-6(-7.5) cm, apex acuminate, base rounded or subcordate, margin 1-3-dentate per side or entire, undivided or 3-lobulate, adaxially sparsely abaxially more or less densely puberulous, basal veins abaxially flat or slightly prominent; petioles 2-7 cm long. Staminate cymes axillary, 5-8-flowered, with umbellate uppermost nodes; peduncles 3.3-7.5 cm long; bracts obovate or ovate, 0.4-2 cm long. Staminate flower 1.2-1.8 cm in diam.; pedicel 1.2-2 cm long, densely puberulous; sepals 4, narrowly oblong or oblanceolate-oblong, 6-10 × 2-3 mm, apex slightly acute, on both surfaces densely puberulous, outside on margin velutinous; stamens 5-7 mm long, glabrous; anthers oblong, 0.8-1 mm long, apex obtuse. Pistillate cymes axillary, 3-many-flowered, with umbellate uppermost nodes; peduncles 2-6 cm long; bracts ovate or broadly ovate, 2-3 cm long. Pistillate flower 1.6-2.1 cm in diam.; pedicel 1.4-2.6 cm long, densely puberulous; sepals 4, white, narrowly oblong or obovate-oblong, 8-11 × 2.6-4 mm, apex obtuse, on both surfaces densely puberulous, outside on margin velutinous; staminodes 7-9 mm long; ovaries puberulous; styles 6-7 mm long, densely villous. Achenes compressed, narrowly obovate or long elliptic, 3.2-4 × 1.5-2 mm, sparsely puberulous, narrowly rimmed; persistent styles 4-4.5 cm long, plumose. Fl. Nov. - Feb.

Belize, Costa Rica, Cuba, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, and Puerto Rico. In forests or by streams; 275-1000 m.

Additional specimens examined.

Belize. Dest. of Belize, Dwyer & Liesner 12014 (US).

Costa Rica. La Tejone, Standley 45796 (US); Nicoya, Tonduz 13465 (GH, US); Vueltas, Tucurrique, Tonduz 13000 (US).

Cuba. Cienfuegos, Combs 674 (P), Pringle 83 (MO, US); El Guama, Palmer & Riley 233 (US); Habana, Ekman 18287 (G), Hermann 508, 551 (LE); Los Palacios, Shafer 11690 (GH, US); Rio Portales, Shafer 11199 (US); San Blas, La Sierra, Jack 8549 (P, US); San Luis, Pol-lard 341 (MO, US); San Miguel, Killip 13896 (US); Santa Clara, Jack 6863 (GH, LE, US), Pringle 83 (MO); Santiago, Hermann 3489 (US); Soledad, Jack 4260 (K); without precise locality, C. Wright 1 (G, LE, K), 1751 (G).

Guatemala. Alta Verapaz, Tuerckheim 7814 (GH); Bajuco, Ortiz 574, 670 (US); Jocolo, Johnson 1147 (US); La Libertad, Ayuilar 340 (GH, MO); Santa Cruz, Bartlett 12393 (US); Santa Elena, Ortiz 524 (G, GH).

Honduras. Mafri-dyle Creek, Gentle 7570 (US); Pena Blanca, Williams 18735 (US); Progreso, Standley 54961 (GH, US).

Mexico. Balancan, Ventura 20928 (MO); Chmameca, Poniche 40 (US); La Luz, Kerber 87 (G); Orizaba, Botteri 828 (G); Puebb, Arséne 5942 (US); Yucatan, Lundell 1106, 1133 (GH, MO, US); Vera Cruz, Langman 3576 (US), Purpus 2866 (GH).

Nicaragua. Boaco, Stevens 5894 (MO); Chontales, Sandino 5136 (MO); Jalapa, Marshall 6831 (GH, MO); Matagalpa, Moreno 6762 (MO); Rivas, Moreno 19611 (MO); Zelaya, Ortiz 1863 (MO).

Panama. Anton, Allen 2062 (US); Chiriqui, Hammel 6237 (MO); Cocle, Lewis 2506

(MO); Veraguas, Mori 3199 (MO).

Puerto Rico. Bayanon, Stevenson 1158 (US); Coumo, Sintenis 3207 (US).

8. *Clematis populifolia* Turcz. in Bull. Soc. Nat. Mosc. 27(2):272. 1854; Jørgenson & León-Yanez, Cat. Vasc. Pl. Ecuador 848. 1999. Type: Venezuela. Trujillo, "Aqua d'Obispo", 7000 ft., 1846-08, Funk & Schlim 790 (holotype, LE, not found; isotypes, G!, P!).

C. floribunda Triana & Planch. in Ann. Sci. Nat. Bot., ser. 4, 17:2. 1862. Type: Colombia. Bogota: Tenasuca, 1800 m, 1855-05, Triana s. n. (lectotype, BM!—designated by Moreno, 1993; isolectotypes, G!, K!, P!).

C. haenkeana auct. non Presl: Lourt. in Mém. Soc. Cien. Nat. La Salle 16:25. 1956, p. p. quoad G. Barriga 11608, Cuatrecasas 5195, A. C. Smith 16682; et in Lasser, Fl. Venezuela 3(1):31, pl. 1:A. 1971.

This species consists of two varieties occurring in Central America and northern South America.

8a. var. *populifolia* Fig. 5: D–F

Woody vine. Branches shallowly 10–14-sulcate, sparsely puberulous or nearly glabrous. Leaves ternate; leaflets papery, ovate or broadly ovate, 3.5–12.5 × 2.8–8.8 (–11) cm, apex acuminate, base rounded or subcordate, margin entire, on both surfaces sparsely puberulous or only on basal veins sparsely puberulous, sometimes nearly glabrous, basal veins abaxially flat or prominent; petioles 2.5–12 cm long. Staminate axillary and terminal, (few–)many-flowered, usually panicle-like, with umbellate uppermost nodes; peduncles 1.5–7.5 cm long; bracts shortly petiolate, simple, ovate or elliptic, or ternate. Staminate flower 0.9–1.8 cm in diam.; pedicel 0.8–1.8 cm long, usually densely puberulous; sepals 4, white, oblanceolate or narrowly oblong, 6.5–9 × 2–3.6 mm, apex slightly acute, on both surfaces more or less densely puberulous, margin velutinous; stamens 3–7.5 mm long, glabrous; anthers oblong or narrowly oblong, 0.8–1.2 mm long, apex obtuse. Pistillate cymes axillary and terminal, usually many-flowered; peduncles 0.3–5 cm long; bracts shortly petiolate, ovate, or sessile, deltoid or oblanceolate, 0.5–3 cm long. Pistillate flower 0.9–2 cm in diam.; pedicel 0.6–2 cm long, densely puberulous; sepals 4, white, obovate-oblong, 6–10 × 2–3.6 mm, at apex slightly acute, on both surfaces densely puberulous, margin velutinous; staminodes 4–6 mm long; ovaries puberulous; styles 4.5–6 mm long, densely villous. Achenes compressed, ovate or nearly rhombic, 3–5 × 1.8–2.2 mm, puberulous, indistinctly rimmed; persistent styles 4.5–5 cm long, yellowish-plumose. Fl. Jun.–Dec.

Colombia, Costa Rica, Ecuador, El Salvador, Honduras, Nicaragua, and Venezuela. In bushes, at forest edges, on river banks; 40–2800 m.

Additional specimens examined.

Colombia. Bogota, Holton 674 (G); Macizo de Bogota: Quebrada de Chico, Cuatrecasas 5195 (US); Salto de Tequendama, Garcia-Barriga 11608 (US); Santander: Las Vegas, Killip & A. C. Smith 16099 (GH); Sierra Nevada de Santa Marta, Cuatrecasas & Romero 24785 (US); Surata, Killip & A. C. Smith 16682 (US).

Costa Rica. Cordillera, Skutch 3483 (US); Alajuela, Standley 47797 (US).

El Salvador. Morazan: Montecristo, Tucker 454 (G).

Honduras. Rio Granda River, Schipp 1145 (G).

Nicaragua. Granada: village de Dioromo, Levy 313 (G).

Venezuela. Aragua, Williams & Alston 125 (LE); Merida, Breteler 4540, 4666 (US), Linden 344 (G, LE); Mucuruba, Gahriger 179 (G, GH, US), Hinas 4797 (US); Mocquerys, Drake 1188 (P); Tovar, Fendler 2 (G), Woronow 7668 (LE).

8b. var. *goudotiana* (Triana & Planch.) W. T. Wang, *st. nov.* — *C. goudotiana* Triana & Planch. in *Ann. Sci. Nat.*, ser. 4, 17: 10. 1862; Cortes, *Fl. Columb.* 84. 1898; W. T. Wang in *Acta Phytotax. Sin.* 38: 312. 2000, p. p. excl. syn. et specim. cit. Type: Colombia. Melgar, Prov. Mariquita, 1844, Goudot s. n. (holotype, P!).

This variety is distinguished from var. *populifolia* by its densely fulvous-pubescent or fulvous-velutinous branches and orbicular-ovate achenes, and by its leaflets narrowly ovate or elliptic-ovate in outline and abaxially densely fulvous-pubescent or fulvous-velutinous. Fl. May – Sept.

Colombia. In bushes; 2200 – 3000 m.

Additional specimens examined.

Colombia. Boyaca: Valle de Cocuy, Cuatrecasas 1753 (US); Sierra Nevada del Cocuy, Grubb & Curry 398 (US). Cundinamarca: Parama de San Miguel, Gutierrez & Jaramillo 275 (GH); San Miguel, Garcia-Baeriga 13337 (GH, US). Fusagasuga: Aguadita, Guevara s. n. (US). Putumayo: Sibundoy, Schultes & Villarreal 7964 (GH, US).

9. *Clematis bonariensis* Juss. ex DC., *Syst.* 1: 145. 1818; et *Prodr.* 1: 5. 1824; Eichler in *Mart.*, *Fl. Bras.* 13 (1): 146, t. 25, fig. 3. 1864; Griseb., *Symb.* 12. 1879, p. p.; Arech., *Fl. Urug.* 1: 25. 1901; Speg., *An. Min. Agr.* 4. 1905; Hicken in *Ap. Hist. Nat. B. Aires* 2: n. 498. 1910; Hauman in *Rev. C. Est. Agr. Vet.* 96: 10. 1919; Domin. in *Trab. Inst. Farm. Fac. C. Méd.* 44: 90. 1928; Herter, *Florul. Urug.* 61. 1930; Lourt. in *Darwiniana* 9 (3–4): 402, fig. 1. 1951; in *Mém. Soc. Cien. Nat. La Salle* 16: 25. 1956; in *Fl. Urug.* 2: 4, fig. 1: c. 1963; et in Reitz, *Fl. Ilustr. Catar.* 1: 5, pl. 1: D. 1966; Molero in Spichiger & Bocquet, *Fl. Parag.* 10, fig. 2. 1985; M. Johnson, *Clematis* 472. 1997; Zuloaga & Morrone, *Cat. Pl. Vasc. Rep. Argentina* 2: 966. 1999; Grey-Wils., *Clematis* 48. 2000. Type: Argentina. Buenos Aires, 1766 – 1768, Commerson s. n. (holotype, P!).

Fig. 4: F, G (see p. 16)

Woody vine. Branches terete, shallowly 10 – 14-sulcate, glabrous. Leaves ternate; leaflets papery, narrowly ovate or broadly lanceolate, 4 – 10 × 1.8 – 4.5 cm, apex long acuminate or attenuate, base rounded or subcordate, margin entire, on both surfaces reticulate and sparsely puberulous, glabrescent, basal veins abaxially prominent; petioles 5 – 8 cm long. Staminate cymes many-flowered, panicle-like; peduncles 2.6 – 10 cm long; bracts linear or lanceolate, or petiolate, leaflet-like. Staminate flower 1.9 – 2.3 cm in diam.; pedicel 0.5 – 1.8 cm long, densely puberulous; sepals 4, obovate-oblong or narrowly oblong, 10 – 12 × 3.5 – 4 mm, apex obtuse, inside glabrous, outside appressed-puberulous, margin velutinous; stamens 6 – 7 mm long, glabrous; anthers oblong, ca. 1 mm long, apex obtuse. Pistillate cymes axillary, 9 – many-flowered; peduncles 2 – 4.5 cm long, sparsely puberulous; bracts linear, ca. 5 mm long. Pistillate flower similar to staminate flower; staminodes similar to fertile stamens; styles ca. 5 mm long, densely villous. Achenes compressed, broadly ovate or elliptic, 3 – 3.5 × 2 – 2.2 mm, puberulous, rimmed; persistent styles 3 – 5 cm long, plumose. Fl. Sept. – Nov.

NE Argentina, S Brasil, S Paraguay, and Uruguay. In forests; 0 – 900 m.

Additional specimens examined.

Argentina. Buenos Aires, Cabrera 3371 (G, GH), Spegazzini s. n. (P); Cruz Colorada, Parodi 8670 (GH); Misiones: Parana, Schinini 25465 (G, MO), Dep. San Javier, Ferrucci et al. 5887 (GH, MO); Santa Ana, Rodriguez 353 (UPS).

Brazil. Curitiba, Dombrowski 538 (GH), Dusen 1362a (GH); Parana, Hatschbach 25635, 27645, 32788 (P); Santa Catarina, Klein & Bresolin 7966 (P), Müller 174 (K).

Paraguay. Encarnacion, Hassler 1442 (G); Itapua, Casas 3737 (G).

Uruguay. Montevideo , Herter 60829 (MO) ; Tacuari , Herter 1623 (G , GH , MO , US).

10. *Clematis variifolia* W. T. Wang , sp. nov. Type : Mexico. “ revers occid. Cordill. Guchilaque ” , 1827-10 , Berlandier 1014 (holotype , here designated , G).

Fig. 6 : A , B

Affinis *C. dimorphophyllae* W. T. Wang , quae ramis 8 – 10-sulcatis , foliis simplicibus et ternatis tantum haud pinnatis subtus puberulis , cymarum nodis ultimis haud umbellatis bibracteatis , sepalis majoribus 6 – 7 mm longis , floris staminati staminibus pluribus 32 – 40 differt.

Liana herbacea. Rami graciles , 1.2 – 1.5 mm diam. , vadose 4 – 6-sulcati , sparse adpresseque puberuli. Folia ramea plerumque 5-foliolatum pinnata , inferiora ternata , infima simplicia ; foliola foliorum compositorum herbacea , anguste ovata vel ovata , raro elliptica. 1.2 – 3.2 cm longa , 0.6 – 2.7 cm lata , apice acutiuscula vel obtusa , basi rotundata vel late cuneata , margine integra , indivisa , raro 3-lobulata , supra sparse adpresseque puberula , subtus glabra , nervis basalibus planis , petiolis 0.5 – 1.2 cm longis compressis supra puberulis ; folia simplicia subsessilia , deltoidea , circ. 2.2 cm longa , 2.5 cm lata , apice acuta , basi subtruncata , margine sparse dentata. Cymae staminatae axillares et terminales , 5 – 14-florae , paniculiformes vel umbelliformes , nodis ultimis umbellatis veticillatum 5-bracteatis ; pedunculi graciles , 1.8 – 3 cm longi , puberuli ; bractee ovatae , 2 – 5 mm longae. Flos staminatus circ. 8 mm diam. ; pedicellus gracilis , 8 – 13 mm longus , dense puberulus ; sepala 4 , longe elliptica , circ. 4.5 mm longa , 2 – 3 mm lata , apice acutiuscula , intus sparse puberula , extus dense adpresseque puberula , ad marginem velutina ; stamina circ. 27 , circ. 3 mm longa , glabra , filamentis linearibus , antheris oblongis circ. 0.8 mm longis apice obtusis.

Herbaceous vine. Branches slender , 1.2 – 1.5 mm in diam. , shallowly 4 – 6-sulcate , sparsely appressed-puberulous. On a branch the lowermost leaves simple , subsessile , upper ones ternate or 5-foliolately pinnate , petiolate ; leaflets of compound leaves herbaceous , narrowly ovate or ovate , 1.2 – 3.2 × 0.6 – 2.7 cm , apex slightly acute or obtuse , base rounded or broadly cuneate , margin entire , undivided , rarely 3-lobulate , adaxially sparsely appressed-puberulous , abaxially glabrous , basal veins flat ; petioles 0.5 – 1.2 cm long , puberulous ; simple leaves subsessile , deltoid , ca. 2.2 × 2.5 cm , apex acute , base subtruncate , margin sparsely dentate. Staminate cymes axillary and terminal , 5 – 14-flowered , paniculiform or umbelliform , the ultimate nodes umbellate and with a whorl of ca. 5 small bracts ; peduncles slender , 1.8 – 3 cm long , puberulous ; bracts ovate , 2 – 5 mm long. Staminate flower ca. 8 mm in diam. ; pedicel slender , 8 – 13 mm long , densely puberulous ; sepals 4 , long elliptic , 4.5 × 2 – 3 mm , apex slightly acute , inside sparsely puberulous , outside densely appressed-puberulous , margin velutinous ; stamens ca. 27 , ca. 3 mm long , glabrous ; anthers oblong , 0.8 mm long , apex obtuse. Fl. Oct.

Mexico (Guchilaque). On slopes.

11. *Clematis uruboensis* Lourt. in Mém. Soc. Cien. Nat. La Salle 16 : 56 , fig. 6 , pl. 3. 1956 ; M. Johnson , *Clematis* 4. 1997 ; Grey-Wils. , *Clematis* 48. 2000. Type : Bolivia. Santa Cruz : Cercado , 450 m , 1928-04-14 , Steinbach 7991 (holotype , LIL ; isotypes , BM ! , G ! , GH ! , K ! , MO ! , NY ! , S !).

Fig. 14 : C (see p. 50)

Woody vine. Branches shallowly 6-sulcate , densely puberulous. Leaves ternate or pinnate , 5-foliolate ; leaflets papery , ovate or nearly rhombic , 5 – 8.5 × 3 – 5.8 cm , apex acute , base broadly cuneate or rounded , margin coarsely few-dentate , adaxially appressed-pubescent , abaxially densely appressed-pubescent , basal veins 3 or 5 , abaxially slightly prominent ; petioles 3 – 7.5 cm long ,



Fig. 6. A, B, *Clematis variifolia* W. T. Wang. A, staminate flowering branch; B, stamen (from Berlandier 1014). C, D, *C. fulvofurureacea* W. T. Wang. C, staminate flowering branch; D, two stamens (from Lopez 9007).

densely puberulous. Pistillate cymes axillary, 2–3-flowered; peduncles 6.4–8.5 cm long, densely puberulous; bracts shortly petiolate, elliptic or ovate, 2.6–5.2 cm long, within themselves with 3–4 bracteoles 0.9–2.7 cm long. Pistillate flower ca. 2.8 cm in diam.; pedicel 2.8–4 cm long; sepals 4, narrowly oblong, 13–15 (–20) × 4–5 mm, on both surfaces densely puberulous; staminodes 10–12 mm long, with sterile anthers narrowly oblong, 1 mm long; ovaries densely puberulous; styles 9–13 mm long, densely villous. Fl. Apr.

NE Bolivia. In forests, often by rivers; ca. 450 m.

12. *Clematis coahuilensis* Keil in Bull. Torr. Bot. Club 104 (1): 10. 1977; M. Johnson, *Clematis* 474. 1997; Grey-Wils., *Clematis* 51. 2000. Type: Mexico. Coahuila: Sierra de la Madera, 1400 m, 1973-08-04, Henrickson & Wendt 11880 (holotype, LL); Sierra de la Madera, Canon de la Charretera, Johnston 9131A (paratype, GH!); Sierra de la Madera, Canon del Pararite, Muller 3155 (paratypes, GH!, MO!); Sierra de la Gloria, Marsh 1865, 1981 (paratypes, GH!). Nuevo Leon: Lampazos, Taylor 353 (paratype, MO!, S!).

This species consists of two varieties confined to N Mexico.

12a. var. *coahuilensis* Fig. 7 : A, B

Woody vine. Branches shallowly 4–8-sulcate, puberulous, glabrescent. Leaves pinnate, 5-foliolate, sometimes ternate; leaflets subcoriaceous or coriaceous, narrowly to broadly ovate, 2–5 (–6) × 1–3.5 (–5) cm, apex acuminate or acute, base rounded or subcordate, margin 1–2-dentate or entire, undivided or 3-lobed, adaxially sparsely puberulous, abaxially densely to sparsely sericeous-puberulous, basal veins abaxially slightly prominent; petioles 1–4.5 cm long. Staminate cymes axillary and terminal, 1–5–many-flowered; peduncles 0.5–5 cm long; bracts sessile, oblanceolate-linear, ca. 5 mm long, or petiolate, ovate, ca. 2 cm long. Staminate flower ca. 2.2 cm in diam.; pedicel 1.4–2 cm long, puberulous; sepals 4, white, oblanceolate, or obovate-oblong, 9–11 × 3–4 mm, apex obtuse, on both surfaces densely puberulous, outside on margin velutinous; stamens 5–10 mm long, glabrous; anthers oblong, 1 mm long, apex obtuse. Pistillate cymes axillary and terminal, 5–13-flowered; peduncles 1.2–2.5 cm long; bracts ovate, 4–9 mm long. Fruiting pedicel 5–9 mm long, densely puberulous. Achenes compressed, ovate, ca. 3 × 2.2 mm, puberulous, narrowly rimmed; persistent styles ca. 2.2 cm long, plumose. Fl. Jul. – Sept.

N Mexico. In bushes or on slopes; 1000–1600 m.

Additional specimens examined.

Mexico. Coahuila: Muzquiz, Wynd 376 (GH, MO, US). Nuevo Leon, Taylor 353 (MO). San Luis Potosi, Purpus 4934 (GH).

12b. var. *brevisepala* W. T. Wang in Acta Phytotax. Sin. 39:6. 2001. Type: Mexico. Nuevo Leon: Rancho Resendez, Lampazos, 1937-06-24, Edwards 358 (holotype, K!).

This variety differs from var. *coahuilensis* in its smaller staminate flowers ca. 9 mm in diam., and its shorter rhombic or obovate sepals 4.5–5 mm long. Fl. Jun.

NE Mexico.

13. *Clematis plukenetii* DC., Syst. 1:153. 1818; et Prodr. 1:7. 1824; W. T. Wang in Acta Phytotax. Sin. 39:318. 2001. — *C. dioica* L. ssp. *catesbyana* (Pursh) Kuntze var. *plukenetii* (DC.) Kuntze in Verh. Bot. Ver. Brand. 26:104. 1885. Type: Bahamas, 1723, Catesby s. n. (holotype, BM!).

C. dioica L. ssp. *virginiana* (L.) Kuntze var. *bahamica* Kuntze in l. c. 102. — *C. bahamica* (Kuntze) Britton in Bull. New York Bot. Gard. 4:117. 1906; Britton & Millsp., Bahama Fl. 140. 1920; Correll, Fl. Bahama Archip. 526. 1982. Type: Bahamas. Eleuthera, 1879-

10, Brace 391 (holotype, K!).

C. orbiculata Correll in J. Am. Arb. 58:40, fig. 1. 1977; et Fl. Bahama Archip. 528, fig. 217B. 1. 1982. Type: Bahamas. Great Exuma, 1975-01-10, Correll 44074 (holotype, GH!).

C. catesbyana auct. non Pursh: M. Johnson, Klematis 473. 1997, p. p. quoad syn. *C. plukenetii* DC.

Fig. 7: C, D

Woody vine. Branches slender, shallowly 4–8-sulcate, glabrous or only on nodes sparsely puberulous. Leaves pinnate, 5-foliolate or ternate; leaflets papery or subcoriaceous, ovate, broadly ovate, or nearly orbicular, rarely oblong or oblanceolate, 1.5–5.8 × 0.5–3.8 cm, apex acute or rounded, usually mucronulate, base rounded or broadly cuneate, rarely cuneate, margin entire, rarely 1–2-denticulate, undivided, rarely 2–3-lobed, on both surfaces glabrous or subglabrous, sometimes near base sparsely puberulous, glabrescent, basal veins abaxially flat or slightly prominent; petioles 1.5–4 cm long. Staminate cymes axillary and terminal, 7–many-flowered; peduncles 1–2.5 cm long; bracts petiolate, ovate, 8–11 mm long. Staminate flower 1.6–2 cm in diam.; pedicel 1–1.8 cm long, sparsely puberulous; sepals 4, oblanceolate, 7–12 × 3–4 mm, apex slightly obtuse, inside only near apex sparsely puberulous, elsewhere glabrous, outside puberulous, on margin velutinous; stamens 3–6 mm long, glabrous; anthers oblong, 1–1.2 mm long, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower 0.6–1.6 cm in diam.; pedicel 4–15 mm long, sparsely puberulous; sepals 4, oblong or obovate-oblong, 4–8 × 1.5–2.2 mm, apex slightly acute, inside sparsely puberulous, outside puberulous, margin velutinous; staminodes 3–5 mm long; ovaries puberulous; styles 3–6 mm long, densely villous. Achenes compressed, ovate or elliptic, 3.5–4 × 2–2.5 mm, puberulous, narrowly rimmed; persistent styles 6–7 cm long, plumose. Fl. Nov. – Dec.

Bahamas and Puerto Rico. In forests or by streams.

Additional specimens examined.

Bahamas. Abaco Island: Brace 1594 (K, US), Gillis 7361 (GH), Wunderlin et al. 8272 (GH); Andros Island: Proctor 47781 (US), Small & Carter 8579 (K, US); Mayaguana Island: Bryne 410 (GH), P. Wilson 7503, 7582 (GH, K).

Puerto Rico. Guayama: without precise locality, Sintensis 2255, Urban 2455 (K).

14. Clematis grossa Benth., Pl. Hartw. 33. 1839; Hems. in Godman & Salvin, Biol. Centr.-Am. Bot. 1:2. 1879; Standley, Fl. Costa Rica 2:434. 1927; Standley & Steyer. , Fl. Guatemala 247. 1946; M. Johnson, Klematis 479. 1997; Grey-Wils., Clematis 52. 2000; W. T. Wang in Acta Phytotax. Sin. 38:314. 2000; Pool in Stevens et al., Fl. Nicaragua 3:2191. 2001. Type: Mexico. San Bartolo in the Barranca, 1839, Hartweg 266 (holotype, K!; isotypes, BM!, P!).

C. haenkeana auct. non Presl: Duke in Ann. Missouri Bot. Gard. 49:458. 1962, p. p. quoad Allen 1523.

Fig. 8: A, B

Woody vine. Branches shallowly 4–6-sulcate, usually densely puberulous. Leaves pinnate, 5-foliolate, or ternate; leaflets chartaceous or subcoriaceous, broadly cordate, cordate, or ovate, 4–8.5 × 2.5–8.5 cm, apex acuminate or acute, base cordate or rounded, margin coarsely 3–5-dentate per side, undivided or 3-lobulate, adaxially sparsely puberulous, abaxially velutinous or densely, rarely sparsely sericeous, basal veins abaxially slightly prominent; petioles 5–8 cm long. Staminate cymes axillary, many-flowered, panicle-like, with uppermost umbellate nodes; peduncles



Fig. 7. A, B, *Clematis coahuilensis* var. *coahuilensis* Keil. A, staminate flowering branch ; B, stamen (from Muller 3155). C, D, *C. plukenetii* DC. C, staminate flowering branch ; D, stamen (from P. Wilson 7582). E, F, *C. caleoides* Standley & Steyerl. E, staminate flowering branch ; F, stamen (from Skutch 171).

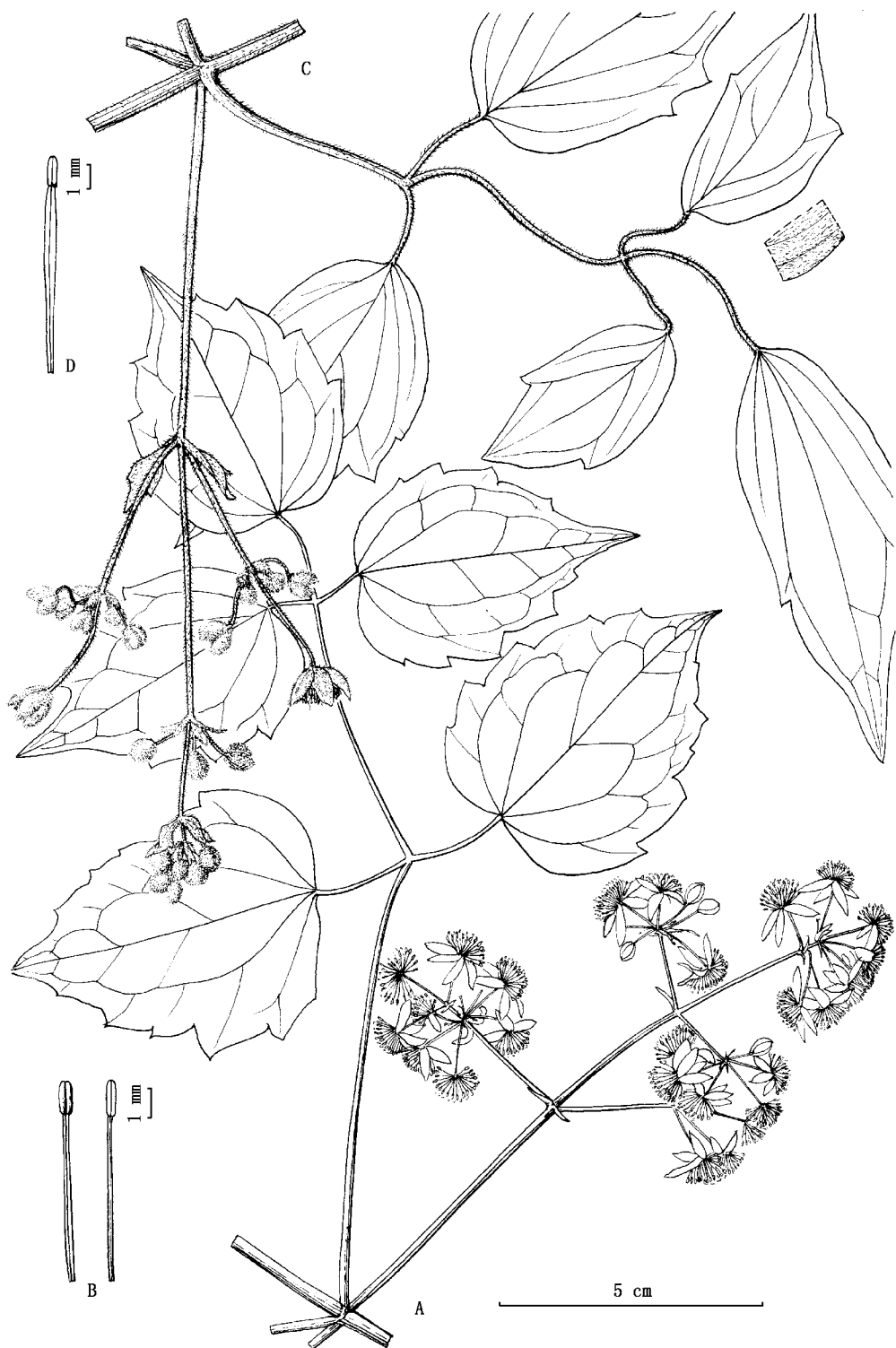


Fig. 8. A, B, *Clematis grossa* Benth. A, staminate flowering branch; B, two stamens (from Skutch 2029). C, D, *C. thalicoides* Steud. C, staminate flowering branch; D, stamen (from Fosberg 19733).

0.7–9 cm long ; bracts linear or orbicular-ovate , 0.5–2.5 cm long . Staminate flower 1–1.2 cm in diam. ; pedicel 6–10 mm long , densely puberulous ; sepals 4 , white , obovate-oblong or oblong , 4.8–7 × 2.2–2.8 mm , apex slightly obtuse , inside puberulous , outside densely puberulous ; stamens 4–6 mm long , glabrous ; anthers oblong or narrowly oblong , 0.8–1 mm long , apex obtuse . Pistillate cymes similar to staminate cymes . Pistillate flower 1.2–1.9 cm in diam. ; pedicel 1–1.4 cm long , densely puberulous ; sepals 4 , white , obovate-oblong , 6–10 × 2.2–3.2 mm , inside sparsely , outside densely puberulous ; staminodes ca. 6 mm long ; ovaries puberulous ; styles 6–7 mm long , densely villous . Achenes compressed , broadly elliptic , 2.2–3 × 1.6–2 mm , puberulous , narrowly rimmed ; persistent styles 2.5–3.8 cm long , plumose . Fl. Oct. – Dec .

Costa Rica , El Salvador , Guatemala , Honduras , Mexico , Nicaragua , and Panama . In thickets or scrambling on bushes ; 700–2000 m .

Additional specimens examined .

Costa Rica. Alfaro Ruiz , A. Smith 2046 (GH) ; Aserri , Standley 34140 (US) ; Barka de Viejo , Conduz 13465 (P) ; Copey , Conduz 11670 (US) ; Santa Maria , Standley 42468 (US) ; Zarcero , A. Smith 609 (GH) .

El Salvador. San Vicente , Standley 21585 (US) ; Santa Ana , Standley 20140 (GH , US) .

Guatemala. Aguacatan , Williams 21817 (GH) ; Cabello de Angel , Morales 623 (US) ; Coban , Turckheim 1356 (G , GH , P , UPS , US) ; Cocalaes , Rodriguez 39 (P) ; Colomba , Skutch 1997 (GH) ; Jalapa , Kellerman 7039 (US) ; Neuton , Nelson 3554 (US) ; Quezaltenango , Skutch 2029 (GH) ; Santa Rosa , Seler 3298 (GH , US) ; Vokan Jumaytepeque , Heyde 4304 (G , GH , US) ; without precise locality , Bernoulli & Cario 3307 , 3311 (LE) .

Honduras. Cortes , Edwards 728 (GH , MO , US) ; Espino , Molina 26312 (US) ; Siguatepeque , Standley 56504 (GH , US) ; Yuscaran , Williams 11193 (GH) .

Mexico. Chiapas , Ton 2207 (US) , Perez 153 (GH) ; Copey , Conduz 11670 (US) ; Cordava , Bourgeau 1567 (P) ; Cordoba , Kerber 87 (LE , P) ; Cuernavaca , Bourgeau 1166 (LE , P) ; Guadalajara , Pringle 2368 (P , UPS) ; Guerrero , Anderson 4342 (GH , US) , Pringle 10332 (G , GH , LE , S) ; Hacunda Noria , Nicolas s. n. (S) ; Haijotla , Karwinsky 1 , 6 (LE) ; Jalisco , Pringle 2368 (GH , LE , S , US) ; Maltrata , Kerber 203 (UPS) ; Mathata , Kerber 87 (P) ; Mina , Mexia 9104 (MO) ; Mollango , Moore 1945 (GH) ; Morella , Arsene 8289 (GH) ; Nuevo Leon , Meyer 2774 (MO) , Mueller 1127 (G , GH , US) ; Oaxaca , Bourgeau 3281 (LE) , Conzatti 22 (MO , US) , Pringle 6057 (G , GH , LE , MO , P , S , US) ; Orizaba , Mueller 1757 (P) , Rosas 987 (G , LE , S) , 1435 (P) ; Puebla , Nicolas s. n. (P) ; Rincon , Hinton 5147 (US) ; Rio Blanco , Palmer 690 (GH , US) ; San Bartolo , Gimata 772 (US) ; San Luis , Bartholomew 3544 (GH) ; Sierra Madre , Mueller 1127 (P) ; Sierrita , Hinton 8769 (G , MO , US) ; Tamaulipas , Rogers 2774 (G) ; Temascaltepez , Hinton 8769 (S) ; Vera Cruz , Arsene 7047 , Palmer 456 , Seler 3586 (US) .

Nicaragua. Aranjuez , Williams 23684 (US) ; Grenada , Moreno 6419 (MO) ; Jinotega , Stevens 5968 (MO) ; Nandaime , Levy 394 (P) .

Panama. Cerro Punta , Allen 1523 (GH) ; Chiriqui , Graham 295 , Wilbur 10922 (GH) , 13042 (MO) .

15. *Clematis thalictroides* Steud. in Flora 39 : 407. 1856. Type : Peru. Tapina , Lechler Herb. no. 1120 (holotype , P !) .

C. sericea H. B. K. ex DC. , Syst. 1 : 144. 1818 , non Michaux , 1803 ; et Prodr. 1 : 5. 1824 ; Kunth , Syn. 3 : 111. 1824 ; Spreng. , Syst. 2 : 669. 1825 ; Triana & Planch. in Ann. Sci. Nat. , ser. 4 , 17 : 9. 1862 ; Jameson , Syn. Pl. Aequat. 1 : 2. 1865 ; Hemsl. in Godman & Salvin , Biol. Centr.-Am. Bot. 1 : 2. 1879 ; Prantl in Bot. Jahrb. 9 : 260. 1888 ; Lillo in Bol.

Mens. Mus. Prod. Arg. 3(26):46. 1890; Rusby in Mém. Torr. Bot. Club 6:2. 1896; Hauman, Cat. 206. 1923; Macbride in Field Mus. Nat. Hist. Chicago Bot. 13:647. 1936; Lourt. in Darwiniana 9(3-4):405, fig. 2. 1951; Comargo, Cat. Illustr. Pl. Cundin. 4:57. 1969. — *C. dioica* L. ssp. *sericea* (H. B. K. ex DC.) Kuntze in Verh. Bot. Ver. Brand. 26:103. 1885; Benoist in Bull. Soc. Bot. France 87:124. 1940. — *C. sericea* var. *striatula* DC., Syst. 1:144. 1818; et Prodr. 1:5. 1824. — *C. grossa* Benth. var. *striatula* (DC.) W. T. Wang in Acta Phytotax. Sin. 38:314. 2000. Type: Ecuador. Quito, 2700 m, 1802, Bonpland 2209 (holotype, P!).

C. sericea H. B. K. ex DC. var. *tereticaula* DC., Syst. 1:144. 1818. Type: Colombia. Rio Majo, Bonpland s. n. (holotype, P).

C. sericea var. *costata* DC. l. c. Type: Colombia. Rio Majo, Bonpland s. n. (holotype, P).

C. haenkeana auct. non Presl: Lourt. in Mém. Soc. Cien. Nat. La Salle 16:25. 1956, p. p. quoad syn. *C. sericea* H. B. K. ex DC. et *C. thalictroides* Steud. et specimina Bang 2801, Ferreyra 3714, Mexia 7350, Spruce 5985, Haught 3251, Killip & A. C. Smith 22316.

Woody vine. Branches shallowly 6–10-sulcate, densely pubescent or velutinous. Leaves pinnate, 5-foliolate, or ternate; leaflets papery, elliptic-ovate or ovate, sometimes subcordate, 3–10 (–14) × 2–7 (–12) cm, apex acuminate or long acuminate, base subcordate, cordate, or rounded, margin coarsely 1–3-dentate per side or entire, undivided or indistinctly 3-lobulate, adaxially appressed-pubescent, abaxially velutinous or densely pubescent, with hairs up to 0.8–1 mm long, basal veins slightly prominent or nearly flat; petioles 2.5–7.5 cm long. Staminate cymes axillary, many-flowered, panicle-like, with uppermost umbellate nodes; peduncles 3–12 cm long; bracts narrowly ovate or linear, sometimes ternate. Staminate flower 1–1.6 cm in diam.; pedicel 0.7–2.2 cm long, densely puberulous; sepals 4, white, obovate-oblong or narrowly oblong, 5–8 × 2–3 mm, apex slightly obtuse, on both surfaces densely puberulous, margin velutinous; stamens 5–7 mm long, glabrous; anthers oblong or narrowly oblong, 1–1.2 mm long, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower 0.9–2.1 cm in diam.; pedicel 0.7–2 cm long; sepals 4, white, oblong, 5–10 × 1.5–4.5 mm, on both surfaces densely puberulous; staminodes 4–7 mm long; ovaries puberulous; styles 4.5–7 mm long, densely villous. Achenes compressed, rhombic or narrowly obovate, (3–) 3.8–5 × (2–) 2.5–3 mm, puberulous, narrowly rimmed; persistent styles 3.7–5 (–8.5) cm long, plumose. Fl. Feb. – Sept.

Argentina, Bolivia, Colombia, Ecuador, and Peru. In bushes or forests; 800–3500 m.

Additional specimens examined.

Argentina. Jujuy: Yala, Ancibor 14386 (P); Salta: Chicoana, Meyer 12362 (G); Lerma, Novara 4515, 7988 (G); Yacone, Lorentz s. n. (G); Tafi, La Hoyada, Venturi 1831 (GH); Tamailla: Villa Nougues, Venturi 1779 (US); Tacuman, Meyer 14020 (G), Rocha 2487 (UPS), Schreiter 1224 (G, P).

Bolivia. Cercado: Tarija, Beck 778, Krapovickas 18852 (P); Cochabamba, Steinbach 9879 (G); Espirito Santo, Bang 1271 (G); Santa Cruz, Krapovickas 32363 (G); without precise locality, Bang 2801 (K, GH), Britton & Rusby 2801 (LE).

Colombia. Cundinamarca: Bogota, Tenasuca, Triana s. n. (G, K); Mesa, Fernandez & Mora 1307 (US); San Antonio de Tena, Cuatrecasas 8281 (US). Dep. del Valle: Cordillera Central, Cuatrecasas 20007 (US). Huila: Finca Cedral, Fosberg 19733 (US); Tena, Goudot s. n. (P), Hartweg 871 (K, P).

Ecuador. Azuay, Camp 2559 (G); Bolivar, Harling 9516 (P); Carchi, Asplund 7190 (G,

US), *Juncosa* 2341 (MO), Harling 12324 (P); Cotopaxi, Harling 9030 (P); Huatasi, Spruce 5985 (GH); Imbabura, Penafiel et al. 91 (MO); Leou: Paramo, Haught 3251 (US); Pichincha: Canton Quito, Mexia 7698 (US); Machachi, Asplund 6224 (G); Pifo, Mexia 7350 (US); Quito, Brandbyge 42572 (UPS).

Peru. Ayacucho: Carrapa, Killip & A. C. Smith 22316 (US); Bougara: Pomacocha, Wurdack 935 (P); Cuzco: Woytkowski 590 (P); Huanuco: Muna, Woytkowski 5262 (MO); Junin: Huacapistana, Gentry & Prance 16438 (G), Killip & A. C. Smith 24329 (US); Tarma, Ferreyra 3714 (GH); Lima: Quive, Pennell 14295 (GH).

C. thalictroides often with velutinous leaflets is similar to *C. grossa* also often with velutinous leaflets, differing from the latter in its leaflets usually elliptic-ovate in outline and at margin 1–3-dentate per side or entire. In *C. grossa*, the leaflets are usually broadly ovate in outline, and at margin 3–5-dentate per side (see above). In *C. thalictroides*, the indumentum of the abaxial leaflet surface is variable in hair density. Sometimes, its hairs do not form a velvety cover, and are more or less sparse. In such a case, this species is similar to another species, *C. haenkeana* and it is difficult to differentiate them. Under such circumstances the hair length may be served as a character to distinguish between them. In *C. thalictroide*, the hairs of the abaxial leaflet surface are up to 0.8–1 mm long, whereas in *C. haenkeana*, they are shorter, 0.2–0.6 mm long (see below).

16. *Clematis haenkeana* Presl, Rel. Haenk. 2:69. 1835; Lourt. in Mém Soc. Cien. Nat. La Salle 16:25, pl. 1–2. 1956, p. p. excl. syn. *C. sericea* H. B. K. ex DC., *C. populifolia* Turcz., *C. thalictroides* Steud., *C. goudotiana* Triana & Planch., *C. medusaea* Planch. & Linden, *C. floribunda* Triana & Planch. et *C. grahamii* Rusby; M. Johnson, *Clematis* 481. 1997, p. p.; Grey-Wils., *Clematis* 47. 2000, p. p.; W. T. Wang in Acta Phytotax. Sin. 38:313. 2000, p. p. excl. syn. *C. floribunda* Triana & Planch. Type: Peru. Cordillerum Peruviae, 1790, Haenke s. n. (holotype, PR; photo, US!).

C. dioica L. var. *brasiliiana* auct. non (DC.) Eichler: Molero in Spichiger & Bocquet, Fl. Parag. Ranunculac. 14, f. 5:d, e. 1985, p. p. quoad Hassler 10208.

Fig. 9: A, B

Woody vine. Branches shallowly 8–10-sulcate, appressed-puberulous. Leaves pinnate, 5-foliolate, sometimes ternate; leaflets papery, ovate or broadly ovate, 3.5–9 × 2–6.5 cm, apex acuminate or long acuminate, base subcordate, truncate, or rounded, margin entire or 1–(2–5)-dentate per side, undivided, rarely 3-lobed, adaxially sparsely puberulous, abaxially subglabrous or sparsely or rarely densely appressed-puberulous, with hairs 0.2–0.6 mm long, basal veins abaxially nearly flat or slightly prominent; petioles 2.5–7.5 cm long. Staminate cymes axillary, many-flowered, panicle-like, with uppermost umbellate nodes; peduncles 2–11 cm long; bracts shortly petiolate, long elliptic or ovate, 1.2–2.5 cm long, or sometimes ternate. Staminate flower 1.2–2 cm in diam.; pedicel 1–2.2 cm long, puberulous; sepals 4, white, obovate-oblong, 6–7 (–9) × 2–3 (–4) mm, apex obtuse, on both surfaces densely puberulous, margin velutinous; stamens 3–7 mm long, glabrous; anthers oblong, 0.8–1 mm, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower similar to staminate one; staminodes 4–7 mm long; ovaries puberulous; styles 4–6 mm long, densely villous. Achenes compressed, elliptic or narrowly obovate, 2.5–4 × 2–2.8 mm, puberulous, narrowly rimmed; persistent styles 3.5–8.5 cm long, plumose. Fl. Feb. – Jun.

Argentina, Bolivia, Colombia, Ecuador, Paraguay, and Peru. In bushes or forests or by river; 500–3300 m.

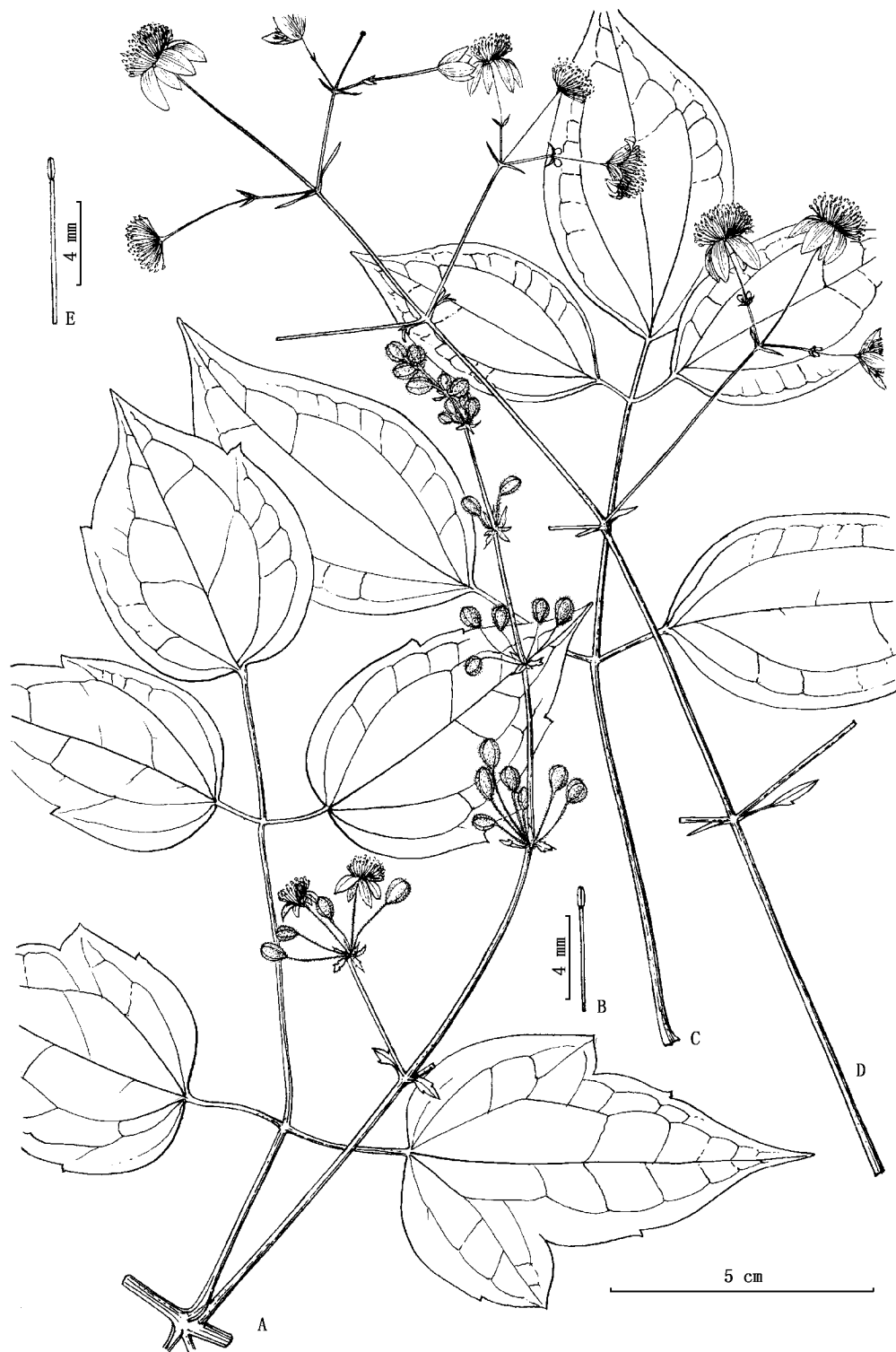


Fig. 9. A, B, *Clematis haenkeana* Presl. A, staminate flowering branch; B, stamen (from Bang 1271). C - E, *C. guadeloupa* Pers. C, leaf; D, staminate inflorescence; E, stamen (from Bretelet 4908).

Specimens examined.

Argentina. Santa Barbara , Fabris 5115 (P); Tafi del Valle , Venturi 2923 (US).

Bolivia. Apolo , Williams 152 (K); Cochabamba , Bang 1271 , Cardenas 5803 (GH); Tarija : Bermejo , Fournet 655 (MO , US); Ruta Tarija , Krapowickas et al. 19012 (GH); San Simon , Krapowickas & Schinini 39032 (G).

Colombia. Corregimiento , El Encano , Barriga 7844 (US); Tenasuca , Triana s. n. (P).

Ecuador. Azuay : Tarqui , Camp 2023 (GH , P); Bolivar , Harling et al. 9560 (P); Chimborazo : Chanchan , Camp 3476 (G); Manabi : Jipijapa , Haught 3396 (US); Napo : Canton , Kirkbride & Chamba 4134 (US); Sibambe : Cordillera , Rimbach 853 (G).

Paraguay. Sierra de Amambay , Hassler 10208 (G , K).

Peru. Castroarcilloso : Ype , Angulo 3087 (P); Cuzco : Rio Yanamayo , Pennell 14061 (US); Huanuco : Tumanga , Woytkowski 8005 (K , US); Lima : Viscas , Pennell 14448 (GH).

17. *Clematis guadeloupa* Pers. , Synop. Pl. 2 : 99. 1807 ; Jørgenson & León-Yáñez , Cat. Vasc. Pl. Ecuador 848. 1999. Type : Guadeloupe , Badier 138 (holotype , according to Moreno , 1993).

C. caracasana H. B. K. ex DC. , Syst. 1 : 141. 1818 ; Williams , Fl. Trinidad & Tobago 1 (1) : 1. 1928. Type : Venezuela. “ in umbrosis Caracasanis ” , 1799 , Humboldt & Bonpland s. n. (holotype , P , according to Moreno , 1993).

C. caripensis H. B. K. , Nov. Gen. Sp. 5 : 36. 1821 ; DC. , Prodr. 1 : 4. 1824 ; Triana & Planch. in Ann. Sci. Nat. Bot. , ser. 4 , 17 : 10. 1862. Type : Venezuela. “ Crescit in umbrosis prope Caripe Cumanensium ” , 720 m , 1799 , Humboldt & Bonpland 249 (holotype , P , according to Moreno , 1993).

C. dioica L. var. *brasiliiana* auct. non (DC.) Eichler : Molero in Spichiger & Bocquet , Fl. Parag. Ranunculac. 14. 1985 , p. p. quoad Hassler 9605.

C. haenkeana auct. non Presl : Lourt. in Mém. Soc. Cien. Nat. La Salle 16 : 25. 1956 , p. p. quoad Bang 2215 , Barriga 4607 , Klug 2922 , 3526 , Pennell , Killip & Hazen 8669 , Steinbach 5371 , 7449.

Fig. 9 : C – E

Woody vine. Branches shallowly 8 – 12-sulcate , glabrous or sparsely puberulous. Leaves pinnate , 5-foliolate , sometimes upper ones ternate ; leaflets papery , ovate or broadly ovate , (3 – 4) 5 – 11 × (1.4 – 2) 6 – 8 cm , apex acuminate , base rounded or subcordate , margin entire , rarely with a few teeth , on both surfaces sparsely puberulous or subglabrous , basal veins abaxially slightly prominent ; petioles 5 – 9 cm long. Staminate cymes large , many-flowered , panicle-like ; peduncles up to 13 cm long ; bracts petiolate , ovate or elliptic , 0.8 – 7 cm long. Staminate flower 1 – 1.4 cm in diam. ; pedicel 0.6 – 1.8 cm long , densely puberulous ; sepals 4 , white , narrowly obovate-oblong , 5 – 8 × 2 – 3.5 mm , apex slightly obtuse or acute , on both surfaces densely puberulous , margin velutinous ; stamens 4 – 6 mm long , glabrous ; anthers oblong , 0.8 – 1 mm long , apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower ca. 1.6 cm in diam. ; pedicel 1 – 2.5 cm long , puberulous ; sepals 4 , obovate-oblong , 6.5 – 8 × 2 – 3 mm long ; staminodes ca. 4 mm long ; ovaries puberulous ; styles ca. 5 mm long , densely villous. Achenes compressed , fusiform or narrowly elliptic , 3 – 5 × 1.5 – 2 mm , puberulous , narrowly rimmed ; persistent styles 4.5 – 5.5 cm long , plumose. Fl. Jul. – Feb.

Bolivia , Brazil , Colombia , Dominican Republic , Ecuador , Guadeloupe , Jalapa , Martinique , Paraguay , Peru , Tobago , and Venezuela. In forests or at edges of fields ; 50 – 1600 m.

Specimens examined.

Bolivia. Sara : Buenavista , Steinbach 7449 (G , K) ; Santa Cruz , Steinbach 5371 (G) : without precise locality , Bang 2215 (US).

Brazil. Bahia , Blanchet 195 (G).

Colombia. Caldas : Rio Quindio , Pennell , Killip & Hazen 8669 (US) ; Mocoa , Barriga 4607 (US) ; Putumayo : Santa Rosa , Schultes 3627 (GH) ; Santa Marta , H. H. Smith 1957 (K , P).

Dominican Republic. Windward Isl. : Baiac , Whiteford 3832 (US).

Guadeloupe. Bois des Banio-Jauneo , Duss 3254 (US).

Guatemala. Jalapa , Schlectondal s. n. (G).

Martinique. Huatero de Lorrain , Stehle 4734 (US) ; without precise locality , Hahn s. n. (P).

Paraguay. Caaguazu , in regione fluminis Ihu , Hassler 9605 (G).

Peru. Loreto : Balsapuerto , Klug 2932 (G , K). San Martin : Juan Jui , Klug 4251 (K) ; Moyobamba , Klug 3465 (G , GH , US) , 3526 (G).

Tobago. St. John , Webster 24180 (GH).

Venezuela. Aragua : Maracay , Croat 21454 (US) ; Hacienda Paloma , Pittier 13055 (G , US) ; Tachira , Breteler 4908 (US) ; Tovar , Fendler 2 (GH).

18. Clematis grahamii Benth. , Pl. Hartw. 5. 1839 ; Hems. in Godman & Salvin , Biol. Centr.-Am. Bot. 1 : 2. 1879. Type : Mexico. Tamaulipas , Tlalpujahua , 1830 , Graham 116 (holotype , K ! ; isotypes , BM ! , GH !).

Fig. 4 : D , E (see p. 16)

Woody vine. Branches shallowly 6 – 10-sulcate , puberulous. Leaves pinnate , 5 (– 7)-foliolate , upper ones sometimes ternate ; leaflets papery , lanceolate , narrowly ovate or ovate , 3 – 7 (– 13) × 1.5 – 3 (– 5) cm , apex attenuate or long acuminate , base rounded , subcordate , or broadly cuneate , margin entire or 1 – 2 (– 3)-dentate per side , adaxially sparsely puberulous , abaxially slightly densely puberulous , sometimes nearly glabrous , basal veins abaxially slightly prominent ; petioles 3 – 6 (– 11) cm long. Staminate cymes axillary and terminal , many-flowered , panicle-like ; peduncles 2 – 11 cm long ; bracts petiolate , foliaceous or simple. Staminate flower 1.1 – 1.4 cm in diam. ; pedicel 0.6 – 1.4 cm long , densely puberulous ; sepals 4 , white , obovate-oblong , 6 – 8 × 2 – 3 mm , apex slightly obtuse , on both surfaces densely puberulous , margin velutinous ; stamens 4 – 7 mm long , glabrous ; anthers oblong , 0.8 – 1 mm long , apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower ca. 1 cm in diam. ; sepals 4 , oblong , 5 – 6 × 1.8 – 2.2 mm ; staminodes 2.5 – 4.5 mm long ; ovaries puberulous ; styles 3.5 – 4 mm long , densely villous. Achenes compressed , elliptic , ca. 3 × 2 mm , puberulous ; persistent styles ca. 3.5 cm long , plumose. Fl. Jul. – Sept.

CE Mexico. In forests ; 1600 – 2800 m (Moreno , 1993).

Additional specimens examined.

Mexico. Hidalgo : Hidalgo , Case et al. 318 (MO) ; Jacala , Lyonnet 1315 (US) ; Michoacan : Tlalpujahua , Moreno G195 (MO) ; Tlaupujahua , Rose & Hay 5400 (GH) ; Nuevo Leon : Sierra Madre Oriental , Meyer & Rogers 2774 (GH) ; Pacola , Hernandez 3724 (MO) ; Tamaulipas , Standford et al. 1036 (GH) ; San Luis Potosi : Alvarez , Palmer 192 , 193 (GH , K , MO) , Pennell 17846 (GH , US) ; Veracruz , Fay et al. s. n. (GH).

19. Clematis caleoides Standley & Steyer. in Publ. Field Mus. Nat. Hist. Chicago , Bot. Ser. 23 (2) : 52. 1944 ; et Fl. Guatemala 245. 1946. Type : Guatemala. Dept. Chimaltenango , Cerro de Tecpam , region of Santa Elena , 2700 m , 1938-12 , Standley 58732 (holotype , F) ; Huehuetenango : Cerro Hults , 1500 – 2600 m , 1942-07-14 , Steyermark 48658 (isoparatype , US !).

Fig. 7 : E , F (see p. 27)

Woody vine. Branches terete, shallowly 10 – 14-sulcate, glabrous or on nodes sparsely puberulous. Leaves pinnate, 5 – 7-foliolate; leaflets papery or subcoriaceous, ovate or elliptic, 3.6 – 12 × 2 – 7.5 cm, apex acuminate, base rounded or subcordate, margin denticulate or entire, on both surfaces on veins sparsely puberulous, glabrescent, abaxially reticulate, basal veins abaxially prominent; petioles 1.5 – 6 cm long. Staminate cymes axillary and terminal, many-flowered, panicle-like; peduncles 3.5 – 7 cm long; bracts linear or elliptic, 0.5 – 2.8 cm long. Staminate flower 0.8 – 1.5 cm in diam.; pedicel 0.7 – 1.5 cm long, densely puberulous; sepals 4, white, oblong or obovate-oblong, 4.5 – 8 × 2 – 3.5 mm, apex obtuse, inside sparsely outside densely puberulous, margin velutinous; stamens 3 – 7 mm long, glabrous; anthers oblong, 0.8 – 1 mm long, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower similar to staminate one; stamens 4 – 5 mm long; ovaries puberulous; styles 4 – 5 mm long, densely villous. Achenes compressed, ovate or suborbicular, 3.5 – 4 × 2.5 – 3 mm, pilose, rimmed; persistent styles ca. 2 cm long, plumose. Fl. Oct. – Jan.

W Guatemala and S Mexico (according to Moreno, 1993). In forests; 1500 – 2700 m.

Specimens examined.

Guatemala. Baja Verapaz: Purulha, Turckheim 3979 (US). Chimaltenango: Chichey Pass, Hunnewell 17124 (GH); Santa Elena, Skutch 105 (US), 171 (GH, US), 282 (GH); Volcan Tajumulco, Steyermark 36955 (G); Zinacantan, Breedlove 55587 (MO).

20. *Clematis fulvofururacea* W. T. Wang, sp. nov. Type: Peru. Prov. Contumaza, Dpto. Cajamarca, alt. 1350 m, borde de Carretera, 1982-06-24, A. Lopez M. et al. 9007 (holotype, here designated, G).

Fig. 6: C, D (see p. 24)

Fortasse affinis *C. caleoidi* Standley & Steyermark, quae ramulis vadosae 10 – 14-sulcatis glabris vel subglabris, foliis majoribus usque ad 12 cm longis 7.5 cm latis utrinque ad nervos sparse puberulis haud furfuraceis facile differt.

Liana suffrutescens. Rami subteretes, longitudinaliter vadosae 6-sulcati, dense puberuli, apice velutini. Folia 5-foliolatum pinnata; foliola papyracea, ovata, indivisa, raro subpentagona et 3-lobata, 1.8 – 4.2 cm longa, 1 – 2.4 cm lata, apice acuta, basi rotundata vel subcordato-truncata, margine integra, raro 1 – 3-denticulata, supra densiuscule adpresseque puberula et saepe fulvofururacea, subtus dense sericeo-puberula, nervis basalibus 5 subtus fere planis; petioli 1.2 – 5 cm longi, dense puberuli vel velutini. Cymae staminatae axillares, 10-multiflorae, paniculiformes, nodis plerumque umbellatis; pedunculi 2.5 – 3.8 cm longi, dense puberuli; bractae primariae oppositae, simplices, petiolatae, ovatae, 1 – 2.5 cm longae, secundariae infimae oppositae, ternatae, petiolatae, secundariae reliquae verticillatae, simplices, sessiles, lineari-lanceolatae vel anguste triangulares, 2.5 – 4 mm longae, dense puberulae. Flos staminatus 1 – 1.4 cm diam.; pedicellus 5 – 10 mm longus, puberulus; sepala 4, caduca, alba, patentia, oblanceolato-oblonga, 5.5 – 7 mm longa, circ. 2 mm lata, apice acutiuscula, utrinque adpresse puberula, extus ad marginem velutina; stamina circ. 30, 2.2 – 7 mm longa, glabra, filamentis linearibus, antheris oblongis vel anguste oblongis 0.7 – 1 mm longis apice obtusis; pistillodia nulla. Cymae pistillatae cum floribus pistillatis ignotae.

Suffrutescens vine. Branches subterete, shallowly 6-sulcate, densely puberulous, near apex velutinous. Leaves pinnate, 5-foliolate; leaflets papery, ovate, undivided, rarely subpentagonal and 3-lobed, 1.8 – 4.2 × 1 – 2.4 cm, apex acute, base rounded or subcordate-truncate, margin entire, rarely 1 – 3-denticulate, adaxially appressed-puberulous and fulvous-furfuraceous, abaxially densely sericeous-puberulous, basal veins 5, abaxially nearly flat; petioles 1.2 – 5 cm long.

Staminate cymes axillary, 10 – many-flowered, panicle-like, with nodes mostly umbellate; peduncles 2.5 – 3.8 cm long; primary bracts simple, petiolate, ovate, 1 – 2.5 cm long, the lowermost secondary bracts often ternate, petiolate, the other secondary bracts sessile, simple, verticillate, lineare-lanceolate or narrowly triangular, 2.5 – 4 mm long. Staminate flower 1 – 1.4 cm in diam.; pedicel 5 – 10 mm long, puberulous; sepals 4, caducous, white, oblanceolate-oblong, 5.5 – 7 × ca. 2 mm, apex slightly acute, on both surfaces puberulous, outside on margin velutinous; stamens ca. 30, 2.2 – 7 mm long, glabrous; anthers oblong or narrowly oblong, 0.7 – 1 mm long, apex obtuse. Fl. Jun.

NW Peru. At edges of high-way; 1350 m.

21. *Clematis drummondii* Torr. & Gray, Fl. N. Amer. 1:9. 1838; Hemsl. in Godman & Salvin, Biol. Centr.-Am. Bot. 1:2. 1879; Small, Fl. SE U.S. 436. 1903; Wootton & Standley in Contr. U. S. Nat. Herb. 19:256. 1915; Tidestr. & Kittell, Fl. Arizona & New Mexico 33. 1941; Keerney & Peebles, Arizona Fl. 312. 1951; Shreve & Wiggins, Veg. Fl. Sonoran Desert 1:518. 1964; Correll & Johnston, Man. Vasc. Pl. Texas 651. 1970; Martin & Hutchins, Fl. New Mexico 1:741. 1980; Wiggins, Fl. Baja Calif. 774. 1980; Keener & Dennis in Taxon 31:38. 1982; Moreno & Essig in Morin, Fl. N. Amer. 3:161. 1997; M. Johnson, Klematis 478. 1997; Diggs et al., Ill. Fl. N. C. Texas 921. 1999; Grey-Wils., Clematis 52. 2000. — *C. dioica* L. ssp. *sericea* var. *drummondii* (Torr. & Gray) Kuntze in Verh. Bot. Ver. Brand. 26:103. 1885. Type: U.S.A. Texas: Colorado River, 1833 – 1834, Drummond 3 (lectotype, PH, designated by Essig, 1991; isolectotype, GH!).

C. nervata Benth., Pl. Hartw. 5. 1839; Hemsl. in Godman & Salvin l. c. — *C. dioica* L. ssp. *sericea* var. *nervata* (Benth.) Kuntze in l. c. Type: Mexico. Aguascalientes, 1839, Hartweg 2 (holotype, K!; isotypes, BM!, GH!, LE!).

? *C. dioica* ssp. *sericea* var. *nervata* (Benth.) Kuntze a. *incana* Kuntze et b. *ochracea* Kuntze in l. c. Type: no type specimens designated.

Fig. 10: C – E

Woody vine. Branches shallowly 4 – 6-sulcate, puberulous. Leaves, pinnate, 5-foliolate; leaflets papery, ovate, narrowly ovate, or pentagonal, 1 – 4.5 × 1 – 4 cm, base broadly cuneate or truncate, 3-parted or 3-lobed, the central lobe narrowly rhombic, lanceolate, or triangular, apex attenuate or acuminate, margin 1-dentate per side or entire, lateral lobes smaller, unequally 2-lobed or undivided, adaxially sparsely puberulous, abaxially on midrib pubescent, basal veins abaxially slightly prominent; petioles 3 – 5.5 cm long. Staminate cymes axillary, 5 – many-flowered, often panicle-like; peduncles 1 – 2.5 cm long; bracts foliaceous or simple, leaflet-like. Staminate flower 1 – 1.5 cm in diam.; pedicel 5 – 18 mm long, puberulous; sepals 4, white, obovate-oblong, 7 – 9 × 2 – 3 mm, apex slightly acute, on both surfaces puberulous, margin velutinous; stamens 4 – 9 mm long, glabrous; anthers oblong, 0.8 – 1 mm long, apex obtuse. Pistillate cymes axillary, usually 1-flowered, terminal 3-flowered; peduncles 0.5 – 3 cm long; bracts simple, lanceolate, or pinnate. Pistillate flower ca. 2.5 cm in diam.; pedicel 1 – 4 cm long; sepals similar to those of staminate flower, but larger, ca. 12 × 4.5 mm; staminodes 8 – 10 mm long; ovaries puberulous; styles 7 – 10 mm long, densely villous. Achenes compressed, elliptic, 3 – 4.5 × 2 – 2.5 mm, puberulous, rimmed; persistent styles 5 – 8 (– 10) cm long, plumose. Fl. Mar. – Sept.

N & C Mexico and SW U.S.A. On slopes and grasslands, in scrubs, or along streams; 0 – 2200 m (Moreno & Essig, 1997).

Additional specimens examined.

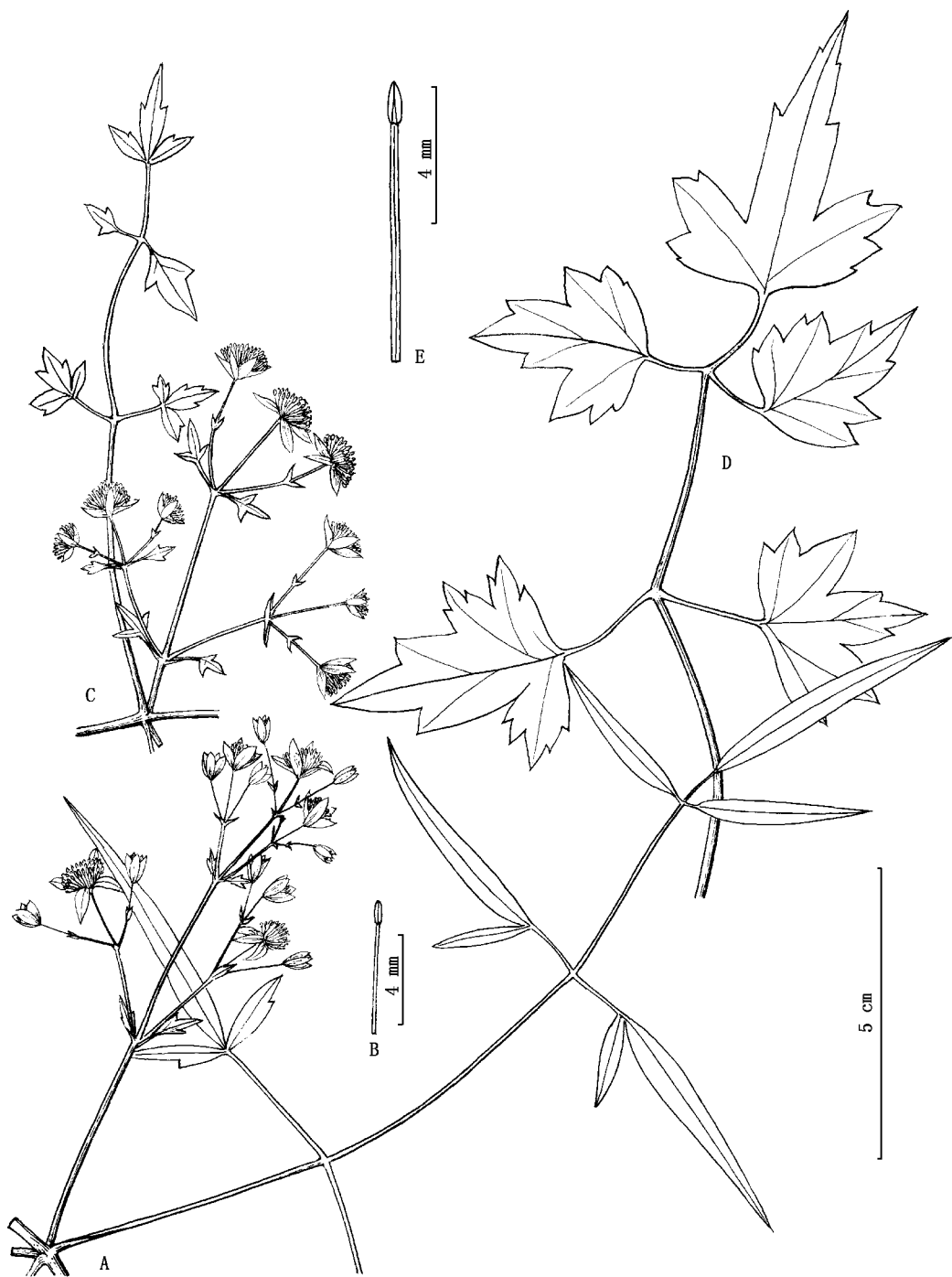


Fig. 10. A, B, *Clematis ligusticifolia* Nutt. var. *angustifoliola* W. T. Wang. A, staminate flowering branch; B, stamen (from Peebles 13518). C – E, *C. drummondii* Torr. & Gray. C, staminate flowering branch; D, leaf; E, stamen (from Brant & Miller 1991).

Mexico. Baja California , Carter et al. 2138 (GH), Purpus 282 (MO , US), H. H. Smith 5208 (LE , US). Chihuahua , Morley 606 (GH , MO), Nelson 6361 (GH , US), Pringle 1002 (US). Coahuila , Johnston & Mueller 669 , 954 (GH), Palmer 122 (GH , MO , NY , S , US), Stewart 1906 , 2739 (GH). Durango , Gentry 8433 (US), Palmer 342 (GH , MO , S , US). Nuevo Leon , Chase 7789 (GH , MO), Mueller 1056 (GH , US), Hinton 16531 (GH , US), Pringle 9676 (GH , MO , US), Wynd 679 (G). Oaxaca , Galeotti 4516 (G). Puebla , Ventura 1597 (US). Sonora , White 2765 (GH , US), 3835 , 4126 (GH), Wiggins & Rollins 444 (GH , MO , US). Tamaulipas , Standford 2362 (G , S). Zacatecas , Johnston 7450 (GH), Lloyd 165 (US), Reveal 2671 (US).

U.S.A. Arizona : Ajo , Jones 24842 (GH); Catalina Mts. , Cory 2966 (GH); Chirihua Mt. , Kusche s. n. (GH); Maricopa Co. , Gillespie s. n. (GH); Pima Co. , Bartram 132 (GH); Santa Rita Mts. , Jones s. n. (GH); Tucson , Pringle s. n. (G , GH , LE). **California :** Miraflores , Purpus 282 (K). **Colorado :** White Park , J. D. Hooker & A. Gray s. n. (K). **New Mexico :** Dona Ana Co. , Wootton 150 (G , GH , LE , MO), s. n. (GH , K , US). **Oklahoma :** Harmon Co. , Stevens 1085 , Waterfall 5183 (GH). **Texas :** Austin , Tharp s. n. (GH , MO); Bexar Co. , Groth 85 (GH , K); Cameron Co. , Davis s. n. (GH); Comanche Spring , Lindheimer 652 (G); Culberson Co. , Waterfall 4097 (GH); Davis Mts. , Young s. n. (GH); Hidelgo Co. , Parker 2869 (GH); Kenedy Co. , Tharp 49096 (US); Live Oak Co. , Hill 18260 (GH); Pecos Co. , Standford 7326 (GH), Tharp 91 (K , S); Presidio Co. , Hinckley 2232 (GH); San Antonio , Bush 1235 (GH); Terrell Co. , Demaree 4840 (S); Taylor Co. , Tolstead 5785 (GH); Uvalde Co. , Palmer 10217 (GH , K); Webb Co. , Brant & Miller 1991 (MO).

22. Clematis catesbyana Pursh , Fl. Amer. Sept. 2 : 736. 1814 ; DC. , Syst. 1 : 142. 1818 ; et Prodr. 1 : 4. 1824 ; Torr. & Gray , Fl. N. Amer. Suppl. 657. 1838 - 40 ; James in J. Cincinn. Soc. Nat. Hist. 6 : 124. 1883 ; Mohr , Pl. Life Alabama 512. 1901 ; Small , Fl. SE U.S. 437. 1903 ; et Man. Southeast Fl. 525. 1933 ; Keener in Sida 6 (1) : 37. 1975 ; Keener & Dennis in Taxon 31 : 38. 1982 ; Essig in Sida 14 : 60 , fig. 3. 1990 ; E. B. Smith , Keys Fl. Arkansas 41. 1994 ; Moreno & Essig in Morin , Fl. N. Amer. 3 : 164. 1997 ; M. Johnson , Klematis 473. 1997 , excl. syn. *C. plukenetii* DC. ; Holmgren , Ill. Compan. Gleason and Cronquist 's Man. 51 , fig. 3. 1998 ; Grey-Wils. , Clematis 51. 2000 , excl. syn. *C. plukenetii* DC. — *C. dioica* L. ssp. *catesbyana* (Pursh) Kuntze cum var. *variabilis* Kuntze in Verh. Bot. Ver. Brand. 26 : 103. 1885 , p. p. — *C. virginiana* L. var. *catesbyana* (Pursh) Britton in Britton & Brown , Ill. Fl. N. U.S. 2 : 67. 1897. Type : U.S.A. South Carolina , 1722 , Catesby 1135 (holotype , OXF — Essig , 1990).

C. cordata Pursh , Fl. Amer. Sept. 2 : 384. 1814. — *C. dioica* L. ssp. *cordata* (Pursh) Kuntze in l. c. Type : U.S.A. West Virginia : Summers Co. , 1806 , Pursh s. n. (lectotype , PH , designated by Essig , 1990).

C. micrantha Small , Man. Southeast Fl. 525. 1933. Type : U. S. A. Florida : Hernando Co. , S of Brooksville , 1922-08-26 , Small , Small & Dewinkler 10602 (lectotype , NY ! , designated by Essig , 1990 ; isolectotype , GH !).

C. ligusticifolia auct. non Nutt. : Radford et al. , Man. Vasc. Fl. Carolina 459. 1968.

Fig. 11 : D , E

Woody vine. Branches shallowly 4 - 6-sulcate , sparsely puberulous. Leaves once or twice pinnate ; leaflets papery , ovate , broadly ovate , or elliptic , 1.8 - 9 × 1 - 9 cm , apex acuminate or acute , base rounded or subcordate , margin few-dentate , on both surfaces sparsely puberulous or abaxially with denser hairs , basal veins abaxially slightly prominent , veinlets conspicuous ; petioles

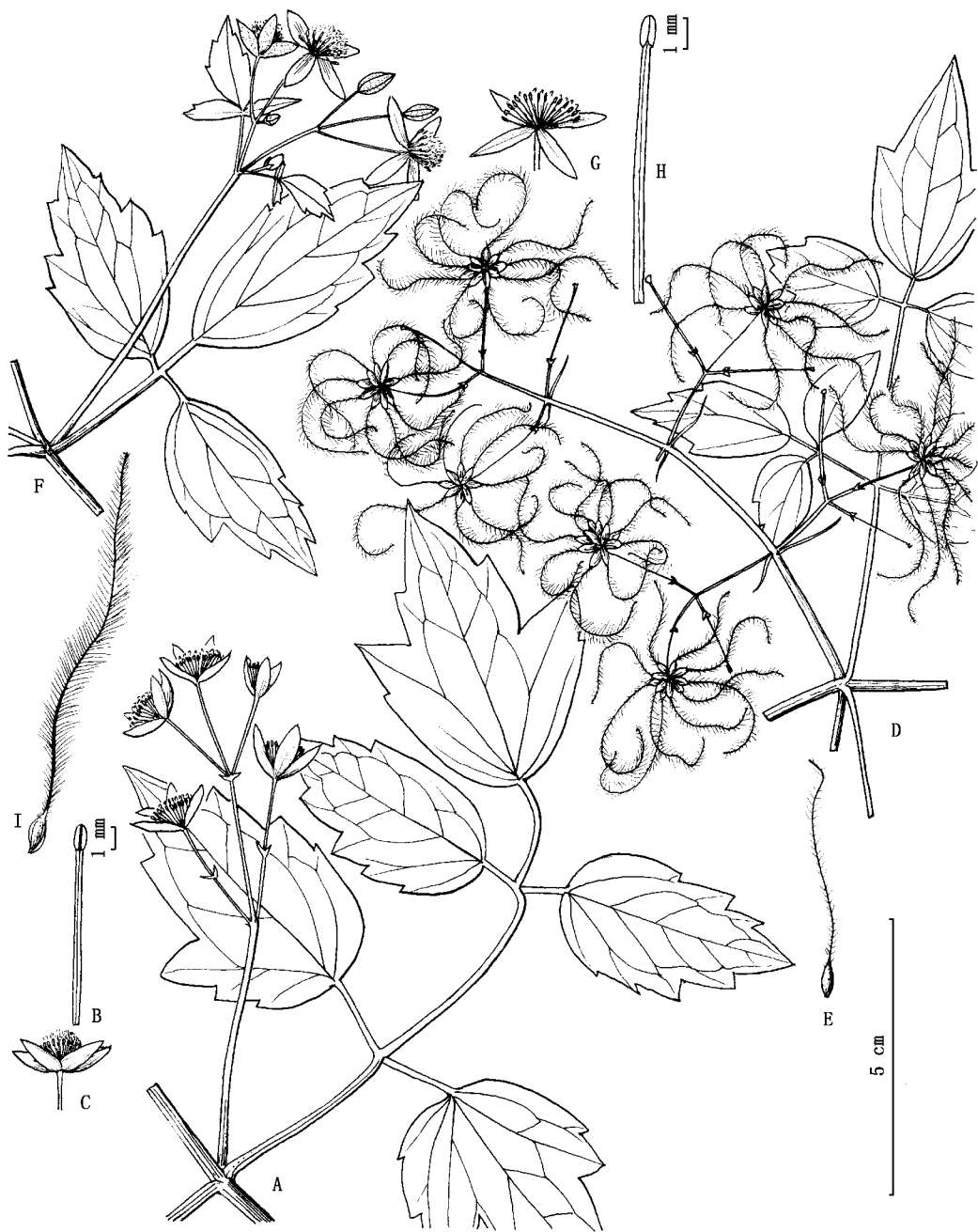


Fig. 11. A - C, *Clematis ligusticifolia* Nutt. var. *ligusticifolia*. A, staminate flowering branch; B, stamen (from Boivin 9436); C, pistillate flower (from Clute 86). D, E, *C. catesbyana* Pursh. D, fruiting branch; E, achene (from Judd 2823). F - I, *C. virginiana* L. F, pistillate flowering branch (from de Lozier & Raveill 1397); G, staminate flower; H, stamen (from Churchill 3920); I, achene (from Palmer 26322).

4–9 cm long. Staminate cymes usually many-flowered, panicle-like, uppermost nodes usually not umbellate; peduncles ca. 6 cm long; bracts petiolate, ternate. Staminate flower 1.2–2 cm in diam.; pedicel 6–11 mm long, puberulous; sepals 4, white, oblanceolate, 7–10 × 2–3 mm, apex slightly acute, inside sparsely outside densely puberulous, on margin velutinous; stamens 5–9 mm long, glabrous; anthers oblong, 1–1.2 mm long, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower 1.2–2 cm in diam.; pedicel 8–15 mm long, densely puberulous; sepals 4, white, oblanceolate or oblong, 6.5–10 × 2.2–4 mm, apex acute, on both surfaces puberulous, margin velutinous; staminodes 4–6 mm long; ovaries puberulous; styles 5–6 mm long, densely villous. Achenes compressed, oblong-elliptic, 3.5–4 × 1.6–2 mm, puberulous; persistent styles ca. 2.5 cm long, plumose. Fl. Jun. – Aug.

SE U.S.A. On slopes or rocky banks, by streams, or at forest edges; 0–1200 m.

Additional specimens examined.

U.S.A. Arkansas: Carroll Co., Palmer 31429; Logan Co., Palmer 24154; Washington Co., Palmer 23276 (GH). **Florida**: Alachua Co., Judd 2823 (GH); Brooksville, Small 10602 (GH); Gadsden Co., Wiegand 1198 (GH); Istachatta, Curtiss 5968 (G, GH, K, MO); Lake Co., Nash 1731 (G, S); Leon Co., Codfrey 68819 (MO); Levy Co., Cooley 7182 (GH); Marion Co., Beckner 2432 (GH); Shell Isl., Curtiss 11 (G, GH, LE). **Georgia**: Pigeon Mt., P. Wilson 209 (NY, US); Seminole Co., Thorne 5615 (NY, US), 5663 (GH). **Louisiana**: Feliciana Pursh, Correll 10467 (GH). **Maryland**: Baltimore, J. D. Smith s. n. (MO, US). **Mississippi**: Warren Co., Ray 4910; Wilkison Co., Ray 5532 (GH). **Missouri**: Christian Co., Bush 3479 (GH, MO); Douglas Co., Steyermark 23111 (MO); Eagle Rock, Palmer 6319 (GH); Greene Co., Bush 4 (GH); Howell Co., Summers 1079 (MO); Jasper Co., Palmer 32225 (GH); Stone Co., Palmer 10564 (GH, MO, US). **North Carolina**: Harkers Isl., Blomquist 11334 (MO); McDowell Co., Miller s. n. (US); Roan Mt., Connon 164 (NY, US); Onslow Co., Wilbur 9590 (MO, US). **Tennessee**: Lincoln Co., Biltmore 319c (US). **Virginia**: Gilea Co., Fogg 15046 (GH).

23. Clematis ligusticifolia Nutt. in Torr. & Gray, Fl. N. Amer. 1:9. 1838; Watson in Bot. Calif. 1:3. 1876; James in J. Cincinn. Soc. Nat. Hist. 6:125. 1883; Gray, Synop. Fl. N. Amer. 1(1):4. 1895; Britton & Brown, Ill. Fl. N. U.S. 2:68, fig. 1583. 1897; Rydberg, Cat. Fl. Montana 160. 1900; et in Britton, Man. Fl. N. Stat. 421. 1901; Piper, Fl. Stat. Washington 266. 1906; Rydberg, Fl. Colorado 141. 1906; Robinson & Fernald, Gray's New Man. Bot., ed. 7, 403. 1908; Rydberg, Fl. Rocky Mount. 291. 1917; Jepson, Man. Flow. Pl. Calif. 392. 1925; Rehd., Man. Cult. Tr. & Shr., ed. 2, 218. 1940; Tidestr. & Kittell, Fl. Arizona & New Mexico 33. 1941; Abrams, Ill. Fl. Pacif. Stat. 2:194, fig. 1812. 1944; Keerney & Peebles, Arizona Fl. 312. 1951; Harrington, Man. Pl. Colorado 242. 1954; Munz, Calif. Fl. 103. 1959; Moss, Fl. Alberta 232. 1959; Munz, Fl. S. Calif. 722. 1974; Scoggan, Fl. Canada 3:730. 1978; Martin & Hutchins, Fl. New Mexico 1:742. 1980; Keener & Dennis in Taxon 31:38. 1982; Essig in Hickman, High. Pl. Calif. 914. 1993; Moreno & Essig in Morin, Fl. N. Amer. 3:163, cum fig. 1997, p. m. p. excl. syn. var. *californica* Watson; M. Johnson, Klematis 482. 1997, p. p. excl. syn. var. *californica* Watson; Grey-Wils., Clematis 52, fig. 11. 2000. Type: U.S.A. Idaho: Rocky Mts., Lewis River, 1834-08, Nuttall s. n. (lectotype, PH, designated by Essig, 1991; isolectotypes, K!, NY!, P!).

C. ligusticifolia Nutt. var. *brevifolia* Nutt. in Torr. & Gray, Fl. N. Amer. 1:9. 1838; Abrams, Ill. Fl. Pacif. Stat. 2:194. 1944; Munz, Calif. Fl. 103. 1959; et Fl. S. Calif. 722. 1974. — *C. brevifolia* (Nutt.) Howell, Fl. N. W. Amer. 1:8. 1897; Rydberg, Fl. Rocky

Mount. 291. 1917. Type : U.S.A. Oregon : Blue Mountains , Nuttall s. n. (holotype , NY !).

C. suksdorfii Robinson in Gray , Synop. Fl. N. Amer. 1 (1) : 4. 1895 ; Abrams , Ill. Fl. Pacif. Stat. 2 : 194. 1944. Type : U.S.A. Washington : Klickitat River , 1881-07-05 , Suksdorf s. n. (holotype , US !).

C. neomexicana Wootton & Standley in Contr. U. S. Nat. Herb. 16 : 122. 1913 ; et Fl. New Mexico 256. 1915 ; Tidestr. & Kittell , Fl. Arizona & New Mexico 33. 1941 ; Martin & Hutchins , Fl. New Mexico 1 : 741. 1980. Type : U.S.A. New Mexico : San Luis Mts. , 1893-09-05 , Mearns 2136 (holotype , US !).

This species consists of three varieties widespread in SW Canada , N Mexico , and W U.S.A.

23a. var. **ligusticifolia** Fig. 11 : A - C

Woody vine. Branches shallowly 4 - 8-sulcate , sparsely puberulous. Leaves once or twice pinnate ; leaflets papery , narrowly ovate , lanceolate , ovate , or rhombic , 1.2 - 8 × 0.7 - 6 cm , apex attenuate or acute , base rounded , succordate , or broadly cuneate , margin few-dentate or few-denticulate , rarely entire , undivided or 2 - 3-lobed , on both surfaces puberulous , basal veins abaxially slightly prominent , veinlets obscure ; petioles 3 - 8 cm long. Staminate cymes axillary and terminal , few - many-flowered , upper nodes usually umbellate ; peduncles 2 - 11 cm long ; bracts ovate or elliptic. Staminate flower 1.3 - 2 cm in diam. ; pedicel 0.5 - 2.8 cm long , densely puberulous ; sepals 4 , white , oblanceolate or elliptic , 7 - 11 × 2 - 4 mm , apex slightly acute , on both surfaces puberulous , margin velutinous ; stamens 4 - 8 mm long , glabrous ; anthers oblong or narrowly oblong , apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower also similar to staminate one ; staminodes 4 - 7 mm long ; ovaries densely puberulous ; styles ca. 6 mm long , densely villous. Achenes compressed , narrowly obovate , 3 - 4 × 1.5 - 1.8 mm , puberulous , narrowly rimmed ; persistent styles 2.8 - 5 cm long , plumose. Fl. Jun. - Aug.

SW Canada , N Mexico , and W U.S.A. On slopes , in bushes or thickets , or by streams ; 0 - 2600 m.

Additional specimens examined.

Canada Alberta : Lundbreak , Jones 23736 (S) ; Medicine Hat , Boivin 9436 (GH).

British Columbia : Marble Mts. , Thompson 634 (GH , US).

Mexico. Chihuahua : San Luis Mts. , Goldman 1429 (US). Coahuila , Wynd & Mueller 376 (S).

U.S.A. Arizona : Catalina Mts. , Peebles 2571 (GH) ; Flagstall , Rehder 22 (GH) ; Grand Canon , Knowlton 250 (US) ; Huachuca Mts. , Gooding 885 (GH) ; Navajo Co. , Zuch 43 (US) ; Pima Co. , Walter 9806 (MO) ; Reservoir Canyon , Clute 86 (GH , MO) ; Sabino Canyon , Jones s. n. (US) ; Santa Rita Mts. , Jones s. n. (US). **California** : Black Canyon , Duran 530 (GH , MO) ; Calaveras Co. , Hansen 218 (GH) ; Humboldt Co. , Tracy 15608 (GH) ; Inyo Co. , Balls 10869 (S) ; Los Angeles , Clokey 4595 (GH , US) , Greene 3458 (G) ; Mendocino Co. , Chesnut 556 (US) ; Napa Co. , Rose 53057 (S) ; San Diego Co. , Palmer 5286 (MO) ; Santa Clara Co. , Thomas 4306 , 4361 (US) ; Solano Co. , Rose 41447 (MO) ; Soloma Co. , Heller 5809 (US) ; White Mts. , Duran 530 (K , S , US). **Colorado** : Colorado Springs , Biltimore 19946 (K) ; Gunnison Co. , Rollins 1956 (G) ; Denver Co. , Churchill s. n. (GH , MO) ; El Poso Co. , Anderson 75 (MO) ; Gunnison Co. , Baker 913 (GH , K , MO) ; Larimer Co. , Utech 84-779 (GH) ; San Miguel Co. , Walker 444 (GH , MO , S). **Idaho** : Bay House , Henderson 3784 (GH , US) ; Boise Co. , Clark 136 (GH , MO , US) ; Custer Co. , Cronquist 3806 (GH , MO) ; Lemhi Co. , Bennett 7357 (S) ; Lincoln Co. , Nelson 1187 (GH , US) ; Nez Perces Co. , Heller 3217 (MO , US) , Sandberg 282 (LE). **Kansas** : Miami Co. , Oyster 1 (MO). **Montana** : Cascade Co. , Palmer

36944 (GH , MO) ; Flathead Co. , Jack 2427 (GH) ; Madison Co. , Lowryll 2573 (GH) ; Park Co. , Hitchcock 13566 (GH , MO , S). **Nebraska** : Banner Co. , Rydberg 1 (US) ; Dawes Co. , Brooks 24641 (GH) ; Sioux Co. , Churchill 4455 (MO) ; Thomas Co. , Rydberg 1717 (GH , US). **Nevada** . Clark Co. , Clokey 7519 (G , GH , MO , S , US) ; Humboldt Co. , Heller 10611 (G , GH) ; White Pine Co. , Pinzl 5628 (MO). **New Mexico** : Chiz , Wooton 2859 (US) ; Colfax Co. , Standley 14411 (GH) ; Dona Ana Co. , Fosberg 3445 (GH , MO , S) , Wooton 29 (G , K , US) ; Grant Co. , Blumer 223 (GH , US) ; Lincoln Co. , Skehan 69 (K , MO) ; Sierra Co. , Metcalf 1190 (GH , MO , US) ; Socorro Co. , Metcalf 849 (K , LE). **North Dakota** : Medora , North Dakota Agr. Coll. s. n. (US). **Oregon** : Blue Mts. , Cusick 3641 (MO , US) ; Crook Co. , Steward 6202 (GH , S) ; Gibbon , Cusick 3641 (US) ; Jackson Co. , Hammond 1 (MO , US) ; Louglan Co. , Ward 52 (US) ; Shirk , Leiberg 2604 (GH , K , MO , S , US) ; Union Co. , Lewis 7331 (MO). **South Dakota** : Black Hills , Forwood 16 (US) ; Fall River Co. , Over 15990 (S) ; Forest City , Griffiths s. n. (US) ; Hot Springs , Rydberg 483 (K). **Utah** : Bluffs , Rydberg 9884 (US) ; Carbon Co. , Woodruff 1342 (G) ; Juab Co. , Maguire 2590 (MO) ; Toasdale , Jones 5644 (MO) ; Thuber , Jones 5644 (MO) ; Wasatch Mts. , Tidestrom 452 (US). **Washington** : Asotin Co. , Cronquist 5870 (GH , S , US) ; Chelan Co. , Purer 7753 (MO) ; Douglas Co. , Sandberg 386 (LE , S) , Thompson 11834 (GH , MO , US) ; Klickitat Co. , Suksdorf 2624 (MO , US) ; San Juan Isl. , Peck 12974 (K) ; Stevens Co. , Boner 158 (GH , MO) ; Whitman Co. , Palmer 291 (G , US) ; Yakima Co. , Cotton 761 (GH , US). **Wyoming** : Albany Co. , Nelson 7395 (K , US) ; Big Horn Co. , Forwood 55 (GH) , Goodding 488 (G) ; Blue Grass Creek , Nelson 361 (MO , US) ; Fremont Co. , Porten 4033 (GH , S) ; Park Co. , Williams 2501 (GH , MO) ; Washakie Co. , Williams 3167 (GH).

23b. var. **californica** Watson in Bot. Calif. 1 : 3. 1876 ; Abrams , Ill. Fl. Pacif. Stat. 2 : 194. 1944 ; Munz , Calif. Fl. 103. 1959 ; et Fl. S. Calif. 722. 1974 ; Wiggins , Fl. Baja Calif. 774. 1980. Type : type specimens collected from California , U. S. A. , not seen.

C. biflora Eastw. in Bull. Torr. Bot. Club 32 : 193. 1905. Type : U. S. A. California : Island of Santa Cruz , 1888-04 , Brandege s. n. (holotype).

This variety differs from var. *ligusticifolia* in the leaflets abaxially velutinous or densely puberulous. Fl. Jun.

N Mexico and SW U. S. A. On slopes or in forests.

Specimens examined.

Mexico. Coahuila : Muzguiz , Wynd & Mueller 376 (K).

U. S. A. California : San Diego Co. , Palmer 1 (G , K , LE) , 2 (K).

23c. var. **angustifoliola** W. T. Wang , var. nov. Type : U. S. A. Arizona : Rock Point Apache Co. , alt. 5300 ft , 1937-06-11 , R. H. Peebles 13518 (holotype , here designated , US).

Fig. 10 : A , B (see p. 37)

A var. *ligusticifolia* et var. *californica* Watson differt foliolis lanceolatis , anguste lanceolatis vel linearibus .

This variety differs from var. *ligusticifolia* and var. *californica* Watson in its lanceolate , narrowly lanceolate , or linear leaflets. The new variety has leaves bipinnate with leaflets are (0.7 -) 1.5 - 4.5 cm × (1 -) 2 - 9 mm , apex attenuate , margin entire , rarely 1 - 2-denticulate , on both surfaces sparsely appressed-puberulous , and flowers in June.

SW U. S. A. (Arizona). 1350 m.

24. Clematis alborosea Ulbr. in Notizbl. Bot. Gart. Berl. 8 : 325. 1923 ; Macbride in Field Mus. Nat. Hist. Chicago Bot. 13 : 644. 1936 ; Herrera , Syn. Fl. Cuzo 327. 1941 ; Lourt. in

Mém. Soc. Cien. Nat. La Salle 16 : 41 , fig. 2. 1956 ; M. Johnson , *Clematis* 471 . 1997 ; Grey-Wils. , *Clematis* 50 . 2000 . Type : Peru . Junin : Prov. Jauja , Hacienda , 3300 m , 1913-04-22 , Weberbauer 6609 (holotype , B , destroyed ; isotypes , GH ! , US !) .

Fig. 16 : A – C (see p. 57)

Woody vine . Branches shallowly 4 – 8-sulcate , appressed-puberulous , glabrescent . Leaves pinnate , 5-foliolate , or once to twice ternate ; leaflets thickly papery , rhombic-ovate or ovate , 2 – 7 × 1 – 5 cm , apex acute or long acuminate , base rounded , subcordate , or truncate , margin entire or 1 – 3-dentate , 3-lobed , adaxially sparsely puberulous or subglabrous , abaxially appressed-sericeous-puberulous or only on veins puberulous , basal veins abaxially prominent ; petioles 1.7 – 5 cm long . Staminate cymes axillary , 3 – 7-flowered ; peduncles 0.8 – 7.5 cm long ; bracts rhombic or spatulate , 0.6 – 1.5 cm long . Staminate flower 1.6 – 2.4 cm in diam . ; pedicel 0.8 – 3 cm long , sparsely puberulous or glabrous ; sepals 4 , white , obovate-oblong or oblong , 8 – 12 × 3 – 4.5 mm , apex obtuse , on both surfaces glabrous or above puberulous , margin subvelutinous ; stamens 5 – 7 mm long , glabrous ; anthers oblong , 0.8 – 1 mm long , apex obtuse . Pistillate cymes similar to staminate ones . Pistillate flower 1.5 – 2 cm in diam . ; pedicel 1.8 – 2 cm long , densely puberulous ; sepals 4 , lanceolate-oblong , 7 – 10 × 2.5 – 4 mm , on both surfaces sparsely puberulous , on margin velutinous ; staminodes 4 mm long ; ovaries glabrous ; styles 5 mm long , densely villous . Achenes compressed , ovate , ca. 4 × 2 mm , glabrous ; persistent styles 1.6 – 2.2 cm long , plumose . Fl. Dec. – May .

Bolivia and S Peru . In bushes or at forest edges ; 2000 – 3600 m .

Additional specimens examined .

Bolivia. Cochabamba , Cardenas 3929 (GH , US) , Steinbach 6032 (G , GH , K) .

Peru. Cuzco , Pennell 14150 , Vargas 5563 , 5966 (GH) .

25. *Clematis flammulastrum* Griseb. in Mém. Am. Acad. Arts & Sci. , n. ser. , 8 : 153 . 1861 ; et Cat. Pl. Cub. 1 . 1866 ; Barker & Dardeau , Fl. Haiti 116 . 1930 ; Moscoso , Cat. Fl. Doming. 1 : 192 . 1943 ; Leon & Alain , Fl. Cuba 2 : 163 . 1951 ; Liogier , Fl. Espanola 2 : 237 . 1983 . Type : E Cuba , 1859-09 – 1860-01 , C. Wright 1561 (holotype , GOET ; isotypes , G ! , K ! , LE ! , MO ! , P !) .

C. picardae Urban , Symb. Antill. 7 : 221 . 1912 ; Barker & Dardeou l. c . ; Moscoso l. c . ; Liogier l. c. 238 . Type : Haiti , Picarda 624 (holotype) .

C. barahonensis Urban , Sertum Antill. 5 : 170 . 1918 ; Barker & Dardeou l. c . ; Moscoso l. c. 191 ; Liogier l. c. 235 . Type : Dominican Republic . Barahona , in via ad Rincon , 1911-09 , Fuertes 1382 (holotype ; isotypes , GH ! , LE , US !) .

This species consists of two varieties distributed in West Indies .

25a. var. *flammulastrum* Fig. 12 : E , F

Woody vine . Branches shallowly 4 – 8-sulcate or not sulcate , sparsely puberulous or subglabrous . Leaves once to twice ternate , or pinnate ; leaflets papery or thickly papery , ovate , narrowly ovate , lanceolate , or linear-lanceolate , 1.2 – 5 (– 7.5) × 0.3 – 3.5 (– 3.7) cm , apex acute , acuminate , or attenuate , base rounded or subcordate , margin entire , sometimes 1 – 2-dentate per side , undivided , rarely 2 – 3-lobulate , adaxially subglabrous , abaxially sparsely puberulous , basal veins abaxially slightly prominent ; petioles 1 – 6 cm long . Staminate cymes axillary and terminal , 3 – many-flowered ; peduncles 1.2 – 3.5 cm long ; bracts simple , ovate , or ternate . Staminate flower 1.2 – 2 cm in diam . ; pedicel (0.6 –) 1.5 – 2 cm long , densely puberulous ; sepals 4 , oblong or narrowly oblong , 5 – 10 × 1.4 – 4 mm , apex slightly obtuse , inside glabrous , outside densely puberulous , margin velutinous ; stamens 3 – 7 mm long , glabrous ; anthers oblong , 1 – 1.5 mm long ,

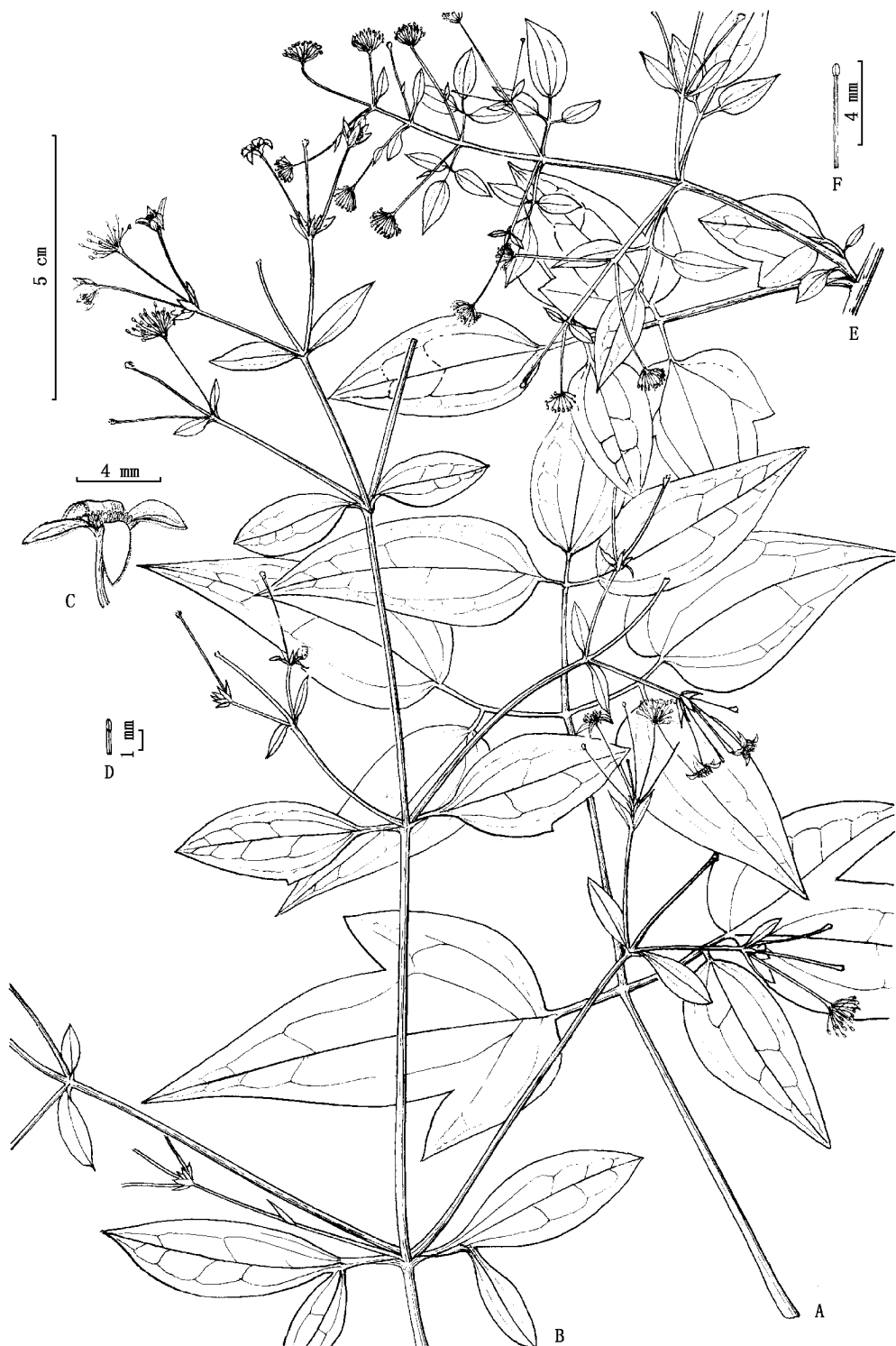


Fig. 12. A - D, *Clematis flammulastroides* W. T. Wang. A, leaf; B, staminate flowering inflorescence; C, staminate flower; D, stamen (from Barthe s. n.). E, F, *C. flammulastrum* Griseb. var. *flammulastrum*. E, staminate flowering branch; F, stamen (from Urban 2255).

apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower similar to staminate one ; sepals 8 – 10 × 2.2 – 5 mm ; staminodes 4 – 5 mm long ; ovaries puberulous ; styles ca. 5 mm long , densely villous. Achenes compressed , long elliptic , 2.5 – 4 × 1 – 1.8 mm , pubescent , narrowly rimmed ; persistent styles 1.5 – 3.5 cm long , brownish-plumose. Fl. Aug. – Nov.

Cuba , Dominican Republic , Haiti , and Puerto Rico. In forests ; 100 – 2000 m.

Additional specimens examined.

Cuba. Herradura , Hermann 2802 (GH) ; Las Villas , Morton 4067 (US) ; Santa Clara : Las Lagunas , Jack 7032 (GH) ; Serra de Nipe , Ekman 15197 (G).

Dominican Republic : Culata , Liogier 13058 (GH) ; Barahona , Fuertes 1382 (G , P) ; El Aguacate , Howard 12576 (GH) ; Pedernales , Baoruco Mts. , Liogier 16676 (GH) ; Santa Domingo , Ekman 13943 (G).

Haiti. Petionville , Ekman 1655 (US) , 2194 (G , GH , K) ; Port-au-Prince , Ekman 7113 (MO) , 9173 (US).

Puerto Rico. Aibinito , Britton 9338 (LE) ; Camuy , Sargent 310 (US) ; between Guayama and Yuamani , Urban 2255 (P) ; Mayaguez in monte Mesa , Sintenis 43 (G , GH , LE) ; Ponce , Britton 1762 (US) , Heller 6156 (G , GH , MO , P , US) ; Rio Piedras , Stevenson 1158 (US) ; Rio Grande , Urban 5570 (G).

25b. var. **fuertesii** (Urban) Moreno, mss., st. nov. — *C. fuertesii* Urban, Symb. Antill. 7 : 222. 1912 ; Barker & Dardeau, Fl. Haiti 116. 1930 ; Moscoso, Cat. Fl. Doming. 1 : 192. 1943 ; Liogier, Fl. Espanola 2 : 237. 1983. Type : Dominican Republic. Barahona : Rincon , 1300 m , 1911-10 , Fuertes 1303 (holotype , B , destroyed ; isotypes , G ! , GH ! , K ! , P !).

C. bidens Urban l. c. 221 ; Moscoso l. c. ; Liogier l. c. 235. Type : Dominican Republic. Barahona , 1200 m , 1910-11 , Fuertes 681 (holotype , B , destroyed ; isotype , G !).

This variety differs from var. *flammulastrum* in densely puberulous branches and leaflets thicker in texture , subcoriaceous , abaxially more or less laxly reticulate , often densely puberulous or velutinous. The new variety has leaflets broadly to narrowly ovate , or orbicular-pentagonous , 1 – 5 × 0.8 – 3 cm , apex acute , margin coarsely 1-dentate per side , usually 3-lobulate or 3-lobed , abaxially often densely puberulous or velutinous , but sometimes subglabrous , basal and lateral veins abaxially often prominent , and flowers from August to November.

Dominican Republic , Haiti , and Jamaica. In forests or by streams ; 325 – 2000 m.

Additional specimens examined.

Dominican Republic. Aceitillas , Liogier 16382 (GH , US) ; Constanza , Jimenez 1558 (US) ; Jarabacoa , Liogier 12154 (GH , P , US) , 17027 (GH) ; La Horma , McDaniel 27094 (MO) ; Perdermales , Howard 8150 (GH , US) ; Piedra del Aguacate : San Juan , Howard 9167 , 9416 (GH , US) ; San Jose , Zaroni 18025A (MO) ; San Rafael , Castony 451 (GH , US) ; Santo Domingo , Ekman 13838 (GH , US) ; Sierra de Neiba , Liogier 12517 (GH , P).

Haiti. Ennery , Leonard 8875 (US) ; Marmelade , Leonard 8266 (GH , US) ; Masif de la Selle , Ekman 1945 (GH , US) ; Morne Goreille , Ekman 4987 (G , GH , MO , US) ; Morues , Holdridge 847 (US).

26. Clematis flammulastroides W. T. Wang , sp. nov. Type : ? West Indies , 1857 , M. Barthes. n. (holotype , here designated , P).

Fig. 12 : A – D

Affinis *C. flammulastro* Griseb. , quae ramis vadose 4 – 8-sulcatis , foliolis haud reticulatis vel subtus laxe reticulatis , cymae staminatae nodis superis haud umbellatis , floribus staminatis majoribus 1.2 – 2 cm diam. , sepalis 5 – 10 mm longis , staminibus 3 – 7 mm longis distinguitur.

Liana lignosa. Rami teretes, 3 mm diam., longitudinaliter vadoseque 16-sulcati, sparsissime adpresseque puberuli. Folia bipinnata, pinnis inferis 2-foliolatis, vel pinnata; foliola papyracea, anguste ovata vel ovata, 4–7.4 cm longa, 1.6–4.9 cm lata, apice attenuata vel acuta, basi rotundata vel subcordata, margine integra, plerumque indivisa, raro 2–3-lobata, supra sparsissime adpresseque puberula, subtus subtiliter denseque reticulata et ad nervos basales prominentes puberula; petioli circ. 7 cm longi. Cyma staminata circ. 20 cm longa, multiflora, paniculiformis, ramis primariis 3-jugatis laxis 3.4–7 cm longis, nodis superis umbellatis; pedunculus 1.8 mm diam., 10-sulcatus, sparse puberulus; bractee petiolatae, foliola simulantes, inaequaliter 2-partitae. Flos staminatus parvus, circ. 7 mm diam.; pedicellus 1.1–1.8 cm longus, dense puberulus; sepala 4, elliptico-oblonga, 3.4–3.8 mm longa, 1.2–2 mm lata, apice acuta, intus margine apicali puberulo excepto glabra, extus dense puberula, ad marginem velutina; stamina numerosa, 1.2–2.5 mm longa glabra, filamentis linearibus, antheris late oblongis vel oblongis 0.7–1 mm longis apice obtusis.

Woody vine. Branches terete, shallowly 16-sulcate, very sparsely appressed-puberulous. Leaves bipinnate with lower pinnae 2-foliolate, or pinnate; leaflets papery, narrowly ovate or ovate, 4–7.4 × 1.6–4.9 cm, apex attenuate or acute, base rounded or subcordate, margin entire, mostly undivided, rarely 2–3-lobed, adaxially very sparsely appressed-puberulous, abaxially finely and densely reticulate and on prominent basal veins puberulous; petioles ca. 7 cm long. Staminate cyme ca. 20 cm long, many-flowered, panicle-like, with 3 lax pairs of primary branches 3.4–7 cm long and uppermost umbellate nodes; peduncle 1.8 mm in diam., 10-sulcate; bracts petiolate, leaflet-like, unequally 2-parted. Staminate flower small, ca. 7 mm in diam.; pedicel 1.1–1.8 cm long, densely puberulous; sepals 4, elliptic-oblong, 3.4–3.8 × 1.2–2 mm, apex acute, inside only on apical margin puberulous, elsewhere glabrous, outside densely puberulous, margin velutinous; stamens numerous, 1.5–2.5 mm long, glabrous; anthers broadly oblong or oblong, 0.7–1 mm long, apex obtuse.

?West Indies.

27. *Clematis acapulcensis* Hook. & Arn., Bot. Beech. Voy. 410. 1831; Hemsl. in Godman & Salvin, Biol. Centr.-Am. Bot. 1:1. 1879; Vazquez et al., Fl. Manantlan 219. 1995; M. Johnson, Klematis 471. 1997; Pool in Stevens et al., Fl. Nicaragua 3:2191. 2001; Wang in Acta Phytotax. Sin. 39:320, fig. 4:1–3. 2001. — *C. dioica* L. ssp. *acapulcensis* (Hook. & Arn.) Kuntze in Verh. Bot. Ver. Brand. 26:104. 1885. — *C. dioica* var. *acapulcensis* (Hook. & Arn.) Grey-Wils., Clematis 49. 2000. Type: Mexico. Acapulco, 1838-01, Sinclair 1042 (holotype, K!).

C. brasiliiana DC. var. *laxa* St. Hil., Fl. Bras. Merid. 1:2. 1824. Type: Brazil. Rio de Janeiro: Encruçada, 1816–1821, St. Hilaire 1 (holotype, P!).

C. brasiliiana DC. var. *minor* St. Hil. l. c. Type: Brazil. Minas Gerais, Guanham, 1816–1821, St. Hilaire s. n. (holotype, P!).

C. brasiliiana DC. var. *glabra* St. Hil. l. c. Type: Brazil. Minas Gerais, 1816–1821, St. Hilaire 359 (holotype, P!).

C. stipulata Kuntze in l. c. 146. 1885; M. Johnson, Klematis 486. 1997; Grey-Wils., Clematis 49. 2000. Type: Costa Rica, 1875-11, Polakowsky 394 (lectotype, BM, designated by Moreno, 1993). Mexico, Sumichrast s. n. (syntype).

C. perulata Kuntze in l. c. 153. 1885. Type: Brazil. Rio Grande, 1833, Gaudichaud 1162 (syntype, P!); without precise locality, Sello 2866 (syntype, K!).

C. barrancae Jones in Contr. West. Bot. no. 18:35. 1933. Type: Mexico. Guadalajara,

La Barranca , 1930-11-25 , Jones 27028 (holotype , POM ; isotypes , BM ! , GH ! , MO !).

C. dioica L. var. *australis* auct. non Eichler : Lourt. in Darwiniana 9 (3 – 4) : 419. 1951 , p. p. quoad St. Hilaire 1 , Rojas 10465 , 10843 ; et in Mém. Soc. Cien. Nat. La Salle 16 : 40. 1956 , p. p. quoad Sello 2866 , Rambo 47182 ; Molero in Spichiger & Bocquet , Fl. Parag. Ranunculac. 14 , fig. 4 : a – c. 1985 , p. p. quoad Rojas & Hassler 10465 , 10465a.

C. dioica auct. non L. : Duke in Ann. Missouri Bot. Gard. 49 : 459. 1962 , p. p. quoad Hunter & Allen 367 et Pittier 5424.

Fig. 13 : A – C

Woody vine. Branches shallowly 6 – 10-sulcate , subglabrous or on nodes puberulous , elsewhere glabrous. Leaves twice or once pinnate ; leaflets papery , ovate or narrowly ovate , 2.5 – 8 × 1.5 – 4.8 cm , apex acuminate , base rounded or subtruncate , margin entire , rarely 1-dentate per side , on both surfaces glabrous or very sparsely puberulous , basal veins abaxially prominent ; petioles 3.5 – 6.5 cm long. Staminate cymes axillary , usually many-flowered and panicle-like , with upper nodes sometimes umbellate ; peduncles 2.5 – 5.5 cm long ; bracts ovate , 0.8 – 2.5 cm long. Staminate flower 1 – 1.5 cm in diam. ; pedicel 0.8 – 1.2 cm long , densely puberulous ; sepals 4 , white , oblong or obovate-oblong , 5 – 9.5 × 2 – 3 mm , apex obtuse , on both surfaces puberulous , margin velutinous ; stamens 3 – 8 mm long , glabrous ; anthers oblong , 0.8 – 1 mm long , apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower similar to staminate one ; sepals 4.2 – 5.5 × 1.8 – 2.2 mm ; staminodes 4 – 4.5 mm long ; ovaries puberulous ; styles ca. 4.5 mm long , densely villous. Achenes compressed , elliptic or long elliptic , 2.5 – 4 × 1.4 – 1.5 mm , puberulous , indistinctly rimmed ; persistent styles 2.5 – 6 cm long , plumose. Fl. Sept. – May.

Argentina , Brazil , Colombia , Costa Rica , El Salvador , Guatemala , Honduras , Mexico , Nicaragua , Panama , and Paraguay. In forests ; 20 – 1500 m.

Additional specimens examined.

Argentina. Gob misiones , Schwarz 4668 (G) ; San Ignacio : Santo Pipo , Schwarz 4681 (MO) ; San Pedro : Misiones , Hunziker 963 (MO).

Brazil. Agua Azul , Rambo 47182 (US) ; Amazonas : Esparanca , Druke 1585 (GH) ; Itacaré , Mori & Santos 10138 (US) ; Mianas Gerais , Emygdio 286 (US) ; Rio de Janeiro , Novo Friburgo , Claussen 123 , 161 (P) ; RS-Igrejinha , Wasum 6219 (G).

Colombia. Barranquilla , Ellias 805 (LE) ; Magdalena , Cuatrecasas 24975 (P).

Costa Rica. Bord du Rio , Tonduz 1577b (G) ; Calolera , Pittier 7068 (P) ; Cartago , Cooper 5702 (GH , US) ; El General , Skutch 2505 (GH , US) ; Guadalupe , A. Smith 2209 , Tonduz 1576 (GH) ; Rio Virilla , Allen 274 (GH) ; Rios , Brenes 23 (GH) ; San Francisco , Tonduz 1577 (G , K , P) ; San Jose , Tonduz 6968 (G , K) ; San Ramon , Brenes 23 (GH) ; San Ramu , A. Smith P2374 (GH).

El Salvador. Ahuachapan , Standley 19910 (GH , US) ; La Libertad , Villacorta 495 (MO) ; Morazan , Tucker 454 (US) , 757 (K) ; San Salvador , Villacorta 727 , Cruz 786 (MO) ; Santa Lucia , Padilla 199 (MO).

Guatemala. Jutiapa , Shannon 3599 (US) ; Salama , Maxon 3386 (GH , US) ; Santa Rosa , Heyde 4305 (GH , US).

Honduras. Comayague , Edwards P508 (GH) ; El Zamorano , Molina 27169 (US) ; Morazan , Molina R701 (GH) ; Olancho , Rendon 5462 (MO) ; Santa Barbara , Thiems 5125 (GH) ; Santa Lucia , Barkley 39654 (GH).

Mexico. Acapulco , Barkley 1982 (MO) , Palmer 487 (MO) , 608 (GH , K , US) ; Ashotla , Mexia 8879 (GH , US) ; Campo Morado , Hinton 11098 (GH , US) ; Cerro Colorado , Gentry 5132



Fig. 13. A - C, *Clematis acapulcensis* Hook. & Arn. A, staminate flowering branch; B, stamen (from A. Smith A656); C, achene (from Hassler 10843). D - F, *C. affinis* St. Hil. D, staminate flowering branch; E, stamen (from Kummrow 882); F, achene (from Hatschbach 42209).

(GH); Chiapas, Breedlove 20229 (MO); Colina, Palmer 1113 (K); Galeana, Hinton 11014 (GH, K, P, US); Guerrero, Mexia 8897 (MO, S); Huerta, Lott 3238 (MO); Jalisco, Mexia 1269 (GH, MO); Manzanillo, Palmer 992 (GH, K); Marathan, Ortega 7469 (MO); Nayarit, Croat 45381 (MO); Oaxaca, Conzatti 664 (GH, US), Nelson 1270 (GH, US), Pringle 6004 (G, GH, K, LE, P, US); Orizaba, Bourgeau 3280 (G, GH, LE, P, S); Petatla, Langlasse 720 (GH, K); Rio Balsas, Mexia 8897 (G, K); Santa Fez, Bourgeau 277 (P); Temascaltepec, Hinton 2203, 5105 (K); Vera Cruz, Sumichrast 1827 (G, LE).

Nicaragua. Boaco, Sandino 3659; Esteli, Moreno 18410; Grenada, Moreno 6352; Jinotega, Moreno 1534, 5011; Leon, Soz 459; Madriz, Stevens 15988; Managua, Moreno 18768; Masaya, Nell 3135B; Matagalpa, Stevens 4808; Mechapa, Nichols 1001; Nueva Segovia, Moreno 5730 (MO).

Panama. Anton, Hunter & Allen 367 (G, GH, US); Chiriqui, Pittier 5424 (US); Cocle, Burch 1163 (MO).

Paraguay. Alto Parana: Hernandarias, Schinini & Marmorì 27372 (G, GH); Caazapa, Molas 728, Zardini 2968 (P); Macizo Acahay, Zardini 4707 (P); San Pedro, Woolston 824 (P); Sierra de Amambay, Rojas & Hassler 10465, 10465a (G, GH, P); Villarman, Jorgensen & Hassler 4134 (US).

C. acapulcensis Hook. & Arn. is closely related to *C. brasiliana* DC. (see below), and differs from the latter only in its glabrous or subglabrous leaflets. So, it is quite reasonable that St. Hilaire treated this taxon as varieties (varr. *laxa*, *minor*, *glabra*) of *C. brasiliana* in 1824 (see the above citation)

28. *Clematis brasiliana* DC., Syst. 1:143. 1818; Delessert, Icon. pl. 1. 1820; DC., Prodr. 1:4. 1824; St. Hil., Fl. Bras. Merid. 1:2. 1824; Hauman, Cat. 204. 1923. — *C. dioica* L. var. *brasiliana* (DC.) Eichler in Mart. Fl. Bras. 13(1):148, pl. 33:2. 1864; Griseb. Symb. 12. 1879; Dusen in Arch. Mus. Rio Janeiro 13:100. 1903; Glaziou in Bull. Soc. Bot. France 52:7. 1905; Lourt. in Darwiniana 9:418. 1951; et in Mém. Soc. Cien. Nat. La Salle 16:36. 1956, p. p. excl. syn. *C. caracasana* H. B. K. ex DC., *C. caripensis* H. B. K., et *C. discolor* Gardn.; M. Johnson, Klematis 477. 1997, p. p.; Zuloaga & Morrone, Cat. Pl. Vasc. Rep. Argentina 2:967. 1999; Grey-Wils., Clematis 49. 2000, p. p. — *C. dioica* L. ssp. *brasiliana* (DC.) Kuntze in Verh. Bot. Ver. Brand. 26:103. 1885. Type: Brazil, 1810, Delessert s. n. (holotype, G-DC!).

C. integra Vell., Fl. Flumin. 241. 1825; et Icones 5:135. 1827. Type: no type specimen designated.

C. medusaea Planch. & Linden in Ann. Sci. Nat. Bot., ser. 4, 17:11. 1862. Type: Colombia. Bogota, Las Mesitas, 1400 m, 1854–1857, Triana s. n. (syntype, P!; isosyntypes, G!, K!).

C. acapulcensis Hook. & Arn. var. *puberula* W. T. Wang in Acta Phytotax. Sin. 39:320. 2001. Type: Brazil. Rio de Janeiro, 1833, Gaudichaud 1056 (holotype, G!, isotype, P!).

C. haenkeana auct. non Presl: Lourt. in Mém. Soc. Cien. Nat. La Salle 16:25. 1956, p. p. quoad Haught 3789, Stelling 8407.

Fig. 14: A, B

Woody vine. Branches subterete, shallowly 8–12-sulcate, puberulous. Leaves bipinnate, upper ones sometimes pinnate; leaflets papery or herbaceous, ovate or narrowly ovate, 2–6.5 × 1.2–4 cm, apex acuminate or acute, base rounded or subcordate, margin entire, rarely 1–2-dentate, adaxially sparsely abaxially more densely appressed-puberulous, basal veins abaxially flat; petioles



Fig. 14. A, B, *Clematis brasiliensis* DC. A, staminate flowering branch; B, stamen (from Gaudichaud 1096). C, *C. uruboensis* Lourt. pistillate flowering branch (from Steinbach 7991).

2.5–6.5 cm long. Staminate cymes axillary and terminal, many-flowered, panicle-like; peduncles ca. 8 cm long, sparsely puberulous; bracts petiolate, ternate or simple, ovate, 4–6 cm long. Staminate flower 0.8–1.4 cm in diam.; pedicel 0.6–2.2 cm long, densely puberulous; sepals 4, white, obovate-oblong or oblong, 4.2–7 × 1.5–3.2 mm, apex slightly acute, inside puberulous, outside densely puberulous, margin velutinous; stamens 3–5.5 mm long, glabrous; anthers oblong, 0.6–1 mm long, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower 1.5–1.8 cm in diam.; pedicel 1.5–2 cm long; sepals 4, obovate-oblong, 6.5–9 × 2–3.2 mm, on both surfaces more or less densely puberulous; staminodes ca. 6.5 mm long; ovaries

densely pubescent ; styles ca. 6 mm long , densely villous . Achenes compressed , narrowly oblong or long elliptic , 3 – 5 × 1.4 – 1.5 mm , pubescent , narrowly rimmed ; persistent styles 4.5 – 5.5 cm long , plumose . Fl. Feb. – Oct.

Argentina , Brazil , Colombia , Guatemala , Honduras , Panama , and Venezuela . 50 – 1500 m . Additional specimens examined .

Argentina. Salta : Chicoana , Novara 8676 (G) ; San Ignacio , Schwarz 2638 (UPS) .

Brazil. Bachia , Blanchet 1 (G) ; Cubatao : Paranaaplacaba , Pedersen 7987 (GH) ; Leopoldo , Rambo SJ35679 (MO) ; Marmeleiro , Lindeman & Haas 1283 (GH) ; Minas Geraes , Claussen s. n. (G) , Regnell 12 (UPS) ; Nouvelle Friburo , Claussen 123 (G) ; Orleaes , Reitz 2153 (G) ; Parana , Lindeman & Haas 1283 (GH) ; Rio de Janeiro , Gaudichaud 1096 (G , P) ; Santa Catarina , Reitz & Klein 9576 (G) , L. B. Smith & Klein 11847 (US) ; Sao Paulo : Caraguatatuba , Eiten 2841 (US) .

Colombia. Magdalena : Codazzi , Haught 3789 (US) ; Ocana , Schlim 144 (G) ; Santa Marta , H. H. Smith 1635 (G , GH) .

Guatemala. Los Verdes , Heyde & Lux 4207 (G) .

Honduras. Morazán : Zamorano , Williams & Molina 10764 (GH) .

Panama. Cocle : banks of Rio Grande , Burch et al. 1163 (US) .

Venezuela. Caracas , Cumana 51 (G) ; Mocquerys , Drake s. n. (G , P) ; Colonium Tovar , Fendler 1 (GH , US) ; Tachire : La Fria , Breteler 4908 (G) ; Valencia , Carabobo , Stelling 8407 (US) ; Vallecito , Lopes & Hernandez 427 (MO) .

29. *Clematis affinis* St. Hil. , Fl. Bras. Merid. 1 : 2. 1824 ; W. T. Wang in Acta Phytotax. Sin. 39 : 322 , fig. 4 : 4 – 6. 2001 . Type : Brazil . Minas Geraes : Onca , 1816 – 1821 , St. Hilaire 2 (holotype , P !) .

C. fluminensis Vell. , Fl. Flumin. 1 : 24a. 1825 ; 5 : t. 133. 1827 . Type : Brazil . Rio de Janeiro , no type specimen designated .

C. dioica L. var. *australis* Eichler in Mart. Fl. Bras. 13 (1) : 147. 1864 ; Urban in Linnaea 43 : 254. 1882 ; Chodat & Hassler in Bull. Herb. Boiss. , ser. 2 , 6 : 538. 1903 ; Lourt. in Darwiniana 9 (3 – 4) : 419 , fig. 5. 1951 , p. p. excl. St. Hilaire 1 , Rojas & Hassler 10465 , 10465a , et Claussen 123 ; in Mém. Soc. Cien. Nat. La Salle 16 : 40. 1956 , p. p. excl. syn. *C. perulata* Kuntze et specim. Rambo 47182 ; et in Fl. Urug. Ranunculac. 4. 1963 ; M. Johnson , Klematis 477. 1997 , p. p. excl. syn. *C. perulata* Kuntze . Type : Brazil . “ in Brasiliae provinciis austro-orientalibus ” , no type specimen designated .

C. discolor Gardn. in J. Bot. 2 : 330. 1843 . Type : Brazil . Riode Janeiro , Imbuhy , 914 m , 1838-03 , Gardner 302 (holotype , BM ! ; isotypes , G ! , GH ! , K !) .

C. dioica L. var. *brasiliiana* auct. non (DC.) Eichler : Lourt. in Reitz , Fl. Ilustr. Catarin. 1 : 11. 1966 , p. p. quoad syn. *C. discolor* Gardn. et specim. Reitz & Klein 6660 .

Fig. 13 : D – F (see p. 48)

Suffruticose vine . Branches shallowly 6 – 14-sulcate , sparsely to densely puberulous . Leaves twice or once pinnate ; leaflets papery , ovate , narrowly ovate , or long elliptic , 2 – 8.5 × 1.5 – 4.4 cm , apex acuminate or long acuminate , base rounded , broadly cuneate , or truncate , margin entire , undivided , rarely unequally 2-lobed , adaxially sparsely puberulous or subglabrous , abaxially densely sericeous or nearly velutinous , basal veins abaxially prominent ; petioles 3 – 10 cm long . Staminate cymes axillary and terminal , usually many-flowered and panicle-like , with umbellate upper nodes ; peduncles 2.4 – 12 cm long ; bracts linear or long elliptic , 0.5 – 1.4 cm long . Staminate flower 1.2 – 1.7 cm in diam. ; pedicel 0.6 – 1.2 cm long , densely puberulous ; sepals 4 , white ,

obovate-oblong or oblanceolate, 6 – 10 × 2 – 3 mm, apex slightly obtuse, inside above puberulous, outside densely puberulous, margin velutinous; stamens 4 – 8 mm long, glabrous; anther oblong, 0.8 – 1.2 mm long, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower similar to staminate one; sepals ca. 6 × 2 mm; staminodes 3 – 4 mm long; ovaries puberulous; styles ca. 4 mm long, densely villous. Achenes compressed, broadly ovate or elliptic, 3.5 × 2 – 2.8 mm, puberulous, narrowly rimmed; persistent styles ca. 5.5 cm long, yellowish-plumose. Fl. Feb. – Mar.

Brazil. In thickets.

Additional specimens examined.

Brazil. Parana: Ponta Grossa, Dusen 7799 (GH); Ressaca, Kummrow 882 (MO); Rio Taquari, Koczioki 53 (MO); Parana, Dusen 14515 (MO, US), Koczzcki 53 (P), Silva 96 (G). **Rio de Janeiro**, Kallunki & Pirani 676 (G). Rio Grande de Sul, Pedersen 15759 (G); Santa Antonio, Glaziou 5722 (P). Santa Catarina, Klein 7203 (P), Reitz & Klein 6660 (P); Serra do Caete, Hatschbach 42209 (US); Serra do Mar, Braga 549 (US).

30. *Clematis campestris* St. Hil., Fl. Bras. Merid. 1:3. 1824; Spreng. in Syst. Cur. Post. 4 (2):221. 1827; Walp., Repert. 1:8. 1842; Eichler in Mart. Fl. Bras. 13(1):145, pl. 33, fig. 1 et 35. 1864; Prantl in Bot. Jahrb. 9:260. 1888; Hauman, Cat. 204. 1923, p. p.; Macbr. in Field Mus. Nat. Hist. Chicago Bot. 13:644. 1936; Lourt. in Darwiniana 9(3–4):408, fig. 3. 1951; et in Mém. Soc. Cien. Nat. La Salle 16:33, fig. 1. 1956; et in Reitz, Fl. Illustr. Catarin. 1:6, pl. 1, fig. c. 1966; Molero in Spichiger & Bocquet, Fl. Parag. Ranunculac. 10, fig. 1. 1985; M. Johnson, Klematis 473. 1997; Zuloaga & Morrone, Cat. Pl. Vasc. Rep. Argentina 2:966. 1999; Grey-Wils., Clematis 51. 2000. — *C. dioica* L. ssp. *campestris* (St. Hil.) Kuntze in Verh. Bot. Ver. Brand. 26:104. 1885. Type: Brazil. Sao Paulo: Yapo, 1816–1821, St. Hilaire s. n. (holotype, P!).

C. triloba St. Hil., Fl. Bras. Merid. 1:3. 1824, non Thunb. 1800, nec Heyne ex Roth, 1821. — *C. hilarii* Spreng. var. *triloba* (St. Hil.) Speg. in An. Soc. Ci. Argent. 10:211. 1880. — *C. hilarii* Spreng., Syst. Veg. 5:177. 1828; Eichler in Mart. Fl. Bras. 13(1):146, pl. 35, fig. 2b. 1864; Griseb., Pl. Lorentz. 20. 1874; Speg. in An. Soc. Ci. Argent. 10:210. 1880; Lorentz, Rio Negro 179. 1881; Hieron. in Bol. Acad. Nac. Cienc. Cordoba. 4:702. 1882; Prantl in Bot. Jahrb. 9:260. 1888; Lillo in Bol. Of. Quim. Tucuman 1:60. 1888; Nieder. in Bol. Mens. Mus. Prod. Arg. 3(26):46. 1890; Bettf., Fl. Argent. 2:139, pl. 93. 1899; Speg. in An. Soc. Ci. Argent. 40:123. 1900; Arech., Fl. Urug. 1:25. 1901; Chodat & Wilczek in Bull. Herb. Boiss., ser. 2, 2:286. 1902; Hassler in Tr. Mus. Farm. F. C. Méd. 21:59. 1909; Lizer in Rev. C. Est. Agr. Vet. Buenos Aires 7:109. 1914; Sockt, Fl. Cordob. 234. 1918; Hicken in Darwiniana 2:47. 1930; Herter, Florul. Urug. 61. 1930; Macbr. in Field Mus. Nat. Hist. Chicago Bot. 13:645. 1936; Lourt. in Darwiniana 9(3–4):410, fig. 4. 1951. — *C. dioica* L. ssp. *catesbyana* (Pursh) Kuntze var. *hilarii* (Spreng.) Kuntze in Verh. Bot. Ver. Brand. 26:104. 1885. Type: Brazil. Cisplatina: Arrorio del Rasario, 1816–1822, St. Hilaire s. n. (holotype, P!).

C. triloba St. Hil. var. *guarantica* St. Hil., Fl. Bras. Merid. 1:3. 1824. — *C. hilarii* Spreng. var. *guarantica* (St. Hil.) St. Hil. & Tul. in Ann. Sci. Nat. Bot., ser. 2, 17:130. 1842. Type: Brazil. Estancia d'Itaruquem, 1816–1822, St. Hilaire s. n. (holotype, P!).

C. montevidensis Spreng., Syst. Veg. 2:667. 1825; Arech., Fl. Urug. 1:24. 1901; Molero in Spichiger & Bocquet, l. c. 12, fig. 3; Zuloaga & Morrone, Cat. Pl. Vasc. Rep. Argentina 2:967. 1999. — *C. hilarii* Spreng. var. *montevidensis* (Spreng.) Speg. in An.

Soc. Ci. Argent. 10 : 211. 1880. Type : Uruguay. Montevideo , 1821 – 1829 , Sellow s. n. (holotype).

C. denticulata Vell. , Fl. Flumin. 240. 1825 ; et Icones 5 : 134. 1827 ; Lourt. in Mém. Soc. Cien. Nat. La Salle 16 : 34. 1956 ; et in Fl. Urug. 2 : 4. 1963 ; et in Reitz , Fl. Ilustr. Catarin. 1 : 8 , pl. 1 , fig. A. 1966 ; Correca , Fl. Patagon. 4a : 294. 1984 ; M. Johnson , Klematis 475. 1997 , p. p. ; Grey-Wils. , Clematis 50. 2000. — *C. dioica* L. ssp. *catesbyana* (Pursh) Kuntze var. *denticulata* (Vell.) Kuntze in l. c. — *C. montevidensis* Spreng. var. *denticulata* (Vell.) Bacig. , Fl. Ill. Entre Rios (Argent.) 3 : 310. 1987. Type : Brazil. Rio de Janeiro , no type specimen designated.

C. mendocina Phil. in Anal. Univ. Chile 2 : 389. 1862. — *C. dioica* L. ssp. *campestris* (St. Hil.) Kuntze var. *mendocina* (Phil.) Kuntze in l. c. — *C. campestris* var. *mendocina* (Phil.) Hauman & Irogoy. in Anal. Mus. Nac. Hist. Nat. Buenos Aires 32 : 204. 1923. Type : Argentina. Mendoza , 1860 – 1861 , Diaz s. n. (holotype , P !).

C. dioica L. ssp. *campestris* (St. Hil.) Kuntze var. *angustissima* Kuntze in l. c. Type : Argentina. Patagonia , no type specimen designated.

C. bangii Rusby in Mém. Torr. Bot. Club 3 : 3. 1893. Type : Bolivia. Cochabamba , 1891 , Bang 988 (holotype , NY ; isotypes , GH ! , K ! , US !).

C. uruguayensis Arech. in Anal. Mus. Nac. Montev. , ser. 2 , 2 : 18. 1905. Type : Uruguay. Puntas de Pan de Azucar , 1901-11 , Arechavaleta 5148 (holotype).

C. maldonadensis Larr. , Escritos D. A. Larranaga 1 : 83. 1922. Type : Uruguay. Montevideo , Larranaga s. n. (holotype).

This species consists of two varieties distributed in Argentina , Bolivia , Brazil , Paraguay , Peru , and Uruguay.

30a. var. *campestris* Fig. 15 : A – C

Suffruticose vine. Branches shallowly 4 – 10-sulcate , sparsely puberulous , glabrescent. Leaves once to twice pinnate , or ternate ; leaflets papery or subcoriaceous , variable in shape , lanceolate , linear-lanceolate , ovate , or broadly ovate , 2 – 8 × 0.2 – 6.5 cm , apex attenuate , long acuminate , or acuminate , base rounded , obtuse , or subtruncate , margin entire , rarely 1-dentate per side , undivided or below 2 – 3-lobed , on both surfaces sparsely puberulous or subglabrous , basal vein abaxially prominent ; petioles 2.4 – 10 cm long. Staminate cymes axillary , 3 – 15-flowered ; peduncle 2 – 7.8 cm long ; bracts linear , lanceolate or narrowly ovate , 0.4 – 6 cm long. Staminate flower 1.2 – 1.8 (– 2.2) cm in diam. ; pedicel 0.5 – 1.6 cm long , puberulous ; sepals 4 , white , obovate-oblong or narrowly oblong , 6 – 9 (– 11) × 3 – 3.5 mm , inside puberulous , outside densely puberulous , margin velutinous ; stamens 5 – 7.5 mm long , glabrous ; anthers oblong , 1 – 1.2 mm long , apex obtuse. Pistillate cymes similar to staminate ones , (1 – 3) – 10-flowered. Pistillate flower 2 – 2.4 (– 2.6) cm in diam. ; pedicel 1.5 – 4.5 (– 6) cm long , puberulous , sometimes glabrous ; sepals 4 , white , oblong or elliptic-oblong , 10 – 11 (– 14) × 4 – 5 (– 6) mm , on both surfaces densely puberulous , margin velutinous ; staminodes 6 – 7 mm long ; ovaries puberulous ; styles 7 – 10 mm long , densely villous. Achenes compressed , oblanceolate or fusiform , 4 – 5 × 1.2 – 2 mm , puberulous , narrowly rimmed ; persistent styles 6 – 8 cm long , plumose. Fl. Oct. – May.

Argentina , S Bolivia , S Brazil , Paraguay , S Peru , and Uruguay. In forests or scrambling on bushes , or on grasslands ; 100 – 2500 m.

Additional specimens examined.

Argentina. Andalgalá , Cantino 339 (GH) ; Alijilán , Pierotti 11528 (GH) ; Beltrán , García 733 (GH) ; Bonpland , Ekman 1444 (G , US) ; Calamuchita , Solomon 4162 (US) ; Campo Alegre ,

Venturi 1937 (GH); Capital , Lille 6178 (MO); Cordoba , Kuntze s. n. (US); Corrientes , Pederson 3937 (G); Descamparados , Cuezco 1278 (MO); Diamante , Huidobro 3641 (MO); Feru-audez , Garcia 687 (GH); Gral Bonesa , Meyer 7118 (GH); Guasayan , Pierotti 100715 (US); Humahuaca , Mexia 4320 (MO); Jachal , Cuezco 1857 (MO); La Pampa , Piccinini 8320 (US); La Paz , Brizuela 1030 (MO); La Salmira , Pederson 7210 (GH); Mendoza , Bocher 2109 (P); Ojo de Agua , Garcia 885 (LE); Oran , Cabrera 4572 (GH); Petagow , Meyer 6999 (GH); Pilcomayo , Morel 6583 (MO); Rio Caropari , Varela 5409 (GH); Rio Negro , Fischer 104 (GH , MO); San Juan , Barlett 20492 (US); San Justo , Borsini 1273 (US); San Luis , Digilio-Grassi 2040 (G); Santa Teresa , Pederson 390 (LE , P); Sierra Chica , Goodspeed 23245 (MO); Tilcara , Cabrera 13344 (US); Tucuman , Peirana 9828 (G , P); Villaguay , Pederson 6289 (GH); Vitoria , Wetmore 842 (US).

Bolivia. Angostura , Steinbach 296 (US); Buyniri , Steinbach 1619 (MO); Charagua , Cardenas 2684 (GH); Cochabamba , Buchtien s. n. (UPS), Steinbach 5971 (G , GH); Cordillera , Beck 9403 (P); Enrredatera , Steinbach 251 (MO); Earija , Cora 1326 (P); Potosi , Cialdella 322 (G); San Rafael , Senn 4388 (GH); Santa Cruz , Cardenus 5293 (US), Nee 41637 (G); Tarija , Krapovickas et al. 19482 (P), West 8251 (GH).

Brazil. Alto Paraiso , Wasum 7581 (US); Botrophis , Sears s. n. (GH); Campos Novos , Reitz 6403 (P); Catarina , Reitz 2722 (US); Caxias do Sul , Rasaato 3359 (G , US); Lajes , Klein 4515 (P); Minas Geraes , Henschen 243 (UPS); Parana , Dusen 3292 (GH , US), Lindeman 3003 (P); Serra do Espinhaco , Anderson 8665 (P); Yapo River , Pauli s. n. (P).

Paraguay. Alto Parana , Fiebrig 6191 (US); Caaguazu , Hassler 8916 (G , GH , P); Cabollero-cue , Fiebrig 5291 (G); Chaco , Schinini 17838 (G); Disiones , Mereles 2360 (G); Itaugua , Mereles 3943 (G); Pilcomayo , Morong 1067 (GH , K , MO , US), Rojas 334 (K , P); Sierra de Amambay , Hassler 10098 (GH); Tacuaral , Hassler 1102 (G); Trinidad , Perez 286 (P); Villeta , Hassler 277 (G); Ypacaray , Hassler 11748 , 12630 (G , GH , MO , US).

Peru. Moquegua , Weberbauer 7452 (G).

Uruguay. Arroyo Mansavillagra , Rosengurt 5725 (MO); Entrer , Lorentz 1056 (GH , LE , UPS); Laualle , Meyer 4151 (GH); Montevideo , Fruchard s. n. (P); Patos , Rosengurt 13-4070 (MO); Paysandu , Herter 1035 (GH , US), 82924 (P), 99631 (MO).

C. campestris St. Hil. var. *campestris* is common in southern South America. It is highly variable in leaflet shape , size , and division , and mainly on the basis of different leaflet morphological characters , some " new species " were described in the last two centuries. In her unpublished excellent doctoral dissertation , Moreno (1993) correctly relegated *C. triloba* St. Hil. , *C. montevidensis* Spreng. , *C. denticulata* Vell. , *C. bangii* Rusby , *C. uruguayensis* Arech. etc. to the synonymy of *C. campestris*. In the present revision her treatment is adopted.

30b. var. **malacophylla** W. T. Wang in Acta Phytotax. Sin. 39 : 322 , fig. 3 : 1 , 2. 2001. Type : Argentina. Salta : Ruta Salta , 1977-03-22 , Krapovichas & Schinini 30413 (holotype , G !).

This variety differs from var. *campestris* in its thinner herbaceous or membranous leaflets abaxially densely appressed-sericeous-puberulous. The former variety has leaves pinnate with leaflets narrowly ovate or ovate , and flowers in March.

Argentina (Salta).

31. Clematis peruviana DC. , Syst. 1 : 141. 1818 ; et Prodr. 1 : 4. 1824 ; Kuntze in Verh. Bot. Ver. Brand. 26 : 153. 1885 ; Ulbr. in Bot. Jahrb. 37 : 402. 1906 ; Weberb. in Engler & Drude , Veget. Erde 12 : 89. 1911 ; Macride in Field Mus. Nat. Hist. Chicago Bot. 13 : 646. 1936 ; Herrera , Syn. Fl. Cuzco 238. 1941 ; Lourt. in Mém. Soc. Cien. Nat. La Salle 16 : 50 , fig. 5.

1956 ; M. Johnson , *Klematis* 484. 1997 ; Grey-Wils. , *Clematis* 50. 2000. Type : Peru. Dombey 596 (holotype , G ! ; isotypes , P !).

C. peruviana DC. var. *andina* Ball. in J. Linn. Soc. Bot. 22 : 28. 1885. Type : Peru. Chicola , 1882-04-21 , Ball s. n. (holotype , K ! ; isotypes , GH ! , LE !).

Fig. 15 : D , E

Woody vine. Branches shallowly 4 – 6-sulcate , densely puberulous. Leaves twice or once pinnate ; leaflets papery , ovate or narrowly ovate , 1 – 4.6 × 0.8 – 4.4 cm , apex acuminate or acute , base subcordate or rounded , margin 1 – 3-dentate per side or entire , rarely incised , undivided , sometimes 3-lobulate or 3-lobed , adaxially sparsely abaxially usually densely puberulous , basal veins slightly prominent ; petioles 1 – 3.6 cm long. Staminate cymes axillary , 3 – 5-flowered ; peduncles 3 – 12 cm long ; bracts ovate , 2 – 3 cm long. Staminate flower 2.6 – 3 cm in diam. ; pedicel 1 – 3 cm long , densely puberulous or velutinous ; sepals (4 – 6) , yellowish-greenish , oblong or narrowly oblong , 13 – 16(– 19) × 3 – 9 mm , apex slightly acute or obtuse , inside puberulous , outside densely pubescent , margin velutinous ; stamens 7 – 13 mm long , glabrous ; anthers oblong , 1.5 – 1.8(– 2) mm long , apex obtuse. Pistillate cymes axillary , 1 – 3(– 9)-flowered ; peduncles 2.5 – 7.4 cm long ; bracts obovate , 1.4 – 1.9 cm long , entire or 2-denticulate. Pistillate flower 2.8 – 4 cm in diam. ; pedicel 0.8 – 2.8 cm long , puberulous ; sepals 4 , obovate or oblong , 14 – 20 × 6.5 – 11 mm , on both surfaces puberulous , outside on margin velutinous ; staminodes 6 – 8 mm long ; ovaries puberulous ; styles 6 – 7 mm long , densely villous. Achenes compressed , elliptic , 3.5 × 2.5 – 3 mm , puberulous , narrowly rimmed ; persistent styles 3 – 3.6 cm long , plumose. Fl. Jan. – Jun.

Peru. On rocky slopes or in bushes ; 2900 – 3800 m.

Additional specimens examined.

Peru. Anaypuanca , Cerrate. 1189 (GH) ; Anchi , Savatier s. n. (K) ; Ancociho , Weberbauer 2681 (G) ; Bolognesi : Huancar , Ferreyra 6222 (P , US) ; Casapalca , Ferreyra 6528 (GH) ; Coracora , Weberbauer 5786 (G , GH , US) ; Cordova , Metcalf 30263 (G , GH , MO , US) ; Cuzco , Tupayachi 1076 (MO) ; Huarochiri : Carretera , Saunders 325 (P) , Kolpayunku , Cerrate 4817 (P) ; Lima : Canta , Dillon et al. 3192 (K) , Penell 14617 (GH , US) ; Chicola , Asplund 11309 (UPS) , Ball s. n. (LE) , Ferreyra 6528 (US) ; Huaros , Pennell 14706 (GH , US) ; Oroya , Kalenborn 168 (GH , MO , US) ; Rio Rimac , Humbert 30514 (US) ; Llata , Macbride 2260 (G) ; Quichas , Ellenberg 602 (P) ; Raccorachaca , Cerrate 710 (GH) ; Tarnborough , Andes , Landeman 75 (K) ; Urubamba , Tupayachi 1076 (MO) ; Viso , Macbride 575 (G , GH) ; Yauyos : Anaypuanca , Cerrate 1189 (P).

32. *Clematis ulbrichiana* Pilger in Repert. Sp. Nov. 41 : 223. 1937. — *C. denticulata* Vell. var. *ulbrichiana* (Pilger) Lourt. in Mém. Soc. Cien. Nat. La Salle 16 : 36 , fig. 1. 1956 ; et in Reitz , Fl. Ill. Catarin. 1 : 10 , pl. 1 : B. 1966 ; M. Johnson , *Klematis* 476. 1997. Type : Brazil. Rio de Janeiro : Itatiaja , 2100 m , 1935-05-28 , Brade 14636 (holotype , RB) ; Itatiaja , 1935-01 , Campos Porto 2710 (paratype) ; Fiozenda de l 'Itatiaja , 1873-01-21 , Glaziou 6461 (paratype , P!).

Fig. 16 : D , E

Woody vine. Branches shallowly 4 – 10-sulcate , subglabrous or puberulous. Leaves 2 – 3-pinnate , with 2 – 3 pairs of pinnae ; leaflets papery , ovate , narrowly ovate , or lanceolate , 1.2 – 5.2 × 0.7 – 3.5 cm , apex acuminate or attenuate , base rounded or cordate , margin 1 – 4-dentate per side or entire , undivided or 3-lobed or 3-lobulate , on both surfaces sparsely or densely puberulous , basal veins abaxial nearly flat or slightly prominent ; petioles 3 – 6 cm long , base dilated. Staminate

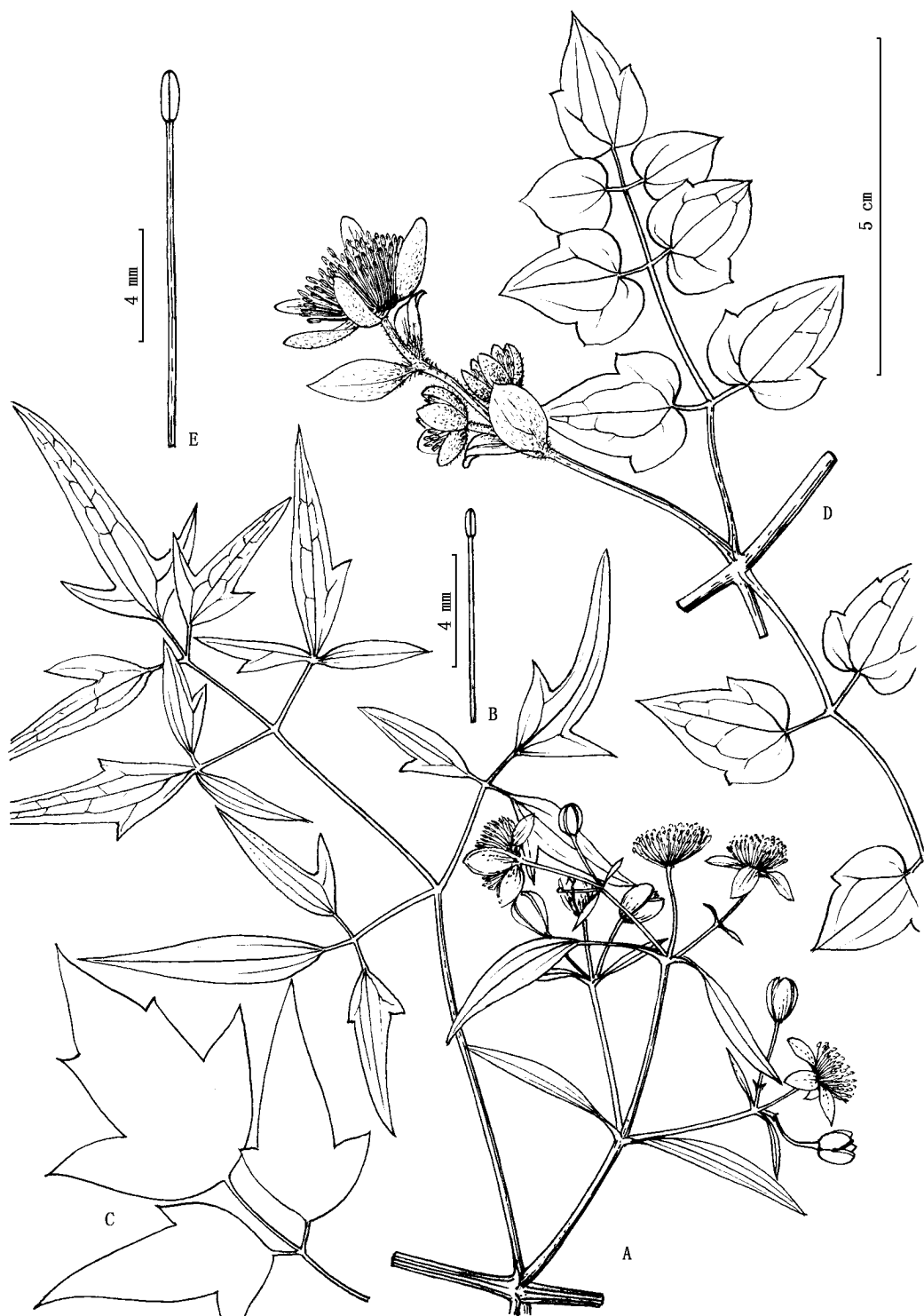


Fig. 15. A - C, *Clematis campestris* St. Hil. var. *campestris*. A, staminate flowering branch; B, stamen (from James & Andrea Solomon 4158); C, leaflets (from Gallinal 5725). D, E, *C. peruviana* DC. D, staminate flowering branch; E, stamen (from Metcalf 30263).

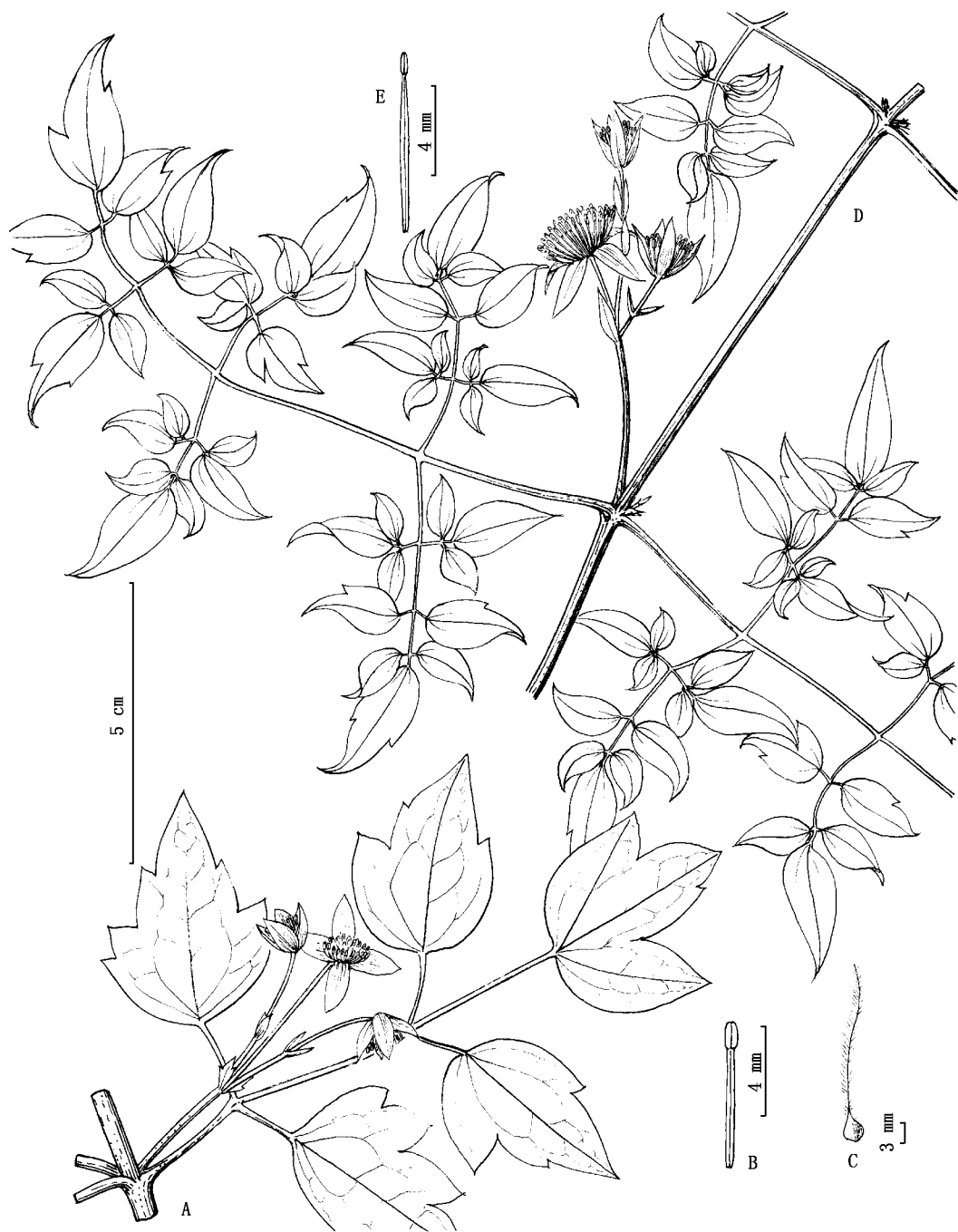


Fig. 16. A - C, *Clematis alborosea* Ulbr. A, staminate flowering branch; B, stamen (from Vargas 5563); C, achene (from Cardenas 3929). D, E, *C. ulbrichiana* Pilger. D, staminate flowering branch; E, stamen (from Glaziou 6461).

cymes axillary, 3 – 11-flowered; peduncles 3 – 6 cm long; bracts lanceolate-linear or narrowly obovate, 10 – 12 mm long, undivided or 3-lobed. Staminate flower ca. 2 cm in diam.; pedicel 6 – 10 mm long, densely puberulous; sepals 4(– 5), white, oblanceolate-oblong or narrowly oblong, 10 – 12 × 3 – 4 mm, apex slightly acute or acuminate, on both surfaces puberulous, margin velutinous; stamens 5 – 10 mm long, glabrous; anthers oblong, 1 – 1.2 mm long, apex obtuse. Pistillate cymes axillary, ca. 15-flowered; peduncles ca. 4.8 cm long; bracts shortly petiolate, narrowly ovate, ca. 2.2 cm long, 3-lobulate. Pistillate flower ca. 1.8 cm in diam.; pedicel 10 – 15 mm long; sepals 4 – 5, elliptic-oblong or narrowly oblong, ca. 9 × 2.5 – 3.5 mm, inside densely outside sparsely puberulous, margin velutinous; staminodes 5 mm long; ovaries puberulous; styles ca. 6 mm long, densely villous. Achenes compressed, broadly ovate, 2 – 3 × 1.5 – 2.5 mm, sparsely puberulous; persistent styles 2 – 4 cm long, plumose. Fl. Oct. – Jan.

SE Brazil. In forests; 1100 – 2200 m.

Additional specimens examined.

Brazil. Espirito Santo: Vitoria, Hatschbach 14900 (P, US); S Joaquim, Reitz 8124 (US). Mt. Itatiaja, L. B. Smith 1735 (US). Santa Catarina, Reitz & Klein 14561, L. B. Smith & Reitz 10413 (P).

Ser. 2. **Millefoliolatae** W. T. Wang in Acta Phytotax. Sin. 36: 507. 2000. Type: *C. millefoliolata* Eichler.

Leaves thrice or twice pinnate; leaflets small, 2 – 15(– 22) mm long. Sepals often yellowish.

Two species, occurring in alpine areas of the Andes in E Bolivia and Peru.

33. Clematis seemannii Kuntze in Verh. Bot. Ver. Brand. 26: 146. 1885; Macbride in Field Mus. Nat. Hist. Chicago Bot. 13: 647. 1936; Lour. in Mém. Soc. Cien. Nat. La Salle 16: 44, fig. 3. 1956; M. Johnson, Clematis 485. 1997; Grey-Wils., Clematis 51. 2000. Type: Peru. “10 – 11000 ft common about the village of Andahuageas”, 1867, P. Pearce s. n. (lectotype, K!, designated by Lourteig, 1956); Quebrada de Obrajilla & San Mateo, Mathews 646 (syntype, K!); without precise locality, Gay 596 (syntype, P!).

C. pseudomicrophylla Kuntze in l. c., pro syn.

C. parvifrons Ulbr. in Notizbl. Bot. Gart. Berl. 8: 326. 1923; Herrera, Pl. Cuzco Herrera. 101. 1930; Macbride in l. c. 646. 1936; Herrera, Syn. Fl. Cuzco 238. 1941; Weber-And. Peru 418. 1945. Type: Peru. Ayacucho, Totorabamba, 3500 – 3600 m, 1910-05, Weberbauer 5464 (holotype, B, destroyed; isotypes, G!, GH!, K!, US!).

Fig. 17: A – D

Woody vine. Branches shallowly 4 – 6-sulcate, densely appressed-puberulous, glabrescent. Leaves thrice or twice pinnate; leaflets subcoriaceous, ovate, broadly or narrowly ovate, or nearly orbicular, 5 – 15(– 22) × 3 – 12(– 20) mm, apex acuminate, acute, or obtuse, base rounded, sometimes subcordate or truncate, margin entire, sometimes 1 – 2-dentate, undivided or 2 – 3-lobulate, on both surfaces glabrous, or sometimes very sparsely puberulous, basal veins abaxially flat or slightly prominent; petioles 2.5 – 8 cm long. Staminate cymes axillary, 1 – 4-flowered; peduncles 0.4 – 4.5 cm long; bracts simple, linear or ovate, or ternate, up to 1.6 cm long. Staminate flower 2.5 – 3 cm in diam.; pedicel 1.5 – 4 cm long, puberulous; sepals 4 – 6, white, obovate-oblong, narrowly obovate, or long elliptic, 10 – 14 × 3 – 9 mm, apex slightly obtuse, on both surfaces puberulous, margin velutinous; stamens 5 – 9 mm long, glabrous; anthers oblong, 1 – 1.5 mm long, apex obtuse. Pistillate cymes similar to staminate ones. Pistillate flower ca. 1.8 cm in diam.; pedicel 1.2 – 1.8 cm long, puberulous; sepals 4 – 6, narrowly ovate or elliptic-ovate, 9 – 10 × 3 – 6 mm, apex slightly obtuse, on both surfaces sparsely puberulous, margin densely puberulous;

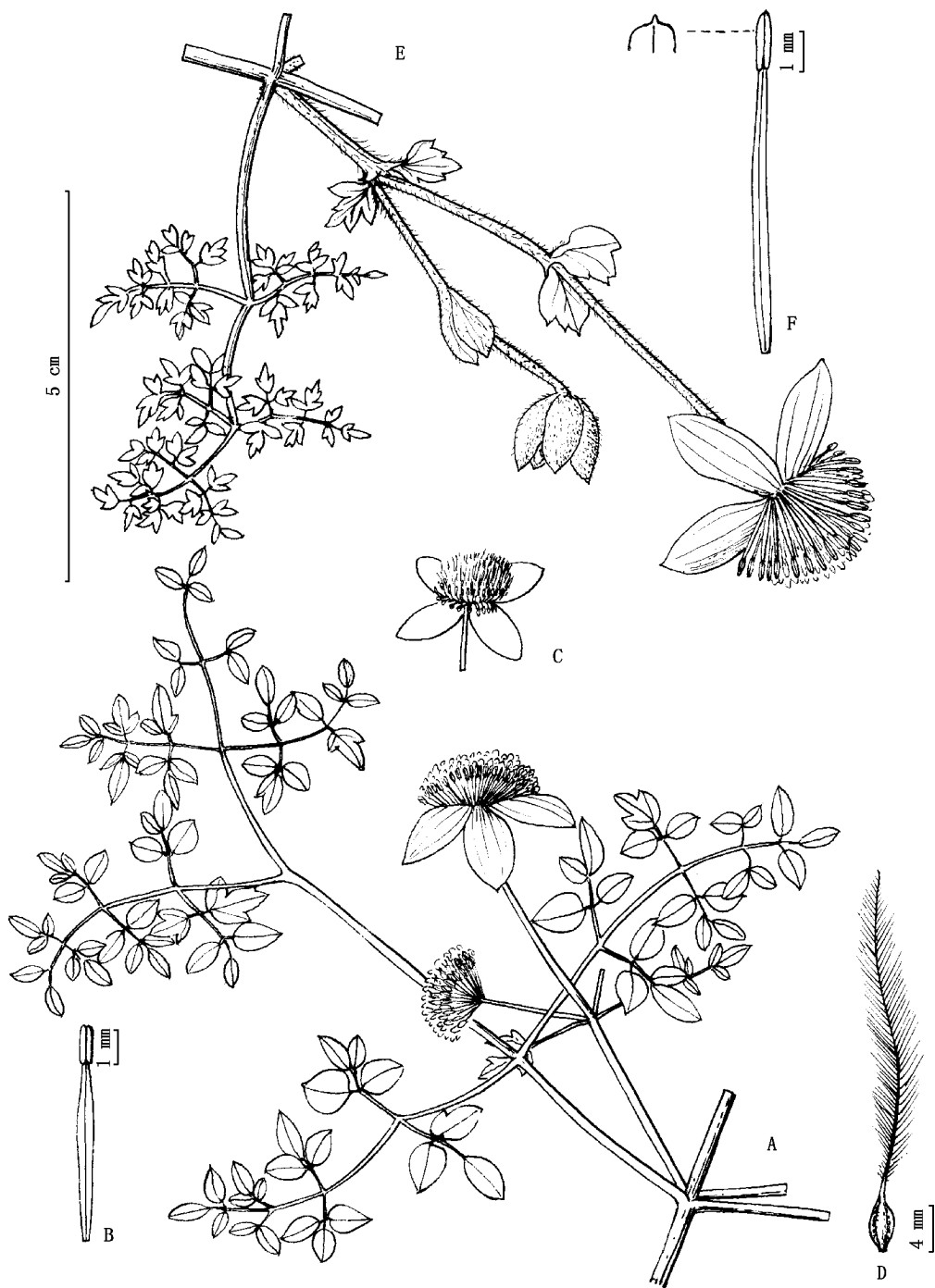


Fig. 17. A – D, *Clematis seemannii* Kuntze. A, staminate flowering branch; B, stamen (from Plowman & Davis 4652); C, pistillate flower; D, achene (from Plowman & Davis 4899). E, F, *C. millefoliolata* Eichler. E, staminate flowering branch; F, stamen (from Pennell 13263).

staminodes 5 mm long ; ovaries glabrous ; styles ca. 5.5 mm long , densely villous . Achenes compressed , narrowly ovate or elliptic , $4 \times 2 - 2.2$ mm , glabrous , narrowly rimmed ; persistent styles ca. 3 cm long , plumose . Fl. Jan. - Mar .

S Peru . In bushes by streams ; 2900 - 3600 m .

Additional specimens examined .

Peru. Apurimac : Chalhuanca , Iltis & Ugent 559 (K , US) ; Rio Incabamba , Stork & Horton 10730 (G , GH , K) . Ayacucho : Huanta , Weberbauer 7488 (GH) , 7488a (G , K , US) ; without precise locality , Plowman 4652 (GH) . Cuzco : Allantaitambo , Herrera 849 (US) ; Aropesa , Herrera 691 (US) ; Písaq , Plowman & Davis 4899 (GH) ; without precise locality , Stafford 272 (K) , West 8052 (GH) . Huancavelica : Connaira , Tovar 181 (GH , US) , 769 (GH) ; Huando , Tovar 1255 (P) ; Youli , Stork & Horton 10856 (G , K , MO) . Junin : Concepcion , Ingenio , Soukup 3678 (US) ; Huancayo , Soukup 3548 (US) .

In having thrice pinnate leaves and glabrous ovaries and achenes , *C. seemanii* is closely related to the next species *C. millefoliolata* . Besides , in having few-flowered cymes and 4 - 6-sepalled flowers *C. seemanii* is also closely related to *C. peruwiana* (see above) , and from the latter distinguished by its often thrice pinnate leaves , white sepals , and glabrous ovaries and achenes .

34. Clematis millefoliolata Eichler in Mart. , Fl. Bras. 1 (1) : 150. 1864 ; Kuntze in Verh. Bot. Ver. Brand. 26 : 154. 1885 ; Prantl in Bot. Jahrb. 9 : 251. 1888 ; Macbride in Field Mus. Nat. Hist. Chicago Bot. 13 : 646. 1936 ; Weberb. , And. Peru. 308. 1945 ; Lourt. in Mém. Soc. Cien. Nat. La Salle 16 : 46 , fig. 4. 1956 ; M. Johnson , Klematis 483. 1997 ; Grey-Wils. , Clematis 49. 2000. Type : Peru. Besser s. n. (holotype , B , destroyed ; photo , US !) ; Carumas , Prov. Moquegua , 3200 m , 1925-02-03 , Weberbauer 7288 (neotype , GH ! , designated by Lourteig on an annotation label ; isoneotypes , G ! , K ! , US !) .

C. cochabambaensis Rusby in Mém. Torr. Bot. Club 3 (3) : 3. 1893. Type : Bolivia. Vicinity of Cochabamba , 1891 , Bang 759 (holotype ; isotypes , G ! , GH ! , K ! , LE ! , US !) .

Fig. 17 : E , F

Woody vine . Branches shallowly 4 - 6-sulcate , densely appressed-puberulous . Leaves thrice or twice pinnate , with ca. 3 pairs of pinnae ; leaflets coriaceous , broadly ovate , ovate , or rhombic , $2 - 10 \times 3 - 8$ mm , base broadly cuneate or truncate , 3-parted or 3-sect , with terminal lobes larger , rhombic to linear-lanceolate , entire or 1 - 2-dentate , and lateral lobes smaller , cuneate or oblong , undivided or unequally 2-lobed , adaxially sparsely abaxially densely sericeous , basal veins abaxially flat or slightly prominent ; petioles 1 - 2.5 cm long . Staminate cymes axillary , 3 - 7-flowered ; peduncle 3 - 5 cm long ; bracts broadly ovate , ca. 1.5 cm long , 3-parted . Staminate flower ca. 1.5 cm in diam. ; pedicel ca. 1.5 cm long , densely puberulous ; bracteoles obovate , 1 - 1.3 cm long ; sepals 4 , oblong-elliptic , ca. 10×6 mm , apex obtuse , inside puberulous , outside velutinous ; stamens 8 - 11 mm long , glabrous ; anthers narrowly oblong , 1.8 - 2 mm long , apex obtuse . Pistillate cymes axillary , 1 - 3-flowered ; peduncles 0.3 - 2 cm long ; bracts ovate or linear , 0.4 - 1 cm long . Pistillate flower 1.7 - 3 cm in diam. ; pedicel 1.6 - 4 cm long , densely pubescent ; bracteoles ovate or broadly rhombic , 3-parted ; sepals 4 , yellowish , obovate-oblong , $10 - 15 \times 4 - 7$ mm , inside puberulous , outside velutinous ; staminodes 9 - 12 mm long ; ovaries glabrous or puberulous ; styles ca. 9 mm long , densely villous . Achenes compressed , oblong-elliptic , ca. 3.8×2.2 mm , glabrous ; persistent styles ca. 2 cm long , plumose . Fl. Feb. - Apr .

E Bolivia and S Peru . On alpine grasslands ; 3000 - 4000 m .

Additional specimens examined .

Bolivia. La Paz , Asplund 886 (UPS) , Beck 192 , 7829 (P) , Solomon 11387 (G , K , MO) .

Peru. Arequipa , Pichu Pichu Range , Stafford 1321 (K) ; Nevado de Chachani , Pennell 13263 (GH , K , US).

Subsect. 2. **Lasianthae** (Tamura) W. T. Wang in Acta Phytotax. Sin. 38 : 507. 2000. — Sect. *Lasiantha* Tamura in Sci. Rep. Osaka Univ. 16 (2) : 34. 1967 ; in Acta Phytotax. Geobot. 34 : 41. 1987 ; et in Hiepko , Engler 's Nat. Pflanzenfam. , ed. 2 , 17 (4) : 381. 1995 ; Snoeijer in *Clematis* 1992 : 16. 1992 ; M. Johnson , *Clematis* 489. 1997 ; Grey-Wils. , *Clematis* 53. 2000. Type : *C. lasiantha* Nutt.

Closely related to subsect. *Dioicae* , and differs from the latter in the hornotinous flowering branch or inflorescences with several leaves together arising from an axillary bud of old branch. In this subsection , the leaves are ternate or pinnate.

Two species , distributed in SW North America.

Key to species

1. Leaflets 0.5 – 2.8 cm broad ; sepals 8 – 13 × 3 – 6 mm ; stamens 5 – 10 mm long 35. ***C. pauciflora***
 1. Leaflets larger , 1.2 – 5.2 cm broad ; sepals larger , 12 – 24 × 5 – 8 mm ; stamens larger , 10 – 17 mm long ...
 36. ***C. lasiantha***

35. *Clematis pauciflora* Nutt. in Torr. & Gray , Fl. N. Amer. 1 : 657. 1840 ; Watson in Bot. Calif. 1 : 3. 1876 ; Hemsl. in Godman & Salvin , Biol. Centr.-Am. Bot. 1 : 2. 1879 ; James in J. Cincinn. Soc. Nat. 6 : 124. 1883 ; Gray , Synop. Fl. N. Amer. 1 (1) : 5. 1895 ; Jepson , Fl. W. Mid. Calif. 168. 1911 ; et Man. Flow. Pl. Calif. 392. 1925 ; Munz , Man. S. Calif. Bot. 176. 1935 ; Abrams , Ill. Fl. Pacif. Stat. 2 : 194 , fig. 1814. 1944 ; Munz , Calif. Fl. 104. 1959 ; Shreve & Wiggins , Veg. Fl. Sonoran Desert 1 : 518. 1964 ; Munz , Fl. S. Calif. 722. 1974 ; Wiggins , Fl. Baja Calif. 774. 1980 ; Keener & Dennis in Taxon 31 : 39. 1982 ; Essig in Hickman , High. Pl. Calif. 914. 1993 ; Moreno & Essig in Morin , Fl. N. Amer. 3 : 162. 1997 ; M. Johnson , *Clematis* 490. 1997 ; Grey-Wils. , *Clematis* 54. 2000. — *C. parviflora* Nutt. in Torr. & Gray , Fl. N. Amer. 1 : 9. 1838 , non DC. 1823. — *C. nuttallii* Koch in Hort. Dendr. 10 : n. 27. 1853. — *C. lasiantha* Nutt. var. *pauciflora* (Nutt.) Kuntze in Verh. Bot. Ver. Brand. 26 : 145. 1885. Type : U. S. A. California : St. Diego , 1836-03 , Nuttall s. n. (lectotype , PH , designated by Essig , 1991 ; isolectotypes , K ! , NY !).

Fig. 18 : A – C

Woody vine. Old branches indistinctly 6-angulate or nearly terete , glabrescent ; hornotinous flowering branch with a few leaves together arising from an axillary bud of old branch , not or obscurely sulcate , puberulous or glabrescent. Leaves ternate or pinnate , 5-foliolate ; leaflets papery , broadly ovate , ovate , or elliptic , 0.7 – 3 × 0.5 – 2.8 cm , apex obtuse or acute , base rounded , subcordate , or broadly cuneate , margin few-dentate or entire , 3-lobed or undivided , on both surfaces very sparsely puberulous , glabrescent , basal veins abaxially slightly prominent or flat ; petioles 0.3 – 3.5 cm long. Staminate cymes axillary usually 1-flowered , terminal 3-flowered ; peduncles short or nearly absent ; bracts narrowly oblong , ca. 3 mm long , or foliaceous. Staminate flower 1.5 – 2.4 cm in diam. ; pedicel 1 – 3 cm long , puberulous ; sepals 4 , white , oblanceolate , 8 – 12 × 3 – 5 mm , apex mucronate , inside glabrous , outside puberulous , margin velutinous ; stamens 5 – 10 mm long ; filaments glabrous , occasionally with a few hairs ; anther glabrous , narrowly oblong , 1.2 – 1.6 (– 2) mm long , apex obtuse. Pistillate cymes axillary , 1 – 3-flowered , sometimes terminal ; peduncles 1 – 8 mm long ; bracts linear , 3 – 4 mm long , or foliaceous. Pistillate flower 2 – 2.5 cm in diam. ; pedicel 1.4 – 3.5 cm long ; sepals 4 , obovate-oblong or oblanceolate , 9 – 13 × 4 – 6 mm ; staminodes 6 – 9 mm long ; ovaries glabrous ; styles ca. 7 mm long , densely villous. Achenes

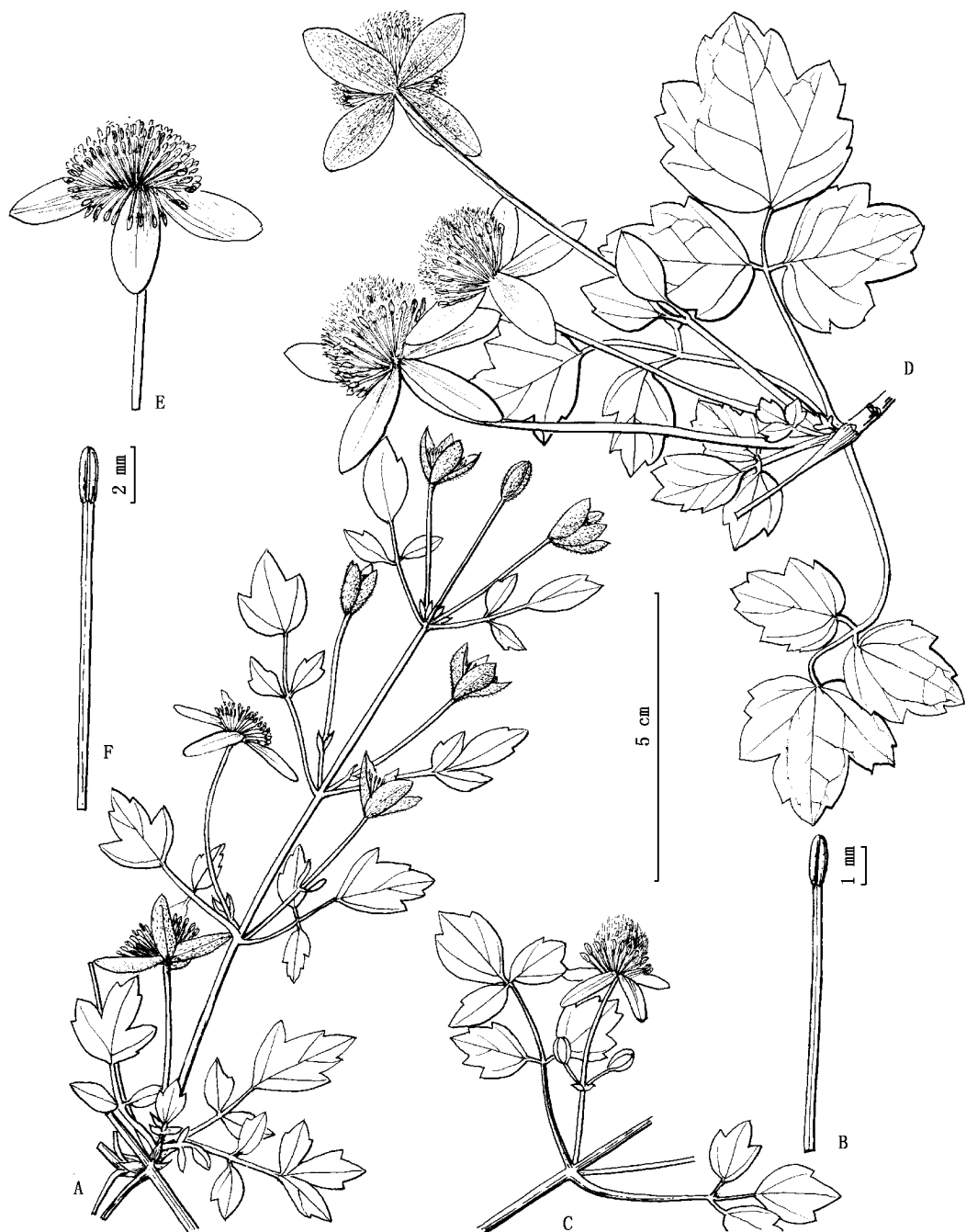


Fig. 18. A - C, *Clematis pauciflora* Nutt. A, staminate flowering branch; B, stamen (from Deane s. n.); C, pistillate flowering branch (from Sargent s. n.). D - F, *C. lasiantha* Nutt. D, pistillate flowering branch (from Purpus s. n.); E, staminate flower; F, stamen (from C. F. Baker 499).

compressed, elliptic or obovate, $4 - 8 \times 2.8 - 3$ mm, glabrous, narrowly rimmed; persistent styles 4 - 5 cm long, plumose. Fl. Jan. - Oct.

NW Mexico and SW U. S. A. In chaparrals, at edges of meadows and cultivated fields; 0 - 2200 m (Moreno & Essig, 1997).

Additional specimens examined.

Mexico. Baja California : Ejido Mexico, Raven et al. 12242 (GH); Ensenada, Wiggins 5168 (GH, US), 5006, 7540 (US); Loguna Hanse, Wiggins 13055 (GH); Rancho San Jose, Wiggins 20970 (GH); Santo Domingo, Wiggins 4504 (GH, US); San Vicinte, Jones s. n. (GH), Ownbey 2054 (GH, US); Sierra de Juarez, Thorne 62359 (G); Sierra San Pedro Martir, Wiggins 5006 (K).

U. S. A. California : Coultan, Vasey s. n. (US); Los Angeles Co., Balls 8273 (S), Wheeler 881 (G); Riverside Co., Jones s. n. (GH); San Bernardino Co., Parish 704 (K), 3625 (G, GH, LE, MO); San Diego Co., Abrams 3428 (G, GH, K, MO), 3736 (GH, MO), Cronquist 9892 (GH), Epling & Robinson s. n. (MO), Gander 105 (S), Sargent s. n. (GH); San Jacint Mts., Leiberg 3220, Wolf 3668 (US); Topango Canyon, Epling s. n. (GH); White-water, Vasey s. n. (K, US).

In *C. pauciflora*, the stamens like those of all other species of sect. *Aspidanthera* are glabrous. However, in a specimen, Epling & Robinson s. n., of this species collected from San Diego County, California, on the stamen filaments there are sparse hairs. This occasional phenomenon appears to some extent to show the one evolutionary trend of stamen from glabrous to hairy in the genus *Clematis* (Wang, 1998; Brandenburg, 2000).

36. *Clematis lasiantha* Nutt. in Torr. & Gray, Fl. N. Amer. 1 : 9. 1838; Watson in Bot. Calif. 1 : 3. 1876; James in J. Cincinn. Soc. Nat. Hist. 6 : 124. 1883; Kuntze in Verh. Bot. Ver. Brand. 26 : 145, cum β . *normalis* Kuntze. 1885; Gray, Synop. Fl. N. Amer. 1 (1) : 5. 1895; Jepson, Fl. W. Mid. Calif. 168. 1911; et Man. Flow. Pl. Calif. 392. 1925; Munz, Man. S. Calif. Bot. 176. 1935; Abrams, Ill. Fl. Pacif. Stat. 2 : 194, fig. 1814. 1944; Munz, Calif. Fl. 103. 1959; et Fl. S. Calif. 722. 1974; Wiggins, Fl. Baja Calif. 774. 1980; Keener & Dennis in Taxon 31 : 38. 1982; Essig in Hickman, High. Pl. Calif. 914. 1993; Moreno & Essig in Morin, Fl. N. Amer. 3 : 162. 1997; M. Johnson, *Clematis* 489. 1997; Grey-Wils., *Clematis* 53, figs. 12, 13. 2000. Type : U. S. A. California : St. Diego, Nuttall s. n. (holotype, NY!; isotype, K!).

Fig. 18 : D - F

Woody vine. Old branches indistinctly 6-angulate, shallowly 6-sulcate or not sulcate, puberulous, glabrescent; hornotinous flowering branch with a few leaves together arising from an axillary bud of old branch, shallowly 4 - 6-sulcate, densely puberulous. Leaves ternate or pinnate, 5-foliate; leaflets papery, broadly ovate, orbicular-ovate, or ovate, $1.5 - 3.8 \times 1.2 - 5.2$ cm, apex obtuse, base cordate, subcordate, or rounded, margin coarsely obtuse-dentate, 2 - 3-lobed or undivided, on both surfaces puberulous, basal veins abaxially slightly prominent or nearly flat; petioles 1.6 - 4 cm long. Staminate cymes arising from the lower leaf axils of hornotinous branch, (1 - 3)-flowered; peduncles 1 - 3.4 cm long; bracts shortly petiolate, broadly elliptic, elliptic, or obovate, 0.9 - 2.4 cm long. Staminate flower 3 - 4.6 cm in diam.; pedicel 5.5 - 8.5 cm long, puberulous; sepals 4, white, oblanceolate, $14 - 24 \times 5 - 7.5$ mm, apex slightly acute, on both surfaces densely puberulous or outside velutinous; stamens 10 - 17 mm long, glabrous; anthers oblong or narrowly oblong, 1.4 - 3 mm long, apex obtuse. Pistillate cymes axillary and terminal, 1-flowered; peduncles 0 - 3.2 cm long; bracts shortly petiolate, elliptic, 0.7 - 1.4 cm long.

Pistillate flower 1.6 – 3.8 cm in diam. ; pedicel 6 – 7.2 cm long , puberulous ; sepals 4 , obovate or narrowly to broadly oblong , 12 – 19 × 5.5 – 8 mm , on both surfaces densely puberulous or outside velutinous ; staminodes 9 – 12 mm long ; ovaries puberulous ; styles ca. 11 mm long , densely vil- lous . Achenes compressed , elliptic , 3 – 5 × 2 – 2.2 mm , pubescent , narrowly rimmed ; persistent styles ca. 4 cm long , plumose . Fl. Jan. – Jun.

NW Mexico and SW U.S.A. In chaparrals or on woodlands ; 0 – 2000 m (Moreno & Essig , 1997).

Additional specimens examined.

U.S.A. California : Berkeley , Greene s. n. (US) , Jones 93 (GH) ; Butle Co. , Edwards s. n. (GH , MO) , Heller 10700 (GH , K , MO) ; Diabie Mt. , Baker 2946 (GH , US) , Greene 2946 (LE) ; Humboldt Co. , Constance & Rollins 2873 (GH , MO , US) ; Lake Co. , Meyer 1376 (MO) ; Los Angeles Co. , Abrams 2610 (G , GH , MO) , Braunton 277 (US) ; Lowe Mt. , Grant 194 (GH) ; Napo Co. , Suksdorf 658 (GH) ; Madera Co. , Rose 65046 (G) ; Maripose , Hollick s. n. (US) ; Mendocino Co. , Heller 5854 (MO , S , US) ; Monterey Co. , Elmer 3390 (K , MO) , Ferris 8410 (GH , MO) ; Napo Co. , Suksdorf 658 (GH) ; Nevada Co. , True 5290 (GH) ; Placer Co. , Carter 1248 , 1249 (G , GH , K , LE , MO , S) ; Pulo Alto , Thomas 7666 (US) ; Riverside Co. , Miller 7461 (MO) ; San Benito Co. , Crosby 14398 (MO) , Fosberg 55008 (S) ; San Diego Co. , Epling s. n. (S) , Spencer 1146 (GH) ; San Luis Obispo Co. , Chambers 1565 (GH) ; San Mateo Co. , Baker 499 (G , GH , MO , US) ; Santa Barbara , Elmer 3844 (GH , MO , US) ; Santa Clara , Elmer 4916 (MO , US) , Heller 7269 (G , GH , LE , MO , US) ; Shasta Co. , Hitchcock 6497 (GH , MO) ; Sonoma Co. , Heller 5623 (GH , MO) , Schneider s. n. (GH) ; Sutter Co. , Heller 11251 (G , GH , MO) ; Tulare Co. , Wolf 4632 (GH) ; Tuolumne Co. , Egleston 9084 (US) ; Ventura , Abrams 48 , Eastwood 5002 (GH) .

Subsect. 3. **Microphyllae** W. T. Wang in Acta Phytotax. Sin. 38 : 507. 2000. Type : *C. microphylla* DC.

Sect. *Flammula* 10. *Vitalbae* d. *Hexapetalae* Prantl in Bot. Jahrb. 9 : 260. 1888 , p. p. m. , quoad *C. microphylla* DC.

Leaves once to twice ternate or once to thrice pinnate . Inflorescences arising alone from leaf axils of hornotinous branch . Sepals 4 , valvate , spreading , linear , narrowly linear or narrowly ob- long , outside on margin velutinous , rarely densely puberulous . Stamens 2 – 4 times rarely slightly (*C. rhodocarpoides*) shorter than sepals ; anthers oblong ; connectives not projected . Staminodes 2 – 16 .

Seven species , endemic to Australia .

Key to species , varieties , and forms

1. Leaves once ternate ; leaflets at margin entire , undivided .
 2. Branches densely fulvous-puberulous ; staminate cymes shorter than leaves , 4 – 7-flowered , not panicle-like ; sepals of staminate flower slightly longer than stamens , oblanceolate-oblong or narrowly oblong 37. **C. rhodocarpoides**
 2. Branches on nodes sparsely white-puberulous , elsewhere glabrous ; staminate cymes longer than leaves , many- flowered , panicle-like ; sepals of staminate flower nearly two times longer than stamens , narrowly linear 38. **C. queenslandica**
1. Leaves pinnate , bipinnate , or twice to thrice ternate , rarely once ternate .
 3. Leaflets ovate or lanceolate , margin denticulate , undivided or 2 – 3-lobed 39. **C. fawcettii**
 4. Sepals white 39a. f. **fawcettii**
 4. Sepals purplish 39b. f. **colorata**
 3. Leaflets at margin entire , undivided , rarely 2 – 3-lobed .

5. Leaflets narrowly ovate or broadly lanceolate 40. **C. brachystemon**
 5. Leaflets narrowly oblong to narrowly linear.
 6. Leaflets or ultimate lobes and sepals of staminate flower narrowly oblong or linear.
 7. Achenes lanceolate, narrowly rimmed, with flat rims 41. **C. linearifolia**
 7. Achenes elliptic, broadly marginate, with rugose margins 42. **C. microphylla**
 8. Leaves twice or once pinnate; leaflets $0.8 - 5.4(-6.5) \times 0.2 - 1.2$ cm
 42a. var. **microphylla**
 8. Leaves bipinnate or thrice pinnatisect, ultimate lobes smaller, $4 - 15 \times 0.8 - 2.5$ mm
 42b. var. **leptophylla**
 6. Leaf ultimate lobes and sepals of staminate flower narrowly linear 43. **C. delicata**

37. *Clematis rhodocarpoides* W. T. Wang, sp. nov. Type: Australia. Moreton District: Robert's Plateau, Lamington National Park; common on edge of rain forest, 1943-03-20, C. T. White 12048 (holotype, here designated, K).

Fig. 19: A, B

Affinis *C. queenslandicae* W. T. Wang, a qua ramis dense fulvo-puberulis, cymis staminatis minoribus foliis brevioribus, sepalis floris staminibus leviter longioribus oblanceolato-oblongis vel anguste oblongis recedit. Habitu similis *C. rhodocarpae* Rose (subsect. *Dioicae*) et *C. glycinoidi* DC. (subsect. *Aristatae*), illa differt foliolis margine saepe 1 - 4-dentatis, sepalis staminibus fere aequilongis intus dense puberulis, haec ramis tantum ad nodos albo-puberulis alibi glabris, connectivis apice distincte projectis.

Liana lignosa. Rami subteretes, indistincte longitudinaliterque striati, dense adpresseque fulvo-puberuli. Folia ternata; foliola papyracea, anguste ovata vel ovata, 2.2 - 6.2 cm longa, 1.9 - 2.8 cm lata, apice acuminata vel attenuata, basi rotundata, margine integra, supra sparse adpresseque puberula, subtus ad nervos adpresse puberula, nervis basalibus 5 subplanis; petioli 4 - 6 cm longi, adpresse fulvo-puberuli. Cymae staminatae axillares, 4 - 7-florae; pedunculi 1.2 - 2.5 cm longi, cum pedicellis dense adpresseque fulvo-puberuli; bracteae petiolatae, lanceolatae vel lineares, 0.7 - 1.4 cm longae. Flos staminatus circ. 1.6 cm diam.; pedicellus 6 - 9 mm longus; sepala 4, alba, patentia, apice obtusa, intus glabra, extus dense adpresseque fulvo-puberula, ad marginem albo-velutina; stamina 40 - 46, 3.5 - 7 mm longa, glabra, filamentis anguste linearibus, antheris anguste oblongis vel oblongis 1 - 1.2 mm longis apice obtusis.

Woody vine. Branches subterete, indistinctly longitudinally striate, densely appressed-fulvous-puberulous. Leaves ternate; leaflets papery, narrowly ovate or ovate, 2.2 - 6.2 x 1.9 - 2.8 cm, apex acuminate or attenuate, base rounded, margin entire, adaxially sparsely appressed-puberulous, abaxially on veins appressed-puberulous, basal veins 5, nearly flat; petioles 4 - 6 cm long, appressed-fulvous-puberulous. Staminate cymes axillary, 4 - 7-flowered; peduncles 1.5 - 2.5 cm long, with pedicels densely appressed-fulvous-puberulous; bracts petiolate, lanceolate or linear, 0.7 - 1.4 cm long. Staminate flower ca. 1.6 cm in diam.; pedicel 6 - 9 mm long; sepals 4, white, oblanceolate-oblong or narrowly oblong, 7.5 - 9 x 2 - 3 mm, apex obtuse, inside glabrous, outside densely appressed-fulvous-puberulous, on margin white-velutinous; stamens 40 - 46, 3.5 - 7 mm long, glabrous; anthers narrowly oblong or oblong, 1 - 1.2 mm long, apex obtuse.

Australia (Queensland: Moreton). At rain forest edges.

In sepals slightly longer than stamens, this species differs from other species of subsect. *Microphyllae*, in which the sepals are 2 - 4 times longer than the stamens, and is strikingly similar to some species of subsect. *Dioicae*, such as *C. rhodocarpa* Rose and *C. polygama* Jacq. occurring in Central America (see above). Unfortunately, it is now only known from a single staminate flowering specimen, and the number of the staminodes per pistillate flower remains to be confirmed.

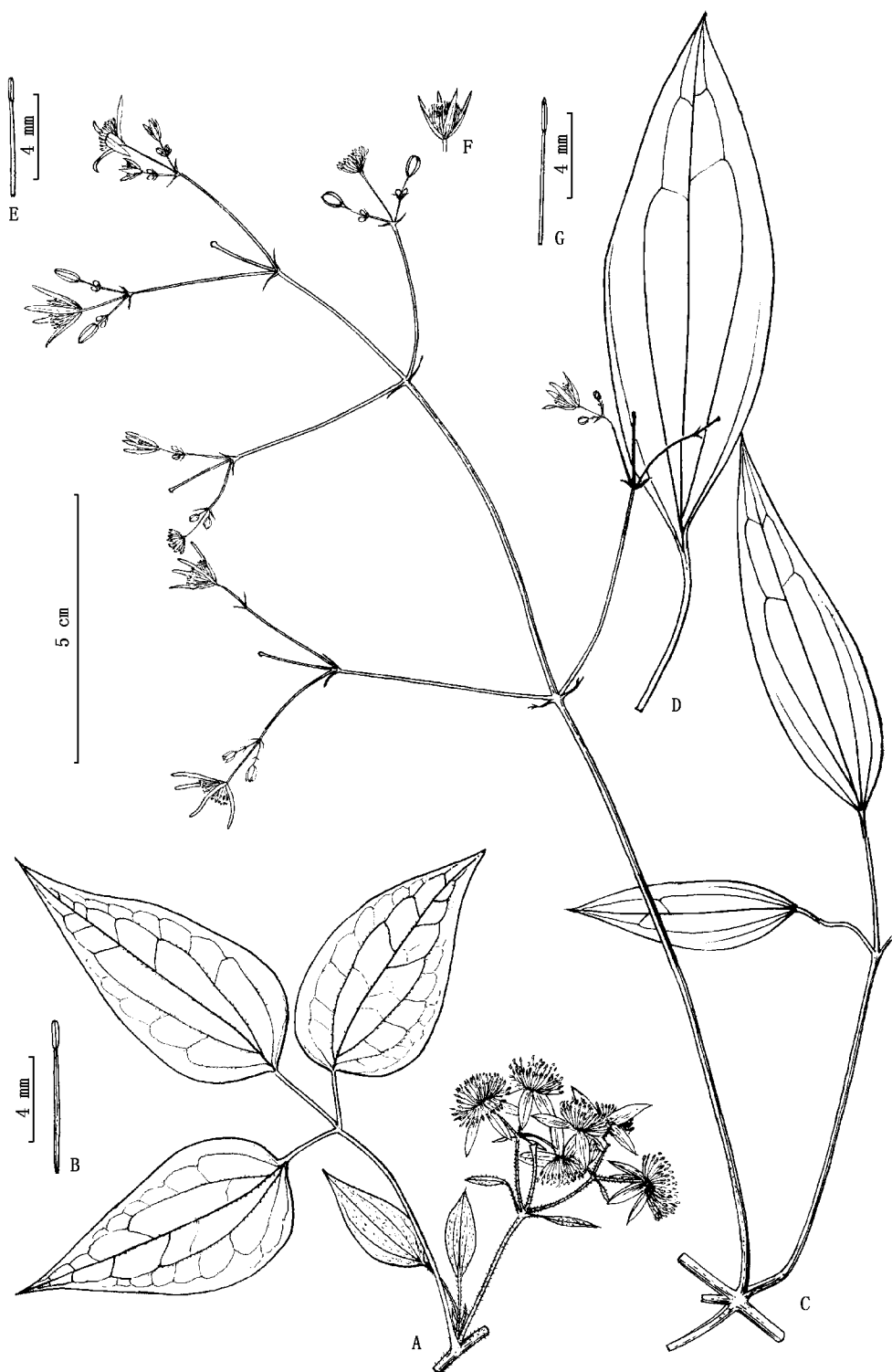


Fig. 19. A, B, *Clematis rhodocarpoides* W. T. Wang. A, staminate flowering branch; B, stamen (from C. T. White 12048). C - G, *C. queenslandica* W. T. Wang. C, staminate flowering branch; D, leaflet; E, stamen; F, pistillate flower; G, staminode (from Mueller s. n.).

If afterwards its pistillate flowering specimens are collected, and if the staminodes are known as numerous per pistillate flower, then this species should be transferred to subsect. *Dioicae*. However, regardless of the number of the staminodes, this species does represent the extant primitive form of the Australian *Clematis*.

38. *Clematis queenslandica* W. T. Wang, sp. nov. Type: Australia. Brunett, Mueller s. n. (holotype, here designated, K).

Fig. 19 : C – G

Affinis *C. rhodocarpoidi* W. T. Wang, a qua ramis nodis sparse albo-puberulis exceptis glabris, cymis staminatis majoribus folia superantibus, sepalis floris staminibus plus minusve 2-plo longioribus anguste linearibus distinguitur.

Liana lignosa. Rami 6-angulati, vadosae 6-sulcati, nodis sparse puberulis exceptis glabri. Folia ternata; foliola papyracea, anguste ovata, oblongo-lanceolata, vel longe elliptica, 2.7 – 9.5 cm longa, 1.1 – 3 cm lata, apice acuminata vel attenuata, basi cuneata vel late cuneata, margine integra, supra ad nervos sparse puberula, subtus subglabra, nervis basalibus 3 fere planis; petioli 4 – 7 cm longi, glabri. Cymae staminatae axillares, longe pedunculatae, multiflorae, paniculiformes, ramis primariis 3-jugatis laxis; pedunculi circ. 11.8 cm longi, superne sparsissime puberuli; bracteae anguste lineares, circ. 6 mm longae, puberulae. Flos staminatus 1.6 – 1.9 cm diam.; pedicellus 6 – 9 mm longus, adpresse puberulus; sepala 4, patentia, anguste linearia, circ. 9 mm longa, 0.8 – 1 mm lata, apice obtusa, intus glabra, extus adpresse puberula, ad marginem velutina; stamina circ. 34, 2.8 – 5 (– 6) mm longa, glabra, filamentis anguste linearibus, antheris oblongis circ. 1 mm longis apice obtusis. Cymae pistillatae axillares et terminales, longe pedunculatae, 3 – 5-florae; pedunculi 5 – 8 cm longi, prope apicem sparse puberuli; bracteae anguste oblanceolatae vel lineares, 4 – 7 mm longae, sparse puberulae. Flos pistillatus circ. 2 cm diam.; pedicellus 5 – 20 mm longus, tota longitudine dense vel superne tantum puberulus; sepala 4, patentia, lanceolato-lineararia, circ. 10 mm longa, 1 – 1.5 mm lata, apice obtusa, intus glabra, extus adpresse puberula, ad marginem velutina; staminodia circ. 10, 5 – 7 mm longa, glabra, filamentis anguste linearibus, antheris sterilibus anguste oblongis circ. 0.8 mm longis; carpella circ. 25, ovariis circ. 0.8 mm longis dense puberulis, stylis circ. 6 mm longis dense villosis.

Woody vine. Branches 6-angulate, shallowly 6-sulcate, only on nodes sparsely puberulous, elsewhere glabrous. Leaves ternate; leaflets papery, narrowly ovate, oblong-lanceolate, or long elliptic, 2.7 – 9.5 × 1.1 – 3 cm, apex acuminate or attenuate, base cuneate or broadly cuneate, margin entire, adaxially on veins sparsely puberulous, abaxially subglabrous, basal veins 3, nearly flat; petioles 4 – 7 cm long, glabrous. Staminate cymes axillary, long pedunculate, many-flowered, panicle-like, with three loose pairs of primary branches; peduncles ca. 11.8 cm long, above very sparsely puberulous; bracts narrowly linear, ca. 6 mm long, puberulous. Staminate flower 1.6 – 1.9 cm in diam.; pedicel 6 – 9 mm long, appressed-puberulous; sepals 4, narrowly linear, 9 × 0.8 – 1 mm, apex obtuse, inside glabrous, outside appressed-puberulous, margin velutinous; stamens ca. 34, 2.8 – 5 (– 6) mm long, glabrous; anthers oblong, ca. 1 mm long, apex obtuse. Pistillate cymes axillary and terminal, long pedunculate, 3 – 5-flowered; peduncles 5 – 8 cm long, near apex sparsely puberulous; bracts narrowly oblanceolate or linear, 4 – 7 mm long, sparsely puberulous. Pistillate flower ca. 2 cm in diam.; pedicel 5 – 20 mm long, densely puberulous or only above puberulous; sepals 4, lanceolate-linear, ca. 10 × 1 – 1.5 mm, apex obtuse, inside glabrous, outside appressed-puberulous, margin velutinous; staminodia ca. 10, 5 – 7 mm long, glabrous; filaments narrowly linear; sterile anthers narrowly oblong, ca. 0.8 mm long; carpels ca. 25, ovaries 0.8 mm long, densely puberulous, styles ca. 6 mm long, densely villous.

Australia (Queensland : Brunett).

39. *Clematis fawcettii* Muell. , *Fragm. Phytogr. Austral.* 10 : 1. 1876 ; *Domin in Bibl. Bot.* 89 (2) : 664. 1925 ; *Stanley & Moss , Fl. SE Queensland* 1 : 169. 1983 ; *Harden , Fl. New S. Wales* 1 : 158. 1990 ; *M. Johnson , Clematis* 499. 1997 ; *Grey-Wils. , Clematis* 59. 2000. — *C. hexapetala* L. f. ssp. *colensoi* var. *fawcettii* (Mueller) Kuntze in *Verh. Bot. Ver. Brand.* 26 : 108. 1885. — *C. microphylla* DC. var. *fawcettii* (Mueller) F. M. Bailey , *Queensl. Fl.* 1 : 6. 1899. Type : Australia. Lismore , Richmond River , Fawcett & Carron s. n. (holotype , K !).

This species consists of two forms confined to E Australia.

39a. f. *fawcettii* Fig. 20 : O , P

Herbaceous vine. Branches slender , 4 – 6-sulcate , glabrous. Leaves bipinnate ; leaflets herbaceous , rhombic-ovate to rhombic-lanceolate , $1.2 - 3.5 \times 0.4 - 1.2$ cm , apex attenuate or acute , base cuneate or broadly cuneate , sometimes subtruncate , margin denticulate , 2 – 3-lobed or undivided , adaxially sparsely puberulous , abaxially glabrous , basal veins abaxially flat ; petioles slender , up to 6 cm long. Staminate cymes laxly 10-flowered , panicle-like ; peduncles up to 7.5 cm long , glabrous ; bracts foliaceous. Staminate flower 2.5 – 5 cm in diam. ; pedicel 1.5 – 4.2 cm long , glabrous ; sepals 4 , white , narrowly linear , $12 - 25 \times 1.2 - 1.8$ mm , apex attenuate , inside glabrous , outside sparsely puberulous , margin velutinous ; stamens 4 – 8 mm long , glabrous ; anthers oblong or narrowly-oblong , 1 – 1.2 mm long , apex obtuse. Pistillate flower with a few staminodes. Achenes compressed , narrowly obovate , rimmed , with elongate plumose persistent styles. Fl. Sept. – Oct.

Australia (New South Wales , S Queensland). In bushes or grassy places.

Additional specimens examined.

Australia. New South Wales : Upper Richmond River , Dunn 24313 , 24314 (K) ; Lismore , Harden 81282 (K).

39b. f. *colorata* (F. M. Bailey) *Domin in Biol. Bot.* 89 (2) : 664. 1925 ; *M. Johnson , Clematis* 499. 1997 ; *Grey-Wils. , Clematis* 60. 2000. — *C. microphylla* DC. var. *colorata* F. M. Bailey , *Queensl. Fl.* 1 : 6. 1899. Type : Australia. S Queensland : Killarney s. n. (holotype , K !).

Sepals purplish.

Australia (S Queensland).

40. *Clematis brachystemon* Gunn ex W. T. Wang in *Acta Phytotax. Sin.* 38 : 507 , fig. 2 : 5 – 8. 2000. — *C. hexapetala* L. f. ssp. *brachystemon* Kuntze in *Verh. Bot. Ver. Brand.* 26 : 108. 1885. Type : Australia. Tasmania : Sand Hills , George Town , fls. yellow , 1844-10-21 , Gunn 1933 (holotype , K !) ; same locality , 1844-10-23 , Gunn 1933a (paratype , K !).

Fig. 20 : A – D

Woody vine. Branches subterete , 1 – 2 mm in diam. , shallowly 8-sulcate , sparsely puberulous or nearly glabrous. Leaves twice or once ternate ; leaflets subcoriaceous , broadly lanceolate , narrowly ovate , or ovate , $1.5 - 4.2 \times 0.8 - 1.6$ cm , apex obtuse or slightly acute , base broadly cuneate , margin entire , on both surfaces below sparsely puberulous or subglabrous , basal veins abaxially slightly prominent or flat ; petioles 3 – 10 cm long , sparsely puberulous or nearly glabrous. Staminate cymes axillary , 7 – 20-flowered , panicle-like ; peduncles 6 – 10 mm long ; bracts simple , broadly lanceolate , or ternate. Staminate flower 2.2 – 3.4 cm in diam. ; pedicel 4 – 7 mm long , densely puberulous ; sepals 4 , yellow , spreading , lanceolate-linear or linear , $12 - 18 \times 2 - 3.6$ mm , apex obtuse , mucronate , inside glabrous , outside puberulous , margin nearly velutinous ; stamens 3 – 5.5 mm long , glabrous ; anthers oblong or broadly oblong , 0.8 – 1 mm long , apex

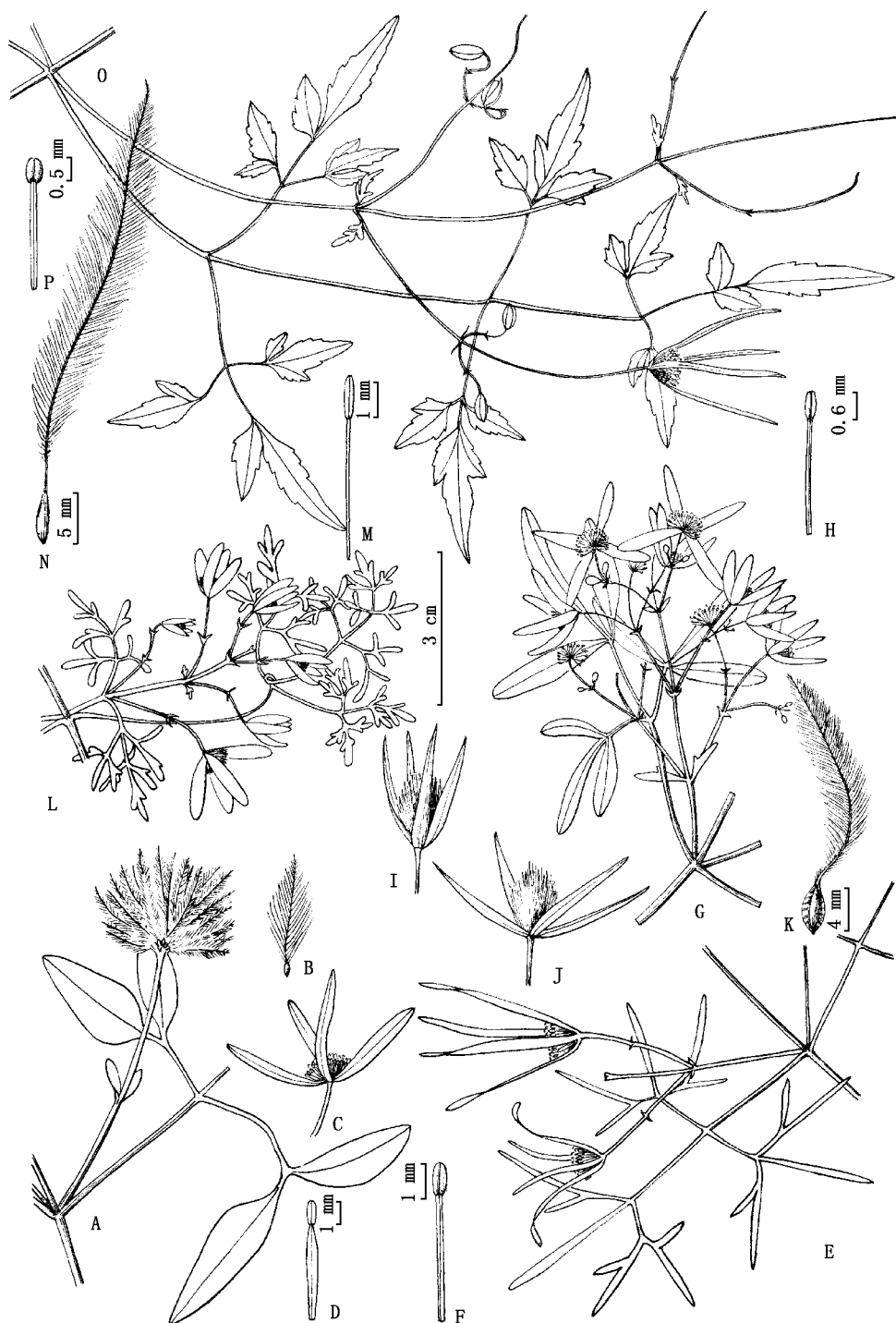


Fig. 20. A - D, *Clematis brachystemon* Gunn ex W. T. Wang. A, fruiting branch; B, young achene; C, staminate flower; D, stamen (from Gunn 1933). E, F, *C. delicata* H. Eichler ex W. T. Wang. E, staminate flowering branch; F, stamen (from Drummond 1). G - K, *C. microphylla* DC. var. *microphylla*. G, staminate flowering branch; H, stamen; K, achene (from Schlipalius s. n.); I, J, pistillate flowers (from F. M-A. 88). L - M, *C. microphylla* var. *leptophylla* Muell. ex Benth. L, staminate flowering branch; M, stamen (from Adams 643). N, *C. linearifolia* Steud. achene (from Morrison 19089). O, P, *C. fauccettii* Muell. f. *fauccettii*. O, staminate flowering branch; P, stamen (from Anonymous 24313).

obtuse. Pistillate cymes axillary, 1–3-flowered; peduncles 1.1–2.2 cm long; bracts petiolate, broadly lanceolate, ca. 1.8 cm long, or sessile, spatulate, 5–7 mm long. Pistillate flower ca. 2.5 cm in diam.; pedicel 1.2–2 cm long, puberulous; sepals 4, yellow, lanceolate-linear, 20–23 × 3–3.8 mm, apex slightly obtuse, inside glabrous, outside puberulous, margin densely puberulous; staminodes ca. 4, 12–14 mm long; ovaries glabrous; styles ca. 15 mm long, densely villous. Fl. Oct.

Australia (Tasmania).

Additional specimen examined.

Australia. Tasmania: without precise locality, J. D. Hooker s. n. (UPS).

41. Clematis linearifolia Steud. in Lehm. Pl. Preiss. 1:262. 1844; Paczk. & Chapman, W. Austral. Fl. 506. 2000. — *C. hexapetala* L. f. ssp. *linearifolia* (Steud.) Kuntze in Verh. Bot. Ver. Brand. 26:108. 1885. — *C. microphylla* DC. var. *linearifolia* (Steud.) Domin in Bibl. Bot. 89(2):664. 1925; M. Johnson, Klematis 502. 1997; Grey-Wils., Clematis 62. 2000. Type: W. Australia. "in arenosis sylvae Pointwater et insulae Rotenest", 1839-07-18, Preiss 1343 (holotype, P!; isotype, G!).

C. microphylla DC. var. *occidentalis* Benth., Fl. Austral. 1:8. 1863. Type: W. Australia. No type specimen designated.

C. microphylla auct. non DC.: Marchant et al., Fl. Perth Region 1:64. 1987.

Fig. 20:N

Subwoody vine. Branches slender, terete, 8-sulcate, on nodes puberulous, elsewhere glabrous. Leaves bipinnate or biternate, similar to those of *C. microphylla* DC.; leaflets chartaceous, narrowly lanceolate, lanceolate-linear, or linear, 1–5 cm × 1–6.8 mm, apex attenuate, base cuneate, margin entire, on both surfaces glabrous or adaxially at base sparsely pilose, midrib abaxially slightly prominent, lateral basal veins obscure; petioles 2.5–10 cm long, glabrous or at base sparsely pilose. Staminate cymes axillary, 3–7-flowered; peduncles 0.8–4 cm long, puberulous; bracts petiolate, 3-sect. Staminate flower 2–2.8 cm in diam.; pedicel 5–12 mm long, densely puberulous; sepals 4, lanceolate-linear, linear, or narrowly oblong, 10–16(–20) × 1.8–3(–4.5) mm, apex attenuate, inside glabrous, outside puberulous, margin more or less velutinous; stamens 2–4 mm long, glabrous; anthers broadly oblong, 0.8–1 mm long, obtuse. Pistillate cymes axillary, 1–10-flowered; peduncles 1.2–4 cm long, glabrous; bracts petiolate, ternate, or small, simple, sessile, subulate. Pistillate flower 3–4 cm in diam.; pedicel 9–14 mm long, densely puberulous; sepals 4, linear, 15–19 × 1.8–3 mm, inside glabrous, outside sparsely puberulous, margin velutinous; staminodes ca. 10, 10–12 mm long; ovaries glabrous; styles ca. 10 mm long, densely villous. Achenes compressed, lunate-oblong, 4–4.8 × 1.5–1.8 mm, glabrous, narrowly rimmed; persistent styles 6.5–10.8 cm long, plumose. Fl. Aug. – Sept.

Australia (Western Australia). On slopes.

Additional specimens examined.

Western Australia. Claremont, Andrews 2(K); Garden Isl., Blake 20651(K); Geragelton, Morrison 13456(K); Kings Park, Mauritzen s. n. (S); Newcastle, Harper s. n. (K); Perth, Mauritzon s. n. (UPS); Ravensthorpe, Melville 71283B(K); Subiaco, Morrison 19088, 19089(K); Swan, Pritzel 538(GH, K, S); Swan River, Drummond 2, 4(K), 402(G), Morrison s. n. (K), Preiss 694, 1345(G); Swanbourne, Cranfield 379(GH); Wonyan Hills, Morrison s. n. (K).

42. Clematis microphylla DC., Syst. 1:147. 1818; et Prodr. 1:5. 1824; Benth., Fl. Austral. 1:7. 1863; F. M. Bailey, Queensl. Fl. 1:66. 1899; Domin in Bibl. Bot. 89(2):644.

1925 ; Black. , Fl. S. Austral. 3 : 362. 1926 ; Ewart , Fl. Victor. 508. 1930 ; Curtis , Stud. Fl. Tasman. 1 : 10. 1956 , excl. syn. *C. linearifolia* Steud. ; Stanley & Ross , Fl. SE Queensl. 1 : 170. 1983 ; Briggs & Makinson in Harden , Fl. New S. Wales 1 : 158. 1990 ; Walsh in Walsh & Entwisle , Fl. Victor. 3 : 38. 1996 ; M. Johnson , *Clematis* 501. 1997 ; Grey-Wils. , *Clematis* 62. 2000. — *C. hexapetala* L. f. ssp. *microphylla* (DC.) Kuntze in Verh. Bot. Ver. Brand. 26 : 108. 1885. — *C. microphylla* DC. var. *normalis* Domin in Bibl. Bot. 89 (2) : 664. 1925. Type : Australia , Riedley s. n. (lectotype , P !).

C. stenophylla Fraser ex Hook. in Mitch. , Trop. Austral. 368. 1848. Type : Australia , Mitchell 77 , 594 , 595 (syntypes , K !).

This species consists of two varieties widespread in E Australia.

42a. var. microphylla Fig. 20 : G – K

Woody vine. Branches shallowly 6 – 8-sulcate , only on nodes sparsely puberulous , elsewhere glabrous . Leaves twice or once pinnate ; leaflets chartaceous or coriaceous , lanceolate-linear , lanceolate , narrowly oblong , or narrowly ovate , 0.8 – 5.4 × 0.2 – 1.2 cm , apex acute or obtuse , base cuneate or broadly cuneate , margin entire , undivided , sometimes 2-parted , on both surfaces glabrous , midrib abaxially slightly prominent ; petioles 1.6 – 7.5 cm long . Staminate cymes axillary and terminal , 3 – 7 – many-flowered ; peduncles 1.2 – 5.6 cm long , puberulous ; bracts linear or lanceolate . Staminate flower 2 – 3 cm in diam. ; pedicel 5 – 16 mm long , densely puberulous ; sepals 4 , white , lanceolate-linear , (9 –) 11 – 17 × 1.5 – 3 mm , apex slightly acute , inside glabrous , outside puberulous , margin velutinous ; stamens 2 – 5 mm long , glabrous ; anthers oblong , 0.8 – 1 mm long , apex obtuse . Pistillate cymes axillary and terminal , 1 – 15-flowered ; peduncles 0.8 – 4 cm long , subglabrous ; bracts sessile or petiolate , simple or ternate . Pistillate flower 2.8 – 4 cm in diam. ; pedicel 4 – 15 mm long , densely puberulous ; sepals 4 , narrowly linear , 14 – 24 × 2 – 3.2 mm , inside glabrous , outside below apex shortly corniculate , sparsely puberulous , margin more or less velutinous ; staminodes ca. 4 , 12 – 15 mm long ; ovaries glabrous ; styles 10 – 12 mm long , densely villous . Achenes strongly compressed , broadly elliptic or rhombic , 3.2 – 5 × 2.2 – 4 mm , glabrous , with broad rugose margins ; persistent styles ca. 3 cm long , plumose . Fl. Jul. – Nov.

Australia (New South Wales , Queensland , South Australia , Tasmania , Victoria). In bushes or forests , or on slopes ; 250 – 740 m .

Additional specimens examined.

Australia. New South Wales : Delungra , Coveny 12353 (K) ; Dubbo , Coveny 10411 (K) ; Gubbata , Coveny 12037 (K) ; Gunuedah , Boorman s. n. (G , P) ; Guyra , Constable 3566 (US) ; Lachlan River , Cunningham 216 (K) ; Narrabri , Boorman 18785 (G , GH , K) ; Rankin Spring , Constable 37857 (K) ; Warialda , Boorman 18783 (K , S , UPS). **Queensland** : Bendemere , Everist 5809 , 6126 (K) ; Goondiwindi , Johnson 526 (K) ; Tara , Everist 5868 (K) ; Wandoan , Everist 20 (US) , Johnson 2785 (K) ; Wyberba , Pedley 1590 (GH). **South Australia** : Adelaide , Kaspiew 5 (S) ; Bulcanoona , Greuter 18711 (K) ; Coonabarabran , Stuiemann 487 (GH) ; Eyre Peninsula , Rohrlach 491 (G) ; Flinders Range , Jackson 1724 (G) , Whibley 524 (GH) , 4294 (P) ; Kangaroo Isl. , H. Eichler 18494 (K) ; Keith , Donner 157 (GH) ; Lofty Range , Ralph s. n. (S) , Schodde 802 (P) ; Warooka , H. Eichler 19056 (GH) ; Woodchester , Booth 3007 (S). **Tasmania** : without precise locality , Gunn s. n. (GH , S). **Victoria** : Anglesea , Muir 4271 (K) ; Balnaning , Linder s. n. (S , UPS) ; Brighton , Morrison 4088 , 5607 (K) ; Greenock , Schneider s. n. (G) ; Kiata , Hicks 234 (K) ; Melbourne , Morrison s. n. (P) ; Point Lonsdale , Tilden 624 (G) ; Ringwood , Mauritzon s. n. (S) ; South Yarra , Muir s. n. (G) ; Wulgulmerang , Melville

3024 (GH). Without precise locality, 1816, R. Brown s. n. (G-DC).

42b. var. **leptophylla** Muell. ex Benth., Fl. Austral. 1:8. 1863; Domin in Bibl. Bot. 89(2):665. 1925; Burb. & Gray, Fl. Austral. Capit. Terr. 174. 1970; Stanley & Ross, Fl. SE Queensl. 1:170. 1983; Briggs & Makinson in Harden, Fl. New S. Wales 1:158. 1990; Walsh in Walsh & Entwisle, Fl. Victor. 3:39. 1996; M. Johnson, Klematis 502. 1997; Grey-Wils., Clematis 62. 2000. — *C. hexapetala* L. f. ssp. *leptophylla* (Muell. ex Benth.) Kuntze in Verh. Bot. Ver. Brand. 26:108. 1885. Type: Australia. On the Snowy River and Mitta Mitta, F. Mueller s. n. (holotype).

C. hexapetala ssp. *mulleri* Kuntze in l. c. — *C. microphylla* DC. var. *mulleri* (Kuntze) Domin in l. c.; M. Johnson l. c. Type: Australia, Mueller s. n. (holotype, BM!).

Fig. 20: L, M

This variety differs from var. *microphylla* in its leaves bipinnate or thrice pinnatisect, with smaller leaflets or ultimate lobes which are oblanceolate-linear, linear, or oblanceolate, 4–15 mm long, and 0.8–2.5 mm broad.

Australia (New South Wales, Victoria). On slopes or on shrubby river banks; 600–950 m. Additional specimens examined.

Australia. New South Wales: Canberra, Mekee s. n. (K); Capital Territory, Hoogland 6431 (GH), H. Eichler 24038 (K); Bungendore, Lepschi 322 (K); Kambah Pod, H. Eichler 24093, 24094 (MO); Killarney, Coveny 12823 (GH, K); Tinderry Mts., Adams 643 (K, P), Hartley 13483 (K), Lgdams 643, Makinson 369 (G). **Victoria:** Little River, Melville 3024 (K, P).

43. Clematis delicata H. Eichler ex W. T. Wang in Acta Phytotax. Sin. 38:509, fig. 2:9, 10. 2000; Paczk. & Chapman, W. Austral. Fl. 506. 2000. Type: Australia. Western Australia: Swan River, 1843, Drummond 1 (holotype, K!; isotype, G!).

Fig. 20: E, F

Suffruticose vine. Branches slender, 1–1.2 mm in diam., shallowly 4–6-sulcate, glabrous. Leaves twice to thrice pinnatisect; pinnae 1–3 pairs, the lower ones with slender stalks, once to twice 2–3-sect; ultimate lobes chartaceous, narrowly linear, 6–26 × 1–2 mm, apex acute, margin entire, adaxially glabrous, abaxially near base with a few short hairs or glabrous, midrib abaxially nearly flat; petioles slender, 1.3–4 cm long, subglabrous. Staminate cymes axillary, 3–4-flowered; peduncles slender, 0.9–2 cm long, sparsely puberulous or subglabrous; bracts linear, 2–3 mm long, puberulous. Staminate flower 3–4.5 cm in diam.; pedicel 6–15 mm long, sparsely puberulous; sepals 4, narrowly linear, 16–24 × 1.1–2 mm, apex caudate-attenuate, inside glabrous, outside sparsely puberulous, margin velutinous; stamens 3–8 mm long, glabrous; anthers oblong or broadly oblong, 0.8–1 mm long, apex obtuse.

Australia (SW Western Australia).

(to be continued)