

GUIDE TO THE GENERA OF LIANAS AND CLIMBING PLANTS IN THE NEOTROPICS

CALCEOLARIACEAE

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Essentially a New World family of shrubs or sub-shrubs with 2 genera and about 272 species. The vast majority of the species are subshrubs up to 2 m tall, with annual shoots that arise from a perennial woody base. Climbers in the Neotropics are found only in *Calceolaria*, a genus with 268 recognized species, of which 45 species are consistently reported as vines that reach 2-5(8) m in length. For the most part, these species occur between (1800)2000-3500 m elevation in montane moist scrubs, cloud forests or paramo.

Diagnosics: Scrambling or twining herbaceous to sub-woody vines with opposite simple, serrate or lobed leaves with sunken pinnate venation; corolla commonly yellow with red spots, bilabiate, the upper lip hooded, the lower lip forming a large pouch (saccate). Vegetatively similar to some species of *Mikania* (Asteraceae) but distinguished by the leaves with serrate margins.

General Characters

1. STEMS. Woody with moderate secondary growth, cylindrical (fig. 1a & b), 10-20 m long and up to 10 cm in diam.; cross sections with *regular* vascular anatomy, the medulla angled or trigonous, vascular tissues with moderately conspicuous rays, xylem with conspicuous wide vessels (fig. 1a & b) and often with bands of confluent parenchyma (fig. 1c & d)), the cortex with numerous stone cells; bark smooth, grayish, lenticellate (fig. 1e).
2. EXUDATES. Watery or no visible exudates.

3. CLIMBING MECHANISMS. *Scramblers* or *twiners*; commonly with short plagiotropic branches.
4. LEAVES. Opposite, decussate, simple, pinnately veined, with bi-serrate or lobulate margins, commonly chartaceous to coriaceous; exstipulate; petioles short or absent, glandless, adaxially canaliculate.
5. INFLORESCENCE. Axillary or terminal, decussate cymes with main pseudo-dichotomous main axis or simple cymes.
6. FLOWERS. Bisexual, zygomorphic; calyx of 4 free sepals; corolla bilabiate, the upper lip hooded, lower lip saccate (a large pouch) with a dorsal infolded lobe with glandular oil-producing trichomes; stamens 2 with divaricate thecae (t-shaped), the filament inserted on the corolla; ovary superior or semi-inferior, bilocular, with numerous ovules per locule, the style simple, capitate.
7. FRUIT. A septicidal, 4-valved capsule with numerous seeds.

GENERIC DESCRIPTION

CALCEOLARIA Linnaeus, Vet. Acad. Handl. Stockholm 31: 286. 1770.

Shrubs, sub-shrubs or herbs, mostly with perennial woody base that produce annual shoots 0.5-2 m tall; a few species with elongated twining or scrambling stems, reaching 2-5(8) m in length; branches often plagiotropic, short, decussate and somewhat cylindrical; node often swollen. Leaves opposite, chartaceous or less often alternate or verticillate or coriaceous, the blade double serrate or lobulate, with pinnate venation, extipulate; petioles moderately long, adaxially canaliculate or leaves sessile. Inflorescences axillary or terminal, decussate cymes with main pseudo-dichotomous main axis. Flowers yellow, orange or reddish, bisexual, zygomorphic; calyx of 4 free sepals; corolla bilabiate, the upper lip hooded, lower lip saccate (a large pouch) with a dorsal infolded lobe with glandular oil-producing trichomes; stamens 2 with divaricate thecae (t-shaped), the filament inserted on the corolla; ovary superior or semi-inferior, bilocular, with numerous ovules per locule, the style simple, capitate. Fruit a dry septicidal capsule opening by 4 valves. Seeds minute, wind dispersed.



Figure 1. Branch of *Calceolaria boliviana* (Rusby) Pennell with inflorescence (Acevedo 4626). Photos by P. Acevedo.

Distinctive features: Scrambling or twining vines with distinctive flowers, the lower lip of the corolla modified into a saccate pouch.

Distribution: A genus of about 268 species distributed from Mexico to Chile through the Andes Range. Of these, 45 species are consistently collected as vines that reach 2-5(8) m in length, at elevations between 1800 and 3500 m, in montane moist scrubs, cloud forests and paramos.

RELEVANT LITERATURE

Molau, U. 1988 Scrophulariaceae-Part 1. Calceolarieae. Flora Neotropical Monograph 47: 1-326