

POACEAE

By Mark T. Strong & P. Acevedo-Rodríguez

A widely distributed family of primarily herbaceous or less often ligneous plants found in arctic, temperate, subtropical, and tropical regions, with ~750 genera and ~12,000 species worldwide. Unarguably, the most important family of plants economically, from which cereals, breads, sugar, forage and other products are produced. There are 18 genera treated herein that have species considered climbing or vining plants for a total of 120 species. Fourteen of these genera represent bamboos, 11 in the tribe Bambuseae (woody bamboos) and three in the tribe Olyreae (herbaceous bamboos).

Diagnosics: In the absence of fertile material, climbing Poaceae species are easily distinguished from vines in similar families, especially from Cyperaceae, by terete, nodose, often hollow stem nodes; tubular sheaths that have free margins and bear a ligule at the adaxial junction of sheath and leaf blade; and primarily two-ranked leaves.

General Characters

1. **STEMS.** Stems are cylindrical in cross section, nodose, hollow or pithy, smooth, scabrous, or with thorns in *Guadua*. Some *Chusquea* spp. have a geniculate, arachnoid branching pattern.
2. **LEAVES.** Leaves are alternate, distichous, rarely spirally arranged, estipulate, with the petiole modified into a sheath. Sheaths bearing an inner membranous or ciliate ligule and sometimes outer ligule at junction of sheath and blade. Leaf blades are flat to inrolled, linear or less often ovate, parallel-veined, sometimes pseudo-petiolate at base.
3. **CLIMBING MECHANISMS.** Climbing Poaceae are scramblers that climb over surrounding plants with branches hanging down. It has been suggested that at culm nodes, a well-developed promontory (a swelling beneath the bud where branching takes place), along with a

persistent, rough, and thickened girdle, may be an adaptation for the climbing habit among neotropical bamboos (Soderstrom and Londoño 1988). Other characteristics aiding climbing bamboos are geniculate (angled) branches, strongly scabrous culm leaves, and some *Chusquea* spp. and *Guadua* have developed thorns modified from culm branches which are often hooked. Of the remainder of genera treated herein, *Ichnanthus* and *Lasiacis* are often mistaken for climbing bamboos because of similar habit, the culms of *Isachne* spp. can elongate to 6 m, clambering and climbing upwards over secondary vegetation, and *Melica sarmentosa* is a species that climbs by means of its tendril-like filiform leaf tips.

4. INFLORESCENCES. Inflorescences terminal or axillary racemes or panicles, open to contracted, bearing reduced partial inflorescences (spikelets) that produce 1-several small inconspicuous florets. Spikelets consist of a rachilla bearing two sterile bracts at base (glumes), the rachilla above the glumes bearing florets which consist of a subtending bract (lemma) and the first appendage of the floral axis (palea), these enclosing a reduced flower.
5. FLOWERS. Flower bisexual or unisexual, the perianth represented by 2–3 minute fleshy or scale-like tepals (lodicules). Stamens generally (1–) 3–6; ovary unilocular, uniovulate; styles 2; stigmas (1–) 2–3, hispid to plumose.
6. FRUITS. Fruit is a dry or sometimes fleshy caryopsis with adherent pericarp, rarely an achene.

USES

In the Neotropics, woody bamboo culms and leaves, particularly of *Guadua* spp., are used for house and building construction, fencing, crafting musical instruments, and arts and crafts, e.g., basketry, furniture, screens, and fans. Medicinal properties of roots, shoots, and water in culms is used to treat a variety of ailments. Neotropical bamboos are not used as a primary food source but more for culinary purposes. Fruits and young shoots can be cooked and eaten,

and water stored in the hollow culms can provide potable water for travelers. Dried culms and leaves are also used for fuel and the bulky network of rhizomes produced in shallow soil layers can aid in the control of erosion on agricultural lands. The herbaceous bamboos are used mostly for medicinal and ceremonial purposes but not to the extent of their woody relatives. The remaining genera treated, *Ichnanthus*, *Isachne*, *Lasiacis*, and *Melica* are of little or no economic importance.

Key to the genera of climbing Poaceae

- 1. Culms woody; (1–)2–30 m long; leaves dimorphic, the culm leaves different from those of the branches which bear the foliage leaves; branches often short, whorled in the area of the nodes; summit of leaf sheath often bearing oral setae2
- 1. Culms herbaceous; leaves monomorphic, those of the culm similar to those of the branches; apex of the leaf sheath lacking setaceous appendages; branches short or elongate13
- 2. Branches armed with spines or thorns; culms with a band of short white hairs above and below the nodes *Guadua*
- 2. Branches without spines or thorns; culms without bands of short white hairs above and below the nodes or present only below the nodes3
- 3. Culms solid or essentially so.....4
- 3. Culms hollow7
- 4. Foliage leaves without oral setae at sheath summit; often in montane habitats above 1,500 m*Chusquea*
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11. Culm leaf sheaths with inconspicuous oral setae, or if conspicuous, then spreading and slightly sinuous12
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12. Mid-culm nodes bearing a single, divergent branch; synflorescence racemose, paniculate or reduced to a single spikelet *Colantheia*
13. Monoecious perennials; spikelets unisexual, the staminate and pistillate spikelets in the same inflorescence (herbaceous bamboos)14

13. Hermaphroditic perennials or annuals; spikelets with at least one bisexual floret16
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14. Glumes and floret disarticulating from the rachis as a unit; thickened internodes present
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15. Lemma and/or palea of pistillate florets foveolate (with small pits) only at apex...*Parodiolyra*
15. Lemma and palea of pistillate florets entirely foveolate *Taquara*
16. Spikelets laterally compressed, cuneate, divergent or nodding at apex of elongate erect
pedicels which parallel axis of rachis; glumes lanceolate, widely spreading, with broad
scarious margins..... *Melica*
16. Spikelets biconvex, globose or subglobose, erect at apex of ascending pedicels; glumes ovate
to broadly ovate, not widely spreading, scarious or essentially so on margins17
17. Spikelets set obliquely on pedicels, black at maturity; fertile lemma and palea wooly in
shallow excavations at apex..... *Lasiacis*
17. Spikelets set square on pedicels, green at maturity, the upper floret pale or stramineous;
fertile lemma and palea pubescent or glabrous but not wooly at apex18
18. Spikelets biconvex, the lower glume dorsally rounded; upper lemma without minute scars or
lanceolate appendages at base *Isachne*
18. Spikelets globose or subglobose, the lower glume keeled, upper lemma with minute, paired
scars or lanceolate appendages at base *Ichnanthus*

ALVIMIA C.E. Calderón ex Soderstrom & Londoño, Amer. J. Bot. 75: 833. 1988.

Rhizomatous perennials; rhizome pachymorph. Culms hollow and thin-walled, slender,



Alvimia sp., photo by R.P. Oliveira (UFBA).

climbing and often hanging over secondary vegetation, *A. auriculata* Soderstr. & Londoño reaching 20–25 m in length; nodes with a promontory just above the nodal line, the mid-culm nodes with 2–many divergent branches. Leaves dimorphic, those of the culm different from those of the branches; culm leaves leathery, the blades erect,

strongly nerved, continuous with the summit of the sheath; foliage leaves with short pseudopetioles, fimbriate, the blades linear to broadly lanceolate. Synflorescences paniculate with several to many pseudospikelets, these extremely elongate and slender, lax, subtended by 1–several small bracts, with numerous fertile florets and a terminal sterile bristle or rudimentary floret; florets membranous, elliptic to lanceolate, slightly inflated; lemma apiculate, somewhat equaling length of palea; stamens 2(–3); stigmas 2, plumose. Fruit a fleshy, olive-sized, caryopsis, the rachis internodes disarticulating with the lemma, palea, and caryopsis as a unit.

Distinctive features: The fruit is an olive-sized, fleshy caryopsis and the rachis internodes disarticulate with the lemma, palea, and caryopsis falling as a unit.

Distribution: A woody bamboo genus of three species endemic to coastal white sand forests (restinga) in Bahia, Brazil; 40–100 m.

ARTHROSTYLIDIUM Ruprecht, Mém. Acad. Imp. Sci. Saint-Petersbourg, sér. 6, Sci. Math.,
Seconde Pt. Sci. Nat. 3(2): 117. 1839.

Rhizomatous perennials with pachymorph and sympodial rhizomes. Culms erect initially,



Arthrostylidium sarmentosum, photo by P. Acevedo.

becoming scandent to clambering, cylindrical, lignified, hollow, elongate, mid-culm nodes with one main branch per node borne from a promontory. Leaves dimorphic, those of the culm different from those of the branches; culm leaves erect, with inconspicuous to prominent oral setae, the blades often confluent with summit of the sheath; foliage leaves with internal and external ligules; sheaths with oral setae at summit, the abaxial surface pale green, with a narrow darker green stripe along one margin. Synflorescences of spicate racemes, lacking

bracts, the rachis straight or flexuous. Spikelets subsessile, with 1 or several fertile florets, deciduous along with the rachilla when mature; glumes 1–3, several nerved, about as half as long as the length of the spikelet; lemma and palea somewhat equal in length, lanceolate to ovate, acute or sometimes awned; stamens 3; stigmas 2. Fruit a dry caryopsis with adherent pericarp.

Distinctive features: Abaxial surface of foliage leaf blade pale green, with a narrow darker green stripe along one margin.

Distribution: A woody bamboo genus of 23 species, 20 of which are climbers; distributed from southern Mexico, Central America, South America south to Bolivia, and in the Antilles. Grows in a variety of habitats; 0–3,700 m.

ATHROOSTACHYS Bentham in G. Bentham & J.D. Hooker, Gen. Pl. 3: 1208. 1883.

Rhizomatous perennials; rhizome pachymorph and short-necked. Culms climbing,



Athroostachys capitata, photo by P. Acevedo.

scrambling, 3–8 m long with hollow, thick-walled, terete internodes; branch complement with 1–3 main branches, mid-culm nodes with well-developed promontories which bear a single bud, the young

internodes with tomentose-

velvety trichomes. Leaves dimorphic, those of the culm different from those of the branches; culm leaf blades linear to narrowly lanceolate, short-petiolate at base at junction of sheath and blade, hirtellous-hispid on girdle of culm leaves and nodal line of foliage leaves, becoming reflexed; foliage leaves lanceolate-oblong, with long oral setae at summit of sheath; sheaths ciliate on margins, ligule membranous, eciliate. Synflorescences capitate; spikelets short-stalked, with 2 subequal glumes, the rachis elongating, terminating in a small rudimentary floret; fertile florets one; glumes ovate with acute apex, 7-nerved, awned; lemma ovate, 7-nerved, pubescent, acuminate at apex, awnless; palea 2-nerved, ciliate on keels; anthers 3; stigmas 2. Fruit not seen.

Distinctive features: The inflorescence, termed a “synflorescence” in bamboo taxonomy, is capitate.

Distribution: A woody bamboo genus of two species endemic to coastal white sand forests (restinga) of Brazil; 30–270 m.

ATRACTANTHA McClure, *Smithsonian Contr. Bot.* 9: 42. 1973.

Rhizomatous perennials; rhizome pachymorph and short-necked. Culms scandent, clambering over secondary vegetation, slender, solid or occasionally hollow, mid-culm nodes



with a single branch borne on a promontory, (2–)3(–5) main branches which re-branch to form many smaller branchlets. Leaves dimorphic, those of the culm different from those of the branches; culm leaf blades erect, linear to narrowly lanceolate; foliage leaf blades linear to lanceolate-ovate; sheaths with a thickened flange like girdle, sometimes strongly to slightly auricled on the basal margin, with oral setae at summit, broader than the pseudopetiolate blade, both inner and outer ligules present. Synflorescences racemose or capitate, the

Atractantha aureolanata, photo by P. Lage.

spikelet florets in fan-shaped, capitate, or scorpioid clusters; florets spindle-like with pungent lemmas, only one fertile; lemma 7–11-nerved, mucronate to short-awned; stamens 3; stigmas 2.

Fruit a dry caryopsis.

Distinctive features: florets very slender and spindle-like, the lemmas sharply pointed.

Distribution: A South American, small, woody bamboo genus of five species, with only the Brazilian species *A. aureolanata* Judz. reported as a climber; found in the seasonally semi-deciduous and wet forests of the Atlantic coast.

AULONEMIA Goudot, Ann. Sci. Nat., Bot., sér. 3, 5: 75. 1846.

Rhizomatous perennials; rhizome pachymorph. Culms erect or scrambling, hollow, with elongate internodes or alternating with sets of 2–4 short internodes, spreading and sinuous; mid-



Aulonemia soderstromii, photo by P. Lage.

culm nodes with a single bud and strongly divergent branch and sometimes several lateral branches. Leaves dimorphic, those of the culm different from those of the branches; culm leaves lacking a sheath girdle, the blades pseudopetiolate above sheath summit; sheaths of foliage leaves purple spotted, fimbriate on upper margins, the summit with elongate oral setae, both inner and outer ligules present; foliage leaf blades often ovate or linear to lanceolate, sometimes broadly rounded or cordate at base, often reflexed, minutely but strongly tessellate on the undersurface.

Synflorescence terminal, paniculate, with several to many spikelets; spikelets with several fertile and sterile florets above the basal two glumes, these unequal, the lowermost one 1–3-nerved, conspicuously shorter than 5–7-nerved upper one; fertile lemmas 7–9-nerved, lanceolate to ovate, obtuse, mucronate, or aristate; stamens 3; stigmas 2. Fruit a dry caryopsis.

Distinctive features: The internodes of the culm are elongate and alternate with sets of 2–4 short internodes and foliage leaf blades are strongly tessellate abaxially.

Distribution: A neotropical woody bamboo genus of 47 species, 13 of which are known to be climbers, these found in Colombia and Brazil; in wet, usually montane forests and paramo.

Andean species typically occur at 2,000–3,600 m elevation while Brazilian taxa from sea level to 2,000 m.

CHUSQUEA Kunth, Syn. Pl. Aequin. 1: 254. 1822.

Rhizomatous perennials; rhizome pachymorph or sometimes amphimorph or leptomorph.



Chusquea scandens, photo by P. Acevedo.

Culms lignified, solid or occasionally hollow, erect or more commonly scandent or clambering and hanging, 1–18 m long, cylindrical, 0.2–6 cm diam., with numerous branches per node, promontory weakly to moderately well developed. Leaves dimorphic, those of the culm different from those of the branches; culm leaves erect, sometimes reflexed; sheaths papery; girdle essentially absent to well-developed; foliaceous leaves with internal and external ligules; sheaths lacking setose appendages, sometimes with small tufts of hair at apex; auricles absent; leaf blades pseudopetiolate, needlelike to well-developed,

tapering at base, abaxially green or waxy, lacking a marginal green stripe, tessellate or not,

adaxially smooth and etessellate. Synflorescences terminal, of dense to open panicles or less frequently racemes or capitate. Spikelets lanceolate or ovate, 5–20 mm long, with only one fertile floret; glumes 4, the lower two often scale-like, sterile; distal flower fertile; lemma apiculate to short-awned; palea bicarinate; stamens 3; stigmas 2. Fruit a dry caryopsis with adherent pericarp.

Distinctive features: The foliage leaves lack oral setae and spikelets only have one fertile floret.

Distribution: A neotropical woody bamboo genus of 190 species, 39 of which have been reported as climbers, these distributed in Panama, Colombia, Ecuador, Brazil and a single disjunct species in the Greater Antilles. Primarily of montane habitats; 1,500–4,000 m.

COLANTHELIA McClure & E.W. Smith, *Smithsonian Contr. Bot.* 9: 77. 1973.

Rhizomatous perennials; rhizome short, pachymorph. Culms erect to high climbing,



Figure 29. *Colantheia cf. kinoshitae*. A. Vegetative branches. B. Fimbriae on auricles. Photos by P. Lage.

delicate and weak, hollow, promontory poorly developed or absent, mid-culm nodes bearing a single, divergent branch.

Leaves dimorphic, those of the culm different from those of the branches; culm leaves with a prominent girdle, the blades pseudopetiolate, triangular,

becoming reflexed; foliage leaves

short-fimbriate, sometimes on auricles, the blades small, narrowly to broadly lanceolate.

Synflorescences terminal, small and sometimes reduced to a single spikelet, racemose or paniculate, with few to many-flowered spikelets; spikelets slender; glumes 2–3, unequal, few-nerved; lemmas of fertile florets many-nerved, lanceolate to ovate, obtuse, mucronate, or aristate; rudimentary florets one to several; stamens 3; stigmas 2. Fruit a dry caryopsis with adherent pericarp.

Distinctive features: The culms are very slender and delicate with promontories absent, or poorly developed and the mid culm nodes bear a single, divergent branch.

Distribution: A South American woody bamboo genus of 11 species, two of which (*C. burchellii* (Munro) McClure, and *C. kinoshitae* Santos-Gonç. et al.) are reported as climbers in the neotropical area of SE Brazil, in semi-deciduous and wet forests; 0–1,300 m, rarely at higher elevations.

ELYTROSTACHYS McClure, J. Washington Acad. Sci. 32: 173. 1942.

Rhizomatous perennials; rhizome short, pachymorph. Culms erect to high climbing,



Elytrostachys sp., photo by Teresa Espinoza.

hollow, promontory weakly developed or absent, mid-culm nodes bearing a single, larger branch and a smaller lateral branch on each side. Leaves dimorphic, those of the culm different from those of the branches; culm leaf sheaths with long, straight, usually erect oral setae at apex, the blades small, narrow, attenuate,

strongly reflexed; foliage leaves short-fimbriate, sometimes on auricles, the blades lanceolate. Synflorescences lateral with short branches and sometimes appearing capitate; pseudo-spikelets few, composed of two glume-like bracts, and above these, 1–2 fertile florets; lemmas of fertile florets many-nerved, lanceolate to ovate, obtuse, mucronate, or aristate; rudimentary florets one to several; stamens 6; stigmas 2, hispid. Fruit a dry caryopsis with adherent pericarp.

Distinctive features: The sheaths of the culm leaves have elongated, straight, usually erect oral setae at apex and synflorescences are borne on short-branched lateral shoots, these appearing as capitate clusters at the nodes of the culm.

Distribution: A small, woody climbing bamboo genus of two species occurring from Guatemala to Colombia and northwestern Venezuela in wet to seasonally dry forests; 0–800 (1,500) m.

GUADUA Kunth, J. Phys. Chem. Hist. Nat. Arts 95: 150. 1822.

Rhizomatous clump-forming perennials. Rhizome pachymorph or if amphimorph, then



culms solid. Culms erect or climbing, hollow or solid, with band of short white hairs present both above and below the nodes, branches armed with sharp thorns, rarely smooth, mid-culm nodes with a single large branch, rarely producing smaller branchlets. Leaves dimorphic, those of the culm different from those of the branches; culm leaf sheaths contiguous with blade or nearly so, leaf blades triangular, with auricles and/or oral setae present or absent; foliage leaf blades linear to lanceolate-ovate, pseudo-petiolate.

Guadua tagoara, photo by P. Acevedo.

Synflorescence terminal, consisting of several to many-flowered pseudo-spikelets; pseudo-spikelets often pedicellate, generally comprising a single bract, prophyll, and several gemmiparous bracts at base, 1–several glumes above these, several fertile florets, and 1 rudimentary floret; florets lanceolate to ovate; lemmas many nerved, apiculate; paleas with two inconspicuous to prominently winged keels; stamens (3–) 6; ovary glabrous to pubescent; stigmas 3, plumose. Fruit a dry caryopsis, rarely fleshy.

Distinctive features: The branches are armed with spines or thorns and the culms have bands of short white hairs above and below the nodes.

Distribution: A woody bamboo genus of 33 species widespread in the Neotropics from Mexico, Central America, and South America. However, only the Brazilian species *G. ciliata* Londoño & Davidse and *G. tagoara* (Nees) Kunth are known to be climbers. Found in low to middle elevations in wet to humid forests, gallery forests, varzea and igapó forests.

ICHNANTHUS P. Beauvois, Ess. Agrostogr. 56. 1812.

Annual or perennial, bamboo-like herbs. Culms straggling, rambling or climbing. Leaves



Ichnanthus bambusiflorus, photo by Christian da Silva.

well-developed; sheaths bearing a membranous ligule at adaxial junction of sheath and blade; blades ovate to lanceolate, asymmetrical at base, often cross veined. Inflorescence terminal or sometimes axillary, paniculate; spikelets laterally compressed to

terete, elliptic, ovate, or lanceolate, acute to attenuate, green at maturity; glumes 2, the lowermost one $\frac{1}{2}$ to as long as spikelet, several-nerved, keeled, separated from the upper one by a distinct internode, the upper one 5–7-nerved; florets 2, the lowermost one sterile or staminate, the upper one fertile, pale to stramineous; lemmas elliptic to lanceolate, indurate, involute, glabrous or rarely pubescent, the upper one with minute, paired scars or lanceolate appendages at basal margins; stamens 3; stigmas 2. Fruit a caryopsis with adherent pericarp.

Distinctive features: The upper lemma of the floret has minute, paired scars or lanceolate appendages at basal margins.

Distribution: A primarily neotropical genus of 30 species with one species occurring in the tropics of Africa, Asia, Malesia, and Australia. Only *I. bambusiflorus* (Trin.) Döll from central and eastern Brazil is known to be a climber. Occurring along forest edges, stream banks, savanna, dry thickets, and cultivated areas; 0–2,200 m.

ISACHNE R. Br., Prodr. Fl. Nov. Holland.: 196. 1810.

Annuals or stoloniferous perennials. Culms erect or scandent. Leaves primarily cauline;



Isachne arundinacea, photo by Canek Ledesma.

sheaths bearing a membranous, ciliate or eciliate ligule or fringe of hairs at adaxial junction of sheath and blade; blades linear to linear-lanceolate or ovate, often cross veined.

Inflorescence an open terminal or sometimes axillary panicle; spikelets biconvex, 2-flowered; glumes 2, the uppermost one as long as spikelet, many-nerved, the lower one shorter and several-nerved; florets 2, the lower staminate or bisexual, the upper pistillate or bisexual, pale to stramineous, disarticulating above the glumes; internodes between glumes and lemmas evident; lower fertile lemmas chartaceous to indurate, elliptic to oblong-elliptic or ovate, involute, glabrous or pubescent; palea well-developed, 2-keeled; stamens 2 or 3; stigmas 2. Fruit a caryopsis with adherent pericarp.

Distinctive features: There is no articulation at the pedicel apex below the glumes, thus the flowers (florets) disarticulate above the glumes.

Distribution: A pantropical genus of 105 species with *I. angustifolia* Nash, *I. arundinacea* (Sw.) Griseb., *I. disperma* (Lam.) Döll., *I. ligulata* Swallen, *I. polygonoides* (Lam.) Döll., *I. pubescens* Swallen, and *I. rigens* (Sw.) Trin. reported as climbing or scrambling herbs in the Neotropics.

Occurring in swamps, marshes, stream and pond margins, seasonally flooded savanna, mountain and tepui summits; 0–2,500 m.

LASIACIS (Grisebach) Hitchcock, Contr. U.S. Natl. Herb. 15: 16. 1910.

Culms cylindrical, lignified and erect or elongate, arching or climbing, freely branched.



Lasiacis divaricata, photo from L. Levy Native Pl. Preserve website.

Leaves monomorphic; sheaths rounded, smooth, lacking setaceous appendages; ligules membranaceous; blades linear to ovate, asymmetrical at base. Inflorescence and open to contracted panicle, the primary branches divaricate, the rachis with a spikelet on the distal portion;

spikelets 2(–3) flowered, adaxial, cylindrical or globose, obovate or elliptic, obliquely set on pedicel, disarticulating below glumes; glumes and sterile lemmas abruptly apiculate, turning shiny black at maturity, wooly at apex; glumes 2, the lowermost one shorter than spikelet, 5–13-nerved, saccate at base, with overlapping margins; upper glume and sterile lemma 7–15-veined; fertile lemma broadly elliptic to obovate, obtuse, indurate, with inrolled margins, dark brown at maturity; palea gibbous dorsally, concave ventrally, indurate, with lobed margins; stamens 3; styles 2, separate at base. Fruit a plano-convex caryopsis.

Distinctive features: The spikelets are obliquely set on pedicel and turn black at maturity and the apex of the fertile lemma and palea are wooly in shallow excavations.

Distribution: A primarily neotropical genus of 15 species, with four species reported as scrambling herbs. These occurring from Mexico to northern South America, Brazil and the West Indies; in forest margins and openings, secondary vegetation, and roadsides; 0–2,000 m.

MELICA Linnaeus, Sp. Pl. 66. 1753 (nom. cons.).

Rhizomatous perennial herbs; rhizomes short or slender. Culms erect or ascending, in one



Melica sarmentosa, image from Earth.com.

species, climbing by
tendrill-like filiform leaf
tips, profusely branching
and bending, elongating to
4 m. Leaves soft, primarily
cauline; sheaths with fused
margins, bearing a
membranous, ciliate ligule
at adaxial junction of

sheath and blade; blades filiform or linear to linear-lanceolate, with or without cross veins.

Inflorescence a spreading or narrow raceme-like panicle; spikelets laterally compressed, cuneate, divergent to reflexed at end of pedicels, with 1–3 lower fertile lemmas and 2–several distal sterile ones that convolute together into a club-shaped mass; glumes 2, large and unequal, papery, 3–5-nerved, with broad scarious margins, widely spreading at maturity; lemmas firm, convex, 7–13-nerved, with scarious margins, awnless or awned below the bifid apex; palea shorter than lemmas, the nerves nearly marginal; stamens 3; stigmas 2. Fruit a caryopsis with adherent pericarp.

Distinctive features: The distal sterile lemmas of the spikelet are convolute together and form a club-shaped mass.

Distribution: A genus of 90 species wide ranging in temperate and subtropical regions worldwide, excluding Australia. There is a single climbing species, *Melica sarmentosa* Nees, which occurs from Bolivia to northern Argentina and southeastern and southern Brazil in forest margins and openings, secondary vegetation, riparian forest, riverbanks, and roadsides; 0–1,000 m.

MEROSTACHYS Sprengel, Syst. Veg. 1: 132, 249. 1824.

Rhizomatous perennials; rhizome pachymorph. Culms hollow, rarely solid, erect basally,



Merostachys sp., photo by P. Lage.

distally climbing into trees, the branches often hanging down, mid-culm nodes with a single bud, the branches numerous, in fan-shaped or triangular clusters. Leaves dimorphic, those of the culm different from those of the

branches; culm leaves pseudo-

petiolate, the leaf blades constricted at base, narrower than sheath summit, often reflexed; foliage leaves in complements; sheaths with inner and outer ligules and oral setae; leaf blades lanceolate to narrowly so, pseudo-petiolate. Synflorescences terminating leafy branches, racemose, the spikelets crowded, densely 1-sided; glumes 2, unequal, shorter than spikelet; fertile floret 1, rarely 2 or more, subinflated, the rachis prolonged beyond florets as a minute bristle or

rudimentary floret; lemmas lanceolate to ovate, acute, many-nerved, clasping the short palea at base; palea strongly 2-keeled; stamens 3; stigmas 2, hispid to sub-plumose. Fruit an achene-like caryopsis, the pericarp free.

Distinctive features: The culm leaves are reflexed and constricted at base and the synflorescence is racemose with crowded spikelets that are 1-sided and appear comb-like.

Distribution: A woody bamboo genus of 53 species, with 12 Brazilian species reported as climbers. These occurring along the Atlantic coastal forest from Bahia to Rio Grande do Sul in semi-deciduous or wet forests; 0–1,500 m.

OLYRA Linnaeus, Syst. Nat. ed. 10, 2: 1261. 1759.

Monoecious perennial herbs, caespitose, rhizome short or absent. Culms erect, creeping, or



Olyra sp., photo by P. Acevedo.

climbing. Leaves with well-developed auricles; ligule membranaceous, ciliate or eciliate; blades broad, lanceolate or ovate. Synflorescences paniculate, solitary or numerous at the upper nodes of the stem, the pistillate spikelets terminal, staminate ones below; spikelets with a single flower; pistillate spikelets usually with a claviform pedicel, separating as a unit or the florets separating above the glumes, the glumes acuminate or aristate, membranaceous, pluriveined, subequal, longer than the flower; florets lanceolate or ovate, the lemma indurate, smooth or pitted, whitish, maturing mottled with brown, persistent; staminate

spikelets smaller than the pistillate ones, linear or lanceolate, hyaline, deciduous, the glumes usually absent; stamens 3; stigmas 2, plumose. Fruit a caryopsis with adherent pericarp, the hilum extending the entire length of caryopsis.

Distinctive features: The glumes of the spikelet are deciduous, disarticulating separately from the floret and there are no thickened internodes between the glumes and filiform pedicels. The caryopsis has a hilum that extends its entire length.

Distribution: An herbaceous bamboo genus of 15 species, two of which are considered climbers, these distributed from Mexico to northern South America and the West Indies. In a variety of moist forest habitats from sea level to rarely above 1,000 m.

PARODIOLYRA Soderstrom & Zuloaga, *Smithsonian Contr. Bot.* 69: 64. 1989.

Monoecious scrambling perennials with short rhizome. Culms weak, scandent,



Parodiolyra ramosissima, photo by A. Popovkin.

scrambling, branching profusely, sometimes rooting from the middle and upper nodes, internodes terete. Leaves with a short petiole-like extension; sheath auricles absent; ligule

membranous, sometimes ciliolate; leaf blades linear-lanceolate to ovate, acuminate, apiculate at apex, truncate at base, firm to somewhat leathery, often asymmetrical. Synflorescence of lax and diffuse panicles from the uppermost nodes, proximal branches with staminate spikelets, distal branches with both proximal staminate and distal pistillate spikelets or entirely of pistillate spikelets; staminate spikelets shorter than pistillate, lanceoloid, early deciduous; pistillate spikelets with filiform peduncle, ellipsoid, glabrous, turning black at maturity, the glumes and floret disarticulating from the rachis as a unit; glumes 2, subequal, with a pulvinate internode, several-nerved, acute to acuminate, equaling length of spikelet; florets stipitate, indurate, acute to obtuse; lemma 5- to 7-nerved, obtuse or acute, apiculate; palea membranous, not involute, 2-veined without keels; stamens 3; stigmas 2. Fruit an elliptical caryopsis with adherent pericarp, the hilum short extending $\frac{1}{2}$ to $\frac{3}{4}$ length of the caryopsis.

Distinctive features: The lemma and/or palea of the pistillate florets are foveolate only at apex.

Distribution: A small, herbaceous climbing bamboo genus of four species wide ranging from Central America, Colombia, Ecuador, Peru, Venezuela, Guianas, Bolivia and Brazil in lowland to lower montane forests, sometimes in dry savanna; 0–1,200 (1,800) m.

RHIPIDOCLADUM McClure, Smithsonian Contr. Bot. 9: 101. 1973.

Rhizomatous perennials; rhizome short, pachymorph and sympodial. Culms scrambling,



Rhipidocladum racemiflorum, photo by B. Hammel.

sometimes hanging or drooping distally, hollow, thin-walled and weak, mid-culm nodes with a single bud, the branches numerous, in fan-shaped or triangular clusters. Leaves dimorphic, those of the culm different from those of the branches; culm leaves triangular to narrowly so, papery to stiff, epetiolate, deciduous; sheaths lacking auricles and often oral setae; ligule membranous, ciliate or eciliate; blades erect, confluent with sheath summit; foliage leaves with both inner and outer ligules; oral setae present but usually not prominent, the blades

shortly pseudo-petiolate, linear to lanceolate, rarely ovate-lanceolate, lacking a conspicuous midvein. Synflorescence spicate-racemose, loosely flowered, the spikelets often one-sided along axis; spikelets slender, sessile or essentially so, several-flowered; glumes 2–3(–5), awl-shaped; fertile florets several, linear to broadly lanceolate; lemmas 5–7-nerved, obtuse to acute or awned; stamens 3; stigmas 2. Fruit an achene-like caryopsis, the pericarp free

Distinctive features: The culm leaf blades are erect and confluent with the sheath apex and the bud and branch complements are fan-shaped or triangular.

Distribution: A woody bamboo genus of 20 species, seven of which are reported as climbers, these occurring in Colombia and Venezuela in humid forest or along forest edges; 150–2,900 m.

TAQUARA I.L.C. Oliveira & R.P. Oliveira, Bot. J. Linn. Soc. 192: 78. 2020.

Monoecious perennials with short rhizomes. Culms erect or scrambling, branching from the upper nodes; nodes compressed, glabrous to pubescent, the internodes cylindrical, hollow and glabrous. Leaf sheaths glabrous to densely pubescent, with or without auricles at apex; ligules membranous; leaf blades oblong-lanceolate or ovate-lanceolate, acuminate, truncate or subcordate and asymmetric or symmetric at base, the margins ciliate, scabrous, or glabrous. Synflorescences terminal panicles, lax, open, or diffuse, the rachis scaberulous to hispid; spikelets unisexual; branches with staminate spikelets proximal and pistillate ones distal; pistillate spikelets ovoid to ellipsoid, acuminate to aristate, disarticulating below the glumes; glumes 3–5-nerved, scabrous to hispid, the florets ovoid or ellipsoid, foveolate; lemma 5-nerved, pilose or glabrous; male spikelets fusiform to lanceolate; lemma acuminate or aristate, scabrous; palea 2-nerved, scabrous. Fruit a caryopsis with adherent pericarp; the hilum short extending $\frac{1}{2}$ to $\frac{3}{4}$ length of the caryopsis.

Distinctive features: The lemma and palea of the pistillate florets are entirely foveolate.

Distribution: A small, herbaceous climbing bamboo genus of two species, one of which is endemic to the Araracuara region of Colombia occurring in sandy paramo, the other widespread in South America from Colombia and Venezuela to the Atlantic coast of Brazil and south to northern Argentina and Paraguay in forest and forest edges.

TIBISIA C.D. Tyrrell, Londoño & L.G. Clark, Taxon 67(5): 925. 2018.

Rhizomatous perennials with pachymorph and sympodial rhizomes. Culms scrambling,



Tibisia cf. farcta, photo by P. Acevedo.

pendulous, cylindrical, lignified, hollow, 1–8 mm in diam., 1–15 m long. Branches at nodal area, fasciculate, with a dominant branch subtended by numerous smaller branches or all branches of similar size. Leaves dimorphic, those of the culm with reflexed blades; sheath

with overlapping, fimbriate margins; oral setae 8–11 mm long, erect at the basal $\frac{1}{2}$, often wavy above; foliage leaves 2–8 per branch, straight to arcuate, with linear, flat or conduplicate blades; sheaths 2–8 cm long with erect, straight or curly fimbriae; oral setae usually wavy above.

Synflorescences spicate or paniculate, the rachis straight with widely spaced spikelets. Spikelets with 2–6 fertile florets, and a rachilla extension with a sterile floret; glumes 3, about a third as long as the length of the spikelet; lemma awned, slightly longer than the palea; stamens 3; lodicules 3, apically ciliate; stigmas 2. Fruit a dry caryopsis with adherent pericarp.

Distinctive features: Climbing bamboos with slender culms; culm leaves reflexed; foliage leaves straight or commonly arcuate.

Distribution: A genus of climbing bamboos with three species distributed in the West Indies (Bahamas, Turk and Caicos, Cuba, Hispaniola, Puerto Rico and Virgin Islands); serpentine to karstic soils; 100–1,000 m.