2321. CAPRIFOLIACEAE (in part)

1. Valeriana L.
   Astrephia Dufresne

Annual, biennial or perennial hermaphroditic, gynodioecious or dioecious herbs, shrubs, or vines. Roots filamentous or tuberous, the tuberous roots simple or fasciculate. Stems rhizomatous or erect; terete or alate, with 2 or 4 wings; glabrous or variously pubescent. Leaves basal, cauline or both; simple or compound; decussate, rarely in whorls of 3-5; sessile or petiolate, glabrous or variously pubescent, the vestiture of simple hairs. Inflorescence many flowered, paniculoid or corymboid, the terminal branches dichotomous or more commonly scorpioid, bearing 2-20 flowers or fruits. Bracts 2 per inflorescence node, linear to ovate, base free or connate; margins entire, lobed or scarious glabrous to ciliate or glandular ciliate. Bractlets 2 per flower-bearing node. Calyx of 8-25 plumose limbs, 2-8 mm, inrolled at anthesis, that unfurl to form a pappus-like structure which persists on mature fruits; occasionally reduced to a simple ring or absent. Corolla 1-10 mm, salverform or unfundibuliform to rotate, weakly to strongly gibbous; the corolla of pistillate flowers 1/3 to 1/2 the size of perfect or male flowers; corolla lobes 5, equal to subequal; spreading or reflexed at anthesis. Stamens 3; included to exserted in male-fertile flowers, vestigial or absent in female flowers, the filaments adnate for 1/4-4/5 of the length of the tube, the anthers 2-or 4-lobed. Style 1, exserted or, rarely, included, vestigial in male flowers. Stigma lobes 3, 0.1-0.7 mm. Ovary 0.5-1 mm at anthesis, locules 3, one fertile and two sterile, the fertile locule adaxial, the sterile locules abaxial and usually reduced or vestigial. Fruit an ovate, pyriform or elliptic cypsela with 3 veins on the abaxial side, 1 on the adaxial side, and 2 along the margin. Base chromosome numbers: x = 7, 8, 12. Approx. 300 spp., 15 spp. in Mesoamerica.


1. Plants suffruticose or herbaceous vines, climbing or running along the ground.
2. Plants suffrutescent; if climbing, the stems not twining; leaves simple, elliptic or ovate.
3. Plants climbers, dioecious; corollas of male flowers 2-2.5 mm, corollas of female flowers 1.1-1.9 mm.

6. V. laxissima
3. Plants clambering over trees and shrubs or running along the ground; gynodioecious; flowers infundibular; corollas of perfect flowers 3-5.5 mm; corollas of female flowers 1.8-3 mm.

13. **V. subincisa**.

2. Herbaceous vines with twining stems; leaves ternate or, if simple, cordate or deltoid.

4. Leaves simple, the base cordate, less commonly truncate.  
   3. **V. candolleana**.  

d. **V. scandens**.

1. Plants erect, taprooted herbs.

5. Taproot narrowly cylindrical or forking; leaves spatulate or broadly petiolate, the margins entire or serrulate.  
   8. **V. prionophylla**.

5. Taproot not cylindrical, simple, lobed or fasciculate; leaves pinnately compound, ternate or simple.

6. Leaves always simple, the petioles as long as or much shorter than the blade.

15. **V. urticifolia**

6. Leaves compound, ternate or, if simple, compound leaves also present and the petioles much longer than the blade.

7. Corollas of perfect flowers 1-2.6 mm.

8. Corollas of perfect flowers rotate, 0.9-1.2 mm; fruits 0.5-0.8 mm.  
   10. **V. robertianifolia**

8. Corollas of perfect flowers infundibular 1.4-2.5 mm; fruits 1-3.2 mm.

9. Leaf margins repand to crenate or dentate; corolla lobes 0.6-0.8 mm, rounded.

1. **V. barbareifolia**

9. Leaf margins serrate; corolla lobes 0.2-0.6 mm, triangular.

10. Terminal leaflet more than twice as large as the largest lateral leaflets; fruits 2.2-2.5 mm, the margins alate.  
   7. **V. palmeri**.

10. Terminal leaflet less than twice as large as the largest lateral leaflets; fruits 1-2.2 mm, the margins not alate.

12. **V. sorbifolia**

7. Corollas of perfect flowers 4-7.8 mm.

11. Calyx absent.  
   9. **V. pulchella**

11. Calyx present (appears as ribbed ring beneath corolla in flower).

12. Inflorescence corymboid.

13. Bractlets shorter than or equal to mature fruits; fruits pubescent, the margins revolute.

5. **V. cucurbititifolia**.

13. Bractlets longer than mature fruits; fruits glabrous, the margins patent.  
   14. **V. tzotzilana**.

12. Inflorescence paniculoid.

14. Corollas of perfect flowers 4.3-6.4 mm, the throat pilose; fruits 2.5-4 mm.  

2. **V. beamanii**
14. Corollas of perfect flowers 3.4-4.9 mm, glabrous; fruits 2.1-2.6 mm. **4. V. chiapensis**


*Valeriana sorbifolia* Kunth var. *barbareifola* (M. Martens et Galeotti) F.G. Meyer.

Erect, biennial, gynodioecious herbs, 25-125 cm. Roots 1-5 × 1-3 cm, simple or 2 to 3-lobed, globose, papiform or fusiform. Stem 1, green or purple-maculate pubescent at the nodes only or retrorse-pubescent proximally, the hairs 0.3-0.5 mm. Leaves cauline, imparipinnate, 3-17 cm, the blades 1-13 × 2-9 cm, ovate or obovate, glabrous or the margins ciliate basally; terminal leaflet larger than the laterals, 15-75 × 5-45 mm, elliptic, ovate or widely ovate, the base cuneate or truncate, the apex acute to rounded, the margin repand to regularly or irregularly crenate or dentate; lateral leaflets in 1-3 opposite or subequal pairs, 9-50 × 4-26 mm, ovate to elliptic, the base cuneate or decurrent, the apex acute, the margin repand or irregularly dentate; petioles 1-5.5 cm, the base free, margins glabrous or ciliate, the hairs 0.2-0.5 mm. Inflorescence paniculoid, green to red, papillose or pubescent at the nodes only; conical in early flower, 20-60 × 7-30 cm in late flower and fruit, the branches ascending; terminal branching scorpioid, bearing 3-7 flowers or fruits. Bractlets 1.2-1.5 × 0.4-0.6 mm, equal to or slightly longer than the mature fruits, lanceolate to ovate, the base connate, the apex acute to acuminate, the margin scarious; glabrous. Calyx 9 to 12-fid, the limbs 2.5-4 mm. Corollas white to pink, infundibular, gibbous, glabrous; corolla of hermaphrodites 1.8-2.6 mm, the tube 1.1-1.8 × 0.5-1 mm, the lobes 0.6-0.8 × 0.6-0.7 mm, the apices rounded, spreading or recurved at anthesis; corollas of female flowers 1.3-1.5 mm, the tube 0.8-1.1 × 0.5-0.7 mm, the lobes 0.3-0.5 × 0.3-0.5 mm, the apices rounded, recurved at anthesis. Stamens weakly exserted, 0.8-1.2 mm. Style of hermaphrodites 0.9-1.6 mm. Cypsela purple-maculate, 1.5-2.8 × 0.9-1.8 mm, ovate to pyriform; pubescent adaxially, the hairs 0.2-0.3 mm, or glabrous, the abaxial lateral veins parallel with the margin, the margins reinforced.

Flowering and fruiting Jul-Dec. *Pinus-Quercus forests*, *Abies forests*. Ch (*Breedlove 25804*, DS); G (*Steyermark 50571*, F). 1300-3400 m. (Mexico [Coahuila, Nuevo León, Tamaulipas, San Luis Potosí, Querétaro, Hidalgo, Veracruz, México, Puebla, Guerrero, Oaxaca], Mesoamerica.)


Erect, perennial, gynodioecious herbs, 30-60 cm. Root simple or fasciculate, 2-3 lobed, the lobes 3-14 cm × 3-15 mm, cylindrical to papiform. Stems 1 (3); green or purple-maculate;
glabrous or with scattered hairs, 0.3-0.6 mm. Leaves basal and cauline, the basal leaves usually absent in late flower and fruit, the cauline leaves in 2-3 pairs, usually near the base of the stem, 4.5-18 cm, imparipinnate; blades 3-10.5 × 1.5-4.5 cm, oblanceolate to obovate, glabrous or with scattered hairs along rachis and tufted-ciliate in the leaflet axils; the terminal leaflet larger than the laterals, 12-40 × 9-25 mm, ovate to obovate, the base cuneate, the apex acute to rounded; the margins entire to dentate; lateral leaflets in 1-3 opposite or subequal pairs, 4-20 × 2-12 mm, ovate to oblong, the base cuneate, the apex acute to rounded; the margins entire to irregularly lobed; petioles 1-8 cm; the margins glabrous or ciliate basally, the hairs 0.2-0.5 mm. Inflorescence paniculoid, capitate in early flower, 1.5-4.5 × 1.5-3.5 cm wide, expanding to 5-18 cm in late flower or fruit; terminal branching scorpioid, bearing 2-3 flowers or fruits; glabrous or pubescent to velutinous, the vestiture densest at the nodes, the hairs 0.3-0.6 mm. Bractlets shorter than mature fruits, 2.1-3 × 0.5-1.5 mm, lanceolate to obovate, the base free or connate; apex acuminate to caudate, the margins scarious, glandular-ciliate. Calyx 10 to12-fid, the limbs 3.5-4 mm. Corollas pink or white, infundibular, gibbous, glabrous without, pilose within, the hairs 0.4-0.7 mm; corollas of hermaphrodites 4.3-6.4 mm, the tube 3-4.7 × 0.8-1.5 mm, the lobes 1.3-2.1 × 0.7-1.7 mm, spreading at anthesis, the apices rounded; corollas of female flowers 2.6-2.9 mm, the tube 2-2.2 × 0.7-1.7 mm wide; the lobes 0.6-0.7 × 0.6-0.7 mm, spreading or ascending at anthesis, rounded. Stamens exserted, 3.2-3.7 mm. Style 5.2-5.8 mm. Cypsela 2.5-4 × 1.2-2 mm; ovate; purple-maculate; glabrous to pubescent, 0.2-0.5 mm, the vestiture sometimes restricted to the abaxial side, the abaxial lateral veins parallel to the margin. Flowering Jun-Aug; fruiting Sep. Alpine meadows. Ch (Breedlove 26702, MEXU); G (Steyermark 48303, MO). 3000-3500 m. (Endemic).


Perennial, herbaceous, gynodioecious vines. Roots simple or fasciculate, the segments cylindric to obconic, 10-20 × 1-5 cm; frequently forking. Stems 1-6 from a simple caudex; twining; to 6 m or more; terete or alate at the base, 4-winged along the stem to the second or third leaf node; terete distally; red or magenta at the base, purple-maculate or green distally; lateral branches arising from the lower leaf nodes; glabrous to sparsely pubescent, often more strongly vested at the nodes, 0.2-0.5 mm. Leaves cauline; simple; 4-16 cm; blades 2.5-9.2 × 2-8 cm;
cordate or triangular to ovate; base cordate or truncate; apex acuminate to acute; margin entire to crenate or dentate; surfaces glabrous or with scattered hairs, 0.2-0.5 mm, if only along the veins, abaxially and adaxially; petioles 1-8 cm; glabrous, or pubescent abaxially, the hairs 0.2-0.4 mm. Inflorescence terminal and lateral, paniculoid 10-30 (-38) × 5-19 cm in flower; 15-40 (-65) × 12-23 cm in fruit; lateral branches divaricate or ascending; terminal branching scorpionoid, bearing 6-10 flowers or fruits; glabrous to pubescent, the hairs 0.3-0.6 mm, more densely vested at the nodes. Bractlets 1.3-2.5 × 0.4-0.8 mm, equal to or slightly shorter than the mature fruits, elliptic or lanceolate, the base free, the apex acute to acuminate, the margin entire or scarious, glabrous or ciliate or glandular-ciliate. Calyx 10 to 13-fid; the limbs 3.5-6 mm. Corolla pale green to white; that of hermaphrodites 1.9-2.8 mm; the tube 1.4-2 × 0.7-1 mm, infundibular, strongly gibbous, glabrous, the lobes 0.5-0.8 × 0.3-0.7 mm, triangular or rounded; spreading or reflexed at anthesis; corolla of females 1.2-1.7 mm, the tube 0.8-1.1 × 0.6-1.1 mm, rotate, strongly gibbous, glabrous, the lobes 0.3-0.6 × 0.3-0.6 mm, triangular or rounded, spreading at anthesis. Stamens 0.8-1.1 mm, included or presented at the lip of the tube; Style included in hermaphrodites, exserted in female flowers, 0.9-1.5 mm. Cypsela 1.9-3.5 × 1-2.1 mm, ovate to pyriform; tan or purple-maculate; abaxial surface glabrous; adaxial surface pubescent, the hairs 0.2-0.5 mm abaxial lateral veins parallel to the margin; margins reinforced or alate. Flowering and fruiting Jan-Dec. Chromosome number 2n = 56 (Engel 1976). Forest margins and disturbed sites. Ch (Breedlove 6903, CAS); G (Aguilar 250, F); H (Valerio 1742, F); ES (Calderón 1917,US); N (Moreno 6046, MO); CR (Williams et al. 29010, F); P (Gentry et al. 28540, MO). 500-2600 m. (Mexico [Hidalgo, México, Puebla, Veracruz, Jalisco, Michoacán, Guerrero, Oaxaca], Mesoamerica, Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, Argentina, Cuba, Puerto Rico.)

*Valeriana candolleana* is similar to *V. scandens* in most respects, differing most noticeably in having simple, as opposed to ternate, leaf blades.

### 4. Valeriana chiapensis Barrie

Erect, perennial, gynodioecious herbs, 50-140 cm Root simple or 2-3-lobed; the lobes 2.5-5 × 1-3 cm, napiform. Stems usually 1; green to purple, pubescent, the hairs 0.3-1 mm, the vestiture sometimes restricted to the leaf nodes. Leaves basal and cauline; imparipinnate or with 1-3 reduced, simple basal leaves; the pinnate basal leaves 6-30 cm; blade 1.3-9.5 × 1.5-9 cm, obovate to ovate or widely ovate, the upper surface glabrous or uniformly pubescent, vestiture restricted to the veins below, the hairs 0.5-1 mm; the terminal leaflet larger than the laterals, 17-75 × 15-45 mm, obovate to ovate or widely ovate, the base truncate or cuneate, the apex acute,

Valeriana cacalioides Standl., *Valeriana palmatiloba* F.G. Meyer.

Erect, perennial gynodioecious herbs, 65-150 cm. Root napiform, surmounted by 1 or more stout caudices, 6-10 × 2 cm, sheathed in the dried, shredded remnants of old leaf bases. Stem 1-3 per caudex, green or purple-maculate, terete, pubescent at the nodes only, the hairs 0.1-0.3 mm. Leaves predominantly basal with 1-2 cauline pairs; the basal leaves simple or ternate, 17-46 cm, simple leaves similar to the terminal leaflet of the ternate leaves, the terminal leaflet larger than the laterals, 7-20 × 8-19 cm, ovate to very widely ovate, the base cordate or truncate, the apex acute, the margins crenate, dentate or repand, ciliate, the hairs 0.3-0.5 mm, surfaces glabrous, glandular, or pubescent along the abaxial veins only; lateral leaflets similar to the
terminal leaflet but smaller, 3-12 × 2-12 cm; petioles 10-33 cm; pubescent, the hairs 0.3-0.6 mm. Cauline leaves simple, the blade 6-17 × 4-8 cm, ovate to widely ovate, the base cordate or truncate, the apex acute, the margins dentate or crenate, vestiture as in basal leaves; petiole 2-6 cm, the base connate, pubescent. Inflorescence corymboid, 5-15 cm in flower, 10-20 cm in fruit, the terminal branching scorpioid, bearing 5-7 flowers or fruits, glabrous or sparsely pubescent, the hairs 0.1-0.3 mm. Bractlets shorter than the mature fruits, 1.5-3.6 × 0.6-0.7 mm, lanceolate, the base free, the apex acute to acuminate, the margins scarious with scattered simple or glandular hairs. Calyx 12 to 14-fid, the limbs 3.5-4.5 mm. Corollas white, infundibular, weakly gibbous, glabrous or pubescent at the base without, pilose within, the hairs 0.7-1.2 mm; corolla of hermaphroditic flowers 4.2-7.8 mm, the tube 2.8-5.8 × 1-2.5 mm, the lobes 1.1-2.3 × 0.7-1.5 mm, spreading at anthesis, acute to rounded; corolla of female flowers 2.6-3.1 mm; the tube 1.8-2.1 × 1.4-1.8 mm, the lobes 0.8-1 × 0.6-0.8 mm, spreading at anthesis, rounded. Stamens 2.4-5.2 mm, exserted. Style of hermaphrodites 5-7.2 mm, that of female flowers 3.1-4.5 mm. Cypselas 2.8-3.6 × 1.3-1.8 mm, lanceolate or elliptic; tan, surfaces smooth or granular, pubescent adaxially, the hairs 0.1-0.2 mm; abaxial lateral veins parallel with the margin, the margins revolute. Flowering Apr-Jul, fruiting Jul-Aug. Limestone outcrops in Pinus-Quercus forest zone. Ch (Breedlove 14410, F); G (Steyermark 50966, F). 1300-3200 m. (Endemic.)


Suffrutescent, scandent, dioecious vines, 4-10 m or more. Root unknown. Stems red to brown, terete, pubescent, the hairs 0.1-0.3 mm. Leaves simple; 2.7-11 cm; blades 2-8.5 × 1.2-4.7 cm; elliptic; base cuneate; apex acuminate; margin entire or revolute, pubescent along veins above, the hairs 0.4-0.8 mm, with scattered glands as well as pubescence along veins below; petioles 7-21 mm, base connate, expanded, glabrous. Inflorescence terminal, paniculoid, 10-20 cm in flower and fruit, the lateral branches divate; disposed in 8-10 pairs; terminal branchlets dichotomous or scorpioid, with 2-3 flowers or fruits; pubescent throughout, becoming tomentose at nodes, the hairs 0.2-0.9 mm. Bractlets 0.6-1 × 0.3-0.5 mm, shorter than mature fruits, elliptical to ovate, the base connate, the apex acuminate, the margins scarious, ciliate or glandular-ciliate. Calyx 15 to 19-fid, the limbs 5.5-8.5 mm. Corollas of male flowers 2-2.5 mm; rotate; the tube 1.3-1.4 × 0.8-0.9 mm, the lobes 0.7-0.9 × c. 0.7 mm, rounded; spreading at anthesis; corolla of females 1.3-1.7 mm; rotate; the tube 0.7-0.9 × c. 0.9 mm; the lobes 0.5-0.8 × 0.4-0.5 mm; triangular; spreading at anthesis; pubescent basally without, the hairs 0.1-0.2 mm; ciliate and glandular-ciliate within. Stamens weakly exserted or parallel with lip of the tube; 0.4-0.5 mm.

*Valeriana fistulosa* Briq., *V. langlassei* Briq.

Erect, biennial, gynodioecious herbs, 30-200 cm, extremely variable in size, with delicate, simple-leaved individuals, sympatric with robust, compound-leaved plants. Roots 1-3 × 1-3 cm; globose to pyriform. Stems 1, terete or alate and 4-winged, the wings decurrent from the keel of the petioles; retrorse-pubescent or with scattered hairs, the hairs 0.2-1 mm, the ribs ciliate or glabrous. Leaves cauline, 4-10 pairs; pinnately compound, pinnatifid or simple, 3-70 cm, the rachis commonly keeled; blades 2-50 × 1.5-30 cm; obovate to elliptic; uniformly pubescent on the adaxial surface, the hairs 0.2-0.6 mm, vestiture restricted to the veins abaxially, the margins and keel ciliate; terminal leaflet 20-185 × 4-120 mm; obovate to elliptic, ovate or widely ovate, the base cuneate, the apex acuminate, the margins serrate or dentate; lateral leaflets in 1-5 pairs, 2-175 mm × 1-71 mm, linear to elliptic or ovate, the uppermost pairs occasionally arcuate; the base strongly decurrent; the apex acuminate, the margins entire to serrate; petioles 1-20 cm, the base free; retrorse-ciliate to glabrescent, the hairs 0.2-0.5 mm. Inflorescence paniculoid, 12-100 × 13-60 cm, the branches ascending to divaricate, the terminal branchlets scorpioid, bearing 5-15 flowers or fruits; glabrous or glabrescent throughout. Bractlets 1/3 to 1/2 the length of the fruits; 1-2 × 0.3-0.8 mm, lanceolate, the base free or connate, the apex acute, the margins scarious, glabrous or glandular-ciliate. Calyx 9 to 12-fid; the limbs 3.2-6.5 mm. Corollas white; tubular; gibbous; glabrous without, glabrous or sparsely pubescent within, the hairs 0.1-0.3 mm; corollas of hermaphrodites 1.4-2.4 mm; the tube 1.1-2 × 0.3-0.7 mm, the lobes 0.3-0.6 × 0.3-0.4 mm, triangular; reflexed at anthesis; corollas of females 1.2-1.7 × 0.4-0.8 mm, the lobes, 0.3-0.4 × 0.3-0.4 mm, triangular, spreading at anthesis. Stamens included, 0.3-0.5 mm. Style included or with the stigmas presented at the mouth of the tube; 0.8-1.4 mm. Cypsela 2.2-4.4 × 0.9-3 mm; ovate or ovate-oblong to rhombic; thin and often arcuate in cross-section; tan to reddish-brown; pubescent adaxially, glabrous abaxially, the hairs 0.3-0.5 mm; margins weakly to strongly alate; lateral veins simple and parallel to the midvein, sometimes only the distal half visible. Flowering and fruiting Jun-Dec. Disturbed sites, Pinus-Quercus forests. Ch (Breedlove 11887, MICH); G (Steyermark 51023, F); H (Molina R. 30659, MO); ES (Croat 42257, MO); N (Moreno 24872, MO); CR (Valerio 591, F). 500-2500 m. (Mexico [Durango, Querétaro, México, Distrito Federal,

*Valeriana pumilio* Standl. et L.O. Williams, *V. skutchii* Standl.

Erect, perennial, gynodioecious herbs, 0.2-1.5 m. Root a cylindrical or forking taproot, 1.5-5 cm wide, surmounted by a simple or multiply-branched caudex. Stems 1 per caudex, green to purple or purple-maculate, sparsely pubescent at the nodes, the hairs 0.2-0.5 mm. Leaves basal only or with 1-4 cauline pairs, 5-40 × 5-9 cm; blades obovate to ligulate or spathulate, the base attenuate, the apex acute to rounded, the margins entire to serrulate, ciliate proximally or along entire length, the hairs 0.3-0.6 mm, tufted-ciliate glands often distributed every 2-15 mm along the margin of entire leaves and in the axils of the teeth on serrulate leaves, the surfaces glabrous, sericeous, or with scattered hairs, 0.3-0.6 mm, the midvein commonly carinate and white; apetiolate or broadly petiolate, the petioles 5-12 cm, the base free, the margins ciliate, the hairs 0.2-0.5 mm. Inflorescence paniculoid, 2.5-13 × 2-10 cm in early flower, 40-65 × 15-20 cm in late flower and fruit; branches ascending, terminal branching dichotomous; glabrous to pubescent throughout, the hairs 0.3-0.5 mm. Bractlets 1.5-3.2 × 0.5-1 mm, 1/2 to equal to the length of the fruits, lanceolate, the base free, the apex acute, the margins glandular-ciliate. Calyx 8 to 11-fid, the limbs 3-6 mm. Corollas white to greenish- or yellow-white, often marked with red-purple, the corolla of hermaphrodite flowers 2.1-3.3 mm, infundibular, gibbous, the tube 1-1.8 × 1-1.7 mm, the lobes 1.1-1.5 × 0.8-1.7 mm, rounded to truncate, spreading at anthesis; corolla of female flowers 0.7-1.5 mm, rotate, gibbous, tube 0.5-1 × 0.4-1 mm, the lobes 0.2-0.5 × 0.2-0.4 mm, rounded to triangular. Stamens exserted, 2.3-3.4 mm. Style 1.3-3.5 mm. Cypsela 1.4-3 × 1-1.7 mm; elliptical to ovate; tan or purple-maculate; glabrous; abaxial veins lateral veins parallel to the margin. Flowering Apr-Aug, fruiting Jul-Sep (Costa Rica); flowering and fruiting Jul-Jan (Guatemala and Chiapas). Chromosome number 2n = 32 (Weberling, et al., 1984). *Wet meadows, cloud forests.* Ch: (*Matuda 4638, MEXU*); G: (*Beaman 3045, TEX*); CR: (*Barrie 275, F*); P (*Weston 10182, MO*). 2100-3200 m. (Endemic.)


*Valeriana woodsonii* Standl.
Perennial hermaphroditic herbs, 30-60 cm. Root simple or fasciculate, with up to 10 lobes, the lobes 3-14 cm × 3-15 mm, cylindric to napiform. Stems 1-10 per plant; green or purple-maculate, glabrous or pubescent at the nodes. Leaves basal or with 1-3 cauline pairs, usually near the base of the stem; 3-25 cm, imparipinnate; blades 2-19 × c. 1-5 cm, oblanceolate or obovate; green or often with veins and margins purple; glabrous, glaucous, with or without scattered hairs along the rachis and tufted-ciliate in the leaflet axils; terminal leaflet larger than the laterals, 12-40 × 7-32 mm, ovate to obovate, the base cuneate, the apex acute to rounded, the margins entire to dentate or irregularly lobed, the lobes restricted to the proximal half of the leaflet; lateral leaflets in 1 to 7 opposite or subequal pairs, 4-20 × 2-15 mm, ovate to oblanceolate, the base cuneate, the apex acute to rounded, the margins entire to irregularly lobed; petioles 1-8 cm, the margins glabrous. Inflorescence corymboid; capitate in early flower, 1.5-4.5 cm × 1.5-3.5 cm, expanding to 5-18 cm, the flowers and fruits clustered at the tips of the branches; glabrous to pubescent or velutinous, the hairs 0.3-0.6 mm. Bractlets 1.4-4.5 × 0.5-2 mm, shorter to longer than mature fruits, obovate or ovate, the base free or connate, the apex acuminate to caudate, the margins scarious, glandular-ciliate. Calyx absent. Corollas pink or white, infundibular, gibbous, 4.3-6.4 mm; the tube 3-4.7 × 0.8-1.5 mm, glabrous without, pilose within, the hairs 0.4-0.7 mm; the lobes 1.3-2.5 × 0.8-1.5 mm wide, spreading at anthesis, the apices rounded. Stamens exserted, 2.8-4.2 mm. Style 5.5-7.6 mm. Cypsela 2.8-4.5 × 1.2-2.4 mm, elliptic or ovate; purple-maculate; glabrous; abaxial lateral veins parallel to the midvein, the margins simple. Flowering Jul-Oct, fruiting Sep-Nov (Chiapas and Guatemala; flowering and fruiting Jan-Dec (Costa Rica and Panama). Alpine meadows. Ch (Breedlove 25804, DS); G (Smith 750, F); CR (Burger 5987, F); P (Davidson 1023, MO). 2800-3500 m. (Mexico [Oaxaca], Mesoamerica.)


Valeriana delicata Standl. et Steyerm., V. venezuelana Briq.

Biennial, gynodioecious herbs, 15-75 cm. Roots 1-7 × 1-5 mm, globose or napiform. Stem 1, green or partially to entirely maroon or mahogany, terete, retrorse-pubescent, the hairs 0.1-0.7 mm. Leaves cauline, 4-8 pairs, ternate or imparipinnate, 1.5-13 (19) cm; blade 1-10 (16) × 0.5-8 (13) cm; triangular, ovate or obovate, glabrous or pubescent adaxially, the hairs 0.2-0.5 mm, the vestiture sparser and often restricted to the veins abaxially; the terminal leaflet, 7-50 (80) × 4-30 (64) mm, elliptic, ovate or obovate to widely ovate or widely obovate, the margins dentate to irregularly lobed or cleft, or trifid, the lateral lobes divaricate or ascending and again once or twice cleft or irregularly dentate, or the leaflet intermediate between the two extremes,
the base cuneate, the apex acute; the lateral leaflets in 1-3 pairs, opposite or subequal, 4-50(-80) × 1-25(-40) mm, elliptic to widely ovate, the base cuneate, the apex acute, the margins entire, 3-5 lobed or irregularly dentate; the petiole 2-35(-70) × 1-3 mm, glabrous or ciliate along margins and midrib. Inflorescence paniculoid, 16-44 × 2-18 cm; branches ascending, the terminal branchlets upturned, so that all of the flowers on a branch-pair are presented on the same horizontal plane, and scorpioid, bearing 5-12 flowers or fruits; glabrous or glabrescent throughout, papillose at the nodes. Bractlets 1-1.6 × 0.2-0.4 mm, slightly shorter to slightly longer than the mature fruits, lanceolate to elliptic, the base free, the apex acuminate, the margin entire, scarious. Calyx 6 to 8-fid, the limbs 2-3.5 mm. Corolla white, rotate, gibbous, glabrous without, glabrous or with a few scattered hairs, 0.2-0.5 mm, within; corolla of hermaphrodites 0.9-1.2 mm, the tube 0.6-0.7 × 0.6-0.7 mm; the lobes 0.3-0.5 × 0.3.4 mm, triangular or deltate, spreading at anthesis; corolla of females 0.5-0.6 mm, the tube 0.3-0.4 × 0.3-0.4 mm, the lobes 0.1-0.2 × 0.1-0.2 mm, triangular, ascending at anthesis. Stamens exerted, 0.7-0.9 mm. Style 0.6-0.8 mm. Cypsela 0.8-1.2 × 0.5-0.8 mm, ovate, tan, adaxial surface pubescent, the hairs 0.1-0.3 mm; adaxial vein often reduced or absent; the abaxial lateral veins parallel with the midvein, the margin, or intermediately positioned; the margin simple or slightly reinforced. Flowering and fruiting Aug-Jan. Chromosome number 2n = 64 (Engel, 1976). Disturbed sites in Quercus and conifer forests. Ch (Breedlove 23244, MEXU); G (Molina R. & Molina 27572, F); H (Standley 14677, F); CR (Brenes 538, F); P (Hammel 5624, MO). 1300-3500 m. (Mexico [Querétaro, México, Veracruz, Jalisco, Michoacán, Guererro, Oaxaca], Mesoamerica, Venezuela.)


Valeriana bonariensis Spreg., V. phaseoli A. Braun, V. regnellii Sonder, V. scandens L. var. angustifolia Müll. Arg.

Perennial, herbaceous, gynodioecious vines. Roots simple or fasciculate, the segments cylindric to obconic, 10-20 cm, 1-5 cm; frequently forking. Stems 1-6 from a simple caudex, to 6 m or more, twining, green or brown near the base, terete; lateral branches arising from the lower leaf nodes; glabrous to sparsely pubescent, the hairs 0.2-0.5. mm. Leaves cauline, ternately compound, 4-20 × 2-12 cm, triangular to ovate, margins entire to sinuate or irregularly dentate; glabrous or with scattered hairs, 0.2-0.5 mm, along the veins abaxially and adaxially; the terminal leaflet blade 2.5-11 × 1.4-6.5 cm, ovate, the base cuneate or truncate, the apex acuminate to acute, the petiolule 5-11 mm; lateral leaflets opposite or subequal, the blade 1-6.5 × 0.6-3 cm; ovate or somewhat falcate, the base oblique or cuneate, the apex acute to acuminate, the petiolules 2-5
mm; petioles 1.5-7.5 cm × 1-3 mm; base free; glabrous, or pubescent along the midvein abaxially. Inflorescences paniculoid; with a terminal and numerous lateral inflorescences per stem; 8-22 × 5-17 cm; lateral branches; divaricate or ascending; terminal branching scorioid, bearing 6-13 flowers or fruits; glabrous or sparsely pubescent at the nodes. Bractlets 1.3-2.5 × 0.4-0.8 mm equal to or slightly shorter than the mature fruits, elliptic or lanceolate, the base free or connate; the apex acute to acuminate, the margins entire, glabrous or glandular-ciliate. Calyx 10 to 13-fid; the limbs 3.5-6 mm. Corolla pale green to white; corolla of hermaphrodites 1.3-2.5 mm, the tube 1-2 × 0.6-1 mm; infundibular; strongly gibbous; glabrous within and without; the lobes 0.3-0.6 × 0.3-0.6 mm, triangular; spreading to reflexed at anthesis; corolla of females 1-1.7 mm; the tube 0.7-1.1 × 0.5-1 mm, rotate, strongly gibbous; glabrous within and without, the lobes 0.3-0.6 × 0.3-0.6 mm, triangular; spreading at anthesis. Stamens included or parallel with the lip of the tube, 0.4-0.7 mm. Style included in hermaphrodites, 0.6-1.1 mm, exserted in females, 0.7-1.5 mm. Cypsela 1.6-3.2 × 0.8-2 mm; obovate to pyriform; tan or purple-maculate; abaxial surface glabrous; adaxial surface pubescent, the hairs 0.2-0.5 mm; adaxial lateral veins parallel to the margin, the margins reinforced or alate. Flowering and fruiting Jan-Dec. Chromosome number 2n = 28 (Engel 1976). Disturbed sites and the margins of mesic and wet forests. Ch (Luckow 2575, TEX); B (Bartlett 13033, MICH); G (Kellerman 7357, F); H (Nelson & Clewell 556, MO); N (Moreno 15812, MO); CR (Godfrey 66248, MO); P (Kirkbride & Duke 466, MO). 50-2600 m. (United States [Florida], México [Nuevo León, Tamaulipas, San Luis Potosí, Querétaro, Hidalgo, Veracruz, Oaxaca], Mesoamerica, Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, Paraguay, Argentina, Cuba, Puerto Rico, Hispaniola.)


Valeriana gracilis Benth., V. tenella Killip, V. toluccana DC.

Erect, biennial, gynodioecious herbs, 30-125 (200) cm. Roots globose, c. 1 cm in diam., or 2-3-lobed, 2-6 cm × 1-4 cm wide, the lobes napiform. Stems 1 (2-3) green to red, terete, retrorse-pubescent basally, or with vestiture restricted to the nodes, the hairs 0.3-0.5 mm. Leaves cauline, imparipinnate, in 3-12 pairs, 3-20 cm, blades 2-18 × 1-8 cm, elliptic to obovate, glabrous or pubescent along the rachis only; terminal leaflet equal to or larger than the laterals, 7-80 × 4-50 mm, elliptic, ovate or widely ovate, the base cuneate, the apex acute to acuminate, the margins serrate; lateral leaflets in 1 to 6 opposite or subequal pairs, sessile or petiolulate, the petiolules 1-3 mm, the blades 2-45 × 1-30 mm, elliptic or ovate, the base cuneate, oblique, or weakly decurrent, the apex acute to acuminate, the margins entire or serrate; the petioles 0.5-6 cm × 1-2 mm, entire
or weakly keeled, the base free or connate, the margins entire. Inflorescence paniculoid, conical in bud and early flower, 12-50 × 3-20 cm in late flower and fruit; the branches divaricate, the terminal branching scorioid, bearing 3 to 15 flowers or fruits; glabrous throughout or papilllose at the nodes. Bractlets slightly shorter to longer than the mature fruits, 1-2.3 × 0.3-0.7 mm, lanceolate, ovate or elliptic, the base free, the apex acute to acuminate, the margins scarious, glabrous or glandular-ciliate. Calyx 6 to 11-fid, the limbs 2-4.5 mm. Corollas white to pink, gibbous, glabrous within and without; corollas of hermaphrodites 1.4-2.5 mm, tubular, the tube 1.1-1.8 × 0.4-0.9 mm, the lobes 0.3-0.6 × 0.2-0.4 mm, triangular, reflexed or spreading at anthesis; corollas of female flowers 0.9-1 mm, infundibular, the tube 0.6-0.8 × 0.5-0.7 mm, the lobes 0.2-0.3 × 0.2-0.3 mm, triangular, spreading or ascending at anthesis. Stamens included, 0.3-0.5 mm. Style of hermaphrodites included or weakly exserted, that of females exserted, 0.9-1.6 mm. Cypsela 1-2.2 × 0.5-1.4 mm, ovate or elliptic; tan or purple-maculate, uniformly pubescent or only adaxially, the hairs 0.1-0.4 mm; the abaxial lateral veins parallel with the margin.

Flowering and fruiting, Jan-Dec. Chromosome number 2n = 32 (Engel 1976). Disturbed sites and Meadows. Ch (Breedlove 12419, F); G (Aguilar 1584, F); H (Allen 3903, F); ES (Rohweder 3373, MO); N (Moreno 22746, MO). 1200-3000 m. (United States [Arizona], México [Baja California Sur, Sonora, Sinaloa, Chihuahua, Coahuila, Durango, Guanajuato, San Luis Potosí, Hidalgo, Edo. México, Distrito Federal, Morelos, Puebla, Tlaxcala, Veracruz, Nayarit, Jalisco, Michoacán, Guerrero, Oaxaca], Mesoamerica, Colombia, Venezuela, Ecuador.)


Valeriana ghiesbrechtii Briq.

Suffrutescent, gynodioecious perennials, decumbent and stoloniferous or scandent, clambering over the canopies of shrubs and small trees, the branches to 10 m. Roots fibrous, arising adventitiously from the nodes of decumbent individuals. Stem terete; soft-woody below, grey, gnarled and much-branched, 1-2 cm in diam.; new growth herbaceous, green or purple-maculate; 2-6 mm in diameter; glabrous or with scattered hairs, 0.2-0.4 mm, pubescent to tomentose at the nodes; with short lateral branchlets, 5-20 mm, bearing 2-5 leaf pairs, in the leaf axils along the main branches. Leaves simple, 3-11.5 cm; blades 2.8 × 0.8-3.7 cm; ovate to elliptic; base truncate or cuneate, rarely attenuate; apex acute; margins entire, rarely denticulate; often with white, glandular patches every 5-8 mm; glabrous or ciliate, the hairs 0.3-0.7 mm; surfaces glabrous to pubescent, the hairs 0.2-0.4 mm, the vestiture sometimes restricted to the veins below, or to the midvein abaxially and adaxially; petioles 3-35 × 0.5-2 mm; base connate;
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pubescent or pilose, the hairs 0.2-0.7 mm. Inflorescences borne on the short, lateral branchlets, paniculoid or corymboid, 9.5-19.5 cm in flower and fruit; the branches ascending; terminal branchlets scorpioid, bearing 3-6 flowers or fruits; glabrous or with scattered hairs, becoming pubescent to pilose at the nodes, the hairs 0.2-0.7 mm. Bractlets 1.1-3 × 0.4-0.8 mm, shorter than the mature fruits, lanceolate; the base free, the apex acuminated; the margins scarious and ciliate or glandular-ciliate; surfaces glabrous, or pubescent abaxially. Calyx 8 to 16-fid, the limbs 2.5-4.5 mm. Corollas white to pale pink; infundibular; base gibbous; glabrous or pubescent near the base without, the hairs 0.2-0.4 mm; pilose within the hairs 0.3-0.8 mm; the corollas of hermaphrodites 3-5.5 mm; the tube 2-4 × 1.2-2 mm; the lobes 1-1.5 × 0.8-1.5 mm; apex rounded; ascending or spreading at anthesis; corollas of females 1.8-3 mm; the tube 1-2 × 0.9-1.3 mm; the lobes 0.7-1.3 × 0.5-0.8 mm; spreading at anthesis. Stamens strongly exserted; 2.1-3.1 mm; the filaments 1.8-2.6 mm, attached 1/2-3/4 above the base of the corolla; anthers 0.6-1 mm. Style 3.9-5.4 (9) mm in hermaphrodites; 2.9-4.5 mm in females; stigmas 0.2-0.3 mm. Cypsela tan; 1.9-3- × 0.5-1.3 mm; narrowly oblong to lanceolate; adaxial vein simple, abaxial veins simple, lateral veins parallel to midvein; marginal veins simple; surfaces glabrous. Flowering and fruiting Jan-Dec. Chromosome number n = 16 (Barrie 264, TEX). Pinus-Quercus forest understory. Ch (Breedlove & Thorne 30424, MEXU); G (Molina R. 21260, F). 2400-3100 m. (México [Nuevo León, Tamaulipas, San Luis Potosí, Querétaro, Veracruz], Mesoamerica.)

The Chiapan and Guatemalan populations of *V. subincisa* are often scandent, whereas the populations in the Sierra Madre Oriental are decumbent, trailing along the ground. This species is similar to the scandent, dioecious Mexican species, *V. naidae* Barrie, which has smaller flowers.


Erect, biennial, gynodioecious herbs, 16-65 cm. Roots 1-3 × 1-3 cm, globose or clavate. Stems green, often purplish along the lower half, terete, glabrous. Leaves cauline, simple or compound with 1-2 subequal pairs of reduced, lateral leaflets, both leaf types often present on the same plant, 23-120 × 12-36 mm; glabrous; terminal leaflets and the blades of simple leaves 18-50 × 12-36 mm, elliptical to ovate, base narrowly to broadly cuneate, apex rounded to acute, margin crenulate or entire; lateral leaflets 4-11 × 2-9 mm, round to ovate, the base decurrent along the petiole, the apex acute, the margins entire to crenulate; petioles 4-65 mm, glabrous. Inflorescence corymboid, the branching acrotonic, capitate in early flower, expanding to 10-30 cm in fruit, the fruit borne in remote terminal clusters. Bractlets .6-3.7 × 0.5-0.7 mm, longer than mature fruits, linear to lanceolate, green, often purple distally, the base free or connate, the apex acute, the
margins scarious, glabrous or glandular-ciliate; pubescent basally. Calyx 11 to 15-fid, the limbs 2-3.5 mm. Corolla infundibular, gibbous, glabrous without, pilose within; corollas of hermaphrodite flowers 4-6 mm, the tube 3-4.5 × 0.9-1.7 mm, the lobes 0.9-1.5 × 0.9-1.1 mm, rounded, spreading at anthesis; corollas of female flowers 1-1.6 mm, the tube 0.8-2 × 0.5-0.7 mm, the lobes 0.5-0.9 × 0.5-0.9 mm, spreading at anthesis, rounded. Stamens exserted, 3.4-5.2 mm. Style of hermaphrodites 4.5-6.5 mm, that of female flowers 3.5-4 mm. Cypsela 2.6-3.6 × 2-2.6 mm, ovate to elliptical; tan or purple-maculate, glabrous; lateral veins parallel to the midvein. Flowering and fruiting Jun-Aug. Meadows. Ch (Breedlove 14789, MEXU). 1800-2200 m. (Endemic.)

The Breedlove specimen is cited in the Flora of Guatemala as Valeriana. deltoidea F.G. Meyer, a species of the Sierra Madre Occidental in Mexico that does not occur in Mesoamerica, and which has pinnately compound leaves with 2-4 pairs of well-developed, lateral leaflets.


Valeriana erysimoides Poepp. et Endl.

Erect, biennial, gynodioecious herbs, 15-120 cm. Roots simple, 1-3 × 1-3 cm, globose. Stems 1, rarely 2-3, green to maroon, terete or weakly alate, glabrous or retrorse-pubescent, the hairs 0.2-0.5 mm. Leaves simple, cauline, 2-8 pairs; blades 10-55 × 5-50 mm, ovate to broadly ovate, reniform, rhombic, triangular or deltate, the base cuneate, truncate or cordate, the apex acute or rounded, the margins sinuate to dentate or serrate, ciliate, the hairs 0.2-0.4 mm, the upper surface glabrous or with scattered hairs, the lower surface glabrous or pubescent along the veins; the lowermost leaves petiolate, the uppermost often sessile or amplexicaul, the petioles 1-15 (-28) × 1-3 mm; sometimes carinate, the keel decurrent along stem. Inflorescence paniculoid, 5-25 cm in bud and early flower, 20-65 cm in late flower or fruit; terminal branchlets scorpoid, bearing 6-20 (35) flowers or fruits; glabrous or retrorse-pubescent, often at the nodes only, the hairs 0.2-0.6 mm. Bractlets 1.2-2 × 0.3-1.2 mm, 3/4 to nearly equal the length of the fruit, lanceolate or ovate the base free or connate, the apex acuminate to apiculate, the margins scarious, glabrous or glandular-ciliate. Calyx 8-12-fid, the limbs 2-5 mm. Corolla salverform, gibbous, white, rarely pale pink, glabrous without, pilose within, the hairs 02.-0.4 mm; corollas of hermaphrodites 2.8-6.7 mm; the tube 1.5-5.2 × 0.3-0.7 mm; the lobes 0.9-2.3 mm, spreading at anthesis, rounded; corollas of females 1.7-3.4 mm, the tube 1-2.5 × 0.3-0.5 mm, the lobes 0.7-1.4 × 0.5-0.9 mm , the apices rounded, spreading at anthesis. Stamens exserted, 1.7-3.6 mm. Style 2.5-7.2 mm in hermaphrodites, 1.8-4.5 mm, in female flowers. Cypsela 1.3-2.6 × 1-1.6 mm, ovate, tan or purple-
maculate; pubescent on the adaxial surface only, the hairs 0.2-0.5 mm; the margin doubly reinforced and thicker than the body. Flowering and fruiting Jun-Feb. Chromosome number $n = 16$ (Barrie 1041, TEX). Open, disturbed sites. Ch (Breedlove 14940, F); G (Standley 5921, F); H (Yuncker et al. 5857, F); ES (Rohweder 3622, MO); N (Guzman et al. 1285, TEX); CR (Brenes 4434, NY); P (D’Arcy 10037, MO). 800-3000 m. (México (Sinaloa, Durango, Guanajuato, Hidalgo, Edo. México, Distrito Federal, Puebla, Veracruz, Nayarit, Jalisco, Michoacán, Guerrero, Oaxaca], Mesoamerica, Colombia, Ecuador, Peru.)

The form in Mesoamerica is the typical variety. A second variety, *V. urticifolia* var. *scorpioides* (DC.) Barrie, characterized by rhombic leaf blades, pink flowers and fruits lacking a thickened margin, occurs in the interior of México.

**Bibliography**

