

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

CYPERACEAE

By Mark T. Strong (Sep 2020)



Scleria sp., photo by P. Acevedo

A widely distributed family of herbs primarily found in warm temperate to tropical regions worldwide. Climbing herbs in the Cyperaceae are restricted to the genera *Rhynchospora* and *Scleria*. *Rhynchospora* have their center of distribution in the Neotropics, but about 75 taxa occur in the United States, primarily in the warm temperate southeast. A species from Sao Paulo, Brazil is known to reach three or more meters in length, clambering or climbing out from the forest edge into openings over secondary vegetation. The highest diversity of *Scleria* species occur in the Neotropics, but about 20 taxa occur in the southeastern United States. There are 13 out of a total 116 species of *Scleria* in the Neotropics that are climbing herbs. They are predominant in forest openings (often made from tree falls), edges of

gallery forest, and open secondary vegetation along trails and roadsides. Along forest edges, the culms often originate in the forest, climbing high on other vegetation to reach sunlight and flower.

Diagnosics: In the absence of fertile material, climbing Cyperaceae species are easily distinguished from vines in similar families, especially from Poaceae by triangular, scabrous- or coarsely scabrous-margined stems; linear, parallel-veined, often scabrous- or coarsely scabrous-margined leaf blades; and in *Scleria*, a contraligule appendage occurs at the adaxial summit of the sheath.

GENERAL CHARACTERS

1. **STEMS.** Stems are triangular in cross section, finely ribbed, retrorsely barbed or sharply spinulose, and leafy at middle and upper nodes. In *Rhynchospora*, they are shallowly to deeply channeled along one side or margin (at least distally) with channel edges often antrorsely scabrous.
2. **LEAVES.** Leaves are 3-ranked, the blades are retrorsely barbed on margins or in *Scleria*, they can be sharply spinulose. Sheaths are closed at adaxial summit, smooth on margins, or in *Scleria*, often retrorsely barbed. In *Scleria*, there is a triangular or rounded ligular appendage (contraligule) at the adaxial summit of the sheath that can be entire or bear a membranous or scarious apex.
3. **INFLORESCENCES.** Inflorescences are terminal, paniculate, often composed of a series of axillary partial panicles or heads of spikelets from the upper leaf-like bracts.
4. **FLOWERS.** In *Scleria*, flowers are unisexual, borne in separate staminate or pistillate spikelets, the panicle branches generally bearing several staminate spikelets above a solitary pistillate spikelet. In *Rhynchospora*, flowers are bisexual above the (1-) 2-5 empty basal scales of spikelet, the terminal often staminate with a rudimentary ovary or reduced and empty.
5. **FRUITS.** Fruits are achenes. In *Scleria*, achenes have a globose or ovoid to ellipsoid body that has a bony or crustaceous pericarp which becomes white or variegated with purple at maturity and 3-lobed hypogynium at base. In *Rhynchospora*, achenes are biconvex to subcylindrical, often transversely rugulose or sometimes smooth, with (1-) 6 (-20) often barbed or plumose bristles at base and a persistent triangular or sometimes discoid style base at apex.

USES

Although Cyperaceae has numerous useful species, the climbing species in *Scleria* are generally considered a nuisance. Walking through a patch of climbing *Scleria* sp. can produce scratches or cuts on unprotected skin. *Scleria secans* (L.) Urb. has been used to make fine paper in Brazil. Until the single climbing species of *Rhynchospora* has been identified, any uses it has remains unknown.

KEY TO THE GENERA

1. Leaf sheaths truncate to concave at adaxial summit, not appendaged; achenes biconvex to subcylindrical, often transversely rugulose or sometimes smooth, with (1-) 6 (-20) often barbed or plumose bristles at base and a persistent triangular or sometimes discoid style base at apex*Rhynchospora*
1. Leaf sheaths with a contraligule appendage at adaxial summit; achenes with globose or ovoid to ellipsoid, white or variegated with purple, bony or crustaceous pericarp and 3-lobed hypogynium at base*Scleria*

GENERIC DESCRIPTIONS

RHYNCHOSPORA Vahl, Enum. Pl. 2: 229. 1805, (nom. & orth. cons.).



R. exaltata, photo by P. Acevedo

Perennial or sometimes annual herbs, erect to ascending, rarely climbing or scandent. Cross section of stem trigonous or obtusely trigonous, occasionally cylindrical, shallowly to deeply channeled along one side or margin (at least distally) with channel edges often antrorsely scabrous. Leaves spirally arranged, basal or basal and

cauline, rarely strictly cauline; sheaths closed at summit with a truncate or concave sometimes v-shaped orifice, rarely convex, the inner band membranous on basal sheaths, often purple-dotted, splitting with age, often membranous only at orifice on cauline sheaths; ligule absent or sometimes present, often a band of thickened tissue or trichomes. Inflorescence terminal or both terminal and with a series of lateral partial panicles from the upper leaf-like bracts, paniculate, corymbose, racemose or congested and head-like. Flowers bisexual above the (1-) 2-5 empty basal scales of spikelet, the terminal often staminate with a rudimentary ovary or reduced and empty; stamens 1-3 (-12); styles subulate, 2-branched or undivided, often long-exserted beyond apex of subtending scale. Achene are biconvex to subcylindrical, often transversely rugulose or sometimes smooth, with (1-) 6 (-20) often barbed or plumose bristles at base and a persistent triangular or sometimes discoid style base at apex.

Unique features: Culms are shallowly to deeply channeled along one side or margin (at least distally) with channel edges often antrorsely scabrous. Fruits (achenes) are generally biconvex with a rugulose surface, crowned by a well developed, persistent style base.

Distribution: There are 365 species worldwide with greatest diversity in the western hemisphere, particularly warm-temperate North America and the Neotropics; 292 species in the Neotropics but only *R. exaltata* Kunth reported as a scrambling herbaceous vine.

SCLERIA P.J. Bergius, Kongl. Vetensk. Acad. Handl. 26: 142. 1765, (nom. cons.).



S. flagellum-nigrorum, photo by P. Acevedo

Herbs, perennials or sometimes annuals, sometimes climbing or scandent. Cross section of stem trigonous, often harshly scabrous on angles. Leaves spirally arranged, the blades linear-elongate or sometimes lanceolate; sheaths closed at summit, the adaxial apex with a rounded, obtuse or

triangular, herbaceous or membranous-appendaged, contraligule. Inflorescences paniculate or spike-like, terminal, or terminal and a series of axillary partial panicles from the upper leaf-like bracts. Flowers unisexual; stamens 1-3; style 3-branched. Fruit an achene with a globose or ovoid to ellipsoid body (white or variegated with purple at maturity), bony or crustaceous pericarp and 3-lobed hypogynium at base.

Unique features: The adaxial sheath summit has an elongated appendage called a contraligule. Fruits (achenes) are globose or ovoid to ellipsoid, with a bony or crustaceous pericarp that generally matures white or variegated with purple and bear a 3-lobed hypogynium at base.

Distribution: 258 species in warm-temperate to tropical regions worldwide, 115 species in the Neotropics, 13 of which are scrambling herbaceous vines reaching 2 or more m in length.

KEY TO THE CLIMBING SPECIES OF *SCLERIA* IN THE NEOTROPICS

1. Contraligule bearing a scarios appendage at apex (Neotropical) *S. secans*
1. Contraligule acute or rounded, the margin entire or fringed with trichomes2

2. Terminal and 1(-2) upper axillary inflorescence partial panicles strictly bearing staminate spikelets, the lower axillary partial panicles strictly bearing pistillate spikelets (Mexico, Central & South America) *S. bracteata*
2. All inflorescence panicles bearing both staminate and pistillate spikelets3
3. Hypogynium absent (SE and S Brazil) *S. variegata*
3. Hypogynium 3-lobed4
4. Leaf sheaths winged on the angles (Central & South America) *S. vaginata*
4. Leaf sheaths not winged on the angles5
5. Ligule a dense fringe of trichomes at the junction of the leaf sheath and blade6
5. Ligule absent7
6. Inflorescence with spreading partial panicles, the spikelets not appearing fascicled; spikelet scales often tinged purplish black on sides; achene smooth (Neotropical) *S. secans*
6. Inflorescence with contracted partial panicles, the spikelets appearing fascicled at nodes; spikelet scales pale, tinged with brown on sides; achene reticulate-tuberculate (South America) *S. tenacissima*
7. Plants of the West Indies8
7. Plants of Central America and South America9
8. Inflorescences panicles open; leaf blade margins with coarse barbs, 0.2-0.5 mm long; spikelet scales dark brown or purplish brown; achene body ovoid-globose to ovoid, 2.6-3.3 mm long; hypogynium lobes strongly revolute, obtuse, typically appressed to base of achene body (Cuba, Puerto Rico) *S. canescens*
8. Inflorescences panicles contracted; leaf blade margins with fine barbs, less than 0.2 mm long; spikelet scales greenish brown; achene body globose to ovoid, 2.3-2.6 mm long; hypogynium lobes weakly revolute, rounded, often spreading away from base of achene body (Cuba, Hispaniola, Virgin Islands, St. Vincent)..... *S. chlorantha*
9. Mature achene exceeding tip of subtending fertile spikelet scale10
9. Mature achene shorter than tip of subtending fertile spikelet scale12
10. Mature achene body 2.5-3.5 mm wide at base, rounded at apex (SE Mexico, Central and South America) *S. flagellum-nigrorum*
10. Mature achene body 2-2.3 mm wide at base, conical or narrowed to recurved at apex11

11. Mature inflorescence panicles erect and spreading with stiff, ascending to divaricate branches; prophylls of lateral branches eciliate at base; achenes conical (South America)*S. macbrideana*
11. Mature inflorescence panicles pendulous with elongate and flexuous branches; prophylls of lateral branches long-ciliate at base; achene ovoid, narrowly rounded to recurved summit (Costa Rica and South America)*S. skutchii*
12. Mature achene body depressed-globose, truncate at apex, essentially smooth (Brazil) *S. scandens*
12. Mature achene body globose, rounded at apex, with low tubercles bearing tufts of hairs (South America) *S. splitgerberiana*

Note: Species of *Scleria* section *Hymenolytrum*, (*S. cyperina*, *S. cyperinoides*, *S. grandis*, *S. macrogyne*, *S. martii*, *S. ramosa*, *S. stipularis*, and *S. violacea*), many of which have a contraligule bearing a scarious appendage at apex, are not included here. They can sometimes be scandent, but generally are not high climbers.

RELEVANT LITERATURE

- Acevedo-Rdgz., P. & M.T. Strong (eds.). 2005. Monocots and Gymnosperms of Puerto Rico and the Virgin Islands. *Contrib. U.S. Natl. Herb.* 52: 1-416.
- Affonso, R., A. Zanin, N.A. Brummitt, & A.C. Araújo. 2015. Diversity of *Scleria* (Cyperaceae) in Santa Catarina, Brazil. *Rodriguésia* 66(2): 353-367.
- Camelbeke, K. & Goetghebeur, P. 1999. The ligule, a new diagnostic character in *Scleria* (Cyperaceae). *Systematics and Geography of Plants* 68: 73–84. Camelbeke, K. & Goetghebeur, P. 2012.
- Core, E.L. 1936. The American species of *Scleria*. *Brittonia* 2: 1-105. Core, E.L. 1965.
- Core, E.L. 1965. Cyperaceae tribe Sclerieae. In: B. Maguire (ed.). *The Botany of the Guayana Highlands* 6. *Mem. New York Bot. Gard.* 12: 54-69.

Govaerts, R., Koopman, J., Simpson, D., Goetghebeur, P., Wilson, K., Egorova, T. & Bruhl, J. (2020) World Checklist of Cyperaceae. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet: <http://apps.kew.org/wcsp/> (accessed 11 September 2020).

Simpson, D.A. & C.A. Inglis. 2001. Cyperaceae of economic, ethnobotanical and horticultural importance: a checklist. *Kew Bull.* 56(2): 257-360.

Strong, M.T. 1994. Two new species of *Scleria* section *Scleria* (Cyperaceae) from the Neotropics. *Novon* 4: 296-302.

Strong, M.T. 2006. Taxonomy and distribution of *Rhynchospora* (Cyperaceae) in the Guianas, South America. *Contrib. U.S. Natl. Herb.* 53: 1-225.