

## CYPERACEAE

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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 ~75 taxa occur in the United States, primarily in the warm temperate southeast. The highest diversity of *Scleria*, a tropical and warm temperate genus, is represented in the Neotropics by ~115 species, of which, only 12 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. 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. 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. 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. 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 often a 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 of climbing Cyperaceae**

- 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*

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

Perennial or sometimes annual herbs, erect to ascending, rarely scrambling to 2–3 m in length. Stems trigonous or obtusely trigonous, occasionally cylindrical, shallowly to deeply



*Rhynchospora* cf. *exaltata*, photo by P. Acevedo.

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. 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.

**Distinctive 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 ~ 380 species worldwide with more than  $\frac{3}{4}$  of the species in the western hemisphere, particularly warm-temperate North America and the Neotropics; ~315 species are in the Neotropics but only *R. cf. exaltata* Kunth has been collected as a scrambling herbaceous vine in the state of Sao Paulo, Brazil; openings along forest edges and secondary vegetation.

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

Herbs, perennials or sometimes annuals, sometimes scrambling. Stem trigonous, often



*Scleria flagellum-nigrorum*, photo by P. Acevedo.

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 often 3-lobed hypogynium at base.

**Distinctive 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 often bear a 3-lobed hypogynium at base (hypogynium wanting in the climber *Scleria variegata*)

**Distribution:** About 260 species in warm-temperate to tropical regions worldwide, ~ 15 species in the Neotropics, 12 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 scarious appendage at apex (neotropical) ..... *S. secans* (L.) Urb.

1. Contraligule acute or rounded, the margin entire or fringed with trichomes .....2
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 and South America) .....*S. bracteata* Cav.
2. All inflorescence panicles bearing both staminate and pistillate spikelets .....3
3. Hypogynium absent (SE and S Brazil) ..... *S. variegata* (Nees) Steud.
3. Hypogynium 3-lobed .....4
4. Leaf sheaths winged on the angles (Central and South America) .....*S. vaginata* Steud.
4. Leaf sheaths not winged on the angles .....5
5. Ligule a dense fringe of trichomes at the junction of the leaf sheath and blade .....6
5. Ligule absent .....7
6. Inflorescence with spreading partial panicles, the spikelets not appearing fascicled; spikelet scales often tinged purplish black on sides; achene smooth (neotropical) .... *S. secans* (L.) Urb.
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* (Nees) Steud.
7. Plants of the West Indies .....8
7. Plants of Central America and South America .....9
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* Boeckeler

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* Boeckeler
9. Mature achene exceeding tip of subtending fertile spikelet scale .....10
9. Mature achene shorter than tip of subtending fertile spikelet scale .....12
10. Mature achene body 2.5–3.5 mm wide at base, rounded at apex (SE Mexico, Central and South America) .....*S. flagellum-nigrorum* P.J. Bergius
10. Mature achene body 2–2.3 mm wide at base, conical or narrowed to recurved at apex .....11
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* Gross
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* M.T. Strong & J.R. Grant
12. Mature achene body depressed-globose, truncate at apex, essentially smooth (Brazil).....*S. scandens* Core
12. Mature achene body globose, rounded at apex, with low tubercles bearing tufts of hairs (South America).....*S. splitgerberiana* Henrard ex Uittien

**Note:** Species of *Scleria* section Hymenolytrum (*S. cyperina* Kunth, *S. macrogyne* C.B. Clarke, *S. martii* (Nees) Steud., *S. ramosa* C.B. Clarke, *S. robusta* Camelb & Goetgh., *S. stipularis* Nees,

and *S. violacea* Pilg.), 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.