17b. Lemma not indurated, palea exposed.
18a. Spikelets with 3 florets, 2 sterile lemmas below fertile floret.
19a. Spikelets falling entire together with pedicel; caryopsis with apical caplike appendage ..... 8. *Brylkinieae* (p. 212)
19b. Spikelets disarticulating above glumes; caryopsis without apical cap.
20a. Lower lemmas enclosing fertile floret, epaleate, often transversely wrinkled, upper hooked at base ..... 3. *Ehrharteae* (p. 181)
20b. Lower lemmas short and subulate, or longer and sometimes staminate, often pubescent, not wrinkled or hooked ..... 12. *Aveneae* (p. 316)
18b. Spikelets with 1 floret.
21a. Spikelets falling entire.
22a. Spikelets dorsally compressed; base of spikelet often shortly bearded; lemma 1–3-veined ..... 27. *Arundinelleae* (184. *Garnotia*: p. 562)
22b. Spikelets laterally compressed; base of spikelet glabrous; lemma (3–)5-veined ..... 12. *Aveneae* (p. 316)
21b. Spikelets disarticulating above glumes.
23a. Glumes (1–)3–9-veined; lemma deeply 2-lobed, awned from sinus ..... 7. *Stipeae* (p. 188)
23b. Glumes 0–3-veined; lemma entire or shortly 2-toothed, awnless or awned from apex or back.
24a. Lemma 3-veined.
25a. Lemma awned ..... 22. *Eragrostideae* (140. *Muhlenbergia*: p. 486)
25b. Lemma awnless ..... 11. *Poeae* (70. *Colpodium*: p. 311)
24b. Lemma 5-veined.
26a. Glumes shorter than floret; lemma awnless or with terminal straight awn ..... 11. *Poeae* (68. *Aniselytron*, 70. *Colpodium*: pp. 310, 311)
26b. Glumes longer than floret, or lemma with dorsal or geniculate awn ..... 12. *Aveneae* (p. 316)

1. Tribe **BAMBUSEAE**

簕竹族 le zhu zu

Li Dezhu (李德铢), Wang Zhengping (王正平 Wang Cheng-ping), Zhu Zhengde (朱政德 Chu Cheng-de), Xia Nianhe (夏念和), Jia Liangzhi (贾良智 Chia Liang-chih), Guo Zhenhua (郭振华), Yang Guangyao (杨光耀); Chris Stapleton

Rhizomes pachymorph (branching sympodial) or leptomorph (branching monopodial). Culms perennial, woody, diffuse (culms solitary), pluricaespitose (culms in a series of clumps connected by rhizomes) or unicaespitose (culms in a single dense clump), self-supporting, scrambling, or rarely climbing; internodes usually hollow, terete, or quadrangular, sometimes flattened or grooved above branch clusters; nodes level or raised at supra-nodal ridge or sheath base, basal nodes often with ring of aerial roots or rarely with hardened root thorns. Culm branches solitary to very many densely fasciculate at nodes, basal branch sheathing often reduced, bud scales variously derived, reduced, or absent. Leaves on most of culm except apex usually deciduous, modified into culm sheaths with a supportive and protective role: sheath thickened, blade much reduced, thickened, generally not photosynthetic; oral setae often well developed, on auricle margins when auricles present. Foliage leaf sheath with interior ligule and a less distinct external ligule, often with well-developed auricles and/or oral setae; blade deflexed, broad, roughly linear-lanceolate, base narrowed into pseudopetiole, articulating and eventually separating from persistent sheath, transverse veinlets often forming distinctly tessellate venation. Inflorescences (more correctly synflorescences) aggregations of sessile florets in spikelets or pseudospikelets, branching absent to compound, bracteate or ebracteate; spikelets prophyllate or not, glumes often poorly distinguished from basal bracts and lemmas, not subtending viable buds or branches (semelauctant), or in pseudospikelets subtending axillary buds capable of partial or extensive spikelet ramification (iterauctant); lodicules absent to very many, usually 3, usually ciliate, veined, posterior lodicule usually narrower than anterior pair. Stamens usually (2 or)3(or 4) or (5 or)6(or 7), rarely very many. Style short or long; stigmas 1–3. Fruit usually a dry caryopsis, sometimes succulent with a thickened, fleshy pericarp. Several South American genera are morphologically rather more diverse.

About 88 genera and ca. 1400 species: Asia, South America, Pacific Islands, N Australia, Africa, especially Madagascar, Central and North America; 34 genera (five endemic, one introduced) and 534 species (469 endemic, three introduced) in China.

Woody bamboos are found extensively in most of southern, central, and southwestern China and are also found in northern China as far north as Beijing. They have been a significant natural resource throughout China's history, providing food and raw materials for construction and manu-

facturing. Domestic and exported bamboo products remain important to China's national economy. Cultivation of bamboos of Chinese origin on a commercial scale in other countries is currently restricted to immediately neighboring countries, but is likely to expand. Many Chinese bamboos are of importance in western horticulture, and numerous species with horticultural potential remain poorly known.

The taxonomy of China's bamboos still remains in a largely unrevised state. The majority of the species has been described since 1980, frequently without knowledge of the flowers, due to the often very long flowering cycles (up to 150 years). Generic delimitation has often been highly speculative and remains controversial. The large number of endemic species, along with the susceptibility of their natural forest habitats to destruction or degradation, and their inherent inability to reproduce and disperse, make the group of particular conservation concern. *In situ* conservation is essential because of the infrequent flowering of bamboos and the short viability of bamboo seeds. There is a pressing need to refine the classification of Chinese bamboos, to ascertain conservation status, and to safeguard threatened species.

Many taxa described as forms are not known in the wild, and they would be more appropriately known as cultivars. They often represent clones with variegated leaves or colored culms, selected for ornamental purposes. These arise spontaneously among the normal population, with a tendency to appear around the time of flowering, and others appear as abnormal seedlings. Such names are largely excluded from this account, and only the more important cultivars are mentioned in comments.

1a. Rhizome pachymorph, thicker than culm.
2a. Higher orders of inflorescence branching with subtending bracts greatly reduced or absent; spikelets pedicellate; stamens 3(–5); subtropical or temperate bamboos 1–12 m tall, leaf venation mostly distinctly tessellate.
3a. Mid-culm branch 1 per node, about as thick as culms ..... 19. *Gaoligongshania*
3b. Mid-culm branches 3 to very many per node, much smaller than culms.
4a. Inflorescence condensed, racemose.
5a. Buds at culm nodes lanceolate, branches ca. 5, subequal; culm sheath blade erect ..... 13. *Thamnocalamus*
5b. Buds at culm nodes ovate, branches 10–20, central dominant, culm sheath blade reflexed ..... 16. *Himalayacalamus*
4b. Inflorescence open, paniculate or fasciculate.
6a. Lower culm nodes with thorns ..... 18. *Chimonocalamus*
6b. Lower culm nodes without thorns.
7a. Leaf blades with prominently tessellate venation; bamboos of temperate habitats.
8a. Rhizomes consistently long necked or both short and long necked, culms solitary or forming a series of small clumps ..... 12. *Yushania*
8b. Rhizomes consistently short necked, culms always forming a single clump ..... 14. *Fargesia*
7b. Leaf blades without prominently tessellate venation; bamboos of subtropical habitats.
9a. Culms self-supporting, nodal sheath scars without corky collar; spikelets not pendulous; culm sheath adaxially distally scabrid ..... 15. *Drepanostachyum*
9b. Culms subscandent, nodal sheath scars often with corky collar; spikelets pendulous; culm sheaths adaxially distally glabrous ..... 17. *Ampelocalamus*
2b. Inflorescence branches all subtended by large bracts; spikelets sessile; stamens 6; tropical and subtropical bamboos (1–)7–30 m tall; leaf venation not distinctly tessellate.
10a. Spikelets 1-flowered; ovary appendage long, stiff, tapering, hollow.
11a. Culms unicaespitose, rhizome neck to 50 cm; fruit a small, dry caryopsis, pericarp thin.
12a. Spikelets in loose, spicate clusters; palea not keeled; lodicules absent (to 3); glumes usually absent; rachilla internodes usually disarticulating ..... 7. *Schizostachyum*
12b. Spikelets in very dense heads; palea keeled; lodicules 3; glumes 2 or 3; rachilla internodes not disarticulating ..... 8. *Cephalostachyum*
11b. Culms diffuse; rhizome neck to 3 m; fruit large, pericarp fleshy or crustaceous.
13a. Culms to 2 cm in diam.; fruit globose, less than 2 cm ..... 9. *Pseudostachyum*
13b. Culms 3–7 cm in diam.; fruit pear-shaped, 5–13 cm ..... 10. *Melocanna*
10b. Spikelets (1- to) many flowered; ovary with short, solid, apical appendage.
14a. Inflorescence a spikelet with basal bracts not subtending buds ..... 11. *Neomicrocalamus*
14b. Inflorescence a pseudospikelet with basal bracts subtending buds.
15a. Mid-culm branches 1 per node, about as thick as culm ..... 6. *Bonia*
15b. Mid-culm branches several to many per node, much smaller than culms.
16a. Caryopsis globose, 10–20 mm, pericarp fleshy ..... 5. *Melocalamus*
16b. Caryopsis cylindrical, rarely spherical, 3–10 mm, pericarp thin.
17a. Palea prominently bifid, cleft to 1/3 of its length ..... 2. *Thyrsostachys*
17b. Palea undivided or shortly bifid.
18a. Inflorescence subtended by a broad, 2-keeled prophyll; rachilla internodes usually distinct and disarticulating ..... 1. *Bambusa*
18b. Inflorescence subtended by a narrow, 1-keeled prophyll; rachilla internodes usually obscure and not disarticulating.

19a. Palea of uppermost or only floret not keeled or slightly 2-keeled; filaments free ..... 3. *Dendrocalamus*
19b. Palea of all florets 2-keeled; filaments connate ..... 4. *Gigantochloa*
1b. Rhizome leptomorph, thinner than culm; culms solitary or pluricaespitose.
20a. Inflorescence branches with or without subtending bracts, bracts usually well developed; spikelets sessile.
21a. Stamens 6 ..... 29. *Indosasa*
21b. Stamens 3.
22a. Culm strongly flattened above branches.
23a. Mid-culm branches 2, unequal, with secondary branching ..... 34. *Phyllostachys*
23b. Mid-culm branches 4 or 5; subequal, without secondary branching ..... 33. *Shibataea*
22b. Culm nearly terete or slightly quadrangular, not flattened or grooved above branches.
24a. Culm sheath blade very small, less than 1 cm ..... 32. *Chimonobambusa*
24b. Culm sheath blade large, more than 1 cm.
25a. Inflorescence with leafy bracts; spikelets laterally compressed; branches 3–9 per node; buds open ..... 31. *Semiarundinaria*
25b. Inflorescence with small bracts; spikelets terete; branches consistently 3 per node; buds closed ..... 30. *Sinobambusa*
20b. Higher orders of inflorescence branching with subtending bracts greatly reduced or absent; spikelets pedicellate.
26a. Mid-culm branch 1(–3) per node; branch and leaves often very large relative to culm size.
27a. Stamens 6, leaf blade margins bleached in winter, terminal blade often at right angle (90°) to shoot ..... 21. *Sasa*
27b. Stamens 3, leaf blade margins not bleached in winter, terminal blade parallel to shoot.
28a. Fruit a small, dry caryopsis, pericarp thin ..... 28. *Indocalamus*
28b. Fruit large, berrylike, pericarp fleshy ..... 27. *Ferrocalamus*
26b. Mid-culm branches (1–)3 to several per node; branches and leaves small to medium relative to culm size.
29a. Stamens 6 ..... 20. *Acidosasa*
29b. Stamens 3 (*Arundinaria* s. l.)
30a. Mid-culm branches 7–12 per node, without secondary branching; florets 0.5–1.4 cm ... 26. *Gelidocalamus*
30b. Mid-culm branches 1–7 per node, with secondary branching; florets (1–)1.5–8(–20) cm.
31a. Culm internodes strongly flattened above branches; culm supra-nodal ridge substantially raised ..... 25. *Oligostachyum*
31b. Culm internodes ± terete; culm supra-nodal ridge not substantially raised.
32a. Culm buds always open at front ..... 22. *Arundinaria*
32b. Culm buds initially closed at front.
33a. Culm sheaths late deciduous, mid-culm branches consistently 3 per node ..... 23. *Pseudosasa*
33b. Culm sheaths very persistent, mid-culm branches 1 to many per node.
34a. Mid-culm internodes terete or rarely slightly sulcate above single branches ..... 23. *Pseudosasa*
34b. Mid-culm internodes slightly grooved above 1–9 branches ..... 24. *Pleioblastus*

1. **BAMBUSA** Schreber, Gen. Pl. 236. 1789, nom. cons.

箣竹属 le zhu shu

Xia Nianhe (夏念和), Jia Liangzhi (贾良智 Chia Liang-chih), Li Dezhu (李德铢); Chris Stapleton

Arundarbor Kuntze; *Bambos* Retzius, nom. rej.; *Bambus* Blanco; *Bambus* J. F. Gmelin.

Arborescent bamboos, occasionally shrubby or scrambling, 1–20 m. Rhizomes short necked, pachymorph. Culms unicaespitose, erect to pendulous, rarely subscandent; internodes terete; nodes not raised. Branches several to many, often 1–3 dominant (subequal in *Bambusa* subg. *Lingnania*), branchlets of lower branches sometimes forming tough or weak thorns. Culm sheaths deciduous, rarely persistent; auricles usually conspicuous, always with marginal oral setae; blade usually erect. Leaf blade variable in size, transverse veins inconspicuous. Inflorescence iterauctant, fully bracteate, subtended by a broad 2-keeled prophyll; pseudospikelets rarely solitary, usually several to many clustered to capitate on flowering branches. Pseudospikelets prophyllate; florets 2 to many, terminal floret sterile or imperfect, sessile; fertile glumes preceded by 1 or more gemmiferous, glumaceous, or spathaceous bracts and/or 1–3 empty glumes; rachilla internodes usually distinct and usually disarticulating with florets, falling separately; lemma broad, many veined; palea 2-keeled, apex acute or shortly bifid; lodicules 3 or 2. Stamens 6; filaments free. Ovary usually stalked, apex thickened and hairy; style solid, usually short; stigmas (1–)3, long, hairy, plumose. Caryopsis terete, apex hairy; pericarp slightly thickened.

More than 100 species: tropical and subtropical Asia; pantropical in cultivation; 80 species (67 endemic) in China, mainly in the south and southwest.

Most species in this genus are very useful cultivated plants, with no known or only limited wild populations. *Bambusa lapidea*, *B. pervariabilis*, *B. rigida*, *B. sinospinosa*, and *B. tuldoides* are used for building construction and scaffolding; *B. albolineata*, *B. lenta*, and *B. textilis* are split for woven bamboo goods; the shoots of *B. gibboides* and *B. variostriata* are edible; *B. multiplex*, *B. ventricosa*, and *B. vulgaris* are very famous ornamental bamboos.

1a. Culm sheath blade narrow, base only 1/3 width of sheath apex; culm internodes usually longer than 30 cm, with thin walls often less than 8 mm thick ..... 3. *B.* subg. *Lingnania*
1b. Culm sheath blade broad, base 1/2–3/4 width of sheath apex; culm internodes shorter than 30 cm, with thick walls to 2 cm thick.
2a. Culm sheath auricles small, rounded; spikelets dense at maturity ..... 4. *B.* subg. *Dendrocalamopsis*
2b. Culm sheath auricles large, rounded or irregular, or absent; spikelets loose at maturity, with broad florets on short rachilla segments.
3a. Branchlets of lower branches specialized into tough or weak leafless thorns; culm sheath blade persistent ..... 1. *B.* subg. *Bambusa*
3b. Branchlets of lower branches normal, leafy; culm sheath blade deciduous ..... 2. *B.* subg. *Leleba*

1. **Bambusa** subg. **Bambusa**

箣竹亚属 le zhu ya shu

Xia Nianhe (夏念和), Jia Liangzhi (贾良智 Chia Liang-chih); Chris Stapleton

Bambusa subg. *Ischurochloa* (Buse) P. C. Keng; *Ischurochloa* Buse.

Culm internodes mostly shorter than 30 cm; wall to 2 cm thick; branches usually arising from basal, mid-culm, and apical nodes, usually 3 co-dominant; branchlets of lower branches specialized into tough or weak thorns. Culm sheaths thickly leathery; auricles large, rounded or irregular, or absent; blade persistent, broad, base 1/2–3/4 width of sheath apex. Pseudospikelets loose at maturity, with broad florets on short rachilla segments.

More than 35 species: widely distributed in tropical and subtropical Asia; widely planted in other parts of the world; 27 species (24 endemic) in China, mainly in the south, some in the southwest.

1a. Branches on lower nodes of culms densely interwoven, with many, tough, sharp thorns.
2a. Culm sheaths pubescent only near base.
3a. Lower internodes of culms glabrous; culm sheath apically subtruncate; auricles subequal, usually reflexed ..... 3. *B. sinospinosa*
3b. Lower internodes of culms with longitudinally arranged, stiff hairs; culm sheath apically broadly arched; auricles dissimilar, not reflexed ..... 4. *B. funghomii*
2b. Culm sheaths pubescent on basal half to entire sheath.
4a. Lower nodes of culms usually with a ring of silky white hairs below and above sheath scar; culm sheaths densely stiffly hairy; auricles usually crescent-shaped, reflexed ..... 1. *B. blumeana*
4b. Lower nodes of culms without silky hair rings or with only a ring of brown hairs below sheath scar.
5a. Culm sheath apically broadly concave, with a triangular protuberance on each shoulder; auricles tiny or absent, narrowly filiform if present ..... 2. *B. flexuosa*
5b. Culm sheath apically broadly convex, without protuberance on each shoulder; auricles well developed, ovate-oblong to ovate-lanceolate ..... 4. *B. funghomii*
1b. Branches on lower nodes of culms with tough and/or weak thorns but not densely interwoven.
6a. Culm sheath auricles large, to 2 cm wide.
7a. Culm sheath blade width 2/3–3/4 width of sheath apex.
8a. Lowest internodes of culms usually with purple streaks; nodes with a ring of brown silky hairs below and above sheath scar; culm sheaths uniformly hairy, apex nearly truncate, ligule ca. 3 mm ..... 24. *B. insularis*
8b. Lowest internodes without purple streaks; nodes with a ring of gray-white hairs below and above sheath scar; culm sheaths only hairy at central base, apex broadly convex, ligule ca. 7 mm ..... 25. *B. xiashanensis*
7b. Culm sheath blade width 2/5–3/5 width of sheath apex.
9a. Lower culm internodes densely hairy; culm sheath apically subtruncate, larger auricles nearly 3 × size of smaller ones ..... 11. *B. rutila*
9b. Lower culm internodes glabrous; culm sheath apically usually broadly convex, sometimes subtruncate, larger auricles to 2 × size of smaller ones.
10a. Basal culm internodes with pale green stripes; leaf blade abaxially glabrous ..... 12. *B. lapidea*
10b. Basal culm internodes without stripes; leaf blade abaxially pubescent.

11a. Culm sheaths glabrous, ligule ca. 6 mm ..... 10. *B. macrotis*
11b. Culm sheaths with dense, stiff, brown hairs, ligule ca. 2 mm ..... 13. *B. latideltata*
6b. Culm sheath auricles small, less than 1 cm wide.
12a. Culm sheath ligule 5–8 mm.
13a. Culm sheath apically obliquely truncate, with unequal, triangular protuberance on each shoulder and white stripes ..... 5. *B. chunii*
13b. Culm sheath apically obliquely asymmetrically arched, with neither protuberance on each shoulder, nor white stripes.
14a. Culm sheath auricles very unequal, usually wrinkled; basalmost culm internodes sometimes with pale yellow stripes ..... 8. *B. dissimulator*
14b. Culm sheath auricles subequal; culm internodes with purple stripes initially ..... 15. *B. longipalea*
12b. Culm sheath ligule 0.5–3(–4) mm.
15a. Culm sheath blade base more than 4/5 width of sheath apex.
16a. Culm sheaths hairy at least near base, rarely glabrous.
17a. Lower culm nodes with a ring of stiff, pale brown hairs below and above sheath scar, basal ca. 3 nodes with a ring of gray-white silky hairs above sheath scar; culm sheaths with stiff, appressed, dark brown hairs ..... 23. *B. diaoluoshanensis*
17b. Lower culm nodes with a ring of gray-white silky hairs below and above sheath scar; culm sheaths with hairs absent, pale, or restricted to base.
18a. Culm sheath apically slightly asymmetrically arched-convex, usually glabrous or with stiff, dark brown hairs near base ..... 14. *B. indigena*
18b. Culm sheath apically ± truncate, distal half with deciduous, stiff, appressed, pale hairs ..... 16. *B. cornigera*
16b. Culm sheaths glabrous throughout.
19a. Culms both normal and abnormal, internodes of normal culms terete, lower internodes of abnormal culms greatly shortened and swollen; culm sheath ligule 0.5–1 mm ..... 21. *B. ventricosa*
19b. Culms all normal, internodes terete; culm sheath ligule 3(–4) mm.
20a. Culm sheaths with 1 or 2 pale yellow stripes near outer margin, apex slightly asymmetrical, broadly triangular or broadly arched.
21a. Lower culm internodes hairy; leaf blade linear-lanceolate to lanceolate, 1.3–1.7 cm wide ..... 14. *B. indigena*
21b. Lower culm internodes glabrous; leaf blade narrow, linear-lanceolate, 1–1.3 cm wide ..... 17. *B. subaequalis*
20b. Culm sheaths without stripes, apex subtruncate or obliquely truncate.
22a. Basal nodes with a ring of gray-white silky hairs below and above sheath scar; culm sheath apically subtruncate, with a protuberance on one shoulder ..... 22. *B. corniculata*
22b. Basal nodes with a ring of gray-white silky hairs below sheath scar only; culm sheath apically obliquely truncate, without protuberance on shoulders ..... 27. *B. ramispinosa*
15b. Culm sheath blade base less than 3/4 width of sheath apex.
23a. Culm sheaths obliquely truncate, or obliquely truncate and convexly arched, or slightly asymmetrical and concavely arched.
24a. Culm sheaths with a triangular protuberance on higher shoulder, blade not narrowed at base ..... 18. *B. gibba*
24b. Culm sheaths without a protuberance on higher shoulder, blade basally narrowed and incurved.
25a. Culm sheaths hairy ..... 20. *B. angustiaurita*
25b. Culm sheaths glabrous.
26a. Culms 3–7 m, 1.5–4 cm in diam., culm sheath ligule ca. 1 mm ..... 7. *B. glabrovagina*
26b. Culms 8–10 m, 4–6 cm in diam., culm sheath ligule 3–4 mm ..... 19. *B. malingensis*
23b. Culm sheaths symmetrical, apex convexly or triangularly arched, or asymmetrically triangular.
27a. Culm sheaths with stiff, dark brown hairs only near base, apex symmetrical, ligule 3–4 mm; foliage leaf blade abaxially densely pubescent ..... 26. *B. prominens*
27b. Culm sheaths glabrous or only hairy below blade, apex asymmetrically triangular; ligule 1–2 mm; foliage leaf blade abaxially sparsely villous or subglabrous.
28a. Basal culm nodes with rings of gray-white to pale brown silky hairs below and above sheath scars; culm sheaths hairy below blade; auricles long decurrent, ca. 3 mm wide; ligule finely dentate, fimbriate ..... 6. *B. angustissima*

28b. Basal culm nodes glabrous; culm sheaths glabrous; auricles not decurrent, ca. 5 mm wide; ligule entire, very shortly ciliolate ..... 9. *B. aurinuda*

1. Bambusa blumeana J. H. Schultes in Schultes & J. H. Schultes, Syst. Veg. 7(2): 1343. 1830.

簕竹 le zhu

Bambusa spinosa Blume ex Nees, Flora 8: 580. 1825, not Roxburgh (1814); *B. stenostachya* Hackel; *B. teba* Miquel; *Ischurochloa stenostachya* (Hackel) Nakai.

Culms 15–24 m, 8–15 cm in diam., apically nodding; basal internodes slightly flexuose, green, 25–35 cm, distally initially sparsely strigose, later glabrous; wall 20–30 mm thick; each node of lower culm with a ring of aerial roots or root primordia, with a gray or brown sericeous ring below and above sheath scar. Branches to base, solitary on lower nodes, with branchlets usually forming tough, sharp, curved thorns and densely interwoven. Branches 3 to several on upper nodes, central markedly longer and thicker. Culm sheaths tardily deciduous, apex broadly convex or concave, with a triangular protuberance on each shoulder, densely stiffly brown hairy; auricles usually reflexed, crescent-shaped, linear-oblong, slightly unequal; oral setae dense, pale brown, curved, long, thick; ligule 4–5 mm, laciniate, fimbriate; blade usually reflexed, ovate to narrowly ovate, abaxially strigose, adaxially densely stiffly dull brown hairy, base ca. 2/5 as wide as sheath apex, margins ciliate. Ultimate branches with 5–9 leaves; leaf blade linear-lanceolate to narrowly lanceolate, 10–20 × 1.2–2.5 cm, both surfaces scabrid, mainly subglabrous but abaxially densely villous near base. Pseudospikelets 2 to several, clustered at nodes of flowering branches. Spikelets pale purple-green, linear, 2.5–4 × 0.3–0.4 cm; florets 4–12, central 2–5 perfect. Glumes 2, ca. 2 mm, glabrous; lemma ovate-oblong, 6–9 × 2.5–4 mm, glabrous, 9–11-veined, margins glabrous, apex acute; palea ca. 7 × 1.8 mm, 3-veined between and 3-veined on either side of keels, apex bifid. Filaments separate, 6–7 mm; anthers yellow, 3–4 mm. Ovary narrowly ovoid, 1.2–2 mm; style short; stigmas 3. New shoots Jun–Sep, fl. spring.

Probably introduced, cultivated on river banks and around villages; below 300 m. Fujian, Guangxi, Taiwan, Yunnan [Indonesia, Malaysia, Philippines, Thailand, Vietnam].

Bambusa blumeana ‘Wei-fang Lin’ (Guihaia 8: 122. 1988) was cultivated in Taiwan. It is characterized by the golden yellow culm and branch internodes, which turn orange with deep green stripes.

The culms are used for scaffolding.

2. Bambusa flexuosa Munro, Trans. Linn. Soc. London 26: 101. 1868.

小簕竹 xiao le zhu

Bambusa scabriculma W. T. Lin.

Culms 6–7 m, 3.5–6 cm in diam., basally flexuose, apically nodding; internodes 20–30 cm, sparsely stiffly brown strigose, with a ring of silky brown hairs below each node; wall thick. Branches to base, solitary at lower nodes, flexuose, densely interwoven, branchlets specialized into tough thorns, higher nodes with 3 to several branches. Culm sheaths tardily deciduous, leathery, prominently ribbed-striate when dry, sparsely stiffly dark brown strigose, apex concave with a triangular protuberance on each shoulder; auricles narrowly filiform or absent; ligule 4–5 mm, dentate or laciniate, fimbriate; blade erect or recurved, ovate-lanceolate to lanceolate, base ca. 1/2 as wide as sheath apex. Leaf blade narrowly lanceolate to lanceolate, 7–11 × 1.2–1.6 cm, both surfaces glabrous. Pseudospikelets solitary or clustered, slightly compressed, 2–3 cm, gemmiferous bracts ca. 4; florets 8–12 with middle florets perfect; rachilla flexuose, internodes flat, 2–2.5 mm, hispid. Glumes usually absent; lemma oblong-lanceolate, 8–10 mm, apex acute; palea usually shorter than lemma, keels ciliate; lodicules 3, subequal, margins long ciliate, apex obtuse. Filaments enlarged at base; anther obtuse at apex. Style short; stigmas 3.

● Hills, river banks. Guangdong, Hainan.

Bambusa flexuosa is usually planted as a thorny hedge to keep out animals. It has been named incorrectly by some authors as *Bambusa bambos* (Linnaeus) Voss.

3. Bambusa sinospinosa McClure, Lingnan Sci. J. 19: 411. 1940.

车筒竹 che tong zhu

Culms 15–24 m, 8–14 cm in diam., apically slightly drooping; internodes 20–26 cm, mainly glabrous but with a ring of gray silky hairs below basal 1 or 2 nodes; wall 10–30 mm thick; branching to base. Branches usually solitary at lower nodes, with tough thorns; branchlets interwoven; branches 3 to several above lower nodes. Culm sheaths tardily deciduous, leathery, densely stiffly dark brown hairy toward base, apex truncate; auricles usually reflexed, oblong to obovate, subequal, rugose, adaxially densely strigose, margin with undulate or erect setae; ligule 3–5 mm, dentate, fimbriate; blade erect or recurved, base ca. 1/2 width of sheath apex. Leaf blade linear-lanceolate, 7–17 × 1.2–1.6 cm, both surfaces glabrous or abaxially proximally pilose. Pseudospikelets solitary or several clustered at each node of flowering branch, linear to linear-lanceolate, slightly compressed, to 4 cm, prophylls obtuse, keels ciliolate; gemmiferous bracts 3–5, narrowly triangular or subovate, glabrous, obtuse; fertile florets 6–12; rachilla internodes 2–4 mm. Glumes usually absent; lemma ovate-oblong, 5–9.5 mm, many veined, apex obtusely acute or acute with fine tip; palea usually slightly longer than lemma, keels ciliolate, 3–5-veined between keels; lodicules 3, unequal, obovate, ca. 1.4 mm, obtuse, margins ciliate. Filaments distinct; anther obtuse at apex. Ovary narrow, apex thickened and hispidulous; style slender, hispidulous; stigmas 3. New shoots May–Jun, fl. Aug–Dec.

● Riversides, near villages. Guangdong, Guangxi, Hainan.

The correct position of *Bambusa sinospinosa* var. *inermis* Keng & P. C. Keng is not known, and it is included with the *taxa incertae sedis* at the end of the genus.

This species is planted along rivers to protect the banks, and the culms are used for construction.

4. Bambusa funghomii McClure, Lingnan Sci. J. 19: 535. 1940.

鸡窦簕竹 ji dou le zhu

Culms 13–15 m, 6–7 cm in diam., basally flexuose, apically erect or slightly drooping; internodes slightly curved, 25–32 cm, not white powdery, lower internodes stiffly longitudinally dark brown strigose; wall 1–1.5 cm thick; branching to base. Branches solitary at lower nodes, 3 to several at upper nodes; lower branches densely interwoven with branchlets specialized into sharp, tough thorns. Culm sheaths tardily deciduous, leathery, abaxially white powdery, lower half sparsely stiffly dark brown hairy, margins white ciliolate or glabrous, apex broadly convex; auricles well developed, extremely unequal, ovate-oblong to ovate-lanceolate, undulate, wrinkled, inflated, both sides strigose; oral setae pale, ca. 1 cm, undulate; ligule 5–7 mm, dentate or laciniate, with unequal fimbriae; blade erect or those on upper nodes recurved, ovate-triangular to broadly lanceolate, base 1/3 width of sheath apex or broader, abaxially glabrous, adaxially stiffly dark brown hairy between veins, margin strongly involute, apex acuminate. Leaf blade linear-lanceolate, 6–15 × 0.6–1.6 cm, both surfaces glabrous or adaxially pubescent near base. Inflorescence unknown.

● Open places on hills or around villages. Guangdong, Guangxi.

Bambusa funghomii is usually grown as a hedge, and the culms are used for scaffolding and poles.

5. Bambusa chunii L. C. Chia & H. L. Fung, Kew Bull. 37: 593. 1983.

焕镛簕竹 huan yong le zhu

Culms 10–12 m, 4.5–6.5 cm in diam., basally flexuose, apically drooping; internodes slightly curved, 25–30 cm, very thinly white powdery, very sparsely stiffly hairy, with a ring of gray hairs below each node; wall thick; branching to base. Branches at lower nodes usually solitary, with tough, sharp thorns, at upper nodes 3 to several with central 3 longer and thicker. Culm sheaths tardily deciduous, with several marginal white stripes on each side, leathery, glabrous, apex obliquely truncate with unequal, triangular protuberance on each shoulder; auricles unequal, linear-lanceolate, small, usually wrinkled, abaxially hispidulous; oral setae well developed, 5–10 mm, undulate, hispidulous at base; ligule 5–7 mm, margin irregular, dentate, laciniate; blade erect, broadly lanceolate, abaxially glabrous, base nearly 1/2 width of sheath apex. Leaf blade lanceolate, 9.5–19 × 1.5–2 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Cultivated around villages. Hong Kong.

The origin of this plant is not known.

6. Bambusa angustissima L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 367. 1981.

狭耳簕竹 xia er le zhu

Culms to 9 m, ca. 5 cm in diam., basally slightly flexuose, apically slightly drooping; internodes ca. 25 cm, glabrous; wall thick; nodes toward base with a ring of gray-white to pale brown silky hairs below and above sheath scar; sheath scar with a persistent ring of stiff, brown hairs; branching to base. Branches at lower nodes usually with branchlets specialized into tough or weak thorns; from mid-culm nodes upward usually many and clustered with central 3 dominant. Culm sheaths somewhat persistent, ribbed-striate when dry, mostly glabrous, pubescent only below blade, apex asymmetrically triangular; auricles unequal, narrowly linear and extremely decurrent, small, slightly wrinkled, margin with both long and short setae 1–3 mm; ligule 1–2 mm, sparsely dentate or shortly fimbriate; blade erect, narrowly triangular, with stiff, brown hairs at joint with sheath, base nearly 1/2 as wide as sheath apex. Leaf blade lanceolate to narrowly lanceolate, 6–9 × 1.1–1.5 cm, abaxially subglabrous, adaxially glabrous. Inflorescence unknown.

● River banks. S Guangdong (Gaozhou).

7. Bambusa glabrovagina G. A. Fu, Acta Phytotax. Sin. 20: 489. 1982 [*"glabro-vagina"*].

光鞘石竹 guang qiao shi zhu

Culms 3–7 m, 1.5–4 cm in diam.; internodes 21–27 cm, initially thinly white powdery, glabrous; wall thick; branching to base. Branches 3 to several at each node, clustered, central 3 dominant; branchlets at lower nodes sometimes forming tough, curved thorns. Culm sheaths deciduous, glabrous, apex slightly inclined to outer side and asymmetrical, broadly convex or subtruncate; auricles unequal, linear-lanceolate or oblong, less than 3 mm wide, margin with curved setae; ligule ca. 1 mm, margin irregular, finely dentate; blade erect, ovate to ovate-lanceolate, base ca. 3/5 width of sheath apex, abaxially glabrous, adaxially slightly scabrid near base, apex acuminate. Leaf blade linear-lanceolate to lanceolate, 5–12 × 0.8–1.7 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets several, clustered at each node, linear-lanceolate to lanceolate, 1.5–2 cm; prophylls ovate, 3–3.5 mm, 2-keeled; gemmiferous bracts 2 or 3, ovate-elliptic to ovate-oblong, 3–3.5 mm, apex obtuse to acute, very shortly mucronate; florets 6 or 7, middle 3 or 4 perfect; rachilla segments flat, 2–3 mm, apex inflated and cupular. Glumes absent; lemma ovate-oblong, 7.5–8 mm, glabrous, 9–11-veined, apex acute, mucronate; palea linear-lanceolate, slightly longer than lemma, 4-veined between and 2-veined on either side of keels, apex with a cluster of white hairs; lodicules 3, unequal; anterior oblique, ca. 2 mm, margins long ciliate; posterior subobovate, ca. 1.2 mm. Filaments slender; anthers ca. 4 mm. Ovary ovoid, ca. 0.4 mm, base with stalk ca. 1 mm, apex thickened and hispidulous; style ca. 0.2 mm; stigmas 3, ca. 0.8 mm. Mature caryopsis unknown.

● Low hills, around villages. Hainan (Dunchang).

8. Bambusa dissimulator McClure, Lingnan Sci. J. 19: 413. 1940 [*"dissemulator"*].

坭簕竹 ni le zhu

Culms 10–18 m, 4–7 cm in diam., basally slightly flexuose, apically suberect or slightly drooping; internodes 25–35 cm, sometimes several at base with pale yellow stripes, initially thinly white powdery, usually glabrous; wall thick; basal nodes sometimes with short aerial roots; branching to base. Branches solitary at basal nodes, 3 to several at higher nodes, with central

3 dominant; branchlets at lower nodes usually condensed into tough or weak thorns. Culm sheaths deciduous, leathery, subglabrous or inconspicuously strigose, apex asymmetrical, arched-concave; auricles unequal, usually wrinkled; larger auricle oblong to oblanceolate, 4–5 mm wide; smaller auricle ovate to elliptic, 3–4 mm wide; oral setae undulate; ligule 5–7 mm, dentate, laciniate, shortly white fimbriate; blade erect, ovate-triangular to ovate-lanceolate, base nearly 1/2–3/5 width of sheath apex, abaxially glabrous, adaxially stiffly dark brown hairy, margins with undulate setae near base. Leaf blade linear-lanceolate to lanceolate, 7–18 × 1–1.8 cm, abaxially sparsely pubescent, adaxially glabrous. Flowering branches with pseudospikelets solitary or clustered at each node, lanceolate, ca. 3 cm, compressed; prophylls 2-keeled; gemmiferous bracts usually 2, ovate, apex obtuse; fertile florets 4 or 5, apical 2 to several florets sterile; rachilla segments 2–3 mm, apex inflated and ciliate. Glumes 1 or sometimes absent, similar to lemma but shorter; lemma lanceolate, to 1.2 cm, base glabrous, veins inconspicuous, base rounded or broadly cuneate, margins ciliolate near apex, apex obtuse or acute with a subulate tip; palea keels strongly folded near apex, ciliolate or scabrous, 5-veined between keels, apex usually penicillate; lodicules 3, subequal, ovate or obovate, margins long ciliate. Filaments distinct; anthers apex obtuse, slightly concave. Ovary obovoid or ovoid, stalked, apex thickened and strigose; style solitary, very short, hairy; stigmas 3. New shoots Jul–Aug, fl. Mar–Apr.

● Open fields, hills, cultivated around villages. Guangdong.

1a. Culm internodes glabrous ..... 8a. var. *dissimulator*
1b. Culm internodes hairy.
2a. Lower culm internodes with a ring of gray silky hairs below and above sheath scar ..... 8b. var. *albinodia*
2b. Culm nodes, internodes, and abaxial surfaces of culm sheaths obviously strigose ..... 8c. var. *hispida*

8a. Bambusa dissimulator var. **dissimulator**

坭簕竹(原变种) ni le zhu (yuan bian zhong)

Culms internodes glabrous.

● Guangdong.

8b. Bambusa dissimulator var. **albinodia** McClure, Lingnan Sci. J. 19: 415. 1940.

白节簕竹 bai jie le zhu

Lower culm internodes with a ring of gray silky hairs below and above sheath scar.

● Usually cultivated around villages. Guangdong.

8c. Bambusa dissimulator var. **hispida** McClure, Lingnan Sci. J. 19: 415. 1940.

毛簕竹 mao le zhu

Culm nodes, internodes, and abaxial surface of culm sheaths evidently strigose.

● Cultivated around villages. Guangdong.

9. Bambusa aurinuda McClure, Lingnan Univ. Sci. Bull. 9: 3. 1940.

裸耳竹 luo er zhu

Culms 5–10 m, ca. 2.5 cm in diam., basally nearly straight, apically slightly drooping; internodes ca. 30 cm, basal nodes sometimes with short aerial roots, glabrous; branching to base or 2nd node. Branches 3 to many, clustered on each node; branchlets on lower nodes usually specialized into thorns; central 3 branches dominant. Culm sheaths slightly persistent, ribbed-striate when dry, glabrous, margins ciliate, apex asymmetrically triangular; auricles unequal; larger auricle oblong, ca. 2 × 0.5 cm; smaller auricle obovate to elliptic, ca. 1 × 0.5 cm; oral setae usually absent or 1 or 2 at distal nodes, deciduous, pale yellow or brown-yellow, 5–10 mm, undulate; ligule arched, ca. 2 mm, entire, very shortly white ciliate; blade erect, ovate-triangular to ovate-lanceolate, base nearly 2/3 width of sheath apex, abaxially glabrous, apex subulate, abruptly acuminate. Leaf blade linear-lanceolate to oblong-lanceolate, 8.5–14 × 0.8–1.2 cm, abaxially initially sparsely pilose, adaxially glabrous or subglabrous. Pseudospikelets linear, 4.5–5 cm; basal rachilla very short, glabrous; gemmiferous bracts usually 2, ovate, obtuse; fertile florets 5–12, distal 2 or 3 and sometimes proximal 1 sterile; rachilla segments 2–3 mm, nearly 1/4–1/3 length of palea. Glumes 1, similar to lemma, 5–6(–8) mm, glabrous; lemma navicular, to 1 cm, papery, glabrous, with many pale purple veins, apex acute with fine tip; palea nearly as long as lemma, keels sparsely ciliolate, apex penicillate; lodicules 3, subequal, ovate-lanceolate, margins ciliate, apex obtuse. Anthers yellow, apex obtuse. Ovary hispidulous at apex; style short, slightly thickened, hispidulous; stigmas 3. Fruit unknown.

Forest margins, riversides. S Guangxi [Vietnam].

10. Bambusa macrotis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 371. 1981.

大耳坭竹 da er ni zhu

Culms 6–7 m, to 6 cm in diam., basally slightly flexuose, apically drooping; internodes glabrous; wall slightly thick; lower nodes usually with a ring of gray-white silky hairs above sheath scar; branching to base. Culm sheaths rather tardily deciduous, glabrous, apex slightly asymmetrical, broadly arched; auricles unequal, strongly wrinkled; larger auricle ovate-elliptic, ca. 3 × 1.5 cm, smaller auricle elliptic, ca. 2 × 1 cm; oral setae undulate; ligule ca. 6 mm, dentate with ca. 2 mm fimbriae; blade erect, narrowly ovate to ovate-triangular, base nearly 1/2 as wide as sheath apex. Leaf blade linear-lanceolate, 5–10 × 0.7–0.9 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Riversides. Guangdong (Qingyuan).

Bambusa macrotis is similar to *B. rutila*, but has glabrous culm internodes and culm sheaths, a slightly asymmetrical, broadly arched culm sheath apex, and narrower leaf blades.

11. Bambusa rutila McClure, Lingnan Sci. J. 19: 533. 1940.

木竹 mu zhu

Bambusa shuangliuensis T. P. Yi.

Culms 8–12 m, 4–6 cm in diam., basally slightly flexuose, apically slightly drooping; internodes 30–35 cm; wall thick; lower internodes usually initially densely stiffly dark brown strigose, basal internodes sometimes with several inconspicuous pale yellow stripes; nodes with a ring of gray-white silky hairs below and above sheath scar and a ring of stiff, brown hairs on sheath scar, several basal nodes usually with short aerial roots; branching from 3rd or 4th node up. Branches usually 3–12 on mid-culm and basal nodes; central 3 dominant, reflexed; those on lower nodes usually with branchlets specialized into weak or tough thorns. Culm sheaths tardily deciduous, ribbed-striate when dry, glabrous or with stiff, dark brown hairs near margins and base, apex slightly oblique and truncate; auricles extremely unequal, abaxially densely hispidulous; larger auricle ovate-oblong, oblong, or narrowly reniform, inflated outward, undulate, wrinkled, ca. 1.5 cm wide; smaller auricle subovate or elliptic, ca. 1 cm wide, undulate, wrinkled; ligule 4–5 mm, dentate, fimbriate; blade persistent, erect, subtriangular or ovate, base nearly 2/5 as wide as sheath apex. Leaf blade linear-lanceolate to narrowly lanceolate, usually 10–18 × 1–1.7 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets linear-lanceolate, compressed, to 3 cm; prophylls obtuse at apex, keels ciliolate; gemmiferous bracts 3–8, ovate, 1–4 mm, margins ciliolate or subglabrous near apex, apex obtuse and finely tipped; florets ca. 9, apical 1 or 2 florets sterile; rachilla segments 2–3 mm, apex ciliolate. Glumes absent; lemma ovate-lanceolate, to 8 mm, abaxially glabrous, many veined, margins ciliolate near apex, finely tipped, apex obtuse or acute and scabrous; palea longer or shorter than lemma, keels ciliate or scabrous at apex, 2- or 3-veined between keels, apex penicillate; lodicules 3, subequal, ovate or obovate, margins ciliate. Anther obtuse at apex. Ovary obovoid, apex thickened and hairy; style very short; stigmas 3, scabrid. Fl. Oct–Dec.

● Open fields, around villages. Fujian, Guangdong, Guangxi, Sichuan.

The culms are used for poles and scaffolding, and the young shoots are edible.

12. Bambusa lapidea McClure, Lingnan Sci. J. 19: 531. 1940.

油簕竹 you le zhu

Bambusa miyiensis T. P. Yi.

Culms 7–17 m, 4–7 cm in diam., basally straight, apically slightly drooping; internodes 20–35 cm, obviously shorter and slightly swollen near base and sometimes inconspicuously pale green striped and purple streaked, glabrous; wall 1–2 cm thick; nodes with a ring of gray-white silky hairs below and above sheath scar, several basal nodes usually with short aerial roots, lower ones with a ring of silky hairs above sheath scar; branching from basal 3rd or 4th node up. Branches usually several to many, clustered at mid-culm and basal nodes, central 3 codominant; branchlets usually specialized into weak or tough thorns. Culm sheaths tardily deciduous, leathery, glossy when fresh, ribbed-striate when dry, glabrous or stiffly hairy at basal margins only, apex subtruncate or slightly asymmetrical, arched; auricles undulate, wrinkled, inflated outward, densely hispidulous or subglabrous abaxially, unequal; larger auricle slightly decurrent, orbicular or ovate, 3.5–4 × 1–1.5 cm; small ones oblong or ovate, ca. 3 × 1–1.5 cm; ligule 4–5 mm, margin nearly entire and densely fimbriate; blade persistent, erect, inflated outward, ovate to oval, base slightly narrowed and then extended toward both sides and joined to auricles, apex abruptly acuminate, sharply tipped. Leaf blade linear-lanceolate to lanceolate, usually 8–23 × 1–2 cm, both surfaces glabrous. Pseudospikelets linear, compressed, more than 2 cm; gemmiferous bracts 2–4; fertile florets 5 or 6, then 2 sterile florets; rachilla segments usually fistulose, ca. 2.5 cm, apex ciliolate. Glumes absent; lemma to 8.5 mm, abaxially glossy and glabrous, many veined, margins glabrous, apex obtuse or acute and finely tipped; palea slightly shorter than lemma, keels ciliate near apex, 2-veined between and scabrous on either side of keels, apex obtuse or sometimes emarginate; lodicules 3, subequal, ovate or obovate, ca. 1.5 mm, margins ciliate, apex obtuse. Anthers ca. 4 mm, apex obtuse. Ovary narrowly obovoid, apex thickened and scabrous; style very short, scabrous; stigmas 3. New shoots Oct, fl. Aug–Sep.

● Plains, hills, riversides, around villages. Guangdong, Guangxi, Sichuan, Yunnan.

The culms are used for scaffolding and construction.

13. Bambusa latideltata W. T. Lin, J. Bamboo Res. 13(2): 15. 1994.

软簕竹 ruan le zhu

Culms 4–8 m, 2–5 cm in diam.; internodes 25–30 cm, glabrescent; wall 1–1.2 cm thick; nodes with a pale hispid ring below and above sheath scar. Branches usually arising from basal culm node upward, clustered, central 3 dominant, lower branchlets sometimes shortened into weak or tough thorns. Culm sheaths deciduous, densely stiffly brown hairy, margins ciliate, apex asymmetrically convex; auricles unequal, larger auricle ca. 2.5 × as large as smaller one; oral setae angular; ligule ca. 2 mm, margin dentate; blade erect, broadly triangular. Leaf blade linear, 4–18 × 0.7–1.6 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Guangdong (Foshan).

Bambusa latideltata is similar to *B. lapidea*, but has branches from the culm base, green culms, lower internodes with stiff, gray-white hairs, culm sheaths with dense, brown hairs, and shorter, dentate ligules.

14. Bambusa indigena L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 370. 1981.

乡土竹 xiang tu zhu

Bambusa dissimilis W. T. Lin.

Culms 10–14 m, 4.5–7 cm in diam., basally slightly flexuose, apically slightly drooping; internodes slightly curved, 25–35 cm, initially thinly white powdery, sparsely stiffly white strigose; wall thick; nodes each with a persistent ring of deciduous, stiff, brown hairs, lower ones with a ring of gray-white silky hairs below and above sheath scar. Branches usually solitary on basal ca. 2 nodes, 3 to many from 3rd node upward, 3 dominant branches longer and thicker, branchlets on lower nodes usually specialized into a few weak thorns. Culm sheaths deciduous, thick, leathery, with 1 very narrow pale yellow

stripe near outer margin, usually glabrous or with dark brown hairs near base, apex slightly asymmetrical, broadly arched; auricles small, unequal; larger auricle elliptic or suboblong, ca. 1 × 0.6–0.7 cm; smaller auricle contiguous with blade, subelliptic, ca. 1/3 size of larger one; oral setae slender, undulate; ligule 3–4 mm, sparsely dentate or shortly fimbriate; blade erect, asymmetrical, triangular or narrowly triangular, base to 9/10 width of sheath apex. Leaf blade linear-lanceolate to lanceolate, 6.5–12 × 1.3–1.7 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets linear, 2–3 cm; prophyll keels ciliate; gemmiferous bracts 3–5, 2.5–3.5 mm, 7–9-veined, obtuse or mucronate; florets 5–12, apical ones sterile; rachilla segments flat, 3–3.5 mm, apex inflated and cupulate with ciliolate margins. Glumes 1, ovate-elliptic, ca. 5 mm, 11-veined, apex acute, mucronate; lemma 9–11 mm, glabrous, 13–15-veined, apex acuminate; palea nearly as long as lemma or slightly longer, keels glabrous, 6-veined between and 2-veined on either side of keels, apex penicillate; lodicules 3, ca. 1.5 mm, long ciliate, anterior 2 oblique, posterior broadly obovate. Filaments slender; anthers ca. 4 mm. Ovary broadly ovoid, ca. 0.5 mm, base stalked, apex thickened and hispid; style ca. 0.3 mm, hispid; stigmas 3, ca. 1.5 mm.

● Low hills, around villages. Guangdong (Guangzhou).

Bambusa indigena is similar to *B. diaoluoshanensis* but has more glabrous culm sheaths with smaller auricles.

15. Bambusa longipalea W. T. Lin, Acta Phytotax. Sin. 26: 224. 1988.

紫斑箭竹 zi ban le zhu

Culms to 8 m, to 6 cm in diam.; basally ± flexuose; internodes deep green, initially with purple stripes, 25–34 cm; nodes glabrous. Branches usually arising from 1st or 2nd node up, central 3 dominant, lower branchlets sometimes shortened into weak thorns. Culm sheaths deciduous, glabrous, apex obliquely asymmetrically arched; auricles subequal, elliptic, margin ciliate; ligule ca. 8 mm, denticulate; blade triangular. Leaf blade linear-lanceolate, 6.5–20 × 0.5–1.8 cm, abaxially pubescent, adaxially glabrous. Pseudospikelets 4–5 cm; gemmiferous bracts 4–7; florets 7 or 8; rachilla segments 3.5–4 mm, apices pubescent; glumes absent or 1; lemma 1–1.1 cm, subglabrous; palea longer than lemma, pubescent, keels ciliolate toward apex, 6-veined between keels; lodicules 3–3.5 mm, margins ciliate; anterior 2 obliquely obovate, posterior oblong. Anthers ca. 5 mm. Ovary obovoid. Fruit unknown.

● Guangdong (Guangzhou).

Bambusa longipalea is similar to *B. indigena* but has internodes deep green, initially with purple stripes, glabrous nodes, and subequal culm sheath auricles.

16. Bambusa cornigera McClure, Lingnan Univ. Sci. Bull. 9: 7. 1940.

牛角竹 niu jiao zhu

Culms 8–13 m, 6–8 cm in diam., basally straight or flexuose, apically pendulous; internodes slightly curved, often swollen near base, 24–28 cm, glabrous, initially thinly white powdery; basal nodes with rings of gray-white silky hairs below and above sheath scar. Branches usually arising from 2nd node upward, primary branches longer and thicker; branchlets of lower branches sometimes specialized into fine, weak thorns. Culm sheaths deciduous, ribbed-striate when dry, with deciduous, stiff, appressed, pale hairs on upper half, apex ± truncate; auricles equal, oblong, small; oral setae fine; ligule to 3 mm, entire, ciliate; blade erect, triangular to narrowly triangular. Leaf blade lanceolate to oblong-lanceolate, 12–20 × 2–3 cm, abaxially pubescent. Inflorescence unknown.

● Riversides. Guangxi (Changwu).

17. Bambusa subaequalis H. L. Fung & C. Y. Sia, Acta Phytotax. Sin. 19: 374. 1981.

锦竹 jin zhu

Culms 8–12 m, 4–6 cm in diam., basally straight, apically drooping; internodes 40–50 cm, initially thinly white powdery, glabrous; wall rather thick; nodes glabrous; branching to base. Branches 1–3 on lower nodes, nearly horizontal; branchlets on lower nodes usually specialized into weak thorns, on middle and upper nodes many, clustered. Culm sheaths deciduous, usually with 1 or 2 pale yellow-green stripes near outer margin, glabrous, apex somewhat broadly triangular or broadly arched; auricles inconspicuous, usually joined to base of blade; ligule ca. 3 mm, margin finely ciliate; blade persistent, erect, subtriangular, base nearly as wide as sheath apex, extending outward to form inconspicuous auricles, margin involute, apex sharp. Leaf blade linear, usually 9–16 × 1–1.3 cm, abaxially pilose, adaxially glabrous. Inflorescence unknown.

● Hills, around villages. Guangdong (cultivated), Sichuan.

Bambusa subaequalis differs from *B. indigena* by its more slender culms with longer internodes, glabrous nodes, inconspicuous culm sheath auricles, and narrower leaf blades.

18. Bambusa gibba McClure, Lingnan Univ. Sci. Bull. 9: 10. 1940.

坭竹 ni zhu

Culms 7–10 m, 3.5–6 cm in diam., basally flexuose, apically suberect; internodes 30–40 cm, inflated near base, initially white powdery, basal internodes initially sparsely stiffly gray-white or brown strigose; wall 3–5 mm thick; nodes glabrous; branching to base. Branches usually 3 at lower nodes with branchlets sometimes specialized into weak thorns; several on middle and upper nodes, 3 central branches dominant. Culm sheaths deciduous, ribbed-striate when dry, glabrous, apex obliquely truncate, with a triangular protuberance on higher shoulder; auricles obviously unequal, sometimes weak; larger auricle ovate-lanceolate or narrowly oblong, 5–6 mm; smaller auricle ovate or elliptic, 2–3 mm; oral setae slender, undulate; ligule arched, 2–3 mm, finely dentate and fimbriate; blade deciduous, erect, narrowly triangular, base not narrowed, nearly 2/3 as wide as sheath apex. Leaf blade linear-lanceolate to narrowly lanceolate, 8.5–14.5 × 0.8–1.3 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets linear, 2–3 cm; prophylls ovate, ca. 1.5 mm, keels ciliate, apex obtuse; gemmiferous bracts 4, ovate, 1.5–3.5 mm, apex obtuse and mucro-

nate; florets 4–8; rachilla segments flat, ca. 3.5 mm, slightly hairy, apex inflated and ciliolate. Glumes 1, ovate-elliptic, 6–6.5 mm, 15-veined, apex acute, mucronate; lemma ovate-oblong, ca. 1.1 cm, 17-veined, apex acute, mucronate; palea nearly as long as lemma or shorter, keels glabrous, 3-veined between and on either side of keels, apex obtuse with a cluster of white hairs; lodicules 3, subequal, ca. 1.5 mm, margins long ciliate toward apex, base thickened, anterior 2 broadly elliptic, posterior ovate. Anther obtuse at apex. Ovary ovoid, ca. 0.5 mm, base stalked, apex hairy; style ca. 0.5 mm; stigmas 3. Fruit unknown.

Low hills, around villages. Fujian, Guangdong, Guangxi, Hainan, Jiangxi [Vietnam].

This species was misidentified as *Bambusa tulda* by Merrill and Chun (Sunyatsenia 2: 207. 1935).

19. Bambusa malingensis McClure, Lingnan Univ. Sci. Bull. 9: 11. 1940.

马岭竹 ma ling zhu

Culms 8–10 m, 4–6 cm in diam., basally straight or slightly flexuose, apically suberect or slightly drooping; internodes 25–30 cm, initially thinly white powdery, glabrous except for basal ca. 5 nodes with rings of gray-white silky hairs below sheath scar; wall thick; branching from ca. 2nd node up. Branches usually solitary at basal nodes, 3 to many at mid-culm and distal nodes, central 3 branches dominant; branchlets on lower branches usually forming weak or sometimes sharp, tough thorns. Culm sheaths slightly persistent, ribbed-striate when dry, abaxially glabrous, apex obliquely truncate and arched; auricles unequal, oblong or sometimes narrowly lanceolate, adaxially and marginally with undulate slender setae; larger auricle slightly slanted downward and extending downward, ca. 5 mm, ca. 2 × size of smaller one; ligule arched or subtruncate, 3–4 mm, margin irregularly dentate and ciliolate; blade deciduous, erect, triangular or narrowly triangular, base slightly arched, narrowed, to 2/3 width of sheath apex. Leaf blade narrowly lanceolate, 8–15 × 1–1.7 cm, abaxially very sparsely pubescent or subglabrous, adaxially glabrous. Inflorescence unknown.

● Open fields on hills. Guangdong (cultivated), Hainan.

20. Bambusa angustiaurita W. T. Lin, Bamboo Res. 1983(2): 52. 1983.

狭耳坭竹 xia er ni zhu

Culms 8–10 m, 3–6 cm in diam., basally slightly flexuose, apically slightly drooping; internodes ca. 30 cm, initially stiffly dull brown hairy; wall thick; basal ca. 3 nodes with persistent ring of gray-white silky hairs above sheath scar; branching from 2nd to 5th node up. Branches solitary or 3 to several per node, dominant 3 longer and thicker; branchlets of those on lower nodes sometimes forming weak thorns. Culm sheaths deciduous, thickly leathery, ribbed-striate when dry, uniformly stiffly dull brown hairy or hairy only near base, apex subtruncate or slightly asymmetrical, broadly arched; auricles unequal, linear; larger auricle 1.5–2 × ca. 0.3 cm; smaller auricle ca. 1 × 0.2 cm; oral setae ca. 3 mm, undulate; ligule 3–4 mm, dentate, shortly fimbriate; blade erect, narrowly ovate to ovate-lanceolate, base slightly arched, narrowed, nearly 1/2 width of sheath apex, apex acuminate, sharply tipped. Leaf blade linear-lanceolate to lanceolate, 8–16 × 1.3–2.3 cm, both surfaces glabrous. Inflorescence unknown.

● Low hills, around villages. Guangdong (Huaiji).

21. Bambusa ventricosa McClure, Lingnan Sci. J. 17: 57. 1938.

佛肚竹 fo du zhu

Leleba ventricosa (McClure) W. C. Lin.

Culms dimorphic; normal culms 8–10 m, 3–5 cm in diam., basally flexuose, apically slightly drooping; internodes 30–35 cm, basally slightly swollen, not white powdery, initially glabrous; lower nodes with rings of gray-white silky hairs below and above sheath scar; branching from 3rd or 4th node up, basal 1 or 2 nodes also with short aerial roots; branches 1–3 on lower nodes; branchlets of these sometimes condensed into weak thorns; branches several to many at mid-culm and upper nodes, with central 3 slightly longer and thicker. Abnormal culms (usual in potted plants) 25–50 cm, 1–2 cm in diam., internodes shortened and swollen at base, branch internodes also shortened and swollen; branches only on upper nodes, usually solitary, without thorns. Culm sheaths deciduous, obviously ribbed-striate, glabrous, apex nearly symmetrical, broadly arched or subtruncate; auricles unequal; larger auricle narrowly ovate to ovate-lanceolate, 5–6 mm; smaller auricle ovate, 3–5 mm; oral setae curved; ligule 0.5–1 mm, very shortly finely fimbriate; blade deciduous, erect or recurved, ovate to ovate-lanceolate, base slightly arched, narrowed, slightly narrower than sheath apex. Leaf sheath glabrous; ligule subtruncate, very short; auricles ovate or falcate; oral setae several, curved; blade linear-lanceolate to lanceolate, 9–18 × 1–2 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets solitary or many clustered on each node, linear-lanceolate, slightly compressed, 3–4 cm; prophylls oval, 2.5–3 mm, 2-keeled, apex obtuse; gemmiferous bracts 1 or 2, narrowly ovate, 4–5 mm, 13–15-veined, apex acute; florets 6–8, basal 1 or 2 and apical 2 or 3 usually sterile; rachilla segments flat, 2–3 mm, apex inflated and cupular. Glumes absent or 1, ovate-elliptic, 6.5–8 mm, 15–17-veined, apex acute; lemma ovate-elliptic, 9–11 mm, glabrous, 19–21-veined, apex acute; palea nearly as long as lemma, ciliolate near apex, 4-veined between and on either side of keels, apex acuminate with a cluster of white hairs; lodicules 3, ca. 2 mm, margins long ciliate, anterior 2 slightly asymmetrical, posterior broadly elliptic. Filaments slender; anthers yellow, ca. 6 mm, apex obtuse. Ovary broadly ovoid, 1–1.2 mm, stalked, apex thickened and hairy; style very short, hairy; stigmas 3, ca. 6 mm. Fruit unknown.

● Guangdong.

Widely cultivated in S China as an ornamental potted plant, this bamboo is sometimes considered to be a cultivar of *Bambusa tuldoides*, but the flowering material on which that decision was based, collected in the United States, may not represent this species. Moreover, in China the culm sheath of *B. ventricosa* is substantially different from that of *B. tuldoides*.

22. Bambusa corniculata L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 368. 1981.

东兴黄竹 dong xing huang zhu

Culms to 8 m, 4–7 cm in diam., basally slightly flexuose, apically drooping; internodes 20–32 cm, those at base markedly shorter, usually flat and shallowly grooved above branches, white powdery, sparsely deciduously stiffly strigose; wall thick; basal nodes with rings of gray-white silky hairs below and above sheath scar and with short aerial roots; branching from 2nd or 3rd node up. Branches solitary on lower nodes, lower branchlets usually shortened into weak, curved thorns, 3 to several per node at mid-culm with primary dominant. Culm sheaths deciduous, glabrous, apex subtruncate, with a triangular protuberance on one shoulder; auricles unequal, larger auricle to 3 × size of smaller one, oblong or elliptic, ca. 8 mm; oral setae ca. 1 cm, undulate; ligule ca. 3 mm, shortly fimbriate, densely strigose; blade erect, triangular or narrowly ovate, base 4/5 width of sheath apex. Leaf blade linear-lanceolate to lanceolate, usually 13–20 × 1–2 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Hills, around villages. Guangxi (Dongxing).

23. Bambusa diaoluoshanensis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 369. 1981.

吊罗坭竹 diao luo ni zhu

Culms ca. 10 m, 4–5 cm in diam., basally slightly flexuose, apically pendulous; internodes 25–30 cm, initially stiffly brown strigose; wall thick; lower nodes with rings of stiff, pale brown hairs and white powder below sheath scar, basal ca. 3 nodes also with a ring of gray-white silky hairs and sometimes aerial roots above sheath scar; branching from base. Branches solitary at basal ca. 3 nodes, 3 on mid-culm, many on upper culms with primary dominant; branchlets of lower branches sometimes shortened into weak thorns. Culm sheaths deciduous, stiffly dark brown hairy, apex asymmetrical, broadly arched; auricles extremely unequal; larger auricle to 4 × size of smaller one, narrowly oblong, ca. 5 mm; smaller auricle subelliptic, usually covered or pressed against base of blade; oral setae undulate; ligule ca. 3 mm, finely dentate, shortly fimbriate; blade erect, narrowly triangular, base rounded, to 8/9 width of sheath apex. Leaf blade linear-lanceolate to lanceolate, usually 7.5–16 × 1.3–1.8 cm, abaxially densely pubescent, adaxially glabrous. Inflorescence unknown.

● Margins of montane forests. Hainan.

Bambusa diaoluoshanensis is similar to *B. ramispinosa*, but has hairs on the culm internodes and sheaths and an asymmetrical culm sheath apex with more unequal auricles.

24. Bambusa insularis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 370. 1981.

黎庵高竹 li an gao zhu

Culms 8–10 m, 4–5 cm in diam., basally slightly flexuose, apically slightly drooping; internodes 30–35 cm, basal ca. 3 usually with purple streaks, with rings of brown silky hairs below and above sheath scars; wall thick; branching from base. Branches solitary on basal nodes, 3 to many on other nodes; branchlets of lower branches sometimes shortened into weak thorns. Culm sheaths deciduous, ribbed-striate when dry, densely stiffly dark brown strigose, apex usually subtruncate; auricles unequal, larger auricle to 1.5 × size of smaller one, elliptic, usually wrinkled, ca. 1 cm; oral setae ca. 1 cm; ligule ca. 3 mm, finely dentate and fimbriate; blade erect, ovate-triangular to narrowly ovate, base ca. 3/4 width of sheath apex, glabrous or abaxially sparsely stiffly dark brown strigose. Leaf blade linear-lanceolate, 8–14 × 1.1–1.5 cm, abaxially densely pubescent, adaxially sparsely pilose near base. Inflorescence unknown.

● Low hills. Hainan.

25. Bambusa xiashanensis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 374. 1981.

霞山坭竹 xia shan ni zhu

Bambusa sanzaoensis W. T. Lin.

Culms 12–13 m, 4.5–5.5 cm in diam., basally slightly flexuose, apically slightly drooping; internodes usually grooved above branches, 35–45 cm, glabrous; wall thick; nodes usually with a persistent ring of stiff, gray-white hairs, basal ca. 4 nodes with a ring of gray-white silky hairs below and above sheath scar, basal node sometimes with short aerial roots; branching from base. Branches solitary on basal 2 nodes, 3 to many on other nodes with primary dominant; dominant branches usually inflated at base and flexuose, lower branchlets sometimes shortened into weak thorns. Culm sheaths deciduous, apex slightly asymmetrical, broadly arched, stiffly dark brown strigose near central base; auricles unequal, larger auricle to 1.5 × size of smaller one, ascending, broadly elliptic, ca. 1.5 cm; oral setae undulate; ligule ca. 7 mm, dentate, shortly fimbriate; blade erect, triangular to ovate-triangular, base ca. 2/3 width of sheath apex. Leaf blade lanceolate to linear-lanceolate, 10–20 × 1.5–2 cm, abaxially densely pubescent, adaxially glabrous. Inflorescence unknown.

● Low hills and plains. Guangdong (Zhanjiang).

Bambusa xiashanensis is similar to *B. rutila*, but has culm sheaths with central rather than marginal hairs, a more symmetrical apex with more equal auricles, a broader blade, and a taller ligule.

26. Bambusa prominens H. L. Fung & C. Y. Sia, Acta Phytotax. Sin. 19: 372. 1981.

牛儿竹 niu er zhu

Culms 10–15 m, 5–7 cm in diam., basally slightly flexuose, apically drooping; internodes 40–50 cm, usually grooved above branches, initially white powdery, glabrous; wall thick; basal nodes with rings of pale brown silky hairs below and above sheath scar and with short aerial roots, with a ring of stiff, dull brown hairs shortly after falling of sheaths; branching from base. Branches many, clustered, central dominant; branchlets of lower branches sometimes shortened into weak thorns. Culm sheaths tardily deciduous, stiffly dull brown strigose near basal margin, apex symmetrical, broadly arched, with a triangular protuberance on one shoulder; auricles unequal, larger auricle to 2 × size of smaller one, oblong; oral setae undulate; ligule 3–4 mm, fimbriate; blade persistent, erect, subtriangular,

base slightly rounded, nearly 3/4 width of sheath apex. Leaf blade linear-lanceolate, usually 15–25 × 2–2.5 cm, abaxially densely pubescent, adaxially glabrous. Inflorescence unknown.

● Hills, riversides. Sichuan.

Bambusa prominens differs from *B. tuldoides* by the culm sheaths having a triangular apical protuberance and dull brown hairs near the basal margin, and the presence of weak thorns.

27. Bambusa ramispinosa L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 373. 1981.

坭黄竹 ni huang zhu

Culms ca. 8 m, to 3.8 cm in diam., basally slightly flexuose, apically drooping; internodes ca. 30 cm, initially white powdery, glabrous; several basal nodes with rings of gray-white silky hairs below sheath scars, branching from 3rd node up. Branches many at mid-culm, central 3 dominant, swollen at base, branchlets of lower branches sometimes shortened into weak thorns. Culm sheaths deciduous, glabrous, apex obliquely truncate; auricles unequal, larger auricle to 2 × size of smaller one, narrowly oblong, ca. 5 mm; oral setae fine, ca. 5 mm; ligule ca. 3 mm, irregularly dentate, very shortly ciliolate or subglabrous; blade erect, narrowly triangular, base nearly 6/7 width of sheath apex. Leaf blade linear-lanceolate to lanceolate, usually 9.5–13 × 1.1–1.6 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Plains, slopes. Guangxi (Bobai).

2. Bambusa subg. **Leleba** (Rumphius ex Nakai) P. C. Keng ex L. C. Chia & X. L. Feng, Fl. Reipubl. Popularis Sin. 9(1): 75. 1996.

孝顺竹亚属 xiao shun zhu ya shu

Xia Nianhe (夏念和), Jia Liangzhi (贾良智 Chia Liang-chih); Chris Stapleton

Leleba Rumphius ex Nakai, Fl. Sylv. Kor. 20: 13. 1933; *Tetragonocalamus* Nakai.

Culm internodes mostly shorter than 30 cm; wall to 2 cm thick; branchlets of lower branches never specialized into tough or weak thorns. Branches usually absent toward culm base, usually 3 co-dominant. Culm sheaths thickly papery; auricles large, rounded or irregular, or absent; blade deciduous, broad, base 1/2–3/4 width of sheath apex. Pseudospikelets loose at maturity, with broad florets on short rachilla segments.

More than 35 species: widely distributed in tropical and subtropical Asia; widely planted in other parts of the world; 30 species (22 endemic) in China, mainly in the south, some in the southwest.

Bambusa crispiaurita (species no. 37) could not be included in the following key because the available description is inadequate.

1a. Culm sheath auricles to 1 cm or wider, or if less than 1 cm then branches arising from lower nodes (sometimes from basal node), or leaf blade abaxially glabrous and culm internodes 20–30 cm.
  2a. Culm sheath blade nearly 1/2 width of sheath apex or narrower.
    3a. Culm sheath auricles unequal; sheaths apically asymmetrical broadly arched, with short, stiff hairs near inner margin ..... 38. *B. rigida*
    3b. Culm sheath auricles subequal; sheaths apically convex and undulate, uniformly hairy.
      4a. Culm sheaths with pale brown or white silky hairs; auricles 2.5–3 cm; ligule 7–8 mm; leaf blade abaxially densely pubescent at least when young ..... 28. *B. polymorpha*
      4b. Culm sheaths with stiff, dark brown hairs; auricles 0.8–1 cm; ligule 3–4 mm; leaf blade abaxially glabrous ..... 41. *B. vulgaris*
  2b. Culm sheath blade more than 1/2 width of sheath apex.
    5a. Culm sheath blade joined with auricles for 1–1.3 cm.
      6a. Culm sheath apically arched, broadly symmetrically triangular; ligule 1.5–2 mm ..... 30. *B. teres*
      6b. Culm sheath apically asymmetrical, arched or truncate; ligule 3–5 mm.
        7a. Culm sheaths broadly triangular, length less than 1/2 basal width, apex very broadly arched-convex or subtruncate; auricles ± horizontal ..... 29. *B. tulda*
        7b. Culm sheaths triangular, length more than 1/2 basal width, apex asymmetrically arched, convex; larger auricle slanted downward along sheath margin.
          8a. Culm internodes subsolid; culm sheath blade broadly lanceolate to triangular-ovate, ligule entire, white ciliolate; leaf blade abaxially glaucous ..... 31. *B. burmanica*
          8b. Culm internodes hollow; culm sheath blade triangular to narrowly triangular, ligule dentate, fimbriate; leaf blade abaxially green ..... 32. *B. eutuldoides*
    5b. Culm sheaf blade joined with auricles for 3–7 mm.
      9a. Culm sheath apically subtruncate; ligule 1.5–2 mm ..... 36. *B. subtruncata*
      9b. Culm sheath apically asymmetrical or broadly arched, sometimes obliquely truncate; ligule 3–5 mm.
        10a. Culm sheaths ± pubescent.
          11a. Larger culm sheath auricle slanted downward along sheath margin, gradually tapering ..... 33. *B. pervariabilis*
          11b. Larger culm sheath auricle not slanted downward, not tapering ..... 40. *B. dolichoclada*

10b. Culm sheaths glabrous.
12a. Lower culm internodes without colored stripes ..... 35. *B. tuldoides*
12b. Lower culm internodes with yellow-green or pale green stripes.
13a. Branches arising from basal node up; larger auricle of culm sheath obovate-oblong or oblanceolate, tapering ..... 33. *B. pervariabilis*
13b. Branches arising from basal 3rd or 4th node up; larger auricle of culm sheath oblong, not tapering ..... 34. *B. longispiculata*
1b. Culm sheath auricles less than 1 cm wide, or if ca. 1 cm, then culm blade base less than 1/3 width of sheath apex.
14a. Leaf blade abaxially pale and glaucous.
15a. Culm sheath auricles very small or inconspicuous ..... 57. *B. multiplex*
15b. Culm sheath auricles well developed.
16a. Culm sheath auricles obviously unequal, usually partially covered by base of blade; sheaths asymmetrical, apex broadly convex ..... 39. *B. boniopsis*
16b. Culm sheath auricles subequal, not covered by base of blade; sheath apically subtruncate ..... 46. *B. pallida*
14b. Leaf blade abaxially green or pale green.
17a. Culm sheath blade base narrower than 1/2 width of sheath apex.
18a. Culm sheath auricles extremely unequal, larger to 3.5 × size of smaller; ligules ca. 1 mm; base of culm sheath blade nearly 3/7 width of sheath apex ..... 53. *B. mollis*
18b. Culm sheath auricles less unequal, larger to 2 × size of smaller; ligules ca. 2 mm; base of culm sheath blade ca. 1/4 width of sheath apex ..... 54. *B. contracta*
17b. Culm sheath blade base wider than 1/2 width of sheath apex.
19a. Culm sheath auricles inconspicuous; sheath apex truncate ..... 56. *B. truncata*
19b. Culm sheath auricles well developed; sheath apex asymmetrically arched, broadly arched, or shallowly undulate, subtruncate.
20a. Culm sheath apically subtruncate, sometimes also extremely broadly arched.
21a. Culm sheaths stiffly hairy near margins and base; auricles subequal; ligules ca. 1 mm ..... 47. *B. duriuscula*
21b. Culm sheaths stiffly hairy near base or inner margin but not both; auricles obviously unequal, larger at least 2 × size of smaller; ligules 2–3 mm.
22a. Branches usually arising from 1st or 2nd node; culm sheaths pubescent only near base ..... 43. *B. gibboides*
22b. Branches usually arising from 8th to 10th node; culm sheaths pubescent only near inner margin ..... 51. *B. lenta*
20b. Culm sheath apically asymmetrically arched, broadly arched, or shallowly undulate.
23a. Culm sheath ligule ca. 5 mm ..... 42. *B. utilis*
23b. Culm sheath ligule 1–3 mm.
24a. Culm sheaths substantially pubescent; ligule 0.6–1 mm.
25a. Culm sheaths white pubescent, auricles falcate and cupped ..... 49. *B. amplexicaulis*
25b. Culm sheaths stiffly brown hairy, auricles not falcate.
26a. Culm sheaths densely and uniformly dull brown hairy; auricles not covered by blade ..... 48. *B. pachinensis*
26b. Culm sheaths ± brown hairy; auricles usually partly covered by blade ..... 50. *B. semitecta*
24b. Culm sheaths glabrous or pubescent only near margins; ligule (<1–)1–3 mm.
27a. Culm nodes glabrous; usually branching from 7th to 11th node up ..... 55. *B. textilis*
27b. Basal culm nodes usually with a ring of gray-white silky hairs above sheath scar; usually branching from 4th to 6th (rarely 7th) node up.
28a. Culm sheaths with stiff marginal hairs; ligule 1–1.5 mm ..... 45. *B. albolineata*
28b. Culm sheaths glabrous; ligule 2–3 mm.
29a. Culm sheath auricles never covered by blade base, the larger oblanceolate and tapering ..... 44. *B. piscatorum*
29b. Culm sheath auricles partly covered by blade base, the larger oblong with rounded ends ..... 52. *B. mutabilis*

28. Bambusa polymorpha Munro, Trans. Linn. Soc. London 26: 98. 1868.

灰秆竹 hui gan zhu

Culms 15–20 m, 7–15 cm in diam., apically nodding; internodes gray-green, 40–65 cm, initially with white powdery chaff; wall thick; nodes slightly prominent, several basal nodes with rings of aerial roots; branching only from mid-culm up.

Branches many, clustered, arched, slender. Culm sheaths quite persistent, short, broad, leathery, rigid, densely pale brown or silky white hairy, apex curved-truncate; auricles subequal, not slanted downward, projecting up or down, falcate, broadly belt-shaped, 7–8 × 2.5–3 cm, strongly wrinkled; oral setae dense, 1–1.5 cm, thick, scabrous; ligule 7–8 mm, shortly fimbriate; blade erect, nearly symmetrical, broadly lanceolate, base slightly narrowed and joined to auricles for ca. 2.5 cm, ca. 1/3 width of sheath apex, abaxially brown silky hairy, apex acute, sharply tipped. Leaf blade linear to narrowly lanceolate, 15–20 × 0.9–1.5 cm, both surfaces initially pubescent, later adaxially hairy near base and abaxially along midrib. Pseudospikelets embraced by sheathlike bracts; bracts terete, 1–1.5 cm, glossy; florets 2 or 3, apical one sterile; rachilla segments flat, glabrous. Glumes 3, ovate, apex mucronate; lemma ovate, many veined, apex mucronate; palea lanceolate, about as long as or slightly longer than lemma, keels glabrous, apex acute; lodicules 3, posterior 1 smaller, suborbicular, 3–5-veined, margins ciliolate. Anthers purple, apex obtuse, sometimes finely tipped. Ovary ovoid, apex hairy; style short; stigmas 3, white hairy. Caryopsis obovoid, unilaterally compressed, ca. 5 mm, apex hairy, with persistent style base.

Montane forests. S Yunnan [Bangladesh, India, Myanmar, Thailand].

29. Bambusa tulda Roxburgh, Fl. Ind., ed. 1832, 2: 193. 1832.

俯竹 fu zhu

Culms to 14 m, 7–8 cm in diam., apically slightly drooping; internodes 30–35 cm, initially white powdery, lower internodes slightly flexuose, basal internodes often with 2 or 3 faint yellow stripes; wall very thick; nodes with rings of gray-white silky hairs below and above sheath scar, basal nodes with short aerial roots; branching from ca. 4th node up. Branches many, clustered, central 3 dominant. Culm sheaths deciduous, usually less than 1/2 as wide as long at base, leathery, densely stiffly dull brown strigose, apex subtruncate; auricles unequal, not slanted downward along sheath margin, 1.5–2.5 × 1.3–1.5 cm, one tall and ovate, one low and oblong, undulate, wrinkled; oral setae long, undulate; ligule ca. 5 mm, dentate, shortly fimbriate; blade erect, slightly asymmetrical, broadly triangular, base slightly narrowed and joined to auricles for ca. 1 cm, nearly 3/4 width of sheath apex, both surfaces stiffly pale hairy, apex acutely acuminate. Leaf blade broadly linear or linear-lanceolate, 15–19 × 1.4–1.7 cm, abaxially pale gray, densely villous, adaxially deep green, glabrous. Inflorescence unknown from China.

Slopes. Yunnan [Bangladesh, Bhutan, India, Nepal, Thailand, Vietnam].

Often misidentified as *Bambusa nutans* subsp. *cupulata* (*B. teres* in this account), *B. tulda* is distinguished by its smaller, more erect auricles, brown rather than black culm sheath hairs, persistent, uncupped culm sheath blade, and shorter, thicker walled culms with stripes on the basal internodes. It was treated as *B. nutans* Munro in FRPS (9(1): 78. 1996).

30. Bambusa teres Buchanan-Hamilton ex Munro, Trans. Linn. Soc. London 26: 95. 1868.

马甲竹 ma jia zhu

Bambusa lixin Hsueh & T. P. Yi; *B. nutans* Munro subsp. *cupulata* Stapleton.

Culms 8–20 m, 5–7 cm in diam., basally very straight, apically slightly drooping; internodes 40–46 cm, initially white powdery; wall thick; nodes flat, basal several with rings of gray-white silky hairs above sheath scar and with aerial roots; branching from basal node up. Branches several to many, clustered, central 3 dominant, lower branches bent downward, middle branches horizontal. Culm sheaths deciduous, convex, thickly leathery, initially white powdery, densely deciduously stiffly black strigose, later dark brown strigose, margin ciliolate, apex asymmetrically triangular; auricles obviously unequal, strongly undulate and wrinkled, larger ones conspicuously slanted downward to 1/3 of height of sheath, narrowly reniform or obovate-lanceolate, 4.5–5 × ca. 1.5 cm; oral setae curved; ligule 1.5–2 mm, entire, glabrous or very shortly ciliate; blade deciduous, nearly symmetrical, broadly triangular-ovate and acuminate, base broadly cordate and inflated, extending to both sides to join auricles for 1–1.3 cm, base ca. 5/8 as wide as sheath apex, abaxially glabrous, adaxially strigose or scabrous. Leaf blade broadly linear to linear-lanceolate, 15–20 × 1.5–2.5 cm, abaxially pale green, densely pubescent, adaxially glabrous or sometimes hispidulous near base. Pseudospikelets solitary or 2–5 clustered at each node of flowering branches. Spikelets linear to linear-lanceolate, 2.5–7.5 × ca. 0.5 cm; florets 4–6, apical 1 or 2 sterile; rachilla segments clavate, striate, apex ciliate. Glumes 1 or 2, many veined, apex acute; lemma ovate to oblong, 1.2–2.5 × ca. 0.8 cm, glabrous, many veined, margin ± slightly ciliate, apex acute or acuminate and finely tipped; palea slightly shorter than lemma, keels ciliate, 5–7-veined between keels, apex penicillate; lodicules 3, ca. 3.8 mm, anterior 2 thickened at base, 5-veined, margins long ciliate, posterior 1 not thickened at base. Anthers purplish red, 7.5–10 mm, apex obtuse or emarginate. Ovary obovate or ovate-ellipsoid, apex thickened and long hispid; style very short, long hispid; stigmas 3. Caryopsis ellipsoid, ca. 7.5 mm, apex long hispid.

Open fields, riversides, around villages. Guangdong, Guangxi, SE Xizang [Bangladesh, Bhutan, India, Myanmar, Nepal].

Bambusa teres is not recognized as a separate species in S Asia, where the name *B. nutans* subsp. *cupulata* is used instead, partially because the name *B. teres* was long overlooked, while this bamboo became widely known as *B. nutans*, the type of which, from Kathmandu in Nepal, represents a contiguous allopatric, very similar bamboo from the western Himalayas to E Nepal. The inclusion of *B. lixin* requires critical investigation.

This species was treated as *Bambusa tulda* in FRPS (9(1): 80. 1996).

31. Bambusa burmanica Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 35. 1896.

缅甸竹 mian dian zhu

Culms 7–8 m, 2.5–3.5 cm in diam., subsolid; internodes green, ca. 30 cm, initially sparsely brown strigose, yellow and glabrous when old; nodes slightly prominent, with rings of gray-white or yellow-white silky hairs below and above sheath scar, several basal nodes with short aerial roots. Culm sheaths deciduous, short, broad, height more than 1/2 of basal width,

both surfaces distally with erect or appressed, stiff, brown hairs, apex slightly asymmetrical, arched; auricles unequal, slightly wrinkled; larger auricle slightly slanted downward to 1/5 of sheath height, oblong to oblong-lanceolate, 3–3.5 × ca. 1 cm, ends extending outside sheath margin, smaller auricle elliptic, ca. 1 × 0.8 cm; oral setae well developed; ligule ca. 3.5 mm, finely serrulate, very shortly ciliolate; blade erect, slightly asymmetrical, triangular-ovate, base cordate and joined with auricles for ca. 1 cm, ca. 5/7 width of sheath apex, adaxially with pale stiff hairs between veins, apex sharply pointed. Leaf blade linear-lanceolate, 16–25 × 1.5–3 cm, abaxially glaucous, densely pubescent, adaxially glabrous. Inflorescence unknown.

Yunnan [Malaysia, Myanmar, Thailand].

The Chinese material included here is possibly distinct from true *Bambusa burmanica*.

32. Bambusa eutuldoides McClure, Lingnan Univ. Sci. Bull. 9: 8. 1940.

大眼竹 da yan zhu

Culms 6–12 m, 4–6 cm in diam., basally straight, apically slightly drooping; internodes 30–40 cm, fistulose, initially thinly white powdery, sometimes sparsely deciduously stiffly hairy below nodes; wall ca. 5 mm thick; nodes slightly prominent, basal several with rings of gray-white silky hairs below and above sheath scar; branching from 2nd or 3rd node up. Branches several or many, clustered, central 3 dominant. Culm sheaths deciduous, triangular to narrowly triangular, leathery, glabrous or sometimes very sparsely stiffly strigose, apex long slanted along one side, extremely asymmetrical, arched; auricles extremely asymmetrical, of various shapes, rigid, wrinkled; larger auricle extremely decurrent, oblanceolate to narrowly oblong, 5–6.5 × ca. 1.5 cm; smaller auricle suborbicular or oblong, ca. 1 cm in diam., or sometimes thoroughly joined to blade base; oral setae undulate; ligule 3–5 mm, irregularly dentate or laciniate, shortly fimbriate; blade deciduous, erect, asymmetrical, triangular to narrowly triangular, base slightly narrowed and then extending outward to join auricles, nearly 3/5 width of sheath apex, abaxially sparsely stiffly deciduous-hairy. Leaf blade abaxially green, lanceolate to broadly lanceolate, usually 12–25 × 1.4–2.5 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets sessile, clustered at each node of flowering branches and branchlets, linear, 2.5–5.5 cm, with several bud-bearing bracts at base; florets 5 or 6; rachilla segments flat, 3–4 mm, apex inflated and ciliolate. Glumes 1, with very small purple spots, oblong, 9–10 mm, 11-veined, glabrous, apex acute, apiculate; lemma similar to glumes, oblong, 1.2–1.3 cm, 13–15-veined; palea lanceolate, ca. 1.1 cm, keels ciliolate toward tip, 4-veined between and 2-veined on either side of keels; lodicules 3, unequal, anterior 2 narrow, ca. 2 mm, apex long ciliate, posterior 1 larger, broadly ovate or suborbicular, ca. 2 mm. Anthers ca. 5 mm, apex bifid. Ovary subglobose, ca. 1 mm in diam., apex hispidulous; style very short, hispidulous; stigmas 3. Caryopsis initially nearly obovoid, ca. 5 mm, apex hispidulous with persistent style base.

● Usually cultivated along river banks and around villages. Guangdong, Guangxi.

1a. Culm internodes uniformly green; culm sheath auricles slightly wrinkled ..... 32a. var. *eutuldoides*
1b. At least lower culm internodes with colored stripes; culm sheath auricles strongly wrinkled.
2a. Culm internodes and abaxial surface of culm sheaths green, with yellow-white stripes ..... 32b. var. *basistriata*
2b. Culm internodes yellow with green stripes, abaxial surface of culm sheaths green with yellow stripes ..... 32c. var. *viridivittata*

32a. Bambusa eutuldoides var. **eutuldoides**

大眼竹(原变种) da yan zhu (yuan bian zhong)

Culm internodes uniformly green. Culm sheath auricles slightly wrinkled.

● Usually cultivated along river banks and around villages. Guangdong, Guangxi.

32b. Bambusa eutuldoides var. **basistriata** McClure, Lingnan Univ. Sci. Bull. 9: 9. 1940.

银丝大眼竹 yin si da yan zhu

Culm internodes and abaxial surface of culm sheaths green, with yellow-white stripes. Larger culm sheath auricles strongly wrinkled.

● Guangdong; cultivated in Guangxi.

32c. Bambusa eutuldoides var. **viridivittata** (W. T. Lin) L. C. Chia, Guihaia 8: 123. 1988 [*"viridi-vittata"*].

青丝黄竹 qing si huang zhu

Bambusa viridivittata W. T. Lin, Bamboo Res. 1983(2): 54. 1983 [*"viridi-vittata"*].

Culm internodes yellow, with green stripes. Culm sheaths initially green, with yellow stripes. Larger culm sheath auricles shorter, strongly wrinkled.

● Cultivated for ornament. Guangdong.

33. Bambusa pervariabilis McClure, Lingnan Univ. Sci. Bull. 9: 13. 1940.

撑篙竹 cheng gao zhu

Culms 7–10 m, 4–5.5 cm in diam., basally straight, apex suberect; internodes straight, ca. 30 cm, basal internodes with yellow-green stripes, initially thinly white powdery or strigose; nodes slightly prominent, basal nodes with rings of gray-white silky hairs below and above sheath scar; branching from basal node up. Branches several to many, clustered, with central 3 dominant. Culm sheaths deciduous, initially with yellow-green stripes, thinly leathery, abaxially glabrous or sometimes strigose, apex asymmetrically arched; auricles unequal, undulate, wrinkled; larger auricle slanted along 1/6–1/5 of sheath margin, obovate-oblong to oblanceolate, 3.5–4 × ca. 1 cm, attenuate; smaller auricle suborbicular or elliptic, ca. 1.5 × 0.8 cm; oral setae fine, undulate; ligule 3–4 mm, irregularly dentate or some-

times laciniate, shortly fimbriate; blade deciduous, erect, nearly symmetrical, initially abaxially yellow-green striped, narrowly ovate-acuminate, base rounded and then extending outward and joined with auricles for 3–7 mm, nearly 2/3 width of sheath apex. Leaf blade linear-lanceolate, usually 10–15 × 1–1.5 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets linear, 2–5 cm, gemmiferous bracts 2 or 3; florets 5–10; rachilla segments ca. 4 mm. Glume 1, oblong, ca. 6 mm, 9-veined, glabrous, apex acute; lemmas oblong-lanceolate, 1.2–1.4 cm, glabrous, 13–15-veined, apex acute; palea nearly as long as or slightly shorter than lemma, ciliolate toward apex, 6-veined between and 3-veined on either side of keels; lodicules 3, unequal; anterior 2 oblique, ca. 2.7 mm, margins long ciliate, posterior larger, obovate-oblong, ca. 3 mm. Filaments short; anthers ca. 5 mm. Ovary ellipsoid, ca. 1 mm, apex hispidulous; style ca. 1 mm, hispidulous; stigmas 3, ca. 3 mm, hairy. Young caryopsis broadly ovoid, ca. 1.5 mm, apex hispidulous, remains of style base persistent.

● River banks, around villages. Guangdong, Guangxi.

Two varieties may be recognized in China. In addition, *Bambusa pervariabilis* var. *multistriata* W. T. Lin (J. Bamboo Res. 16(3): 25. 1997) was described from cultivated, sterile material from Guangdong (Guangzhou).

1a. Basal culm internodes green, with pale yellow stripes ..... 33a. var. *pervariabilis*
1b. All internodes of culms and branches yellow, with green stripes ..... 33b. var. *viridistriata*

33a. Bambusa pervariabilis var. **pervariabilis**

撑篙竹(原变种) cheng gao zhu (yuan bian zhong)

Basal several culm internodes green, with yellow white stripes.

● River banks, around villages. Guangdong.

33b. Bambusa pervariabilis var. **viridistriata** Q. H. Dai & X. C. Liu, Acta Phytotax. Sin. 24: 395. 1986 [*"viridi-striata"*].

花撑篙竹 hua cheng gao zhu

All internodes of culms and branches yellow, with green stripes.

● Cultivated. Guangxi (Nanning).

This variety is cultivated for ornament.

34. Bambusa longispiculata Gamble in Brandis, Indian Trees 668. 1906.

花眉竹 hua mei zhu

Culms 8–12 m, 4–5 cm in diam., basally slightly flexuose, apically erect or slightly drooping; internodes ca. 30 cm, initially thinly white powdery, glabrous, lower ones with yellow-green or pale green stripes; wall thick; nodes flat, lower ones with a ring of gray-white silky hairs below and above sheath scar, basal 1 or 2 nodes with short aerial roots; branching from 3rd or 4th node up. Branches several to many per node with central dominant. Culm sheaths deciduous, leathery, ribbed-striate when dry, glabrous, margins densely ciliate, apex slightly asymmetrical, broadly arched; auricles unequal, undulate, wrinkled; larger auricle slightly slanted downward for 1/7–1/6 of sheath, oblong, 2.5–3 × ca. 1 cm, ends subrounded; smaller auricle suborbicular, ca. 1/2 size of larger; oral setae slender, undulate, densely covering margins of auricles; ligule 4–5 mm, margin irregular, finely dentate and laciniate, densely ciliolate; blade erect, slightly asymmetrical, ovate-triangular, base slightly rounded, then extending outward and joined with auricles for 4–5 mm, base nearly 2/3 as wide as sheath apex. Leaf blade linear or linear-lanceolate, 9–15 × 1–1.5 cm, abaxially densely pubescent, adaxially glabrous. Inflorescence not known from China.

Cultivated. Guangdong [native to Bangladesh and Myanmar].

The determination of Chinese gatherings as this species is doubtful.

The culms are used for scaffolding.

35. Bambusa tuldoides Munro, Trans. Linn. Soc. London 26: 93. 1868.

青秆竹 qing gan zhu

Bambusa angulata Munro; *B. breviflora* Munro; *B. fauriei* Hackel; *B. flavonoda* W. T. Lin; *B. longiflora* W. T. Lin; *B. parvifolia* W. T. Lin; *Chimonobambusa angulata* (Munro) Nakai; *Leleba fauriei* (Hackel) Nakai; *L. tuldoides* (Munro) Nakai; *Tetragonocalamus angulatus* (Munro) Nakai.

Culms 6–10 m, 3–5 cm in diam., apically slightly drooping; internodes 30–36 cm, initially thinly white powdery; wall thick; nodes slightly prominent, basal 1 or 2 with rings of gray-white silky hairs below and above sheath scar; branching from base up. Branches several to many, clustered, central 3 dominant. Culm sheaths deciduous, convex and slanted along outer margin for 1/10–1/8 of length of sheath, with 1–3 pale yellow stripes toward outer margin, glabrous, apex asymmetrically arched; auricles unequal, outer one larger, ovate to ovate-elliptic, ca. 2.5 × 1–1.4 cm, slightly wrinkled; inner one smaller, ovate to elliptic, ascending, ca. 1/2 size of larger; oral setae slender, undulate; ligule 3–4 mm, laciniate, densely fimbriate; blade deciduous, erect, asymmetrically ovate-triangular to narrowly triangular, sparsely deciduously stiffly brown or pale brown strigose, base slightly rounded and then extending outward to join auricles for 5–7 mm, nearly 2/3–3/4 width of sheath apex, margin slightly wrinkled near base and fringed, apex subulate, acuminate. Leaf blade lanceolate to narrowly lanceolate, 10–18 × 1.5–2 cm, abaxially densely pubescent, adaxially glabrous or sparsely pilose near base. Pseudospikelets several at each node of flowering branches, pale green, linear-lanceolate, slightly flat, 2–3 × 0.3–0.4 cm; prophylls 2-keeled, keels ciliate, subtended by sheathlike bracts; gemmiferous bracts 2, glabrous, apex obtuse; florets 6 or 7, proximally and distally sterile; rachilla segments flat, 3–4 mm, apex inflated and cupular, hairy. Glume 1, ovate-oblong, ca. 8.5 mm, glabrous, apex acute; lemma ovate-oblong, 1.1–1.4 cm, ca. 19-veined, glabrous, apex obtuse, mucronate; palea about as long as or slightly shorter than lemma, 4-veined between and 4-veined on either side of keels, penicillate; lodicules 3, anterior 2 obovate, oblique, short, ca. 2.5 mm, broad, margins long ciliate; posterior one long, ca. 3 mm, narrow. Anthers ca. 3 mm, apex emarginate.

Ovary obovoid, ca. 1.2 mm, stalked, apex thickened and hispid; style ca. 0.7 mm, hispid; stigmas 3, ca. 5.5 mm. Caryopsis terete, slightly curved, ca. 8 mm, ca. 1.5 mm in diam., apex obtuse and thickened, hispid, with remains of style.

● Low hills, river banks, commonly cultivated around villages. Guangdong, Guangxi.

Bambusa tuldoides 'Swollen Internode' (鼓节竹 gu jie zhu), with culm internodes shortened and swollen at base, is frequently found in gardens. The compression of its internodes is weaker than in *B. ventricosa*.

This species was misidentified as *Bambusa tulda* by Bentham and as *B. blumeana* by Hooker and Arnott.

36. Bambusa subtruncata L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 378. 1981.

信宜石竹 xin yi shi zhu

Culms 4–5 m, 2–2.5 cm in diam., basally nearly straight, apically slightly drooping; internodes 25–30 cm, initially thinly white powdery, several lower internodes striped yellow-green; wall thick; nodes slightly prominent; basal ca. 3 nodes with rings of gray-white silky hairs below and above sheath scars; usually branching from 3rd or 4th node up. Branches many, clustered, nearly horizontal, central dominant. Culm sheaths deciduous, initially yellow-green striped, glabrous or with stiff, brown hairs near inner margin and base, apex subtruncate; auricles unequal, larger auricle nearly 2.5 × as large as smaller one, broadly elliptic or elliptic, ca. 2 × 1.3 cm, wrinkled; oral setae undulate; ligule 1.5–2 mm, margin ciliate; blade deciduous, erect, triangular to narrowly triangular, base slightly rounded extending outward to join auricles for 6–7 mm, nearly 3/5 as wide as sheath apex. Leaf blade linear-lanceolate, 8–15 × 0.9–1.3 mm, abaxially densely pubescent, adaxially glabrous. Inflorescence unknown.

● Slopes, around villages. Guangdong (Xinyi).

Bambusa subtruncata is similar to the Chinese form of *B. longispiculata*, but differs in its truncate culm sheath apex with larger, broadly elliptic or elliptic auricles, 1.5–2 mm ligules, and narrower blade base, only 3/5 as wide as the sheath apex.

37. Bambusa crispiaurita W. T. Lin & Z. M. Wu, J. S. China Agric. Univ. 13(2): 81. 1992.

皱耳石竹 zhou er shi zhu

Culms to 8 m, 2–6 cm in diam.; internodes 15–25 cm, upper parts ± uniformly stiffly brown strigose; wall thick; nodes slightly prominent, usually with rings of pale silky hairs below and above sheath scar. Branches usually from 1st or 2nd nodes up, dominant ones longer and thicker. Culm sheaths deciduous, sparsely stiffly brown hairy, margins ciliate, apex truncate; auricles subequal, narrowly oblong, wrinkled, margin with a few bristles; ligule 4–5 mm, denticulate; blade erect, ovate-lanceolate, base as wide as sheath apex. Leaf blade linear-lanceolate, 8–17 × 0.8–18 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Slopes of low hills. Guangdong (Guangning).

38. Bambusa rigida Keng & P. C. Keng, J. Wash. Acad. Sci. 36(3): 81. 1946.

硬头黄竹 ying tou huang zhu

Bambusa stipitata W. T. Lin.

Culms 5–12 m, 2–6 cm in diam., basally upright, apically slightly arched; internodes 30–45 cm, initially thinly white powdery, glabrous; wall 1–1.5 cm thick; nodes slightly prominent, sometimes basal node with a ring of gray-white silky hairs above sheath scar; branching from basal or 2nd node up. Branches several to many, clustered, central dominant, 4–6 mm in diam. Culm sheaths deciduous, leathery, basally stiffly deciduously dull brown strigose on inner margin, apex slanted outward and slightly asymmetrical, broadly arched; auricles deep brown, unequal, slightly wrinkled; larger auricle usually ovate, ca. 2.5 × 1.5 cm, those on upper culms nearly oblong or lanceolate; smaller auricle ovate or suborbicular, ca. 2/3 size of larger one; oral setae ca. 1 cm, undulate; ligule 2.5–3 mm, laciniate, fringed; blade deciduous, erect, nearly symmetrical, ovate-triangular to ovate-lanceolate, base rounded and extending outward to join auricles for 3–4 mm, nearly 2/5 width of sheath apex, abaxially very sparsely stiffly brown hairy, adaxially densely stiffly brown hairy near base, distally scabrid, apex acuminate, apiculate. Leaf blade linear-lanceolate, 7.5–18 × 1–2 cm, abaxially densely pubescent, adaxially glabrous or sparsely hairy near base. Pseudospikelets solitary, or several to many clustered at each node of flowering branches, clustered ones usually sterile, solitary ones usually fertile, fertile pseudospikelets 3–4.5 cm; florets 3–7, preceded by several gemmiferous bracts; rachilla segments flat, 2–4 mm, glabrous, apex thickened and cupular. Glumes elliptic, 6–7 mm, many veined, apex acute; lemma oblong-lanceolate, 1–1.5 × 0.4–0.8 cm, many veined, apex mucronate; palea slightly shorter than lemma, ciliate toward apex, 5-veined between keels; lodicules 3, 1.5–3 mm, upper margins long ciliate; anterior 2 subspatulate; posterior l slightly longer, obovate-lanceolate. Anthers 4–6 mm, apex penicillate. Ovary 3-ribbed, ovoid, 2–2.5 mm with stalk, apex hispidulous; style hairy, 1.5–2 mm; stigmas 3, shortly hairy, less than 1 mm. Mature caryopsis unknown.

● Usually cultivated along riversides and around villages of the Sichuan basin. Sichuan.

39. Bambusa boniopsis McClure, Lingnan Univ. Sci. Bull. 9: 7. 1940.

妈竹 ma zhu

Bambusa fecunda McClure.

Culms 3–6 m, 1–2.5 cm in diam., basally erect, apically suberect; internodes slightly curved or straight, 23–30 cm, initially thinly white powdery, glabrous; wall slightly thick; nodes flat, from mid-culm upward with a ring of white powder above sheath scar; branching from 3rd to 5th node up. Branches several to many, clustered, central dominant. Culm sheaths deciduous, rigid when dry, glabrous, apex slightly slanted outward and asymmetrically broadly arched; auricles unequal, minutely wrinkled, usually partly covered by blade base; larger auricle usually elliptic to broadly elliptic, 1–1.3 × 0.7–0.8 cm; smaller auricle usually elliptic, ca. 0.4 × 0.2 cm; oral setae very fine, curved; ligule ca. 1.5 mm, margin erose, very fine ciliolate; blade deciduous, erect, asymmetrically ovate-lanceolate,

longer than sheath, abaxially initially thinly white powdery, glabrous, base rounded, swollen on one side, obviously narrower than sheath apex. Leaf blade linear-lanceolate, 10–16 × 1.4–2 cm, abaxially glaucous, densely pubescent, adaxially sparsely deciduously long hispid. Pseudospikelets solitary or in clusters of 2 or 3 at each node of flowering branches, linear or linear-lanceolate, 2–3 × 0.5–0.7 cm; prophylls 2-keeled; basal bracts gemmiferous; florets 3–7, middle 2 or 3 fertile; rachilla segments flat, 3–4 mm, apex thickened and cupular, hairy. Glumes 1, ovate-oblong, 6.5–7 mm, 11–13-veined, glabrous, acute; lemma with very small purple spots, oblong-lanceolate, 1.2–1.5 cm, glabrous, 17–19-veined, apex acute, mucronate; palea 1–1.2 cm, ciliate toward apex, 4-veined between and 3-veined on either side of keels, apex penicillate; lodicules 3; anterior 2 narrow and oblique, ca. 4 mm, margins long ciliate; posterior 1 nearly oblong, apex 3-toothed. Anthers yellow, ca. 4.5 mm, apex retuse. Ovary very broadly ovoid, stalked, apex thickened and hispidulous; style ca. 0.8 mm, hispidulous; stigmas 3, ca. 2 mm, plumose. Caryopsis initially obconiform, ca. 7 mm, apex hispidulous, style base persistent.

● Ravines, forests, around villages. Hainan.

40. Bambusa dolichoclada Hayata, Icon. Pl. Formosan. 6: 144. 1916.

长枝竹 chang zhi zhu

Leleba dolichoclada (Hayata) Odashima.

Culms 10–15 m, 4.5–8 cm in diam., basally erect, apically slightly drooping; internodes 30–45 cm, initially thinly white powdery; wall slightly thick; nodes flat, lower several with rings of gray-white silky hairs; branching from basal node up. Branches 3 to many per node, central 3 dominant. Culm sheaths deciduous, leathery, thinly white powdery, densely shortly stiffly brown hairy around apex and upper parts of both sides, apex slightly slanted along one side and slightly asymmetrical, broadly arched, sometimes subtruncate; auricles usually slightly wrinkled with obtuse ends, obviously unequal; larger auricle oblong or narrowly ovate, 2–2.5 × 0.8–1 cm, smaller auricle ovate or elliptic, to 1/3 size of larger one; oral setae undulate, densely covering margins and adaxial surface; ligule 3–4 mm, slightly dentate, fringed with hairs ca. 5 mm; blade deciduous, erect, asymmetrically ovate-triangular, base slightly narrowed and then joined with auricles for 3–5 mm, nearly 2/3 width of sheath apex, abaxially sparsely stiffly dull brown hairy, adaxially densely stiffly pale brown hairy between veins, apex acuminate, apiculate. Leaf blade linear to linear-lanceolate, 10–26 × 1–2.3 cm, abaxially pubescent, adaxially glabrous and glossy. Pseudospikelets in clusters of 3–9 at nodes of flowering branches. Spikelets linear, 3–4 × 0.6–0.8 cm; florets 4–12 preceded by several gemmiferous bracts. Glumes 2, ovate or oval, 2–4.5 mm, 14-veined, apex acute; lemma ovate, ca. 9 mm, 18–20-veined, apex acute; palea ca. 8.5 mm, keels densely ciliolate. Anthers yellow, ca. 4.5 mm, apex emarginate. Ovary obovoid, ca. 2 mm, apex sparsely hispidulous; style very short; stigmas 3.

● Forest margins, around villages; below 300 m. Fujian, Taiwan.

A cultivar, *Bambusa dolichoclada* ‘Stripe’ (条纹长枝竹 tiao wen chang zhi zhu) is cultivated in S Taiwan. This differs from the typical plant by its yellow-green culms and branches, later becoming pale yellow with deep green stripes, and its pale green culm sheaths, initially with several fine milky-yellow stripes.

41. Bambusa vulgaris Schrader ex J. C. Wendland, Coll. Pl. 2: 26. 1810.

龙头竹 long tou zhu

Bambusa auriculata Kurz; *B. humilis* Reichenbach ex Ruprecht; *B. madagascariensis* Rivière & C. Rivière; *B. sieberi* Grisebach; *B. striata* Loddiges ex Lindley; *B. surinamensis* Ruprecht; *B. thouarsii* Kunth; *B. vulgaris* var. *striata* (Loddiges ex Lindley) Gamble; *B. vulgaris* var. *vittata* Rivière & C. Rivière; *Leleba vulgaris* (Schrader ex J. C. Wendland) Nakai; *L. vulgaris* var. *striata* (Loddiges ex Lindley) Nakai.

Clumps rather open. Culms 8–15 m, 5–9 cm in diam., basally straight or flexuose, apically drooping; internodes deep green, 20–30 cm, initially thinly white powdery, stiffly pale brown strigose; wall slightly thick; nodes slightly prominent, basal several with aerial roots and rings of grayish white silky hairs below and above sheath scar; usually branching from lower nodes. Branches several to many, clustered, central dominant. Culm sheaths deciduous, ribbed-striate when dry, densely stiffly deciduously dark brown hairy, apex arched below blade, concave below auricles; auricles conspicuous, ascending, nearly equal in shape and size, oblong or reniform, 8–10 mm; oral setae curved, fine; ligule 3–4 mm, serrate, very shortly white ciliolate; blade deciduous, erect or deflexed, broadly triangular to triangular, base slightly rounded, ca. 1/2 width of sheath apex, abaxially sparsely stiffly dull brown hairy, adaxially densely stiffly dull brown hairy between veins, apex involute, sharply apiculate. Leaf blade narrowly lanceolate, 10–30 × 1.3–2.5 cm, both surfaces glabrous. Pseudospikelets several, clustered at nodes, narrowly lanceolate to linear-lanceolate, slightly flattened, 2–3.5 × 0.4–0.5 mm, apparently bifid; gemmiferous bracts several; florets 5–10; rachilla segments 1.5–3 mm. Glumes 1 or 2, abaxially shortly hairy near apex, apex apiculate; lemma 8–10 mm, abaxially shortly hairy near apex, apex apiculate; palea slightly shorter than lemma, keels ciliolate; lodicules 3, 2–2.5 mm, margins long ciliate. Anthers ca. 6 mm, apex penicillate. Style 3–7 mm, slender; stigmas 3, short.

Riversides, open forests. Yunnan [SE Asia; pantropical].

Two cultivars, *Bambusa vulgaris* ‘Vittata’ (黄金间碧竹 huang jin jian bi zhu), with culm internodes yellow with green stripes, and *B. vulgaris* ‘Wamin’ (大佛肚竹 da fo du zhu), with culm internodes shortened and basally swollen, are widely cultivated in gardens and parks. Although they have been given varietal or even specific status elsewhere, they are recognized as cultivars here.

This species was incorrectly named by Aiton as *Bambusa arundinacea* Willdenow.

42. Bambusa utilis W. C. Lin, Bull. Taiwan Forest. Res. Inst. 98: 2. 1964.

乌叶竹 wu ye zhu

Culms 3–14 m, 2–7 cm in diam.; internodes 15–50 cm; wall rather thick; nodes slightly prominent; branching from

basal nodes up. Branches several to many, clustered, central 3 dominant. Culm sheaths deciduous, leathery, asymmetrical, broadly arched, densely stiffly brown hairy, distal margins initially ciliolate, apex slightly slanted along outer side; auricles unequal, not slanted, slightly wrinkled; larger auricle oblong to lanceolate, ca. 1.5 × 0.7 cm; smaller auricle narrowly ovate to ovate-lanceolate, ca. 1/3 size of larger one; oral setae undulate, brown; ligule ca. 5 mm, finely dentate, ciliolate; blade erect, slightly asymmetrically triangular, base slightly rounded and joined to auricles for ca. 2 mm, ca. 5/6 width of sheath apex, abaxially sparsely stiffly dull brown hairy or glabrous; adaxially scabrous or densely stiffly dull brown hairy between veins, apex shortly acuminate, apiculate. Leaf blade linear, 10–25 × 1.2–2.5 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets solitary or many and clustered at each node of flowering branches, linear, 2.5–4 × 0.5–0.7 cm; florets 4–6. Glumes 2, subovate, ca. 5 mm, 9–11-veined, apex acute, mucronate; lemma ovate-lanceolate, ca. 1.3 cm, 17–20-veined, apex acute, mucronate; palea lanceolate, ca. 1 cm, keels ciliolate, 7-veined between and 2-veined on either side of keels, apex truncate; lodicules 3, nearly broadly elliptic, ca. 1.8 mm, margins long ciliate. Anthers ca. 6 mm. Ovary obovoid; style short; stigmas 3. Caryopsis unknown.

● Low hills, around villages; below 300 m. Taiwan.

43. Bambusa gibboides W. T. Lin, Acta Phytotax. Sin. 16(1): 70. 1978.

鱼肚腩竹 yu du nan zhu

Culms 10–12 m, 5–7 cm in diam., basally flexuose, apically drooping; internodes slightly curved, basally slightly swollen, 40–47 cm, initially thinly white powdery, stiffly brown strigose; wall slightly thick; nodes slightly prominent, basal 2 usually with rings of gray-white silky hairs; branching from basal or 2nd node up. Branches solitary on basal nodes, several to many at mid-culm and distal nodes, central obviously dominant. Culm sheaths deciduous, ribbed-striate when dry, with appressed, dull brown hairs near base, apex subtruncate; auricles unequal, horizontal along both sides of sheath apex, larger ones oblong to narrowly oblong, ca. 2 × 0.5–0.6 cm, smaller auricle elliptic, ca. 1/2 size of larger one; oral setae undulate; ligule 2–3 mm, dentate, shortly fringed; blade erect, narrowly ovate to ovate-triangular, ca. 1/2 as long as sheath, base slightly rounded and joined to auricles for ca. 3 mm, ca. 2/3 width of sheath apex. Leaf blade linear-lanceolate to narrowly lanceolate, 10–20 × 1.3–2 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets several, clustered at nodes of flowering branches, linear-lanceolate, slightly flat, 3–4 cm; prophylls ovate, keels ciliolate toward apex, apex obtuse; gemmiferous bracts usually 2, ovate; florets 5–7, apical 1 or 2 usually sterile; rachilla segments flat, 3–4 mm, apex inflated and hairy. Glumes 1, ovate, 6–8 mm, many veined, apex mucronate; lemma ovate-elliptic, 1–1.4 cm, glabrous, many veined, apex acute, mucronate; palea slightly longer than lemma, sparsely very shortly ciliolate near apex or sometimes subglabrous, 6- or 7-veined between and 3- or 4-veined on either side of keels, apex obtuse; lodicules 3, unequal, posterior 1 slightly larger, obovate, base thickened, margin finely ciliate. Filaments short; anthers yellow, apex obtuse. Ovary ovoid, apex hispidulous; style very short; stigmas 3. Caryopsis unknown.

● Cultivated. Guangdong.

The shoots are edible.

44. Bambusa piscatorum McClure, Lingnan Univ. Sci. Bull. 9: 14. 1940 [*"piscaporum"*].

石竹仔 shi zhu zi

Culms 6–10 m, 2.5–3.5 cm in diam., apically suberect; internodes 50–60 cm, initially thinly white powdery, glabrous; wall rather thin; nodes flat, basal node with a ring of gray-white silky hairs below and above sheath scar, 2nd node with a ring of gray-white silky hairs above sheath scar; branching from 4th to 6th node up. Branches many, clustered, central slightly longer and thicker. Culm sheaths deciduous, thickly leathery, rigid, glossy, glabrous, apex slightly asymmetrically arched; auricles unequal, minutely wrinkled with obtuse ends; larger auricle oblanceolate, ca. 1.5 × 0.5 cm; smaller auricle usually pressed against blade base and wrinkled, or narrowly obovate, ca. 2/5 size of larger one; oral setae dense, deciduous, curved; ligule 2–3 mm, dentate, fringed or glabrous; blade persistent, erect, asymmetrically ovate-triangular to narrowly ovate-triangular, base slightly rounded and joined with auricles for ca. 5 mm, ca. 4/5 width of sheath apex, apex subulate, acuminate. Leaf blade linear-lanceolate to lanceolate, 8–16(–20) × 1.2–1.6(–2) cm, abaxially densely villous, adaxially glabrous. Inflorescence unknown.

● Around villages. Hainan.

Bambusa piscatorum is very similar to *B. mutabilis*, but has thicker culm sheaths with smaller, rigid auricles usually pressed against the blade base and not partly covered, the larger auricle oblanceolate, the smaller narrowly ovate, both with obtuse tips.

45. Bambusa albolineata L. C. Chia, Guihaia 8: 121. 1988 [*"albo-lineata"*].

花竹 hua zhu

Bambusa textilis McClure var. *albostriata* McClure, Lingnan Univ. Sci. Bull. 9: 15. 1940 [*"albo-striata"*]; *B. albostriata* (McClure) Ohrnberger, nom. superfl.

Culms 6–8 m, 3.5–5.5 cm in diam., apically drooping; internodes 40–60(–80) cm, basal 1st to 4th (to 6th) internodes with pale yellow stripes; wall slightly thin; nodes flat, basal 1st to 4th nodes usually with a ring of gray-white silky hairs above sheath scar; branching from 4th to 6th node up. Branches many, clustered, central 3 dominant. Culm sheaths deciduous, leathery, rigid, apex slightly asymmetrical, arched or shallowly undulate, abaxially with yellow-white stripes, both sides sparsely stiffly dull brown strigose, sparser to nearly absent abaxially, denser adaxially, sheaths on basal 2 nodes densely hairy on lower half; auricles unequal, minutely wrinkled, margin sparsely thickly shortly setose near ends, larger ones oblong or nearly oblanceolate, ca. 1.5 × 0.5–0.7 cm, smaller usually continuous with blade base, oblong-oblanceolate if separated from blade, 1/3–1/2 size of larger one; ligule 1–1.5 mm, shortly dentate, very shortly fringed; blade erect, asymmetrically ovate to

narrowly ovate-triangular, those on lower nodes usually with yellow-white stripes, base slightly rounded and joined to auricles for 4–5 mm, ca. 5/7 width of sheath apex, apex acuminate, apiculate. Leaf blade linear, 7–15(–24) × 0.9–1.5(–2.2) cm, abaxially pilose, adaxially scabrous. Pseudospikelets usually in clusters of 3–5 at nodes of flowering branches, linear-lanceolate, 2–2.5 × 0.4–0.5 cm; prophylls ca. 3 mm, 2-keeled, keels ciliolate; gemmiferous bracts subovate, ca. 4.5 mm, glabrous, 15-veined, apex obtuse and mucronate; florets 5–7, apical one sterile; rachilla segments flat, ca. 3 mm, glabrous, margin erose, apex enlarged. Glumes 1, oval, ca. 5 mm, 15–17-veined, glabrous, apex obtuse and mucronate; lemma elliptic, 7–9 mm, glabrous, 17–19-veined, apex obtuse, mucronate; palea linear-lanceolate, 7.5–9.5 mm, keels glabrous, 8-veined between and 2-veined on either side of keels, margin very shortly ciliolate, bifid with apices of keels extended and deflexed, apex subtruncate; lodicules 3, unequal; anterior 2 oblique, ca. 3 mm, margins long ciliate; posterior 1 nearly obovate-elliptic, ca. 2 mm. Anthers ca. 4 mm. Ovary broadly ovoid, ca. 1 mm, base stalked, apex thickened and hispidulous; style very short, 0.4–0.5 mm, hispidulous; stigmas 3, ca. 6 mm. Mature caryopsis unknown.

● Cultivated on low hills, plains, and along riversides. Fujian, Guangdong, Jiangxi, Taiwan, Zhejiang.

The *nomen novum Bambusa albolineata* was published in the belief that the original epithet *"albostriata"* was blocked by the earlier but not validly published *nomen nudum "B. albostriata* Hort. ex Lavalleé" (Arbor. Segrez. 306. 1877). Nevertheless, *B. albolineata* is legitimate because of the change in rank.

46. Bambusa pallida Munro, Trans. Linn. Soc. London 26: 97. 1868.

大薄竹 da bao zhu

Bambusa critica Kurz.

Culms to 15 m, 5.5–7.5 cm in diam.; internodes 30–57 cm, initially thinly white powdery and stiffly gray hairy; wall thin; nodes flat, basal nodes usually with a ring of gray-white silky hairs and short aerial roots when old; branching from 6th or 7th node up. Branches many, clustered, central 3 dominant. Culm sheaths deciduous, attenuate, broadly trapezoid, leathery, initially white powdery, glabrous or sparsely deciduously dull brown strigose, apex subtruncate; auricles spreading, subequal, broadly elliptic or suborbicular, small, 5–6 mm wide; oral setae present; ligule very short; blade erect, narrowly triangular, usually longer than sheath, base slightly rounded, slightly narrower than sheath apex, sparsely stiffly deciduously dull brown hairy. Leaf blade linear-lanceolate, 10–20 × 1.2–2 cm, abaxially chalky-white. Pseudospikelets in capitate clusters, glaucous, 2.5–3 cm, gemmiferous bracts present; florets 7–14, basal 1 male, apical 3–5 imperfect; rachilla segments clavate, apex enlarged and ciliate. Glumes 1 or 2, ovate, apex acute; lemma ovate, abaxially glabrous, many veined, adaxially slightly hairy, apex acute, mucronate; palea obviously shorter than lemma, keels ciliate, 3–5-veined between keels; lodicules 3, oblong or narrowly obovate, base thickened, margin ciliate, anterior 2 slightly asymmetrical, posterior symmetrical and smaller. Ovary oblong, tapering; stigmas 3.

Open areas; 100–2000 m. SW Yunnan [Bangladesh, India, Myanmar, Thailand].

47. Bambusa duriuscula W. T. Lin, Bull. Bot. Lab. N.-E. Forest. Inst., Harbin 1980(6): 87. 1980.

蓬莱黄竹 peng lai huang zhu

Bambusa breviligulata L. C. Chia & H. L. Fung.

Culms suberect, 6–7 m, 3–4 cm in diam.; internodes straight, 38–55 cm, sparsely stiffly dull brown hairy, initially partly white powdery below sheath scar but powder not in rings; wall slightly thin; nodes flat, glabrous; branching from 5th or 6th node up. Branches many, clustered, horizontal, central slightly dominant. Culm sheaths deciduous, glossy, abaxially and near margins ± stiffly dull brown hairy, apex subtruncate; auricles subequal, narrowly oblong, ca. 1.5 × 0.6–0.7 cm; oral setae undulate; ligule ca. 1 mm, erose, very shortly ciliolate; blade deciduous, erect, ovate-triangular, nearly as long as or slightly shorter than sheath, base ca. 2/3 width of sheath apex. Leaf blade linear, 9–14 × 0.8–1.2 cm, abaxially subglabrous, adaxially pubescent near base. Pseudospikelets 2 or 3 clustered on each node of flowering branches, linear-lanceolate, 2–3 cm; gemmiferous bracts 2 or 3, ovate, ca. 5 mm, 13-veined, base cordate, apex acute; florets 6 or 7, apical one sterile; rachilla segments flat, 2–4 mm, subglabrous. Glumes absent; lemma oblong, ca. 1.2 cm, slightly asymmetrical, 21-veined, apex acute; palea narrow, longer than or about as long as lemma, keels sparsely ciliolate near apex, 5-veined between and 3-veined on either side of keels; lodicules 3, unequal, anterior 2 oblique, ca. 2 mm, margins long ciliate, posterior narrowly obovate, ca. 1.5 mm. Anthers ca. 5 mm, apex retuse. Ovary subglobose, ca. 1 mm in diam., stalked, apex hispidulous; style hairy, ca. 1.5 mm; stigmas 3, ca. 5 mm. Mature caryopsis unknown. New shoots May–Oct.

● Usually cultivated, slopes near villages. Hainan.

Bambusa duriuscula is similar to *B. pachinensis*, but has shorter internodes, the culm sheath with hairs only near the base and margins, the apex subtruncate, the blade nearly as long as the sheath proper, and the leaf blade narrower and abaxially glabrous. The paratype *W. T. Lin 31826* should be excluded from this species.

48. Bambusa pachinensis Hayata, Icon. Pl. Formosan. 6: 150. 1916.

米筛竹 mi shai zhu

Culms 3–8 m, 1–4.5 cm in diam., apically slightly drooping; internodes 30–70 cm, initially thinly white powdery, sparsely stiffly pale or dark brown strigose; wall thin; nodes flat, basal 5 nodes usually with rings of gray-white silky hairs below and above sheath scar; branching from 8th to 10th node up. Branches several to many, clustered, 3 central dominant. Culm sheaths deciduous, leathery, rigid, broadly arched, uniformly stiffly dull brown strigose, apex slanted on outer side, asymmetrical; auricles unequal, slightly wrinkled, larger ones oblong or lanceolate, 1–1.5 × 0.4–0.5 cm, ends subrounded and slanted downward, smaller auricle subovate, ca. 1/3 size of larger one, ends slightly ascending; oral setae fine, curved, long; ligule ca. 1 mm, irregularly dentate or long fimbriate; blade

erect, slightly asymmetrically ovate to ovate-triangular, 1/3–1/2 length of sheath, base slightly cordate, narrowed and joined with auricles for 2–3 mm, abaxially very sparsely brown hairy, adaxially scabrous, apex acuminate, apiculate. Leaf blade linear to lanceolate, 8–18 × 1–2 cm, abaxially densely villous, adaxially glabrous. Pseudospikelets lanceolate to linear-lanceolate, 2–3.5 × 0.4–0.5 cm; prophylls ca. 2.5 mm, keels ciliolate; gemmiferous bracts 2 or 3, ovate, to 7 mm, glabrous, 15–17-veined, apex obtuse and mucronate. Lemma ovate-elliptic, ca. 1.2 cm, glabrous, 17–19-veined, apex acute, mucronate; palea lanceolate, ca. 1.1 cm, slightly shorter than lemma, keels not ciliate, 5- or 6-veined between and 3- or 4-veined on either side of keels, margin irregularly dentate, apex 3-fid and with a cluster of white long hairs; lodicules 3, unequal, anterior 2 spatulate, ca. 3 mm, margins long ciliate, posterior 1 nearly obovate-elliptic, ca. 1.6 mm. Filaments slender; anthers ca. 4 mm. Ovary ovoid, ca. 1.5 mm, base stalked, apex thickened and hispid; style ca. 0.5 mm, hispid; stigmas 3, ca. 5 mm. Mature caryopsis unknown.

● Usually cultivated, river banks, low hills, around villages. Fujian, Guangdong, Guangxi, Jiangxi, Taiwan, Zhejiang.

1a. Culm sheath ligule irregularly dentate ..... 48a. var. *pachinensis*
1b. Culm sheath ligule long fimbriate, fimbriae 5–10 mm ..... 48b. var. *hirsutissima*

48a. Bambusa pachinensis var. **pachinensis**

米筛竹(原变种) mi shai zhu (yuan bian zhong)

Bambusa beisitiku (Odashima) P. C. Keng; *Leleba beisitiku* Odashima; *L. pachinensis* (Hayata) Nakai.

Culm sheath ligule irregularly dentate.

● Usually cultivated, river banks, around villages. Fujian, Guangdong, Guangxi, Jiangxi, Taiwan, Zhejiang.

48b. Bambusa pachinensis var. **hirsutissima** (Odashima) W. C. Lin, Bull. Taiwan Forest. Res. Inst. 98: 21. 1964.

长毛米筛竹 chang mao mi shai zhu

Leleba beisitiku Odashima var. *hirsutissima* Odashima, J. Soc. Trop. Agric. 8: 58. 1936; *Bambusa textilis* McClure var. *fusca* McClure; *Leleba pachinensis* (Hayata) Nakai var. *hirsutissima* (Odashima) W. C. Lin.

Culm sheath ligule with long fimbriae, 5–10 mm.

● Usually cultivated, low hills, around villages. Fujian, Guangdong, Guangxi, Taiwan, Zhejiang.

49. Bambusa amplexicaulis W. T. Lin & Z. M. Wu, Bull. Bot. Res., Harbin 12: 349. 1992.

抱秆黄竹 bao gan huang zhu

Culms to 3 m, to 2.5 cm in diam., basally slightly flexuose; internodes 13–31 cm, glabrous; nodes slightly prominent, branching from 3rd node up. Culm sheaths deciduous, apically arched-convex, white pubescent, margins ciliolate; auricles unequal, falcate, cupped, deflexed; oral setae subulate, 6–8 mm; ligule 0.6–1 mm, margin nearly entire; blade deciduous, erect, ovate-triangular, base slightly rounded, ca. 3/5 width of sheath apex. Leaf blade linear-lanceolate, 3–11 × 0.4–1.2 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Bases of hills, open fields. Guangdong.

50. Bambusa semitecta W. T. Lin & Z. M. Wu, J. S. China Agric. Univ. 14(3): 111. 1993.

掩耳黄竹 yan er huang zhu

Culms 2–3 m, 1–1.5 cm in diam.; internodes 20–30 cm, glabrous; nodes slightly prominent, branching from 7th to 8th node up. Culm sheaths deciduous, ± stiffly brown hairy, margins glabrous, apex convex; auricles unequal, oblong, ends ascending, usually partly covered by blade; ligule ca. 1.5 mm, denticulate, ciliolate; blade deciduous, erect, base slightly rounded, ca. 1/4 × as wide as sheath apex. Leaf blade linear-lanceolate, 5.5–21 × 0.8–1.8 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Low hills. Guangdong (Guangning).

This species is inadequately known.

51. Bambusa lenta L. C. Chia, Guihaia 8: 125. 1988.

藤枝竹 teng zhi zhu

Culms 5–10 m, 4–4.5 cm in diam., apically slightly drooping; internodes 35–50 cm, basal internodes swollen on alternate sides, initially thinly white powdery, stiffly dull brown hairy; wall slightly thin; nodes flat, basal 3 usually with rings of gray-white silky hairs above sheath scar, higher nodes initially with white powdery rings, sometimes also with rings of gray-white silky hairs below sheath scar; branching from 8th to 10th node up. Culm sheaths deciduous, leathery, rigid, usually sparsely stiffly dull brown hairy toward inner margin, apex slightly slanted at outer side, subtruncately broadly arched; auricles ascending, unequal, slightly wrinkled, larger one suboblong, ca. 8 × 6 mm, ends exserted beyond margin, smaller auricle subelliptic, 1/4–1/3 size of larger one, usually partly covered by blade base; oral setae fine, undulate; ligule 2–3 mm, finely dentate, shortly fringed at both sides; blade erect, slightly asymmetrical, triangular to narrowly triangular, base rounded, joined to auricles for 2–3 mm, ca. 3/4 × as wide as sheath apex, abaxially glabrous, adaxially scabrous. Leaf blade linear, 9–17 × 1.2–2 cm, abaxially densely pubescent, adaxially glabrous. Inflorescence unknown.

● Cultivated, along rivers, around villages; low elevations. S Fujian.

52. Bambusa mutabilis McClure, Lingnan Univ. Sci. Bull. 9: 12. 1940.

黄竹仔 huang zhu zi

Culms 5–7 m, 2.5–3.5 cm in diam., apically suberect; internodes 40–50 cm, initially thinly white powdery, lower ones with many purple streaks, and with a ring of white powder below sheath scar, glabrous or sometimes very sparsely stiffly strigose; wall rather thin; nodes slightly prominent, basal ca. 3 nodes with a ring of gray-white silky hairs above sheath scar, only basal node with a ring of gray-white silky hairs below sheath scar; branching usually from 5th to 7th node upward.

Branches many, clustered, central branch slightly longer and thicker. Culm sheaths deciduous, glossy, with many purple streaks, leathery, rigid, initially thinly white powdery, glabrous, apex slightly asymmetrically arched; auricles unequal, oblong, minutely wrinkled, partly covered by blade base, ends suborbicular, larger ones 1–1.4 × 0.3–0.4 cm, smaller auricle usually 1/2 size of larger one; oral setae dense, deciduous, curved; ligule ca. 2 mm, dentate, shortly fringed or glabrous; blade deciduous, erect, slightly asymmetrically ovate to narrowly ovate, base narrowed and slightly cordate, ca. 2/3 × as wide as sheath apex, abaxially with many purple streaks, apex acuminate, apiculate. Leaf blade linear-lanceolate to lanceolate, 8.5–15.5(–20) × 1.1–1.6(–2) cm, abaxially densely villous, adaxially glabrous. Inflorescence unknown.

● Open fields on hills, riversides, forest margins. Hainan.

53. Bambusa mollis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 377. 1981.

拟黄竹 ni huang zhu

Culms 5–8 m, 2.5–3.5 cm in diam., apically drooping; internodes 35–40 cm, initially sparsely white hispid; wall thin; basal 2 nodes usually with rings of gray-white silky hairs above sheath scar; branching from 3rd to 5th node up. Culm sheaths deciduous, glabrous, apically asymmetrically arched, one side slanted, other side arched; auricles obviously unequal, larger one slanted downward, lanceolate to oblong-lanceolate, ca. 1.5 × 0.5–0.7 cm, ca. 5 × size of smaller one, smaller one oblong with ends ascending; oral setae undulate; ligule ca. 1 mm, subentire; blade deciduous, erect, ovate-lanceolate, to 1/2 length of sheath, base slightly rounded and extending outward to join auricles for 2–3 mm, nearly 3/7 × as wide as sheath apex. Leaf blade linear-lanceolate, 11–16 × 1.5–2 cm, abaxially pubescent, adaxially glabrous. Inflorescence unknown.

● Open fields, hills, around villages. Guangxi (Beiliu).

54. Bambusa contracta L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 19: 376. 1981.

破篾黄竹 po mie huang zhu

Culms 5–6 m, 2–3 cm in diam., apically drooping; internodes 40–57 cm, initially thinly white powdery, sparsely long, white hispid; wall thin; nodes flat, glabrous, branching from 4th to 6th node up. Culm sheaths deciduous, thinly white powdery, usually glabrous or with appressed or erect, stiff, dull brown hairs near base, apex slanted and asymmetrically arched; auricles unequal, oblong to lanceolate, undulate, wrinkled, larger auricle slightly slanted downward, ca. 3 × 0.7–1 cm, ca. 2 × as large as smaller; oral setae undulate; ligule ca. 2 mm, sparsely dentate; blade erect, narrowly ovate, nearly 2/5 as long as sheath, base rounded and joined to auricles for 2–3 mm, ca. 1/4 × as wide as sheath apex, apex involute, apiculate. Leaf blade linear to linear-lanceolate, 10–15 × 1.3–1.5 cm, abaxially densely pubescent, adaxially glabrous. Inflorescence unknown.

● Bases of hills, around villages. Guangxi (Dongxin).

Bambusa contracta is similar to *B. textilis*, but the culm sheaths have larger auricles and a shorter, narrower, basally more cordate blade.

55. Bambusa textilis McClure, Lingnan Univ. Sci. Bull. 9: 14. 1940.

青皮竹 qing pi zhu

Culms 8–10 m, 3–5 cm in diam., apically slightly drooping; internodes green, 40–70 cm, initially thinly white powdery, ± stiffly pale brown hairy; wall 2–5 mm thick; nodes flat, glabrous; branching from 7th to 11th node upward. Culm sheaths deciduous, leathery, rigid, slightly glossy, basally stiffly dull brown strigose, apex slightly slanted and asymmetrical, broadly arched; auricles unequal, ends not decurrent, larger one narrowly oblong to lanceolate, slightly slanted, ca. 1.5 × 0.4–0.5 cm, smaller one oblong, not slanted, ca. 1/2 size of larger; oral setae slender, undulate; ligule ca. 2 mm, dentate or sometimes laciniate, ciliolate; blade deciduous, erect, narrowly ovate-triangular, ca. 2/3 as long as sheath, abaxially sometimes stiffly hairy between veins, basally sparsely dull brown hairy, adaxially scabrid, base slightly cordate, narrowed, nearly 2/3 as wide as sheath apex. Leaf blade linear-lanceolate to narrowly lanceolate, 9–17 × 1–2 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets solitary or several to many, clustered at each node of flowering branches, dull purple when fresh, bronze-colored when dry, linear-lanceolate, slightly curved, 3–4.5 × 0.5–0.8 cm; prophylls ovate, ca. 3 mm, keels glabrous; gemmiferous bracts 2 or 3, ovate, 3–4.5 mm, glabrous, apex acute, mucronate; florets 5–8, apical one sterile; rachilla segments subterete or flat, ca. 4 mm, apex enlarged. Glumes 1, ovate, ca. 6 mm, ca. 20-veined, glabrous, apex acute, mucronate; lemma elliptic, 1.1–1.4 cm, glabrous, ca. 25-veined, apex acute, mucronate; palea lanceolate, 1.2–1.4 cm, slightly longer than lemma, keels glabrous, ca. 10-veined between and 4-veined on either side of keels; lodicules unequal; anterior 2 subspatulate, ca. 3 mm, margins long ciliate; posterior obovate-elliptic, ca. 2 mm. Filaments slender; anthers yellow, ca. 5 mm. Ovary broadly ovoid, ca. 2 mm in diam., base stalked, apex thickened and hispidulous; style ca. 0.7 mm, hispidulous; stigmas 3, 6–7 mm. Mature caryopsis unknown.

● Usually cultivated, riversides, around villages; low elevations. Anhui, Guangdong, Guangxi.

1a. Culm sheath blade ca. 2/3 as long as sheath proper or longer, base ± cordate; ligule ca. 2 mm ..... 55a. var. *textilis*
1b. Culm sheath blade less than 1/2 length of sheath proper, base slightly rounded; ligule 1–1.5 mm.
  2a. Culm sheaths glabrous ..... 55b. var. *glabra*
  2b. Culm sheath base and margins with sparse, stiff, dull brown hairs ..... 55c. var. *gracilis*

55a. Bambusa textilis var. **textilis**

青皮竹(原变种) qing pi zhu (yuan bian zhong)

Bambusa annulata W. T. Lin & Z. J. Feng; *B. glaucescens* (Willdenow) Merrill var. *annulata* (W. T. Lin & Z. J. Feng) N. H. Xia; *B. minutiligulata* W. T. Lin & Z. M. Wu; *B. textilis* var. *maculata* McClure; *B. textilis* var. *persistens* B. M. Yang; *B. textilis* var. *pubescens* B. M. Yang; *B. textilis* var. *purpurascens* N. H. Xia; *B. varioaurita* W. T. Lin & Z. J. Feng.

Culms 3–5 cm in diam. Culm sheath blade ca. 2/3 as long as sheath proper or longer, base ± cordate; ligule ca. 2 mm.

● Usually cultivated, along rivers, around villages; low elevations. Anhui, Guangdong, Guangxi.

Two cultivars *Bambusa textilis* ‘Maculata’ and *B. textilis* ‘Purpurascens’ are found in gardens. The former is distinguished by several basal culm internodes and sheaths having purple-red spots and streaks, whereas the culm internodes of the latter have purple-red stripes.

55b. Bambusa textilis var. **glabra** McClure, Lingnan Univ. Sci. Bull. 9: 16. 1940.

光秆青皮竹 guang gan qing pi zhu

Culms 3–5 cm in diam.; internodes and sheaths glabrous. Culm sheath blade nearly 1/2 as long as sheath proper, base slightly rounded; ligule 1–1.5 mm.

● Usually cultivated in gardens. Guangdong, Guangxi.

55c. Bambusa textilis var. **gracilis** McClure, Lingnan Univ. Sci. Bull. 9: 16. 1940.

崖州竹 ya zhou zhu

Culms slender, less than 3 cm in diam. Culm sheath with sparse, stiff, dull brown hairs near both sides and base, blade to 1/2 as long as sheath proper, base slightly rounded; ligule ca. 1 mm.

● Cultivated in gardens. Guangdong, Guangxi.

56. Bambusa truncata B. M. Yang, Acta Sci. Nat. Univ. Norm. Hunan. 12: 337. 1989.

平箨竹 ping tuo zhu

Culms to 7 m, to 4.5 cm in diam.; internodes 22–35(–44) cm, initially thinly white powdery, glabrous. Branches usually arising from mid-culm, central branch longer and thicker. Culm sheaths deciduous, sparsely brown strigose, apex truncate; auricles inconspicuous; oral setae absent; ligule truncate, ca. 1.5 mm, margin dentate and ciliolate; blade erect, narrowly triangular, base nearly as wide as or slightly narrower than sheath apex. Leaf blade oblong-lanceolate, 8–14 × 0.9–1.5 cm, both surfaces glabrous. Inflorescence unknown.

● Cultivated, river banks, around villages. Hunan (Lingling).

Further work is required on this species.

57. Bambusa multiplex (Loureiro) Raeuschel ex Schultes & J. H. Schultes in Roemer & Schultes, Syst. Veg. 7(2): 1350. 1830.

孝顺竹 xiao shun zhu

Culms suberect or apically slightly drooping, 1–7 m, (0.3–) 1.5–2.5 cm in diam.; internodes 30–50 cm, thinly white powdery, distally stiffly deciduously brown or dull brown hairy, especially densely so below nodes; wall usually rather thin, solid in var. *riviereorum*; nodes slightly prominent, glabrous; branching from 2nd or 3rd node up. Branches several to many, clustered, subequal or central slightly dominant. Culm sheaths deciduous, trapezoid, initially thinly white powdery, glabrous, asymmetrically arched, apex slanted along outer side; auricles very small to inconspicuous, oral setae few; ligule 1–1.5 mm, irregularly dentate; blade deciduous, erect, narrowly triangular, base nearly as wide as sheath apex, abaxially with scattered, stiff, dull brown hairs, adaxially scabrous, apex acuminate. Leaves 5–26 per ultimate branch; leaf blade abaxially pale glaucous, adaxially bright green, linear, 1.6–16 × 0.3–1.6 cm, abaxially densely pubescent, adaxially glabrous. Pseudospikelets solitary or several clustered at nodes of flowering branches, linear to linear-lanceolate, 3–6 cm; prophylls ca. 3.5 mm, 2-keeled, keels ciliolate; gemmiferous bracts usually 1 or 2, ovate to narrowly ovate, 4–7.5 mm, glabrous, 9–13-veined, apex obtuse or acute; florets (3–)5–13, middle ones fertile; rachilla segments flat, 4–4.5 mm, glabrous. Glumes absent; lemma asymmetrical, oblong-lanceolate, ca. 1.8 cm, glabrous, 19–21-veined, apex acute; palea linear, 1.4–1.6 cm, keels ciliolate, 6-veined between and 4-veined on one side and 3-veined on other side of keels, apex subtruncate, ciliolate, with a fine hairy tip on each side; lodicules 3, anterior 2 subovate, 2.5–3 mm, posterior narrowly lanceolate, 3–5 mm, margins glabrous. Filaments 0.8–1 cm; anthers purple, ca. 6 mm, apex penicillate. Ovary ovoid, ca. 1 mm, base with stalk ca. 1 mm, apex thickened and hispidulous; stigmas 3 or variable in number, ca. 5 mm, directly exserted from ovary apex. Mature caryopsis unknown.

Wild and cultivated, fields, mountains, low hills, riversides. Guangdong, Guangxi, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [SE Asia].

Among the several names applied to these bamboos, *Bambusa multiplex* and *B. glaucescens* are most widely used. The application of the name *B. glaucescens* has been disputed and cannot be verified from type material or from the protologue.

Most taxa are beautiful ornamental bamboos, but their identification, classification, and nomenclature remain complex and controversial. Many varieties, forms, and cultivars have been published, given new status, and variously combined under the species recognized by different authorities. Therefore, a comprehensive synonymy is not possible in this abbreviated account.

1a. Culms 1–3 m, ultimate branches with 13–26 leaf blades; leaf blade 1.6–3.2 × 0.3–0.7 cm ..... 57c. var. *riviereorum*
1b. Culms 4–7 m, ultimate branches with 5–12 leaf blades; leaf blade 5–16 × 0.7–1.6 cm.
  2a. Culm sheaths nearly symmetrical, apex arched-convex ..... 57d. var. *shimadae*
  2b. Culm sheaths slanted along one side, apex asymmetrically arched-convex.
    3a. Culm sheaths abaxially glabrous ..... 57a. var. *multiplex*
    3b. Culm sheaths abaxially strigose ..... 57b. var. *incana*

57a. Bambusa multiplex var. **multiplex**

孝顺竹(原变种) xiao shun zhu (yuan bian zhong)

Arundo multiplex Loureiro, Fl. Cochinch. 1: 58. 1790; *Arundinaria glaucescens* (Willdenow) P. Beauvois; *Bambusa albofolia* T. H. Wen & Hua; *B. alphonso-karrii* Mitford ex Satow [*“Alphonse Karri”*]; *B. caesia* Siebold & Zuccarini ex Munro; *B. dolichomerithalla* Hayata; *B. glauca* Loddiges ex

Lindley; *B. glaucescens* (Willdenow) E. D. Merrill; *B. glaucescens* f. *alphonso-karrii* (Mitford ex Satow) Hatusima; *B. glaucescens* f. *solida* K. J. Mao & C. H. Zhao; *B. liukiuensis* Hayata; *B. multiplex* var. *nana* (Roxburgh) P. C. Keng; *B. multiplex* var. *solida* B. M. Yang; *B. nana* Roxburgh; *B. nana* var. *alphonso-karrii* (Mitford ex Satow) Latour-Marliac ex E. G. Camus; *B. nana* var. *variegata* E. G. Camus; *B. sterilis* Kurz ex Miquel; *B. viridiglaucescens* Carrière; *Ischurochloa floribunda* Buse ex Miquel; *Leleba dolichomerithalla* (Hayata) Nakai; *L. elegans* Koidzumi; *L. liukiuensis* (Hayata) Nakai; *Ludolfia glaucescens* Willdenow.

Culms 4–7 m, 1.5–2.5 cm in diam., internode walls rather thin. Culm sheaths abaxially glabrous, slanted along one side, apex asymmetrically arched, convex. Ultimate branches with 5–12 leaves; blade 5–16 × 0.7–1.6 cm.

Wild or cultivated. Guangdong, Guangxi, Hainan, Yunnan [SE Asia].

57b. Bambusa multiplex var. **incana** B. M. Yang, J. Hunan Teachers' Coll. (Nat. Sci. Ed.) 1983(1): 77. 1983.

毛凤凰竹 mao feng huang zhu

Bambusa glaucescens (Willdenow) Siebold ex Munro var. *pubivagina* (W. T. Lin & Z. J. Feng) N. H. Xia; *B. glaucescens* var. *strigosa* (T. H. Wen) L. C. Chia; *B. multiplex* var. *pubivagina* W. T. Lin & Z. J. Feng; *B. pubivaginata* W. T. Lin & Z. M. Wu; *B. strigosa* T. H. Wen.

Culms 4–7 m, 1.5–2.5 cm in diam., internode walls rather thin. Culm sheaths abaxially strigose, apex asymmetrically arched, convex. Ultimate branches with 5–12 leaves; blade 5–16 × 0.7–1.6 cm.

● Open fields, riversides. Hunan, Jiangxi.

57c. Bambusa multiplex var. **riviereorum** Maire, Fl. Afrique N. 1: 355. 1952.

观音竹 guan yin zhu

Bambusa glaucescens (Willdenow) Siebold ex Munro var. *riviereorum* (Maire) L. C. Chia & H. L. Fung.

Culms 1–3 m, 3–5 mm in diam.; internodes solid. Branches usually bent downward, bow-shaped. Culm sheath slanted along one side, apex asymmetrically arched-convex. Ultimate branches with 13–23 leaves; blades small, 1.6–3.2 × 0.3–0.7 cm.

● Low hills, riversides, widely cultivated as potted plants. Guangdong.

57d. Bambusa multiplex var. **shimadae** (Hayata) Sasaki, Trans. Nat. Hist. Soc. Taiwan 21: 118. 1931 [*"shimadai"*].

石角竹 shi jiao zhu

Bambusa shimadae Hayata, Icon. Pl. Formosan. 6: 151. 1916 [*"shimadai"*]; *B. glaucescens* var. *shimadae* (Hayata) L. C. Chia & But; *Leleba shimadae* (Hayata) Nakai.

Culms 4–7 m, 1.5–2.5 cm in diam., internode walls rather thin. Culm sheaths nearly symmetrical, broadly arched. Ultimate branches with 5–12 leaves.

● Usually cultivated in fields or mountains. Guangdong, Taiwan.

3. Bambusa subg. **Lingnania** (McClure) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 213. 1980.

箪竹亚属 dan zhu ya shu

Li Dezhu (李德铢); Chris Stapleton

Lingnania McClure, Lingnan Univ. Sci. Bull. 9: 34. 1940; *Neosinocalamus* P. C. Keng.

Culm internodes usually 30–110 cm; wall often less than 8 mm thick, but sometimes to 2 cm thick. Branchlets of lower branches never specialized into thorns. Branches usually absent on lower culm, usually subequal. Culm sheaths thickly papery; auricles small or absent, often narrowly oblong; blade deciduous, narrow, only ca. 1/3 width of sheath apex. Pseudospikelets purple-brown or bronze-colored.

About 14 species: S China, N Vietnam; 14 species (12 endemic) in China.

1a. Central branches dominant; culm wall usually more than (6–)8 mm thick.
  2a. Culm wall 15–20 mm thick.
    3a. Young culm internodes thinly white powdery, sparsely deciduously white hairy; culm sheath blade abaxially glabrous ..... 58. *B. intermedia*
    3b. Young culm internodes pubescent only; culm sheath blade both strigose and pubescent ..... 59. *B. wenchouensis*
  2b. Culm wall 6–10 mm thick.
    4a. Culm sheath blade abaxially hispid ..... 67. *B. emeiensis*
    4b. Culm sheath blade abaxially glabrous.
      5a. Young culm internodes with brown longitudinally arranged hairs; nodal sheath scars glabrous; culm sheath blade reflexed ..... 60. *B. remotiflora*
      5b. Young culm internodes sparsely glaucous hairy; nodal sheath scars hairy; culm sheath blade erect .... 61. *B. surrecta*
1b. Branches subequal; culm wall 2–5(–8) mm thick.
  6a. Culms scrambling ..... 68. *B. hainanensis*
  6b. Culms erect to pendulous, never scrambling.
    7a. Culms apically long pendulous ..... 67. *B. emeiensis*
    7b. Culms apically erect to nodding.

8a. Young culms glabrous.
9a. Culm sheath asymmetrical, one side smooth, the other rugate, apex with unequal rounded shoulders ..... 71. *B. rugata*
9b. Culm sheath symmetrical.
10a. Culm sheaths hispidulous; blade adaxially glabrous ..... 62. *B. cerosissima*
10b. Culm sheaths silky hairy; blade adaxially hispidulous ..... 63. *B. chungii*
8b. Young culms hairy.
11a. Young culms hispidulous, concavely tuberculate, white powdery ..... 64. *B. distegia*
11b. Young culms tuberculate-hairy, not white powdery or only in rings below nodes.
12a. Culm sheaths symmetrical, apex truncate or slightly concave.
13a. Leaf blade 0.8–1.6 cm wide; culm sheath, blade reflexed ..... 65. *B. guangxiensis*
13b. Leaf blade 2.4–2.8 cm wide; culm sheath blade erect; ligule margin dentate and long ciliate; leaf sheath glabrous or glabrescent ..... 69. *B. fimbriligulata*
12b. Culm sheaths asymmetrical, apex concave.
14a. Culm sheath ligule margin serrulate; leaf blade glabrous adaxially ..... 66. *B. papillata*
14b. Culm sheath ligule margin long ciliate; leaf blade hispidulous between veins adaxially ..... 70. *B. papillatoides*

58. Bambusa intermedia Hsueh & T. P. Yi, J. Bamboo Res. 3(1): 43. 1984.

绵竹 mian zhu

Culms to 10(–15) m, to 10 cm in diam.; internodes deep green, 35–45(–55) cm, initially thinly white powdery, sparsely deciduously white hairy; wall to 2 cm thick; nodes flat, white tomentose; branching from basal nodes up. Branches many, main mid-culm branch to 2 cm in diam. Culm sheaths deciduous, ca. 1/2 as long as internodes, leathery, with yellow and brown hairs, apex truncate or slightly concave; auricles small; oral setae several; ligule 2–3 mm, fimbriate; blade reflexed or spreading, abaxially glabrous, base ca. 1/3 as wide as sheath apex. Leaf sheaths glabrous; ligule truncate; auricles narrowly ovate; oral setae deflexed; blade lanceolate, 7–18 × 1–2.5 cm. Pseudospikelets 2–4 cm; gemmiferous bracts progressively larger; florets 7–11. Glumes 1 or 2; lemma 0.7–1 cm; palea longer than lemma, narrow, apex obtuse; lodicules 3. Anthers 4–5 mm. Ovary pubescent at apex; stigmas 3. Caryopsis unknown.

● Widely cultivated in river valleys and hilly areas; 500–2300 m. Guizhou, Sichuan, C and S Yunnan.

This species is intermediate between *Bambusa* subg. *Leleba* and *B.* subg. *Lingnania*, with inflorescences typical of the former and culm sheaths typical of the latter.

59. Bambusa wenchouensis (T. H. Wen) P. C. Keng ex Y. M. Lin & Q. F. Zheng, Fl. Fujian. 6: 45. 1995.

温州篁竹 wen zhou dan zhu

Lingnania wenchouensis T. H. Wen, J. Bamboo Res. 1(1): 32. 1982.

Culms to 12(–16) m, 8–12 cm in diam.; internodes 37–50 cm, initially pubescent; wall 1.6–2 cm thick; nodes flat, tomentose; branching from base. Branches many, dominant ones to 1.8 cm in diam. Culm sheaths deciduous, ca. 1/2 as long as internodes, leathery, brown hairy, apex slightly concave; auricles small; oral setae several; ligule ca. 2 mm, serrulate; blade strongly reflexed, both strigose and pubescent, base ca. 1/3 as wide as sheath apex. Leaf sheaths initially pubescent; ligule slightly prominent; auricles ovate; oral setae recurved; blade broadly lanceolate, 9–16 × 1.2–2 cm. Pseudospikelets to 3.3 cm; florets 9–13. Glumes 2–4; lemma ca. 0.8 cm; palea longer than lemma; lodicules ovate. Anthers ca. 6 mm. Ovary elliptical, ca. 1 mm, apically pubescent; stigmas 3, ca. 3 mm. Caryopsis unknown.

● River banks, around villages; 200–500 m. Fujian, Zhejiang.

The shoots are bitter but edible after treatment.

60. Bambusa remotiflora (Kuntze) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 214. 1980.

甲竹 jia zhu

Arundarbor remotiflora Kuntze, Revis. Gen. Pl. 760. 1891; *Bambusa lingnanioides* W. T. Lin; *Lingnania fimbriligulata* McClure; *L. parviflora* McClure; *L. remotiflora* (Kuntze) McClure.

Culms 8–12 m, 5–7.5 cm in diam.; internodes 30–40 cm, initially with brown, longitudinally arranged hairs; wall 6–9 mm thick; nodes flat, initially with a ring of yellow tomentum; sheath scars glabrous; branching from base. Branches many, central branches dominant. Culm sheaths deciduous, thickly leathery, dark brown hispid, apex truncate or slightly concave; auricles narrowly oblong, oral setae several; ligule convex, 2–3 mm, fimbriate; blade reflexed, base ca. 1/3 as wide as sheath apex, adaxially strigose. Leaf sheaths glabrous; ligule fimbriate, 2–3 mm; auricles deciduous, small; oral setae straight; blade lanceolate, 9–20 × 1–3 cm. Pseudospikelets 1–2.4 cm; florets 4–7. Glumes 1 or 2, 3.5–5.5 mm; lemma ca. 9 × 5–6 mm; palea about as long as lemma. Anthers ca. 4 mm. Stigmas 3. Caryopsis unknown.

Lowland river banks; 200–500 m. Guangdong, Guangxi, Hainan [Vietnam].

The culms are used for weaving.

61. Bambusa surrecta (Q. H. Dai) Q. H. Dai, Fl. Reipubl. Popularis Sin. 9(1): 119. 1996.

油竹 you zhu

Lingnania surrecta Q. H. Dai, Acta Phytotax. Sin. 20: 213. 1982.

Culms 6–10 m, 3–6 cm in diam.; internodes 40–50 cm, sparsely glaucous-hairy; wall 6–10 mm thick; nodes flat; sheath scars with a densely strigose ring; branching from base. Branches many, central branches slightly dominant. Culm sheaths deciduous, thickly leathery, densely hispid, apex slightly concave; auricles narrowly ovate; oral setae recurved; ligule ca. 3–5 mm, fimbriate; blade erect, base ca. 1/3 as wide as sheath apex, adaxially strigose. Leaf sheaths glabrous; ligule fimbriate, ca. 1 mm; auricles deciduous, small; oral setae absent; blade lanceolate, 12–18 × 1–3 cm. Inflorescence unknown.

● River banks, near villages; 100–300 m. Guangxi.

The culms are very good for weaving.

62. Bambusa cerosissima McClure, Lingnan Sci. J. 15: 637. 1936.

簞竹 dan zhu

Lingnania cerosissima (McClure) McClure, Lingnan Univ. Sci. Bull. 9: 35. 1940.

Culms 3–7(–15) m, 2–5 cm in diam.; internodes 30–60 cm or longer, densely white powdery; wall 2–4 mm thick; nodes flat; sheath scars corky; branching absent from lower nodes. Branches many, subequal. Culm sheaths late deciduous, thickly papery, much shorter than internodes; densely glaucous, hispidulous, apex slightly concave; auricles narrowly oblong, oral setae long, slender; ligule ca. 2 mm, slightly convex, fimbriate; blade strongly reflexed, base 1/4–1/3 as wide as sheath apex, adaxially glabrous. Leaf sheaths glabrous; ligule ca. 1 mm; auricles conspicuous, occasionally absent; oral setae straight; blade narrowly lanceolate, 16–20 × 1.5–3 cm. Glumes 1 or 2; lemma ca. 1 cm; palea about as long as lemma, apex obtuse or truncate. Style 1–2 mm; stigmas 3. Caryopsis triangular.

Farmlands, roadsides; 100–200 m. Guangdong, Guangxi [N Vietnam].

63. Bambusa chungii McClure, Lingnan Sci. J. 15: 639. 1936.

粉簞竹 fen dan zhu

Lingnania chungii (McClure) McClure; *L. chungii* var. *petilla* T. H. Wen.

Culms 5–10(–18) m, 3–5(–7) cm in diam.; internodes 30–45(–100) cm, initially white powdery, glabrous; wall 3–5 mm thick; nodes flat; sheath scars corky, initially with a ring of dense, brown hairs; branching from distal nodes only. Branches many, subequal. Culm sheaths deciduous, thinly leathery, initially white powdery, silky hairy, apex later glabrous, concave; auricles narrowly oblong, glossy; ligule ca. 1.5 mm, serrulate or long fimbriate; blade deciduous, strongly reflexed, base 1/5–1/3 as wide as sheath apex, adaxially hispidulous. Leaf sheaths glabrous; auricles usually developed; oral setae straight; blade lanceolate, 10–16(–20) × 1–2(–3.5) cm. Pseudospikelets ca. 2 cm; gemmiferous bracts 1 or 2; florets 4 or 5. Glumes 1 or 2; lemma 9–12 mm; palea about as long as lemma. Styles 1–2 mm; stigmas 3 or 2. Caryopsis triangular, 8–9 mm.

● Lowland hilly areas; 100–500 m. Fujian, Guangdong, Guangxi, S Hunan, SE Yunnan.

The culms are used for weaving and papermaking. The species is also planted as an ornamental because of the dense, persistent, white wax on the culms.

64. Bambusa distegia (Keng & P. C. Keng) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 213. 1980.

料慈竹 liao ci zhu

Sinocalamus distegius Keng & P. C. Keng, J. Wash. Acad. Sci. 36: 76. 1946; *Bambusa yunnanensis* N. H. Xia; *Lingnania distegia* (Keng & P. C. Keng) Keng; *Schizostachyum annulatum* Hsueh & W. P. Zhang.

Culms 5–10 m, 3–5 cm in diam.; internodes 20–50 cm, initially white powdery, hairy, later concavely tuberculate; wall 5–8 mm thick; nodes flat; sheath scars corky, initially with a ring of dense, brown hairs. Branches many from distal nodes, subequal. Culm sheaths deciduous, ca. 1/2 as long as internodes or less, leathery, finely white powdery, initially minutely golden or brown hispid, apex truncate; auricles minute; oral setae 3–5 mm; ligule 1–2 mm, serrulate; blade reflexed or horizontal, base ca. 1/3 as wide as sheath apex, adaxially hispidulous. Leaf sheaths glabrous; auricles usually minute; oral setae minute; blade lanceolate, 5–16 × 0.8–1.6 cm. Pseudospikelets 1.3–1.8 cm; florets 4–6. Glumes 1 or 2; lemma 8–10 × 8–10 mm; palea about as long as lemma. Anthers 5–6 mm. Ovary ca. 2.5 mm, pubescent; styles 2–3 mm; stigmas 1–3, 5–9 mm. Caryopsis ca. 8 mm. New shoots Sep–Oct, fl. Sep–Oct.

● Hilly areas, streams; 300–500 m. Sichuan.

The culms are used for weaving.

65. Bambusa guangxiensis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 214. 1980.

桂簞竹 gui dan zhu

Lingnania funghomii McClure, Lingnan Univ. Sci. Bull. 9: 36. 1940, not *Bambusa funghomii* McClure (1940).

Culms 2–5 m, 1.5–3 cm in diam., apically pendulous; internodes 40–60 cm, initially with bulbous-based hairs, papillate in age; wall 2–4 mm thick; nodes flat; sheath scar with a densely brown hirsute ring. Branches many, subequal. Culm sheaths deciduous, leathery, initially with dense, brown tuberculate hairs, apex truncate or slightly concave; auricles minute; oral setae 3–5 mm; ligule ca. 1 mm, serrulate; blade reflexed, base 1/4–1/3 as wide as sheath apex, both surfaces glabrous. Leaf sheaths silky hairy; auricles uniform; oral setae 6–8 mm; blade narrowly lanceolate, 8–16 × 1–1.5 cm. Inflorescence unknown.

● River valleys, lowland areas; 300–500 m. Guangxi.

The culms are split for weaving and tying.

66. Bambusa papillata (Q. H. Dai) K. M. Lan, Fl. Guizhou. 5: 281. 1988.

水簞竹 shui dan zhu

Lingnania papillata Q. H. Dai, Acta Phytotax. Sin. 20: 213. 1982.

Culms 3–6 m, 2–4 cm in diam., apically pendulous; internodes 30–60 cm, initially with bulbous-based hispid hairs, papillate in age; wall 2–3 mm thick; nodes flat; sheath scar with

a densely brown hirsute ring, distal to a white powdery ring. Branches many, subequal. Culm sheaths deciduous, asymmetrical, leathery, initially with brown tuberculate hairs, apex concave; auricles minute; oral setae 3–5 mm; ligule ca. 1 mm, serrulate; blade erect, base 1/4–1/3 as wide as sheath apex, both surfaces glabrous. Leaf sheaths weakly hispid; auricles minute; oral setae 8–12 mm; blade narrowly lanceolate, 8–19 × 1–1.5 cm. Inflorescence unknown.

● River valleys, hilly areas; 100–500 m. Guangxi.

67. Bambusa emeiensis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 214. 1980.

慈竹 ci zhu

Dendrocalamus affinis Rendle, J. Linn. Soc., Bot. 36: 447. 1904, not *Bambusa affinis* Munro (1868); *Lingnania affinis* (Rendle) P. C. Keng; *Neosinocalamus affinis* (Rendle) P. C. Keng; *Sinocalamus affinis* (Rendle) McClure.

Culms 5–10(–12) m, 5–8 cm in diam., apically long pendulous; internodes 15–30(–60) cm, initially stiffly pale brown strigose; wall 8–12 mm thick; nodes flat. Branches absent from lower nodes, many from mid-culm, central ones slightly prominent. Culm sheaths deciduous, leathery, both pale pubescent and dark brown spinous-hairy, apex concave; auricles minute or absent; ligule 2–5 mm, fimbriate; blade reflexed or horizontal, base 1/3–1/2 as wide as sheath apex, both surfaces hispid. Leaves variable in size; sheaths glabrous; ligule truncate, 1–1.5 mm; auricles and oral setae absent; blade narrowly lanceolate, 10–30 × 1–3 cm. Pseudospikelets 1.2–1.5 cm; prophylls 1-keeled; bracts 2 or 3; florets 3–5, with a terminal sterile floret. Rachilla internodes abbreviated, apical ones ca. 2 mm, falling together. Glumes absent or 1, 6–7 mm; lemma 0.8–1 cm; palea 7–9 mm; lodicules 3(or 4). Anthers 4–6 mm. Ovary ca. 1 mm; styles to 4 mm; stigmas 2–4, 3–5 mm. Caryopsis 7–8 mm. New shoots Jun–Sep, fl. Jul–Sep. 2*n* = 76*.

● River valleys, hilly areas; 800–2100 m. Guizhou, W Hunan, Sichuan, Yunnan.

This is the most common species of bamboo cultivated on the Yunnan Plateau and adjacent provinces. It has been used for various purposes, from household weaving to agricultural tools, and for ornamental and soil-protection purposes. It is also of great systematic interest, with vegetative parts typical of *Bambusa* subg. *Lingnania*, while the spikelet structure differs from the rest of the subgenus, having characteristics of *B.* subg. *Dendrocalamopsis*.

68. Bambusa hainanensis L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 213. 1980.

籐箪竹 teng dan zhu

Lingnania scandens McClure, Lingnan Univ. Sci. Bull. 9: 38. 1940, not *Bambusa scandens* Blume ex Nees (1824).

Culms scrambling; internodes 20–30 cm, stiffly strigose; wall less than 8 mm thick. Branches many, subequal. Culm sheaths imperfectly known. Leaf sheaths glabrous; auricles and oral setae absent; blade lanceolate, 16–25 × 2–3 cm. Pseudospikelets few flowered. Lemma ca. 1 cm; palea longer than lemma; lodicules 3, brown, hirtellous. Ovary oblong, apex hirtellous; stigmas (2 or)3. Caryopsis unknown.

● Tropical forests. Hainan.

This imperfectly known species requires further investigation.

69. Bambusa fimbriligulata McClure, Lingnan Univ. Sci. Bull. 9: 10. 1940.

流苏箪竹 liu su dan zhu

Culms usually ca. 6 m tall, ca. 3 cm in diam.; internodes upward strigose at first, later hairs deciduous; nodes slightly prominent. Culm sheaths deciduous, brown hispid abaxially; auricles narrow, glabrous, apex truncate; oral setae sparse, very weak; ligules ca. 1.5 mm tall in middle, margin dentate and long ciliate; blades erect, deciduous, lanceolate, apex long attenuate, nearly glabrous abaxially, slightly scabrous adaxially. Branches many, subequal. Leaf sheaths glabrous or glabrescent; auricles and oral setae weakly developed; ligules scarcely exserted, apex concave, petioles slightly scabrous on both sides; blades 13.5–17.5 × 2.4–2.8 cm, oblong-lanceolate, glabrous adaxially, puberulous abaxially, transverse veinlets inconspicuous. Inflorescence unknown.

● Riversides. Guangxi (Quanxian).

This imperfectly known species requires further investigation.

70. Bambusa papillatoides Q. H. Dai & D. Y. Huang, Acta Phytotax. Sin. 36: 279. 1998.

细箪竹 xi dan zhu

Culms erect or suberect, usually 3–6 m tall, 1–3 cm in diam.; internodes terete, 30–50 cm, densely white hispid, papillate after hairs falling, white powdery below nodes; wall 2–5 mm thick; basal intranodes grayish white lanuginous; sheath scars dense pale brown hairy. Branches many, main one longer than lateral ones. Culm sheaths deciduous, oblong, green when fresh, brittle, margin papery, apex very concave, asymmetrical; densely brown or grayish white hispidulous; auricles long ovate or elliptic, oral setae many, well developed, ca. 5 mm, white, erect; ligules ca. 1 mm, margin white ciliate, cilia ca. 5 mm; blades erect, ovate-lanceolate, base constricted, glabrous abaxially, hispidulous between veins adaxially. Leaves 7–10 on ultimate branches; leaf sheaths 3–4 cm, hispidulous at first, margin ciliate; ligules ca. 1 mm; auricles falcate or absent, oral setae 3–5, grayish white, 10–12 cm, radiate, deciduous; blades lanceolate, 10–15 × 1–2 cm, fine white hairy along veins abaxially, secondary veins 4–6 pairs. Inflorescence unknown.

● Cultivated. Guangxi (Nanning).

71. Bambusa rugata (W. T. Lin) Ohrnberger, Bamboos World Introd. 4: 19. 1997.

皱纹箪竹 zhou wen dan zhu

Lingnania rugata W. T. Lin, J. Bamboo Res. 12(3): 2. 1993.

Culms 3–4 m tall, 1.3–3 cm in diam.; internodes 25–38 cm, glabrous, with a ring of white powder below nodes; wall 2–3 mm thick; nodes not prominent; sheath scar slightly prominent, ± yellow hispid. Branches many, subequal. Culm sheath

deciduous, one side smooth and flat, the other side rugate, abaxially ± hispid at base, apex concave, unequal, 2 shoulders rotund; auricles narrow; oral setae present, erect; ligules ca. 1 mm, margin fimbriate; blades reflexed, lanceolate. Leaves 3 or 4 in ultimate branches; leaf sheaths glabrous, auricles falcate, small, oral setae radiate; blades 3.5–15 × 0.8–2.5 cm, glabrous adaxially, white puberulous abaxially; secondary veins 4–6 pairs. Inflorescence unknown.

● Guangdong (Zhuhai).

4. Bambusa subg. **Dendrocalamopsis** L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 214. 1980.

绿竹亚属 lü zhu ya shu

Li Dezhu (李德铢); Chris Stapleton

Dendrocalamopsis Q. H. Dai & X. L. Tao.

Culm internodes usually 30–110 cm; wall usually thin, often less than 8 mm thick, but sometimes to 2 cm thick. Branches usually absent in lower culm, usually subequal. Branchlets of lower branches never specialized into thorns. Culm sheaths thickly papery; auricles absent or small, often narrowly oblong; blade deciduous, narrow, only ca. 1/3 width of sheath apex. Pseudospikelets purple-brown or bronze-colored.

Ten species: E and S China, Myanmar (*Bambusa copelandii* Brandis); nine species (all endemic) in China.

The genus *Dendrocalamopsis* was validly published when *D. grandis* was published, as its description satisfies the criteria for a *descriptio generico-specifica* (Stapleton & Xia, Taxon 53: 526–528. 2004).

1a. Culm sheaths apically narrow; blade recurved to reflexed; spikelets ovate, sometimes bilaterally compressed.
2a. Culms with abbreviated basal internodes; branching from basal nodes; stigma 1 ..... 79. *B. bicicatricata*
2b. Culms without abbreviated basal internodes, not branching from basal nodes; stigmas 1–3.
3a. Culm sheath blade base ca. 1/3 of sheath apex ..... 77. *B. stenoaurita*
3b. Culm sheath blade base not much narrower than sheath apex.
4a. Culms initially pubescent; culm sheaths with minute auricles; stigmas (1 or)2–4 ..... 76. *B. beecheyana*
4b. Culms initially hispid; culm sheaths with small, reflexed auricles; stigma 1 ..... 78. *B. grandis*
1b. Culm sheaths apically broad; blade erect; spikelets slender, subulately terete or ovate, usually not bilaterally compressed.
5a. Culm sheath auricles absent ..... 80. *B. xueana*
5b. Culm sheath auricles slightly conspicuous, oblong, ovate or rounded.
6a. Culm sheaths with unequal auricles, larger auricle ca. 2 × size of smaller one ..... 75. *B. basihirsuta*
6b. Culm sheaths with similar-sized auricles.
7a. Culm sheath ligule 3–9 mm; culms pubescent, initially with lilac stripes ..... 72. *B. variostriata*
7b. Culm sheath ligule ca. 1 mm; culms glabrous, green.
8a. Spikelets slender, 3–3.7 × ca. 0.5 cm, 8–13-flowered; culm sheath base outer margin usually with an arrowlike expansion below point of attachment ..... 73. *B. odashimae*
8b. Spikelets ovate, 2.7–3 × 0.7–1 cm, 5–9-flowered; culm sheath base without expansion ..... 74. *B. oldhamii*

72. Bambusa variostriata (W. T. Lin) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 215. 1980 [*"vario-striata"*].

吊丝簞竹 diao si dan zhu

Sinocalamus variostriatus W. T. Lin, Acta Phytotax. Sin. 16(1): 66. 1978 [*"vario-striatus"*]; *Dendrocalamopsis variostriata* (W. T. Lin) P. C. Keng; *Neosinocalamus variostriatus* (W. T. Lin) J. F. Zhuo.

Culms 5–12 m, 4–7 cm in diam., apically long pendulous; internodes initially with lilac stripes, 15–30 cm, initially pubescent; wall 8–10 mm thick; nodes flat; branching from culm base up. Branches many, main ones slightly dominant at mid-culm. Culm sheaths deciduous, leathery, with deciduous, yellow, spinous hairs; auricles slightly conspicuous, oblong; oral setae few, 4–6 mm; ligule 3–9 mm, entire or serrulate; blade erect, base ca. 1/2 as wide as sheath apex, adaxially hispid. Leaf sheaths subglabrous; ligule truncate, ca. 1 mm; auricles minute; oral setae few; blade narrowly lanceolate, 13–26 × 1.6–3 cm. Pseudospikelets 3–5 cm; bracts 3–5; florets 5 or 6 plus terminal sterile floret; rachilla not disarticulating, internodes 2–3 mm. Glumes 1, ca. 1 cm; lemma ca. 1.5 cm; palea ca. 1.5 cm; lodicules 3, 4–5 mm. Anthers ca. 7 mm. Ovary ovoid, ca. 2.5 mm; styles ca. 5 mm; stigmas 3. Caryopsis unknown.

● Lowlands, hilly areas. Guangdong.

73. Bambusa odashimae Hatusima, Fl. Okinawa, rev. ed., 128. 1967.

乌脚绿竹 wu jiao lü zhu

Leleba edulis Odashima, J. Trop. Agric. 8: 59. 1936, not *Bambusa edulis* Carrière (1866); *B. taiwanensis* L. C. Chia & H. L. Fung; *Dendrocalamopsis edulis* (Odashima) P. C. Keng; *Sinocalamus edulis* (Odashima) P. C. Keng.

Culms to 20 m, 7.5–13 cm in diam.; internodes 20–35 cm; wall 1–1.8 cm thick; nodes flat. Branches many from basal

nodes, main ones slightly dominant at mid-culm. Culm sheaths deciduous, leathery, hispid, base of outer margin usually with an arrowlike expansion below point of attachment; auricles small; oral setae few; ligule ca. 1 mm, entire or ciliate; blade erect, base ca. 1/2 as wide as sheath apex, adaxially hispid. Leaf sheaths glabrous; auricles minute; oral setae few, 7–10 mm; ligule truncate, ca. 1 mm; blade oblong-lanceolate or narrowly lanceolate, 20–34 × 3–5 cm. Pseudospikelets slender, 3–3.7 × ca. 0.5 cm; florets 8–13, with 2 or 3 terminal florets sterile; rachilla not disarticulating, internodes 2–3 mm. Glume 1, 0.8–1 cm; lemma 0.8–1.3 cm; palea 0.6–1 cm; lodicules 2 or 3, 1.5–2 mm. Anthers 4–4.5 mm. Ovary oblong, 1.5–2 mm; styles ca. 2 mm; stigmas 3. Caryopsis unknown.

● Lowlands, hilly areas. Taiwan.

This species has delicious shoots and is widely cultivated in N Taiwan.

74. Bambusa oldhamii Munro, Trans. Linn. Soc. London 26: 109. 1868 [*"oldhami"*].

绿竹 lü zhu

Bambusa atrovirens T. H. Wen; *Dendrocalamopsis atrovirens* (T. H. Wen) P. C. Keng ex W. T. Lin; *D. oldhamii* (Munro) P. C. Keng; *Leleba oldhamii* (Munro) Nakai; *Sinocalamus oldhamii* (Munro) McClure.

Culms 6–12 m, 3–9 cm in diam.; internodes slightly flexuose, 20–35 cm, initially white powdery, glabrous; wall 4–12 mm thick; nodes flat. Branches many from mid-culm up, 3 dominant. Culm sheaths deciduous, leathery, dark brown spinous-hairy, soon glabrescent; auricles small, rounded, ciliate; ligule ca. 1 mm, subentire; blade erect, base ca. 1/2 as wide as sheath apex. Leaf sheaths initially hispid; ligule truncate, ca. 1 mm; auricles suborbicular; oral setae few; blade oblong-lanceolate, 15–30 × 3–6 cm. Pseudospikelets 2.7–3 × 0.7–1 cm; bracts 3–5; florets 5–9; rachilla not disarticulating, internodes 2–3 mm. Glumes 1, 0.9–1 × ca. 0.8 cm; lemma similar to glumes, ovate, ca. 1.7 × 1.3 cm; palea ca. 1.3 cm; lodicules 3, ca. 3.5 mm. Anthers ca. 8 mm. Ovary ovoid, ca. 2 mm; style ca. 5 mm; stigmas 3. Caryopsis unknown. New shoots May–Nov, fl. summer–autumn.

● Plains. Fujian, Guangdong, Guangxi, Hainan, Taiwan, S Zhejiang.

Bambusa oldhamii is commonly cultivated in Taiwan for its very high-quality shoots.

75. Bambusa basihirsuta McClure, Lingnan Univ. Sci. Bull. 9: 6. 1940.

扁竹 bian zhu

Bambusa prasina T. H. Wen; *Dendrocalamopsis basihirsuta* (McClure) P. C. Keng & W. T. Lin; *D. prasina* (T. H. Wen) P. C. Keng.

Culms 7–12 m, 4–9 cm in diam.; internodes 22–35 cm, initially thickly white powdery, sparsely hispid; nodes flat. Branches many from mid-culm up, 3 dominant. Culm sheaths deciduous, leathery, initially brown spinous-hairy, glabrescent; auricles unequal, ciliate, larger one ca. 5 mm, smaller ca. 3 mm; ligule ca. 2 mm, ciliate; blade erect, triangular, glabrous, base ca. 1/2 as wide as sheath apex. Leaf sheaths initially hispid; ligule truncate, ca. 1 mm; auricles suborbicular; oral setae few; blade oblong-lanceolate, 13–25 × 2.5–5 cm. Pseudospikelets ca. 2.4 × 0.7 cm, subtended by a prophyll; florets 5–7; rachilla not disarticulating, internodes ca. 2 mm. Glumes 1 or 2; lemma ca. 1.6 × 1 cm; palea ca. 1.4 cm. Lodicules 3, ciliate. Anthers ca. 7 mm. Ovary ovoid, ca. 2 mm; styles ca. 5 mm; stigmas 3, 4–6 mm. Caryopsis unknown.

● Low-lying areas. Guangdong, Zhejiang.

The bitter shoots are not eaten.

76. Bambusa beecheyana Munro, Trans. Linn. Soc. London 26: 108. 1868.

吊丝球竹 diao si qiu zhu

Culms to 16 m, 9–10 cm in diam., apically pendulous or long pendulous; internodes 34–41 cm, initially thickly white powdery, sparsely pubescent; wall 1.5–2 cm thick; nodes flat. Branches several, 1–3 dominant. Culm sheaths deciduous, leathery, initially with uneven, dark brown, spinous hairs; auricles small at lower nodes, larger at distal nodes; oral setae present or absent; ligule 2–4 mm, ciliate; blade recurved, triangular, base 1/2–4/5 as wide as sheath apex, adaxially hirtellous. Leaf sheaths initially hirtellous; ligule truncate, 0.5–1 mm; auricles absent or minute; oral setae scarce or absent; blade oblong-lanceolate, 11–28 × 1.5–3.5 cm. Pseudospikelets 1.5–2 × 0.5–0.8 cm; florets 6–8; rachilla not disarticulating, internodes ca. 2 mm. Glumes 2, cordate, 4–5 mm, ciliate; lemma ca. 0.9 × 0.9 cm; palea 4–8 mm; lodicules 3, ciliate. Anthers ca. 5 mm. Ovary ovoid, ca. 1.5 mm; styles 3–4 mm; stigmas (1 or)2–4, ca. 6 mm. Caryopsis unknown. New shoots Jun–Jul, fl. Sep–Dec.

● Plains. Guangdong, Guangxi, Hainan, Taiwan.

Bambusa beecheyana is commonly cultivated in S Guangdong for its slightly bitter shoots.

1a. Culms apically long pendulous, without a brown pubescent ring below nodes; basal nodes without branches; stigmas 2–4 ..... 76a. var. *beecheyana*

1b. Culms apically pendulous, with a brown pubescent ring below nodes; basal nodes with branches; stigmas 2 ..... 76b. var. *pubescens*

76a. Bambusa beecheyana var. **beecheyana**

吊丝球竹(原变种) diao si qiu zhu (yuan bian zhong)

Dendrocalamopsis beecheyana (Munro) P. C. Keng; *Neosinocalamus beecheyanus* (Munro) P. C. Keng & T. H. Wen; *Sinocalamus beecheyanus* (Munro) McClure.

Culms apically long pendulous; without a brown pubescent ring below nodes; basal nodes without branches. Palea abaxially hirtellous, apex acuminate or obtuse; stigmas 2–4.

● Guangdong, Guangxi, Hainan.

76b. Bambusa beecheyana var. **pubescens** (P. F. Li) W. C. Lin, Bull. Taiwan Forest. Res. Inst. 6: 1. 1964.

大头典竹 da tou dian zhu

Sinocalamus beecheyanus var. *pubescens* P. F. Li, Sunyatsenia 6: 205. 1946; *Dendrocalamopsis beecheyana* var. *pubescens* (P. F. Li) P. C. Keng; *Neosinocalamus beecheyanus* var. *pubescens* (P. F. Li) P. C. Keng & T. H. Wen; *Sinocalamus pubescens* (P. F. Li) P. C. Keng.

Culms apically recurved, with a brown pubescent ring below nodes; basal nodes with branches. Palea densely pubescent abaxially, apically 2-cleft; stigmas 2.

● Guangdong, Taiwan.

77. Bambusa stenoaurita (W. T. Lin) T. H. Wen, J. Bamboo Res. 10(1): 22. 1991.

黄麻竹 huang ma zhu

Sinocalamus stenoauritus W. T. Lin, Bull. Bot. Lab. N.-E. Forest. Inst., Harbin 1980(6): 89. 1980; *Dendrocalamopsis stenoaurita* (W. T. Lin) P. C. Keng ex W. T. Lin; *Neosinocalamus stenoauritus* (W. T. Lin) W. T. Lin.

Culms pendulous, to 10 m, ca. 7 cm in diam.; internodes 22–32 cm, glabrous; wall ca. 1 cm thick; nodes flat. Branches several from middle nodes of culms, central slightly dominant. Culm sheaths deciduous, leathery, initially brown spiny-strigose; auricles reflexed, linear, small; ligule ca. 3 mm, serrulate; blade recurved or reflexed, triangular, base ca. 1/3 as wide as sheath apex. Leaf sheaths subglabrous; auricles absent or minute, with or without few oral setae; ligule truncate, 0.5–1 mm; blade oblong-lanceolate, 13–25 × 2–2.5 cm. Pseudospikelets 2–2.5 cm; bracts 1 or 2; florets ca. 6; rachilla not disarticulating, internodes ca. 2 mm. Glumes 1 or 2, ciliate; lemma 1–1.2 cm; palea about as long as lemma; lodicules 3, ca. 3.5 mm, ciliate. Anthers 8–10 mm. Ovary ovoid; styles 3–4 mm; stigmas (1 or)2–4. Caryopsis unknown. New shoots Jul–Oct.

● River valleys. Guangdong.

Bambusa stenoaurita may be more appropriately placed in *Dendrocalamus*.

This species is cultivated in some areas of Guangdong for its shoots.

78. Bambusa grandis (Q. H. Dai & X. L. Tao) Ohrnberger, Bamboos World Introd. 4: 18. 1997.

大绿竹 da lü zhu

Dendrocalamopsis grandis Q. H. Dai & X. L. Tao, Acta Phytotax. Sin. 20: 210. 1982; *D. daii* P. C. Keng, nom. illeg. superfl.; *Neosinocalamus grandis* (Q. H. Dai & X. L. Tao) T. H. Wen.

Culms 10–15 m, 8–10 cm in diam., apically recurved; internodes 30–40 cm, basally slightly swollen, initially sparsely hispid; wall 2–2.5 cm thick; nodes flat. Branches several, central dominant. Culm sheaths deciduous, leathery, initially with dark brown, spiny hairs; auricles reflexed, linear, small; ligule 3–5 mm, serrulate; blade recurved, occasionally erect, ovate to lanceolate, base ca. 4/5 as wide as sheath apex. Leaf sheaths hirtellous; ligule truncate, 1–1.5 mm; auricles and oral setae absent; blade lanceolate, 15–20 × 3–5 cm. Pseudospikelets 1.5–2 cm; 4–8-flowered, plus a sterile terminal floret; rachilla not disarticulating, internodes ca. 2 mm. Glumes 1, ciliate; lemma 1–1.2 cm, ciliate; palea 0.8–1 cm; lodicules 3. Anthers ca. 6 mm. Ovary obovoid; styles ca. 4 mm; stigma 1. Caryopsis unknown. New shoots Jul–Oct.

● River banks, near villages. Guangxi.

The name used in FRPS (9(1): 149. 1996), *Dendrocalamopsis daii*, was published in the belief that *D. grandis* was not validly published. However, the latter name is validly published as it fulfills the requirements for a *descriptio generico-specifica* (Stapleton & Xia, Taxon 53: 526–528. 2004).

This species is cultivated in Guangxi for its shoots and culms.

79. Bambusa bicicatricata (W. T. Lin) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 214. 1980.

孟竹 meng zhu

Sinocalamus bicicatricatus W. T. Lin, Acta Phytotax. Sin. 16(1): 68. 1978; *Dendrocalamopsis bicicatricata* (W. T. Lin) P. C. Keng; *Neosinocalamus bicicatricatus* (W. T. Lin) W. T. Lin.

Culms ca. 10 m, 5.5–7.5 cm in diam., apically recurved; basal internodes normally 20–36 cm, on abnormal culms very short, ca. 1 cm; wall ca. 1.5 cm thick; nodes level; branching to base. Branches several, central dominant. Culm sheaths deciduous, leathery, initially with dark brown, spiny hairs; auricles reflexed, linear, small; ligule 4–5 mm, serrulate; blade recurved or reflexed, ovate-lanceolate, base 1/2–4/5 as wide as sheath apex. Leaf sheaths subglabrous; ligule truncate, 1.5–2 mm; auricles tiny; oral setae developed; blade lanceolate, 9–22 × 2–4 cm. Pseudospikelets 1.7–1.8 cm; florets 6–8, apical 2 sterile. Rachilla internodes ca. 2 mm. Glumes 2 or 3, subcordate, ca. 5 mm, glabrous; lemma 7–8 mm, ciliate; palea 7–8 mm; lodicules 3. Anthers ca. 3.5 mm. Ovary ca. 3.5 mm; stigmas 1. Caryopsis unknown. New shoots Jun–Oct, fl. winter.

● Roadsides, margins of villages, cultivated. Hainan.

80. Bambusa xueana Ohrnberger, Bamboos World Introd. 4: 19. 1997.

疙瘩竹 ge da zhu

Neosinocalamus yunnanensis Hsueh & J. R. Hsueh, Acta Phytotax. Sin. 29: 274. 1991; *Bambusa tengchongensis* D. Z. Li & N. H. Xia, nom. illeg. superfl.; *B. yunnanensis* (Hsueh & J. R. Hsueh) D. Z. Li (1994), not N. H. Xia (1993).

Culms 8–12 m, 4–7 cm in diam., apically pendulous; internodes 40–50 cm, initially gray-white or brown pubescent, with brown tomentose rings below nodes, wall ca. 15 mm thick; nodes flat; branches many, central dominant. Culm sheaths slowly deciduous, leathery, abaxially densely brown strigose; auricles absent; ligule ca. 2 mm, serrulate; blade erect, triangular or long-triangular, base as wide as sheath apex. Leaves 5–9 per ultimate branch; sheaths glabrous; ligule ca. 0.5 mm; auricles absent; blade 12–25 × 1–2.5 cm, base broadly cuneate,

lateral veins 5–9-paired. Pseudospikelets 1–3(to many) per node of inflorescence, yellow-green or slightly lilac, ca. 2 × 0.7 cm, somewhat patent when mature; florets 5–8; rachilla disarticulating, joined to florets. Glumes 1 or 2, yellow, leathery; lemmas broadly ovate, ca. 14 × 1.1 cm, 14–16-veined, apex mucronate; palea narrow, keels pilose, 5–7-veined. Lodicules 2 or 3, transparent, ciliate. Filaments 1(–10) mm; anthers yellow, ca. 6 mm. Ovary pyriform, densely pilose; stigmas 2 or 3.

● 1700–1800 m. W Yunnan (Tengchong).

Taxa incertae sedis

Bambusa basisolida W. T. Lin (J. Bamboo Res. 16(3): 23. 1997) was described from sterile material from Guangdong (Yangchun). In the protologue it was compared with *B. subtruncata*.

Bambusa concava W. T. Lin (J. Bamboo Res. 16(3): 24. 1997) was described from sterile material from Hainan (Haikou). In the protologue it was compared with *B. duriuscula*.

Bambusa multiplex (Loureiro) Raeuschel ex Schultes & J. H. Schultes var. *lutea* T. H. Wen (J. Bamboo Res. 1(1): 31. 1982) was described from Zhejiang. The holotype (*X. Q. Hua et al. 81901*, ZJFI) has an abaxially pale green leaf blade, glabrous culm internodes, subfalcate culm sheath auricles, and abaxially glabrous culm sheath blades. Because these characters are so different from those of *B. multiplex*, it is not reasonable to recognize it as a variety of that species. According to field records, its culms are up to 3 m high and 1–2 cm in diam. As the holotype is fragmentary and very difficult to identify, further investigations are required to place this taxon effectively.

Bambusa rongchengensis (T. P. Yi & C. Y. Sia) D. Z. Li (Acta Bot. Yunnan. 16: 41. 1994; *Dendrocalamus rongchengensis* T. P. Yi & C. Y. Sia, J. Bamboo Res. 7(4): 20. 1988) was described from Sichuan.

Bambusa sinospinosa McClure var. *inermis* Keng & P. C. Keng (J. Wash. Acad. Sci. 36: 80. 1946; *Bambusa inermis* (Keng & P. C. Keng) T. P. Yi; *Dendrocalamus inermis* (Keng & P. C. Keng) T. P. Yi) was described from Sichuan. The correct position of this taxon is not known.

Bambusa valida (Q. H. Dai) W. T. Lin (Guihaia 10: 15. 1990; *Dendrocalamopsis valida* Q. H. Dai, Acta Phytotax. Sin. 24: 393. 1986, *"validus"*) was described from material cultivated at the Guangxi Institute of Forestry, Nanning.

Lingnania transvenula W. T. Lin & Z. J. Feng (J. S. China Agric. Univ. 13(2): 82. 1992) was described from Guangdong.

Neosinocalamus rectocuneatus W. T. Lin (Acta Phytotax. Sin. 26: 228. 1988; *Sinocalamus rectocuneatus* (W. T. Lin) W. T. Lin) was described from Guangdong. This species is a member of *Bambusa* subg. *Dendrocalamopsis*.

Sinocalamus concavus W. T. Lin & Z. M. Wu (J. S. China Agric. Univ. 13(2): 82. 1992) was described from Guangdong.

Sinocalamus suberosus W. T. Lin & Z. M. Wu (J. S. China Agric. Univ. 13(2): 83. 1992) was described from Guangdong.

Sinocalamus triramus W. T. Lin & Z. M. Wu (J. S. China Agric. Univ. 15(2): 78. 1994) was described from Guangdong.

2. THYRSOSTACHYS Gamble, Indian Forester 20: 1. 1894.

泰竹属 tai zhu shu

Li Dezhu (李德铢); Chris Stapleton

Arborescent bamboos, moderately sized; clumps very dense. Rhizomes short necked, pachymorph. Culms unicaespitose, erect; internodes terete. Branches several to many, 1 dominant. Culm sheaths persistent, thickly papery; ligule short; auricles absent or small without bristles; blade recurved or erect, triangular. Leaf sheath blade small to moderate-sized; ligule short; auricles absent. Inflorescence iterauctant, fully bracteate, comprising a cluster of 1–3 fertile pseudospikelets and 1 or 2 sterile ones subtended by a spathiform 2-keeled prophyll, sessile upon a branch node. Pseudospikelets with prophyll, 1–3 florets plus a fertile terminal one and a rachilla extension, falling together, not disarticulating; rachilla hairy. Glumes 2–4; lemma papery; palea 2-cleft for ca. 1/3 of its length; lodicules absent to 3, ciliate. Stamens 6, long exserted; anthers apiculate. Ovary turbinate, stalked; style long; stigmas 1–3, feathery. Caryopsis terete, smooth, glabrous, with persistent style base. $2n = 76$*.

Two species: China, Myanmar, Thailand; two species in China.

1a. Culm sheath apically straight-truncate; leaf blade 17–20 × 1.2–2 cm; spikelets 1.5–2.5 cm; culms densely caespitose ..... 1. *T. oliveri*

1b. Culm sheath apically triangular-truncate; leaf blade 7–15 × 0.7–1.2 cm; spikelets 1.2–1.4 cm; culms very densely caespitose ..... 2. *T. siamensis*

1. Thyrsostachys oliveri Gamble, Indian Forester 20: 1. 1894.

大泰竹 da tai zhu

Culms to 20 m, to 7.5 cm in diam.; internodes initially bright green, becoming dull green, 30–50 cm; wall rather thick; nodes slightly prominent. Branches several, main mid-culm ones to 1.5 cm in diam. Culm sheaths orange to brown, ca. 3/4 as long as internodes, papery, margins ciliate, apex rounded; auricles and oral setae absent; ligule ca. 2.5 mm, serrulate; blade reflexed, narrow, to 20 cm, base ca. 1/3 width of sheath apex. Leaf sheaths hairy; ligule short, pubescent; blade linear-lanceolate, 17–20 × 1.2–2 cm. Pseudospikelets 1.5–2.5 cm; prophylls to 1 cm; gemmiferous bracts 2 or 3; empty glumes 1 or 2; fertile florets 2 or 3; fertile lemma 1.2–1.6 cm; palea 1.4–1.8 cm, narrow, bifid for 1/4–1/3 of its length; lodicules 2 or 3. Anthers yellow, apiculate. Ovary turbinate; style 1, ca. 1.5 cm; stigmas 3. Caryopsis ca. 1 cm.

Forests on low hills, open areas; 500–700 m. S Yunnan [Myanmar].

2. Thyrsostachys siamensis Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 59. 1896, nom. cons.

泰竹 tai zhu

Bambusa regia Thomson ex Munro, nom. rej.; *Thyrsostachys regia* (Thomson ex Munro) Bennet, nom. rej.

Culms to 12 m, to 6 cm in diam.; internodes initially green, becoming gray-green, 20–30 cm; wall thick; nodes slightly thickened, with a white ring below. Branches several, main mid-culm ones to 1 cm in diam. Culm sheaths pale brown, 3/4–1 × as long as internodes, papery, appressed pubescent, margins ciliate, apex truncate; ciliate; auricles small; ligule ca. 1 mm; blade erect, base ca. 3/4 width of sheath apex. Leaf sheaths white pubescent and ciliate; ligule very short, pubescent; blade linear, 7.5–15 × 0.7–1.2 cm. Pseudospikelets 1.2–1.4 cm; prophylls to 0.8 cm; gemmiferous bracts 2 or 3; glumes 2 or 3; fertile florets 1–3. Fertile lemma 1–1.3 cm; palea slightly longer than lemma, narrow, bifid for 1/3 of its length; lodicules absent to 3. Anthers pale yellow, apex purple, apiculate. Ovary ovoid to turbinate; style 1, ca. 1.2 cm; stigmas 1–3. Caryopsis ca. 0.6 cm. 2*n* = 76*.

River valleys to hilly forested areas; 500–1000 m. S Yunnan [Myanmar, N Thailand].

This species is one of the most beautiful ornamental bamboos in the tropics of SE Asia, long cultivated in SE China, and recently found wild in Yunnan. The widespread use and economic importance of the name *Thyrosostachys siamensis* justified its conservation against the earlier name, *Bambusa regia* (1868).

3. DENDROCALAMUS Nees, Linnaea 9: 476. 1835.

牡竹属 mu zhu shu

Li Dezhu (李德铢); Chris Stapleton

Arborescent bamboos, large-sized; clumps dense. Rhizomes short necked, pachymorph. Culms unicaespitose, erect, or occasionally scrambling, apex usually pendulous; internodes terete. Branches several to many, none to 3 dominant. Culm sheaths deciduous; ligule conspicuous; auricles often absent or small; blade usually recurved, or erect. Leaf blades usually large; ligule conspicuous; auricles usually absent; venation not tessellate. Inflorescence iterauctant, fully bracteate, subtended by a narrow single-keeled prophyll, pseudospikelets clustered in soft or spiky globose mass at nodes of leafless flowering branches. Pseudospikelets prophyllate, (1 or)2–8-flowered, with or without rachilla extension and rudiment, sessile, fertile glumes preceded by 1 or more gemmiferous bracts and 0–2 empty glumes. Prophyll narrow, single-keeled. Rachilla internodes usually abbreviated and not disarticulating; florets falling together. Lemma broad, nearly equal to palea, many veined, sometimes long mucronate; palea of lower florets 2-keeled, but rounded or imperfectly keeled in terminal floret if rachilla extension small or absent, apex acute or shortly bifid; lodicules absent or variably 1–3. Stamens 6; filaments usually free, rarely united into a loose tube. Ovary stalked, apex thickened and hairy; style very short, solid; stigmas 1(–3), long, hairy, plumose. Caryopsis terete, apex hairy; pericarp slightly thickened. 2*n* = 76*.

Forty species: subtropical and tropical Asia; 27 species (15 endemic) in China, mostly in the southwest.

1a. Culms usually apically nodding, basal nodes with branches, 1–3 branches dominant; spikelets light yellow-green, usually in spiny globose mass; florets (1 or)2–4 ..... 1. *D.* subg. *Dendrocalamus*
1b. Culms apically pendulous, basal nodes without branches, midculm branches subequal; spikelets yellow-brown, usually in soft globose mass; florets 2–8 ..... 2. *D.* subg. *Sinocalamus*

1. Dendrocalamus subg. Dendrocalamus

牡竹亚属 mu zhu ya shu

Culms apically nodding, not pendulous (except in *Dendrocalamus hamiltonii* and *D. semiscandens*); wall thick; branching from lower nodes. Branches unequal, 1–3 dominant. Culm sheaths thickly papery. Leaves small; auricles small. Pseudospikelets usually many, clustered on each node of flowering branches into a spicate globose mass. Lemma mucronate or long mucronate.

About 20 species: widely distributed in tropical Asia; 16 species (eight endemic) in China.

Dendrocalamus parishii (species no. 16) could not be included in the following key because its culm sheaths are not known.

1a. Culm sheath blade erect, triangular, base about as wide as apex of culm sheaths; auricles absent, ligule short; dominant branches 3; pseudospikelets 1–10 per fascicle, not in globose head; lemma shortly mucronate.
2a. Culms 12–25 m, 12–18 cm in diam.; branching from 9th to 14th node up; lemma apically obtuse ..... 6. *D. tibeticus*
2b. Culms 7–15 m, 6–8 cm in diam.; branching from ca. 4th node up; lemma apically deeply cleft ..... 5. *D. bambusoides*
1b. Culm sheath blade reflexed or erect, when erect apex of culm sheaths broadly ovate; mouth and base of culm sheath narrow; dominant branches none or 1 (but 3 in *D. brandisii*); pseudospikelets many, clustered, globose; glumes and lemma long mucronate.
3a. Culm sheath blade reflexed, ligule well developed, marginal cilia or bristles 1.5–2 cm; spikelets flat on both sides, apex obtuse; florets separate from each other and each opening when mature; lemmas all 2-keeled; lodicules absent or 2; stigmas 1, rarely 3.

4a. Culm sheath auricles obvious; oral setae 5–10 mm; ligule 2–3 mm, marginal cilia or setae 1.5–2 cm ..... 10. *D. liboensis*
4b. Culm sheath auricles reduced or absent; oral setae to 3 mm; marginal cilia usually to 1 cm.
5a. Culm sheath ligules 4–10 mm; leaf sheaths initially hispid ..... 7. *D. farinosus*
5b. Culm sheath ligules 2–4 mm; leaf sheaths glabrous.
6a. Culm internodes initially sparsely white powdery, wall very thin (1–4 mm); culm sheath ligule ca. 2 mm, with marginal cilia 5–10 mm ..... 8. *D. tsiangii*
6b. Culm internodes initially densely white powdery, wall thick; culm sheath ligule ca. 4 mm, fimbriate or with marginal cilia 1–2 mm ..... 9. *D. pulverulentus*
3b. Culm sheath blade erect or reflexed; ligule short, to 10 mm, marginal cilia or bristles absent or to 1 cm; spikelets rounded, apex acute; florets not separate from each other and remaining closed when mature; lemma of upper floret not 2-keeled; lodicules absent; stigmas 1 (but 2 in *D. brandisii*).
7a. Culm sheath blade erect; ligule 2–3 mm.
8a. Cavity of culm narrow, or absent in basal internodes; pseudospikelets rigid, usually ciliate; glume and lemma both long mucronate ..... 1. *D. strictus*
8b. Cavity of culm broad; pseudospikelets soft, usually glabrous; glume and lemma usually shortly mucronate.
9a. Culms nodding, internodes partially covered with gray scurfy stripes initially; pseudospikelets globose, 1–2 cm in diam. ..... 11. *D. hamiltonii*
9b. Culms pendulous, but because of developed main branch (sometimes as robust as culm) upper part of culm climbing; internode completely covered with gray cilia, cilia not in stripes; pseudospikelets globose, 1.9–3.2 cm in diam. ..... 12. *D. semiscandens*
7b. Culm sheath blade reflexed (but erect in *D. brandisii*); ligule (2–)3–10 mm.
10a. Culm sheath auricles and oral setae inconspicuous.
11a. Internodes white powdery, without hairs; pseudospikelets usually glabrous; leaves thin ..... 2. *D. membranaceus*
11b. Internodes white hairy; pseudospikelets usually ciliate.
12a. Internodes with stripes of gray cilia, dominant branches developed or not, other branches on same node slender and surrounding culm; culm sheath ligule ca. 10 mm; culm 20–40 m, 12.5–20 cm in diam. ..... 13. *D. brandisii*
12b. Internodes with uniformly distributed, gray cilia, cilia not in stripes; dominant branches 3, other branches on same node not enclosing culm; culm sheath ligule 4–5 mm; culms 7–10 m, to 8 cm in diam. ..... 4. *D. birmanicus*
10b. Culm sheath auricles obvious, oral setae well developed, 5–8 mm.
13a. Leaves 1–2 cm wide, secondary veins 5- or 6-paired ..... 3. *D. barbatus*
13b. Leaves (1.5–)3–7 cm wide, secondary veins 7–13-paired.
14a. Internodes white powdery, glabrous; leaf blade 15–30 × 3.8–7 cm, secondary veins 10–12-paired; culm sheath auricles obvious ..... 14. *D. sikkimensis*
14b. Internodes very thinly white powdery, brown setose; leaf blade 20–35 × 3–5 cm, secondary veins 7–11-paired; culm sheath auricles inconspicuous ..... 15. *D. asper*

1. Dendrocalamus strictus (Roxburgh) Nees, Linnaea 9: 476. 1834.

牡竹 mu zhu

Bambos stricta Roxburgh, Pl. Coromandel. 1: 58. 1798; *Bambusa stricta* (Roxburgh) Roxburgh.

Culms 7–17 m, (3–)6–10 cm in diam.; internodes 30–45 cm, white powdery; wall thick, culm often solid. Branches several, main mid-culm ones 3. Culm sheaths deciduous, orange-brown, ca. 3/4 as long as internodes, thickly papery, margins ciliate, apex rounded; auricles absent; ligule 1–3 mm, serrulate; blade erect, narrowly triangular. Leaf sheaths initially sparsely hairy, becoming glabrous; ligule short, serrulate; blade usually narrowly lanceolate, 5–30 × 1–3 cm. Pseudospikelet clusters 2.5–5 cm in diam. Spikelets 8–15 mm, usually densely pubescent; fertile florets 2–4. Glumes 2 or more, 6–8 mm, long mucronate; lemma 9–10 mm, apex long mucronate; palea 8–9 mm. Anthers yellow, ca. 5 mm, connective apically produced. Ovary turbinate; style ca. 6.5 mm; stigmas 1. Caryopsis 6–8 mm.

Cultivated. Guangdong, Taiwan [India].

2. Dendrocalamus membranaceus Munro, Trans. Linn. Soc. London 26: 149. 1868.

黄竹 huang zhu

Bambusa membranacea (Munro) Stapleton & N. H. Xia.

Culms 8–15 m, 7–10 cm in diam.; internodes 34–42 cm, initially thinly white powdery, becoming glossy; wall thick to thin. Branches from culm base, 3 to several, subequal, main mid-culm ones 3, central not dominant. Culm sheaths deciduous, initially orange-green, elliptical to oblong, usually longer than internodes, papery, margins ciliate; auricles small; oral setae short; ligule 8–10 mm, serrulate; blade reflexed, linear-lanceolate, 30–40 × 2–3 cm. Leaf sheaths initially sparsely hairy, becoming glabrous; ligule short, serrulate; blade lanceo-

late, 12.5–25 × 1.2–2 cm. Pseudospikelet clusters dense, 2.5–5 cm in diam., prophylls broad, 2-keeled. Spikelets 8–15 mm, glabrous; fertile florets 2–5. Glumes 2 or more, 8–9 mm, long mucronate; lemma 9–10 mm, apex long mucronate; palea 7–8 mm. Anthers yellow or purple, 4–5 mm, apex apiculate. Ovary turbinate; style 5–6 mm; stigma purple. Caryopsis 6–8 mm.

River valleys to hilly forested areas; 500–1000 m. S Yunnan [Laos, Myanmar, N Thailand, N Vietnam].

This species has also been placed in *Bambusa* because of its vegetative characters and 2-keeled inflorescence prophyll, but it has a more capitate inflorescence than other *Bambusa* species.

It is the most important and most extensive wild species of bamboo in subtropical China, found in pure bamboo forest or mixed with broad-leaved trees.

3. Dendrocalamus barbatus Hsueh & D. Z. Li, J. Bamboo Res. 7(4): 4. 1988.

小叶龙竹 xiao ye long zhu

Culms 15–18 m, 10–15 cm in diam., tip slightly drooping; internodes 26–32 cm; wall thick. Branches several, main mid-culm ones 3. Culm sheaths deciduous, orange-brown, ca. 3/4 as long as internodes, leathery, margins ciliate, apex rounded; auricles 5–15 mm; oral setae present or absent; ligule 5–8 mm, serrulate; blade reflexed, glabrous or densely bearded at base. Leaf sheaths sparsely hairy; auricles inconspicuous, sparsely hairy; ligule ca. 1 mm; blade narrowly lanceolate, 10–15 × 1–2 cm. Pseudospikelet clusters 1–2.2 cm in diam. Spikelets 6–8.5 mm, nearly glabrous; fertile florets usually 2. Glumes 2 or 3; lemma 6–7 mm, apex shortly mucronate; palea 5–6 mm. Anthers yellow, becoming purple when dry, ca. 6 mm. Pistil 6–7.5 mm; ovary, style, and stigma all hairy; stigmas solitary. Fruit unknown.

● Mostly in cultivation; 300–1100 m. S Yunnan.

1a. Culm sheath auricles with oral setae; blade with basal beard ..... 3a. var. *barbatus*
1b. Culm sheath auricles without oral setae; blade glabrous ..... 3b. var. *internodiradicatus*

3a. Dendrocalamus barbatus var. **barbatus**

小叶龙竹(原变种) xiao ye long zhu (yuan bian zhong)

Culm sheath auricles with oral setae; blade with basal beard.

● Mostly in cultivation; 300–1100 m. S Yunnan.

3b. Dendrocalamus barbatus var. **internodiradicatus** Hsueh & D. Z. Li, J. Bamboo Res. 7(4): 6. 1988 [*"internodiiradicatus"*].

毛脚龙竹 mao jiao long zhu

Culm sheath auricles without oral setae; blade glabrous.

● Cultivated. S Yunnan (Menglun Tropical Botanical Garden).

4. Dendrocalamus birmanicus A. Camus, Bull. Mus. Natl. Hist. Nat., sér. 2, 4: 1044. 1932.

缅甸龙竹 mian dian long zhu

Culms 7–10 m, to 8 cm in diam.; internodes 20–28 cm. Branches several, main mid-culm ones 3. Culm sheaths deciduous, shorter than internodes, leathery or thickly papery; auricles small; ligule 3–4 mm, serrulate; blade reflexed, 6–10 cm, adaxially setose. Leaf sheaths thinly white powdery, glabrous; ligule ca. 1 mm; serrulate; blade 16–20 × 1.5–2.5 cm. Pseudospikelet clusters 1–1.8 cm in diam. Spikelets 7–8 mm; fertile florets 2 or 3. Glumes 2, 4–4.5 mm, margins ciliate; lemma 5.5–7 mm, apex long mucronate; palea 5.5–7 mm. Anthers 3–4 mm. Style glabrous; stigma 1, about as long as style. Fruit unknown.

Yunnan [Myanmar].

5. Dendrocalamus bambusoides Hsueh & D. Z. Li, J. Bamboo Res. 6(2): 16. 1987.

椅子竹 yi zi zhu

Sellulocalamus bambusoides (Hsueh & D. Z. Li) W. T. Lin.

Culms 7–15 m, 6–8 cm in diam.; internodes 26–34 cm; wall 1.4–2.8 cm thick. Branches several, main mid-culm ones 3. Culm sheaths deciduous, thickly papery to leathery, abaxially yellow hispid or glabrous, apex slightly arched; auricles absent; ligule ca. 2 mm; blade erect. Leaf sheaths glabrous, margins ciliate; ligule ca. 1 mm; blade narrowly lanceolate, (5–)14–17 × 0.8–1.6 cm. Pseudospikelets subtended by 1–5 bracts, 8–16 mm; fertile florets 3 or 4. Glumes 1 or 2, 5–7 mm, margins ciliate; lemma 7–13 mm, apex mucronate; palea 6–14 mm. Anthers yellow, 4–6 mm. Pistil 1.3–1.7 cm; stigma 1. Fruit unknown.

● S Yunnan.

6. Dendrocalamus tibeticus Hsueh & T. P. Yi, J. Bamboo Res. 2(1): 31. 1983.

西藏牡竹 xi zang mu zhu

Sellulocalamus tibeticus (Hsueh & T. P. Yi) W. T. Lin.

Culms 12–25 m, 12–18 cm in diam.; internodes (30–)40–45(–60) cm; wall thick, 6–12 mm. Branching usually from ca. 9th node up, usually with central branch slightly dominant. Culm sheaths initially orange-brown, leathery, abaxially usually with dark brown setae, adaxially glabrous; auricles absent; ligule 2–4 mm; blade erect or slightly reflexed. Leaf sheaths 6–11 mm, glabrous; ligule truncate, 1–1.5 mm; blade broadly lanceolate, 10–32 × 2.2–4.5 cm. Pseudospikelets 2–10 per cluster, 1–1.2 cm, with 3 or 4 florets, basal one sterile; fertile florets 2–3. Glumes 1, ca. 7 × 5 mm, margins ciliate, mucronate; lemma 6–18 mm, margins ciliate, apex obtuse or acute; palea 5–7 mm. Anthers yellow, 5–6 mm. Ovary ovoid; style 5–8 mm; stigmas 1, 2–3 mm. Fruit unknown.

● Broad-leaved forests; 1200–1700 m. Xizang, NW Yunnan.

7. Dendrocalamus farinosus (Keng & P. C. Keng) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 215. 1980.

大叶慈 da ye ci

Sinocalamus farinosus Keng & P. C. Keng, J. Wash.

Acad. Sci. 36(3): 79. 1946; *Dendrocalamus ovatus* N. H. Xia & L. C. Chia; *Lingnania farinosa* (Keng & P. C. Keng) P. C. Keng; *Neosinocalamus farinosus* (Keng & P. C. Keng) P. C. Keng & T. H. Wen.

Culms 7–12 m, 4–8 cm in diam.; internodes 20–45 cm; wall 4–10 mm thick. Branches from ca. 10th node up; dominant branches distinct, 1–2.5 m, 4–12 mm in diam. Culm sheaths initially orange-brown, becoming brown, oblong-triangular, about as long as internodes, thickly papery or leathery, margins ciliate, apex truncate or concave; auricles absent; ligule ca. 1.3 cm, with setae; blade reflexed, narrowly lanceolate. Leaf sheaths initially hispid; ligule 1–1.5 mm; blade lanceolate, 9–33 × 1.5–6 cm. Pseudospikelets 7–20 per node, 8–14 mm; florets 3–5. Glumes 2 or more, 6–8 mm, long mucronate; lemma 7–10 mm, apex mucronate; palea ca. 7 mm. Anthers yellow, 3–5 mm, connectives aristate. Ovary ovoid, style ca. 1 mm; stigmas 1–3, 2–3 mm. Caryopsis yellow, glabrous, apex beaked.

● Guangxi, Guizhou, Sichuan, Yunnan.

8. Dendrocalamus tsiangii (McClure) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 216. 1980.

黔竹 qian zhu

Lingnania tsiangii McClure, Sunyatsenia 6(1): 41. 1941; *Dendrocalamus ronganensis* Q. H. Dai & D. Y. Huang; *D. textilis* N. H. Xia, L. C. Chia & C. Y. Xia.

Culms 6–8 m, 3–4 cm in diam.; internodes 20–30(–40) cm; wall 1–4 mm thick. Branches usually from 7th–11th node up, several, dominant branches longer and thicker. Culm sheaths deciduous, thickly papery, abaxially appressed setose; auricles absent; ligule ca. 2 mm, margin setaceous; blade reflexed. Leaf sheaths glabrous; ligule 1–2 mm, serrulate or crinkled; blade oblong-lanceolate, 6–16 × 1–2 cm. Inflorescence unknown.

● Guangxi, Guizhou, Sichuan.

An ornamental cultivar, *Dendrocalamus tsiangii* 'Viridistriatus' (花黔竹 hua qian zhu) is distinguished by its yellow culms with green stripes.

9. Dendrocalamus pulverulentus L. C. Chia & But, Kew Bull. 43: 115. 1988.

粉麻竹 fen ma zhu

Culms to 8 m, 4–6 cm in diam.; internodes 25–30 cm; wall thick. Branches usually from ca. 10th node upward, several, dominant branches longer and thicker. Culm sheaths deciduous, abaxially appressed brown setose; auricles small or absent; ligule ca. 4 mm, margin hairy, apex arched; blade reflexed, lanceolate. Leaf sheaths glabrous; ligule ca. 1 mm, serrulate; blade lanceolate to oblong-lanceolate, 13–20 × 2.5–3.3 cm. Inflorescence unknown.

● Cultivated. Guangdong.

10. Dendrocalamus liboensis Hsueh & D. Z. Li, J. Bamboo Res. 8(1): 37. 1989.

荔波吊竹 li bo diao zhu

Dendrocalamus exilis N. H. Xia & L. C. Chia; *D. guiyangensis* N. H. Xia & L. C. Chia.

Culms (8–)12–15 m, (4–)6–9 cm in diam.; internodes (26–)32–36 cm, initially densely white powdery; wall 8–13 mm thick. Branches usually from 6th or 7th node up, central branch dominant, 3–5 m. Culm sheaths deciduous, leathery, abaxially appressed black-brown setose; auricles undulate; oral setae 5–10 mm; ligule 2–4 mm, margin fringed or with setae ca. 1 cm; blade reflexed, lanceolate, 9–12 cm. Leaf sheaths glabrous; ligule ca. 1 mm; blade 8–40 × 1.5–8.5 cm. Inflorescence unknown.

● Guizhou.

11. Dendrocalamus hamiltonii Nees & Arnott ex Munro, Trans. Linn. Soc. London 26: 151. 1868.

版纳甜龙竹 ban na tian long zhu

Sinocalamus hamiltonii (Nees & Arnott ex Munro) T. Q. Nguyen.

Culms 12–18 m, 9–13 cm in diam., often very pendulous; internodes 30–50 cm, persistently densely white to brown scurfy; wall 1.2–2 cm thick. Branches several, dominant central branch very well developed, especially on older pendulous culms where branches can approach size of culm. Culm sheaths deciduous, initially with patches or stripes of dark brown hairs, margins ciliate, apex slightly arched; auricles absent but with a delicate, naked, triangular protuberance to 1 cm on each side; ligule 1–3 mm, apex somewhat undulate and dentate; blade erect, 3–7 cm, narrow. Leaf sheaths yellow setose; ligule 1.5–2 mm; blade variable, largest ca. 38 × 7 cm. Pseudospikelets 10–25 per node, clusters 1–4 cm in diam. Spikelets dark purple, 8–10 × 3–5 mm, glabrous; fertile florets 2–4. Glumes 1 or 2; lemma 5–7 × 6–7 mm, apex long mucronate; palea about as long as lemma, apex bifid. Anthers yellow or red-purple, apex apiculate. Style ca. 4.5 mm; stigmas 1–3, red-purple. Caryopsis brown, ± spherical.

Yunnan [Bhutan, India, Laos, Myanmar, Nepal].

12. Dendrocalamus semiscandens Hsueh & D. Z. Li, J. Bamboo Res. 8(1): 28. 1989.

野龙竹 ye long zhu

Culms (7–)10–18 m, (6–)10–15 cm in diam.; internodes 29–35(–60) cm. Branches several, central dominant. Culm sheaths deciduous, leathery, abaxially brown hairy, apex rounded; auricles absent; ligule ca. 1 mm; blade erect. Leaf sheaths white hairy; ligule 3–5 mm; blade 25–35 × 3–4.5 cm. Pseudospikelets 30–40 per node; clusters (1–)1.9–3.2 cm in diam. Spikelets obovate-triangular, 10–13 × 4–7.5 mm; florets 4 or 5. Glumes 1–3; lemma 8.5–9.5 × 5–6 mm, apex long mucronate; palea 7.5–8 mm. Filaments ca. 7 mm; anthers yellow, ca. 3.7 mm, apiculate. Style purple, ca. 6 mm; stigma 1. Caryopsis golden, with a beak ca. 1.5 mm, basally glabrous, distally including beak white pubescent.

● 500–1000 m. Yunnan.

This bamboo is not yet well distinguished from the widely distributed and variable *Dendrocalamus hamiltonii*.

13. Dendrocalamus brandisii (Munro) Kurz, Prelim. Rep. Forest Pegu, 94. 1875.

勃氏甜龙竹 bo shi tian long zhu

Bambusa brandisii Munro, Trans. Linn. Soc. London 26: 109. 1868; *Sinocalamus brandisii* (Munro) P. C. Keng.

Culms 10–15 m, 10–12 cm in diam.; internodes 34–43 cm; wall ca. 3 cm thick. Branches several, dominant branches well developed. Culm sheaths deciduous, orange-brown to bright yellow, leathery; auricles small; ligule ca. 1 mm, margin deeply dentate; blade reflexed or nearly erect. Leaf sheaths white hairy; ligule 1.5–2 mm; blade variable, 23–30 × 2.5–5 cm. Pseudospikelets 5–25 per node, clusters 1.3–1.8 cm in diam. Spikelets ovate-orbicular, 7–9 × 4–5 mm; florets 2–4. Glumes 1 or 2, apex acute; lemma 5–6 mm; palea 2-keeled, keels ciliate, 3-veined between keels, acute or mucronate. Filaments short; anthers green-yellow, ca. 3 mm, apiculate. Ovary ovoid; style ca. 3 mm; stigmas 1 or 2. Caryopsis ovoid, 1.5–5 mm, distally hairy, apex beaked.

Cultivated around villages. Yunnan [native to Laos, Myanmar, Thailand, and Vietnam; cultivated in India].

14. Dendrocalamus sikkimensis Gamble ex Oliver, Hooker's Icon. Pl. 18: t. 1888. 1770.

锡金龙竹 xi jin long zhu

Culms 10–18 m, 10–13 cm in diam.; internodes becoming orange, 46–56 cm; wall 1–2.5 cm thick. Branches several, sometimes 1 branch dominant. Culm sheaths deciduous, leathery, very densely dark brown velvety; auricles reflexed, broad, 0.5–2 × 0.2–0.5 cm; oral setae orange, curved, long; ligule ca. 5 mm, serrulate; blade strongly deflexed, 10–18 cm. Leaf sheaths appressed white hairy; auricles and oral setae prominent; ligule ca. 1 mm; blade variable, 15–30 × 3.8–7 cm. Pseudospikelet clusters ca. 4 cm in diam. Spikelets lanceolate, 1.2–1.8 cm; florets 2 or 3. Glumes 3 or 4, ovate; lemma ovate, margins ciliate, apex acute or mucronate; palea keels ciliate, many veined. Anthers apiculate at apex. Ovary spherical. Caryopsis obovoid, apex beaked.

100–600 m. S Yunnan [Bhutan, India (Sikkim)].

15. Dendrocalamus asper (Schultes & J. H. Schultes) Backer ex K. Heyne, Nutt. Pl. Ned.-Ind., ed. 2, 1: 301. 1927.

马来甜龙竹 ma lai tian long zhu

Bambusa aspera Schultes & J. H. Schultes, Syst. Veg. 7: 1352. 1830; *Dendrocalamus flagellifer* Munro; *Gigantochloa aspera* (Schultes & J. H. Schultes) Kurz; *Sinocalamus flagellifer* (Munro) T. Q. Nguyen.

Culms 15–20 m, 6–10(–12) cm in diam.; internodes 30–50 cm. Branches from ca. 9th node up, central branch dominant. Culm sheaths deciduous, initially light green, leathery, apex rounded; ligule 7–10 mm, margin with brown setae; auricles linear, ca. 20 × 7 mm, margin undulate; oral setae present; blade reflexed, lanceolate. Leaf sheaths initially sparsely hairy, becoming glabrous; ligule truncate, ca. 2 mm, entire or serrulate; blade variable, lanceolate or oblong-lanceolate, (10–)20–30(–35) × (1.5–)3–5 cm. Spikelets 6–9 mm; florets 4 or 5, apical one sterile. Glumes 1 or 2, ovate-lanceolate; lemma broadly ovate, margins ciliate; palea about as long as lemma, keels and margins ciliate, 1–3-veined between and 2-veined on either side of keels. Anthers 3–5 mm, apex apiculate. Ovary hairy; style hairy; stigmas 1. Fruit unknown.

Hong Kong, Taiwan, Yunnan [Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand].

16. Dendrocalamus parishii Munro, Trans. Linn. Soc. London 26: 149. 1868.

巴氏龙竹 ba shi long zhu

Dendrocalamus hookeri Munro var. *parishii* (Munro) Blatter; *Sinocalamus parishii* (Munro) W. T. Lin.

Culms to 10 m, to 10 cm in diam. Culm sheaths unknown. Leaf sheaths glabrous; ligule ca. 2 mm; blade ca. 17 × 3 cm, glabrous. Pseudospikelets 20–35 per node, clusters 2.5–3.2 cm in diam. Spikelets ovoid, ca. 13 × 5 mm; florets 2 or 3. Glumes 1 or 2, apex mucronate; lemma 10–12 × 7.5–8.5 mm, margins ciliate, apex long mucronate; palea 5–9 mm, 2-keeled, keels sparsely ciliate, apex obtuse. Anthers 3–5 mm, apex apiculate. Pistil 0.8–1 cm; stigmas 1 or 2. Fruit unknown.

Yunnan [India, Pakistan].

The identification of this bamboo appears somewhat speculative.

2. Dendrocalamus subg. **Sinocalamus** (McClure) Hsueh & D. Z. Li, J. Bamboo Res. 7(4): 9. 1988.

麻竹亚属 ma zhu ya shu

Sinocalamus McClure, Lingnan Univ. Sci. Bull. 9: 66. 1940.

Culms apically pendulous, basally without branches, dominant branches none or 1. Culm sheaths thickly leathery. Leaves usually large. Pseudospikelets 1 to several on nodes of flowering branches, yellow-brown; florets 2–8. Lemma not mucronate; lodicules absent to 1. Stigmas 1.

About 25 species: mainly distributed in SE Asia; 11 species (seven endemic) in China.

1a. Culm 15–25(–30) m, 10–20(–30) cm in diam.; spikelets acute, with 5–8 florets, florets inseparable and each floret usually closed when mature (open in *D. fugongensis*).
  2a. Culm sheath blade reflexed or nearly erect; apex of palea bifid.
    3a. Basal culm internodes normal; culm sheath blade reflexed; spikelet 1–1.5 cm; 2-veined between 2 keels of palea ..... 17. *D. giganteus*

3b. Basal culm internodes congested; culm sheath blade nearly erect; spikelet 3–3.5 cm; 5-veined between 2 keels of palea ..... 18. *D. sinicus*
2b. Culm sheath blade erect; apex of palea obtuse.
4a. Culm initially white ciliate; bracts basal to inflorescence obviously shorter than pseudospikelets ..... 19. *D. calostachyus*
4b. Culm initially white powdery, not ciliate; bracts basal to inflorescence nearly as long as pseudospikelets ..... 20. *D. fugongensis*
1b. Culm 15–20 m (to 25 m in *D. yunnanicus* and *D. latiflorus*), 10–18 cm in diam.; spikelets obtuse or acute, truncate, with 2–8 florets, florets slightly separable from each other and each floret usually open when mature (closed in *D. pachystachys*).
5a. Culm sheath setaceous, or setaceous and tomentose; spikelets 0.5–1.2 × 0.4–0.8 cm, with 4 or 5 florets.
6a. Culm internodes glabrous, white powdery initially; abaxial surface of culm sheath with appressed brown setae ..... 25. *D. minor*
6b. Culm internodes with setae or tomentose, without powder.
7a. Culm sheath with dense black-brown setae and white to light brown tomentum scattered and not clustered into spots; spikelets obovate-triangular, 10–12 × 5–8 mm ..... 26. *D. peculiaris*
7b. Culm sheath with black-brown tomentum and spots of white tomentum; spikelet oblong-ovate, ca. 5 × 4.5 mm ..... 27. *D. tomentosus*
5b. Culm sheaths glabrous or with readily deciduous setae, becoming glabrous; spikelet 1–1.6(–2.8) × 0.5–1.3 cm, with 5–8 florets.
8a. Culms white ciliate or glabrous.
9a. Ligule 3–4 mm; spikelet 1.7–2.8 × 0.5–1 cm, apex acute; florets inseparable from each other and each floret closed when mature, floret white ciliate ..... 21. *D. pachystachys*
9b. Ligule 1–2 mm; spikelet 1.2–1.5 × 0.7–1.3 cm, apex obtuse; florets partially separable from each other, each open when mature, only upper floret yellow-brown ciliate ..... 22. *D. latiflorus*
8b. Culms with appressed setae, or tomentose, or with sparse white powder.
10a. Apex of culm sheath truncate or projected at center, 6–11 cm wide; ligule 1–4 mm; internodes of flowering branches white-brown or yellow-brown tomentose ..... 23. *D. jianshuiensis*
10b. Apex of culm sheath depressed, 3–7 cm wide; ligule 5–8 mm; internodes of flowering branches yellow-brown ciliate ..... 24. *D. yunnanicus*

17. Dendrocalamus giganteus Munro, Trans. Linn. Soc. London 26: 150. 1868.

龙竹 long zhu

Sinocalamus giganteus (Munro) A. Camus, Rev. Int. Bot. Appl. Agric. Trop. 29: 551. 1949.

Culms 20–30 m, 20–30 cm in diam.; internodes 30–45 cm; wall 1–3 cm thick. Branches several. Culm sheaths deciduous, initially purple, thickly leathery, brown hairy; margins broadly rounded; auricles reflexed, wavy; oral setae absent; ligule 6–12 mm, serrulate; blade reflexed, ovate-lanceolate, 13–38 cm. Leaf sheaths glabrous; ligule 1–3 mm, serrulate; blade usually oblong-lanceolate, to 45 × 10 cm. Inflorescence branches pendulous, long. Pseudospikelets 4–12(–25) cm. Spikelets 10–15 × 3–4 mm; florets 5–8, apical one sterile. Glumes 2, 3–4 mm; lemma broadly ovate, margins ciliate, apex mucronate; palea about as long as lemma, 2-keeled, keels ciliate, 2-veined between and 1-veined on either side of keels. Anthers ca. 6.5 mm, apex apiculate. Pistil ca. 1 cm, shortly hairy. Ovary ovoid; style long; stigma 1, purple. Caryopsis oblong, apex obtuse, plumose.

Yunnan; cultivated in Taiwan [Myanmar; cultivated in Malaysia and Thailand].

18. Dendrocalamus sinicus L. C. Chia & J. L. Sun, Bamboo Res. 1(1): 10. 1982.

歪脚龙竹 wai jiao long zhu

Culms 20–30 m, 20–30 cm in diam.; internodes 17–22 cm. Culm sheaths deciduous or persistent, initially yellow-green, thickly leathery; auricles absent; ligule ca. 6 mm; blade erect. Leaf sheaths initially slightly hairy, becoming glabrous; ligule 1.5–2 mm; blade 20–40 × 4–6.5 cm. Pseudospikelets 1 or more. Spikelets 30–35 × 6.5–7.5 mm; florets 5 or 6. Glumes 1.2–1.5 cm, abaxially slightly hairy, apex mucronate; lemma 17–25 mm; palea 5-veined between keels, apex bifid. Filaments 1.5–3 cm; anthers 8–12 mm. Style long; stigma 1. Fruit unknown.

● 600–1000 m. Yunnan.

19. Dendrocalamus calostachyus (Kurz) Kurz, Prelim. Rep. Forest Pegu, 94. 1875.

美穗龙竹 mei sui long zhu

Bambusa calostachya Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 247. 1873; *Sinocalamus calostachyus* (Kurz) P. C. Keng.

Culms tall. Culm sheaths leathery, apex truncate; ligule 1–2 mm, rounded or serrulate; auricles absent; blade erect. Leaf sheaths glabrous, margins long ciliate, apex truncate; ligule 1–2 mm, rounded or serrulate; blade variable, broadly lanceolate, 23–30 × 2.5–6.5 cm, apex acute. Pseudospikelets 1–5. Spikelets 1–1.5 cm; florets 4–6. Glumes 2 or 3, broadly ovate, margins ciliate, apex mucronate; lemma 9–11 × 6–9 mm; palea 6–7 mm, 3–5-veined between and 1-veined on either side of keels, apex acuminate. Filaments slender; anthers yellow, ca. 5.5 mm; Pistil ca. 1.1 cm; ovary ovoid or orbicular; style 1; stigma 1. Fruit unknown.

Yunnan [Myanmar; cultivated in India].

20. Dendrocalamus fugongensis Hsueh & D. Z. Li, J. Bamboo Res. 7(4): 9. 1988.

福贡龙竹 fu gong long zhu

Culms to 20 m, 10–15 cm in diam.; internodes 35–46 cm; wall ca. 2 cm thick. Branches several, central branch dominant. Culm sheaths deciduous, yellow-green when dry, leathery; auricles absent; ligule ca. 3 mm, serrulate; blade erect. Leaf sheaths glabrous, margin ciliate; ligule 1.5–2 mm; auricles small; blade 18–25 × 3–4.2 cm. Pseudospikelets 6–14 per node, clusters 1–1.5 cm in diam. Spikelets 10–13 × 3–4 mm; florets 4. Glumes 1 or more, 8–10 × 6–8 mm, long mucronate; lemma 1–1.2 cm, long mucronate; palea 7–9 mm. Anthers yellow or purple. Style 6–7 mm; stigma 1. Fruit unknown.

● NW Yunnan.

21. Dendrocalamus pachystachys Hsueh & D. Z. Li, J. Bamboo Res. 8(1): 25. 1989.

粗穗龙竹 cu sui long zhu

Culms 10–12 m, to 10 cm in diam.; internodes 39–47 cm; wall to 2 cm thick. Branches several, dominant branch well developed. Culm sheaths deciduous, initially yellow-green, leathery or thickly leathery, glabrous; auricles absent; ligule ca. 3 mm, serrulate; blade erect, 6–12 cm. Leaf sheaths brown hairy; ligule 3–5 mm, serrulate; blade to 40 × 12 cm. Pseudospikelets 1 or more per node. Spikelets 17–24 × 5–10 mm; florets 5–8. Glumes 2 or 3, apex mucronate; lemma 7.5–12.5 mm, leathery, apex mucronate; palea about as long as lemma or slightly longer, 4- or 5-veined between keels, apex bifid. Filaments 7–11 mm; anthers yellow, 6–7 mm. Pistil 1.2–1.7 cm; stigma 1. Fruit unknown.

● Yunnan.

22. Dendrocalamus latiflorus Munro, Trans. Linn. Soc. London 26: 152. 1868.

麻竹 ma zhu

Bambusa latiflora (Munro) Kurz; *Dendrocalamus latiflorus* var. *lagenarius* W. C. Lin; *Sinocalamus latiflorus* (Munro) McClure; *S. latiflorus* var. *magnus* T. H. Wen.

Culms 20–25 m, 15–30 cm in diam.; internodes 45–60 cm; wall 1–3 cm thick. Branches several, central branch dominant. Culm sheaths deciduous, thickly leathery; auricles small; ligule 1–3 mm, serrulate; blade reflexed, ovate to lanceolate. Leaf sheaths initially slightly hairy, becoming glabrous; ligule 1–2 mm, serrulate; blade oblong-lanceolate, 15–35(–50) × 2.5–7 cm. Pseudospikelets 1–7 or more per node. Spikelets 12–15 × 7–13 mm; florets 6–8. Glumes 2 or more, ca. 5 mm, margins ciliate; lemma 12–13 × 7–16 mm; palea 7–11 × 3–4 mm. Anthers yellow, 5–6 mm, apex mucronate. Ovary broadly ovoid; style white hairy; stigma 1. Caryopsis 8–12 mm.

Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, Yunnan; cultivated in SW Jiangsu and S Zhejiang [Myanmar, Vietnam].

Two cultivars occur in Taiwan: *Dendrocalamus latiflorus* ‘Subconvex’ (葫芦麻竹 hu lu ma zhu), distinguished by its much smaller culms, 5–10 m, 4–12 cm in diam., with internodes 10–30 cm, basally congested and pear-shaped; and *D. latiflorus* ‘Mei-nung’ (美浓麻竹 mei nong ma zhu), with culms and branches yellow-green with green stripes and culm sheaths yellow-green to brown-green with several narrow, yellow stripes.

23. Dendrocalamus jianshuiensis Hsueh & D. Z. Li, J. Bamboo Res. 7(4): 14. 1988.

建水龙竹 jian shui long zhu

Culms 17–18 m, 10–12 cm in diam.; internodes 25–37 cm; wall 1.2–2 cm thick; branching from 8th–9th node up, central branch dominant. Culm sheaths deciduous, about as long as internodes, thickly leathery, apex truncate; auricles small, 0.5–2 cm; ligule 1–4 mm, serrulate; blade reflexed, 10–20 × 3.5–7.5 cm. Leaf sheaths glabrous; ligule ca. 2 mm; blade 20–38 × 3.5–8.5 cm. Pseudospikelets 1 or more per node. Spikelets 10–18 × 5–10 mm, apex obtuse; florets 6 or 7. Glumes 1–3, 5–8 mm, abaxially slightly hairy, apex mucronate; lemma and glumes 7–12 × 5–10 mm; palea 6–9 mm. Filaments 1–1.4 cm; anthers yellow, 4–6 mm, apex mucronate. Pistil 1–1.5 cm, white hairy; stigma 1. Fruit unknown.

● Yunnan.

24. Dendrocalamus yunnanicus Hsueh & D. Z. Li, J. Bamboo Res. 7(4): 17. 1988.

云南龙竹 yun nan long zhu

Culms 18–25 m, 11–18 cm in diam.; internodes 42–52 cm; wall 1–2 cm thick. Branches several. Culm sheaths deciduous, leathery to thickly so, depressed, apex narrow; auricles small; ligule 5–8 mm, serrulate; blade reflexed, 9–18 × 3–9 cm, adaxially brown hairy. Leaf sheaths white hairy; ligule 1.5–2 mm; blade 25–35 × 4.5–6.5 cm, abaxially glabrous. Pseudospikelets 1 or more per node. Spikelets 1–1.6 cm, apex acute; florets 5–7. Glumes 2 or more, 2–4 mm, abaxially slightly hairy, apex acute; lemma 5–9 mm, long mucronate; palea 4–8 mm, 4- or 5-veined between keels, apex depressed. Anthers yellow, 3–4 mm, apex mucronate. Style ca. 4 mm; stigma 1. Fruit unknown.

Yunnan [Vietnam].

25. Dendrocalamus minor (McClure) L. C. Chia & H. L. Fung, Acta Phytotax. Sin. 18: 215. 1980.

吊丝竹 diao si zhu

Culms 5–12 m, (3–)6–8 cm in diam.; internodes green or yellow with green stripes, 30–45 cm; wall 5–5.6 mm thick. Branches several. Culm sheaths deciduous, initially grass-green, leathery, initially appressed brownish hispid, becoming glabrous; auricles small; ligule 3–8 mm, fimbriate; blade reflexed, ovate-lanceolate or lanceolate, abaxially glabrous. Leaf sheaths initially slightly hairy, becoming glabrous; ligule ca. 1 mm, serrulate; blade oblong-lanceolate, 10–25 × 1.5–3 cm, base rounded, apex acute. Pseudospikelets 5–10 per node. Spikelets ca. 1.2 cm; florets 4 or 5. Glumes usually 2(or 3), ca. 6 mm, margins ciliate; lemma 9–11 mm, glabrous, margins ciliate, apex acute, mucronate; palea 6–8 mm, 2-keeled, 3-veined between keels, apex acuminate or bifid. Anthers yellow, 5–6 mm, apex mucronate. Ovary ovoid; style slender; stigma 1. Caryopsis ca. 5 mm.

● Low hills. Guangdong, Guangxi, Guizhou.

1a. Culms 6–12 m, to 8 cm in diam., internodes green; glumes 2, palea apically acuminate ..... 25a. var. *minor*
1b. Culms 5–8 m, 4–6 cm in diam.; internodes slightly yellow with 5–8 deep green stripes; glumes 3, palea apically bifid ..... 25b. var. *amoenus*

25a. Dendrocalamus minor var. **minor**

吊丝竹(原变种) diao si zhu (yuan bian zhong)

Sinocalamus minor McClure, Sunyatsenia 6(1): 47. 1941; *Dendrocalamus sapidus* Q. H. Dai & D. Y. Huang.

Culms 6–12 m, to 8 cm in diam., internodes green. Glumes 2; palea acuminate at apex.

● Guangdong, Guangxi, Guizhou.

25b. Dendrocalamus minor var. **amoenus** (Q. H. Dai & C. F. Huang) Hsueh & D. Z. Li, J. Bamboo Res. 8(1): 39. 1989.

花吊丝竹 hua diao si zhu

Sinocalamus minor McClure var. *amoenus* Q. H. Dai & C. F. Huang, Acta Phytotax. Sin. 19: 261. 1981.

Culms 5–8 m, 4–6 cm in diam.; internodes slightly yellow, with 5–8 deep green stripes. Glumes 3; palea bifid at apex.

● Low hills. Guangxi.

26. Dendrocalamus peculiaris Hsueh & D. Z. Li, J. Bamboo Res. 8(1): 32. 1989.

金平龙竹 jin ping long zhu

Culms 13–18 m, 10–15 cm in diam.; internodes 36–43 cm; wall 3–3.5 cm thick. Culm sheaths deciduous, orange-brown, leathery; auricles absent; ligule 6–10 mm, serrulate; blade reflexed. Leaf sheaths initially slightly hairy, becoming glabrous, margins ciliate; ligule ca. 1 mm; blade 25–40 × 3–5.5 (–10) cm. Pseudospikelets 2–15 per node. Spikelets 1–1.2 cm; florets 4 or 5. Glumes 2; lemma 7–11 mm, margins undulate, apex mucronate; palea 6–8 mm, 2-keeled, 2-veined between keels, apex acute. Anthers yellow, 3–3.5 mm, apex mucronate. Pistil ca. 1 cm; stigma 1. Fruit unknown.

● Yunnan.

27. Dendrocalamus tomentosus Hsueh & D. Z. Li, J. Bamboo Res. 8(1): 34. 1989.

毛龙竹 mao long zhu

Culms to 20 m, 9–12 cm in diam.; internodes 29–42(–55) cm; wall ca. 2 cm thick. Branches several, dominant branches well developed, 5–6 m. Culm sheaths deciduous, leathery; auricles absent; ligule 5–7 mm; blade reflexed, abaxially setaceous. Leaf sheaths initially thinly white powdery, becoming black; ligule ca. 1 mm; blade 25–34 × 2.5–4.2 cm. Pseudospikelets 6–8 per node, clusters 7–11 mm in diam. Spikelets ca. 5.5 mm; florets 4 or 5. Glumes 1 or 2; lemma 4–5 mm, slightly hairy; palea ca. 4 mm, apex obtuse or depressed. Anthers yellow, 2.5–3 mm, apex mucronate. Pistil ca. 6 mm; stigma 1. Fruit unknown.

● Broad-leaved forests; 800–900 m. Yunnan.

4. GIGANTOCHLOA Kurz ex Munro, Trans. Linn. Soc. London 26: 123. 1868.

巨竹属 ju zhu shu

Li Dezhu (李德铢); Chris Stapleton

Arborescent bamboos, large-sized; clumps dense. Rhizomes short necked, pachymorph. Culms unicaespitose, erect, pendulous at apex; internodes green initially, often with yellow stripes, terete. Branches several, 1 dominant. Culm sheaths deciduous, very broad, densely hairy; ligule conspicuous; auricles absent or small; blade recurved or erect. Leaves usually large, base cuneate; auricles usually absent; ligule conspicuous; blade cuneate at base, venation not tessellate. Inflorescence iterauctant, fully bracteate, subtended by a narrow single-keeled prophyll, pseudospikelets clustered in soft or spiky globose mass at nodes of leafless flowering branches. Pseudospikelets sessile, prophyllate; florets (1 or)2–5, with a sterile terminal floret with lemma only, sessile. Fertile glumes preceded by 1 or more gemmiferous bracts and 0–2 empty glumes; rachilla very short, obscure, not disarticulating; lemma broad, many veined; palea strongly 2-keeled; lodicules absent. Stamens 6; filaments united into a firm tube; anthers apiculate. Ovary stalked, apex thickened and hairy; stigma 1, long, hairy, plumose. Caryopsis terete, apex hairy; pericarp slightly thickened. $2n = 76$*.

About 30 species: tropical Asia; six species (two endemic) in China.

There are several to possibly many further entities not yet properly identified, some of which might represent new taxa.

"Gigantochloa menlunenesis" (B. Wen, J. Bamboo Res. 20(2): 10. 2001) was not validly published because no type was indicated.

1a. Leaf sheath ligule 5–10 mm; culm sheath initially densely white hispid ..... 4. *G. verticillata*
1b. Leaf sheath ligule 1–4 mm; culm sheath where known brown hispid or strigose.
2a. Leaf sheath ligule ca. 1 mm.
3a. Leaf sheath gray setose, blade 1.8–3 cm wide; culm sheath brown setose, auricles conspicuous, undulate ..... 1. *G. levis*
3b. Leaf sheath initially sparsely pubescent, blade 3–5 cm wide; culm sheath densely dark brown hispid, auricles minute ..... 2. *G. nigrociliata*
2b. Leaf sheath ligule 1.5–4 mm.
4a. Leaf blade 1.5–2.5 cm wide, ligule 1.5–3.5 mm; culm sheath initially sparsely dark brown hispid, later glabrous ..... 3. *G. albociliata*

4b. Leaf blade 3.5–6 cm wide, ligule 3–4 mm; culm sheath not seen.
5a. Leaf blade 30–45 × 4.5–6 cm ..... 5. *G. felix*
5b. Leaf blade 16–28 × 3.5–4 cm ..... 6. *G. parviflora*

1. Gigantochloa levis (Blanco) Merrill, Amer. J. Bot. 3: 61. 1916.

毛笋竹 mao sun zhu

Bambusa levis Blanco, Fl. Filip. 272. 1837.

Culms 8–15 m, 9–13 cm in diam.; apically drooping; internodes 30–45 cm, initially with brown to white hairs; wall ca. 2.5 mm thick. Culm sheaths deciduous, broadly flabellate, thickly leathery, apex narrow, brown setose; auricles conspicuous, undulate; oral setae 5–7 mm; ligule 6–15 mm, serrulate; blade usually reflexed, ovate-triangular, 9–13 cm, basally with brown setae on both sides. Ultimate branches with 6–10 leaves. Leaf sheath gray setose; ligule ca. 1 mm; blade 15–25 × 1.8–3 cm, abaxially glabrous, adaxially white hairy. Inflorescence unknown.

Riversides, valleys; 500–1000 m. S Yunnan; cultivated in Taiwan [Malaysia, Philippines].

2. Gigantochloa nigrociliata (Buse) Kurz, Natuurk. Tijdschr. Ned.-Indië 27: 226. 1864.

黑毛巨竹 hei mao ju zhu

Bambusa nigrociliata Buse, Pl. Jungh. 3: 389. 1854; *Oxytenanthera nigrociliata* (Buse) Munro; *Pseudoxytenanthera nigrociliata* (Buse) T. Q. Nguyen.

Culms 8–15 m, 4–10 cm in diam.; internodes 36–46 cm, yellow striate, brown hispid; wall thick. Branches several, central ones prominent. Culm sheaths deciduous, brown, 18–22 cm, leathery, densely dark brown hispid; auricles minute; ligule ca. 4 mm, serrulate; blade recurved. Ultimate branches with ca. 11 leaves. Leaf sheath initially sparsely pubescent; ligule ca. 1 mm; blade 19–36 × 3–5 cm. Pseudospikelets in heads ca. 2.5 cm in diam. Spikelets 1–1.2 × 0.2–0.3 cm; florets 2. Glumes 2 or 3, ovate, dark brown ciliate; lemma margins dark brown ciliate; palea shorter than lemma. Anthers yellow. Ovary ovoid; style 6–7 mm; stigmas 1. Caryopsis unknown.

Tropical rain forests; 500–800 m. Hong Kong, S Yunnan [India, Indonesia, Myanmar, Thailand].

3. Gigantochloa albociliata (Munro) Kurz, Prelim. Rep. Forest Pegu, App. A: 136. 1875 [*"albo-ciliata"*].

白毛巨竹 bai mao ju zhu

Oxytenanthera albociliata Munro, Trans. Linn. Soc. London 26: 129. 1868 [*"albo-ciliata"*]; *Dendrocalamus albociliatus* (Munro) J. L. Sun; *Pseudotenanthera albociliata* (Munro) R. B. Majumdar; *Pseudoxytenanthera albociliata* (Munro) T. Q. Nguyen.

Culms 6–10 m, 2–5 cm in diam.; internodes 20–35 cm, white hispid; wall thick. Branches several, subequal. Culm sheaths deciduous, brown, 18–22 cm, leathery, initially sparsely dark brown hispid, glabrous in age; auricles absent; ligule 10–25 mm, irregularly serrate; blade erect. Ultimate branches with ca. 11 leaves. Leaf sheath initially pubescent, glabrous in age; ligule 1.5–3.5 mm, ciliate; blade 15–20 × 1.5–2.5 cm. Inflorescence on leafless branches. Pseudospikelets 10–20 per head. Spikelets 1.5–2 × 0.1–0.15 cm; florets 1 or 2. Glumes 2 or 3, ovate, white ciliate; lemma margins white ciliate; palea shorter than lemma. Anthers yellow. Ovary narrowly ovoid; style 6–7 mm; stigmas 1(or 2). Caryopsis unknown.

Tropical rain forests; 500–800 m. S Yunnan [India, Myanmar, Thailand].

4. Gigantochloa verticillata (Willdenow) Munro, Trans. Linn. Soc. London 26: 123. 1868.

花巨竹 hua ju zhu

Bambusa verticillata Willdenow, Sp. Pl. 2: 245. 1799; *Arundo maxima* Loureiro (1790), not Forsskål (1775); *B. maxima* (Loureiro) Poiret; *B. pseudoarundinacea* Steudel; *Gigantochloa maxima* (Loureiro) Kurz; *G. pseudoarundinacea* (Steudel) Widjaja.

Culms 8–15 m, 7–10 cm in diam.; internodes yellow striate, 28–42 cm, white or brown hispid; wall ca. 1.6 cm thick. Branches several, central dominant. Culm sheaths deciduous, green, yellow striate initially, later brown, leathery, initially densely white hispid, margins ciliate; auricles minute, inconspicuous; oral setae absent; ligule ca. 3 mm, irregularly serrate or fimbriate; blade reflexed. Leaf sheath initially pubescent; ligule 5–10 mm, entire; blade 24–47 × 3.5–7 cm. Inflorescence unknown.

Tropical rain forests; 500–800 m. Hong Kong, S Yunnan [India, Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

The application of names to this bamboo has been contentious and it is widely known as *Gigantochloa pseudoarundinacea*. Further study of types is required.

This species is widely planted as an ornamental.

5. Gigantochloa felix (Keng) P. C. Keng, J. Bamboo Res. 3(1): 24. 1984.

滇竹 dian zhu

Oxytenanthera felix Keng, J. Wash. Acad. Sci. 30: 425. 1940.

Culms to 9 m; internodes unknown. Culm sheaths unknown. Leaf sheath initially pubescent; glabrous in age; ligule concave, 3–4 mm; blade 30–45 × 4.5–6 cm. Inflorescence on leafless branches. Pseudospikelets in heads to 5 cm in diam. Spikelets 1.6–2.2 cm; florets 4. Glumes 1–3, ovate, white ciliate or glabrous; lemma 1.1–1.7 cm, ciliate or glabrous; palea 11–15 cm, uppermost one rounded. Filament tube ca. 1.5 cm; anthers 4–7 mm. Ovary narrowly ovoid; style ca. 1 cm; stigmas 1, ca. 9 mm. Caryopsis unknown.

● Riversides, valleys; 1200–1400 m. S Yunnan.

This imperfectly understood species is known only from its type

gathering. It may represent one of many little-known, cultivated *Gigantochloa* species of S Yunnan, or it may perhaps have become extinct in the wild.

6. Gigantochloa parviflora (P. C. Keng) P. C. Keng, J. Bamboo Res. 3(1): 24. 1984.

南峤滇竹 nan qiao dian zhu

Oxytenanthera parviflora P. C. Keng, Acta Phytotax. Sin. 6: 358. 1957.

Culms and culm sheaths unknown. Leaf sheath ligule truncate, ca. 3.5 mm; blade 16–28 × 3.5–4 cm. Inflorescence on leafless branches. Pseudospikelets in heads to 4 cm in diam. Spikelets 1–1.5 cm; florets 3. Glumes 2, ovate, 2–3 mm, glabrous; lemma 8–14 mm, ciliate; palea equal to lemma, uppermost one rounded. Filament tube ca. 0.8 cm; anthers 4–8 mm. Ovary ca. 1.5 cm. Caryopsis unknown.

● River valleys; ca. 1400 m. S Yunnan.

This imperfectly understood species is known only from its type gathering, and it may perhaps have become extinct in the wild.

5. MELOCALAMUS Bentham in Bentham & J. D. Hooker, Gen. Pl. 3: 1212. 1883.

梨籐竹属 li teng zhu shu

Li Dezhu (李德铢); Chris Stapleton

Clump-forming climbing bamboo, tall, with slender culms. Rhizomes short necked, pachymorph. Culms flexuose, nearly solid; nodes slightly prominent. Branch complements several to many, 1 dominant and sometimes about as thick as and replacing main culm. Culm sheaths persistent, leathery; auricles present, sometimes very small; ligule short, inconspicuous; blade erect or reflexed, large. Leaf blade large or medium sized, lanceolate to oblong-lanceolate, rounded at base. Inflorescence iterauctant, glomerate, on large leafless flowering branches, subtended by 1-keeled prophylls. Spikelets 2-flowered, with rachilla extension, small, to 4 mm. Glumes 2, ovate, glabrous; lemma similar to glumes. Palea 2-keeled, equal to or slightly longer than lemma. Lodicules 3, glabrous, ciliate on margin. Stamens 6; filaments free. Ovary stalkless, glabrous; style very short; stigmas 2 or 3, plumose. Caryopsis berrylike, globose, 1.5–2 cm, with fleshy pericarp, without endosperm, sometimes viviparous.

About five species: Bangladesh, S China, India (Assam), Myanmar; four species (three endemic) in SW China.

In addition to the species treated below, *Melocalamus ningmingensis* Ohrnberger (Bamboos World Introd. 4: 19. 1997) was published as a *nomen novum* for *M. gracilis* W. T. Lin (J. S. China Agric. Univ. 14(3): 110. 1993, not R. B. Majumdar, 1989), which was described from sterile material from Guangxi (Ningming).

1a. Culm sheath auricles conspicuous.
2a. Culm sheath apically truncate, symmetrical; internodes 25–35 cm, solid or subsolid ..... 1. *M. compactiflorus*
2b. Culm sheath apically oblique, asymmetrical; internodes 45–50 cm, hollow, wall ca. 5 mm thick ..... 2. *M. scandens*
1b. Culm sheath auricles absent or inconspicuous.
3a. Culm internodes 70–120 cm; culm sheath apically with thin projection 1–2 cm on each side ..... 3. *M. elevatissimus*
3b. Culm internodes 20–40(–60) cm; culm sheath apically truncate ..... 4. *M. arrectus*

1. Melocalamus compactiflorus (Kurz) Bentham, Gen. Pl. 3: 1212. 1883.

梨籐竹 li teng zhu

Culms to 40 m, 1.5–5 cm in diam.; internodes initially green, becoming gray-green, 25–35 cm, solid or nearly so; wall thick; nodes slightly thickened, each with a white ring below. Branches several, main mid-culm ones to 10 m. Culm sheaths pale brown, ca. 1/2 as long as internodes, leathery, appressed pubescent, margins ciliate, apex truncate; auricles conspicuous; ligule 1–5 mm, ciliate or fimbriate; blade recurved, base ca. 3/4 as wide as sheath apex. Leaf sheaths white pubescent, margins ciliate; ligule very short, pubescent; auricles and oral setae conspicuous; blade lanceolate, 7.5–15 × 0.7–1.2 cm. Pseudospikelets 1.2–1.4 mm; prophylls to 0.8 mm; gemmiferous bracts 2 or 3; fertile florets 1–3. Glumes 2 or 3; fertile lemma 1–1.3 mm; palea slightly longer than lemma, narrow, bifid for 1/3 length. Lodicules absent to 3. Anthers pale yellow, apex purple, apiculate. Ovary ovoid to turbinate; style 1, ca. 1.2 mm; stigmas 1–3. Caryopsis 2–4 cm. 2*n* = 76*.

River valleys in tropical rain forests, forested hills; 400–1700 m. S Yunnan [Bangladesh, NE India, Myanmar].

1a. Culm sheath ligule not fimbriate ... 1a. var. *compactiflorus*
1b. Culm sheath ligule fimbriate ..... 1b. var. *fimbriatus*

1a. Melocalamus compactiflorus var. **compactiflorus**

梨籐竹(原变种) li teng zhu (yuan bian zhong)

Pseudostachyum compactiflorum Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 252. 1873; *Dinochloa compactiflora* (Kurz) McClure.

Plant taller, with thinner culms. Culm sheath ligule much shorter, not fimbriate; leaves smaller.

River valleys in tropical rain forests; 400–1000 m. S Yunnan [Bangladesh, NE India, Myanmar].

1b. Melocalamus compactiflorus var. **fimbriatus** (Hsueh & C. M. Hui) D. Z. Li & Z. H. Guo, Acta Bot. Yunnan. 23: 178. 2001.

流苏梨籐竹 liu su li teng zhu

Melocalamus fimbriatus Hsueh & C. M. Hui, Acta Phytotax. Sin. 30: 167. 1992.

Plant shorter, with thicker culms. Culm sheath ligule much longer, fimbriate; leaves larger.

● Forested hills; 1000–1700 m. S Yunnan.

2. Melocalamus scandens Hsueh & C. M. Hui, Acta Phytotax. Sin. 30: 166. 1992.

大吊竹 da diao zhu

Culms to 20 m, 2–4 cm in diam.; internodes 45–50 cm; wall ca. 5 mm thick; nodes flat, each with a brown tomentose ring above and below. Branches several, dominant ones to 6 m. Culm sheaths brown, asymmetrical, leathery, initially minutely powdery, apex oblique; auricles asymmetrical, with some oral setae; ligule ca. 1 mm, entire; blade erect, triangular, base about as wide as sheath apex. Leaf sheaths glabrous; auricles minute; ligule ca. 1 mm; blade lanceolate, 15–25 × 1.5–2.5 cm. Inflorescence unknown.

● Broad-leaved montane forests; 700–1000 m. S Yunnan.

3. Melocalamus elevatissimus Hsueh & T. P. Yi, J. Bamboo Res. 2(1): 28. 1983.

西藏梨篠竹 xi zang li teng zhu

Culms to 20 m, 1.5–3 cm in diam.; internodes 40–70 (–120) cm, initially hispid; wall 4–10 mm thick; nodes flat, each with a brown tomentose ring below. Branches several, main mid-culm ones to 6 m. Culm sheaths dark brown, 24–38 cm, leathery, with appressed, minute, yellow spiny hairs, apex with thin projections 1–2 cm on each side; auricles absent; ligule depressed, ca. 1 mm; blade erect, linear-lanceolate, base articulate. Leaf sheaths glabrous; auricles absent; ligule ca. 1 mm; blade oblong-lanceolate, 20–40 × 3–9 cm. Inflorescence unknown.

● Broad-leaved montane forests; 900–2000 m. SE Xizang.

This species appears very similar to *Cephalostachyum latifolium*.

4. Melocalamus arrectus T. P. Yi, Acta Bot. Yunnan. 10: 440. 1988.

澜沧梨篠竹 lan cang li teng zhu

Culms 10–15 m, 2–4 cm in diam.; internodes 20–40(–60) cm, initially pubescent; wall rather thick; nodes prominent, each with a ring of white powder and tomentum below. Branching from 2nd to 3rd nodes upward, 1–3 dominant, to 8 m. Culm sheaths pale brown, ca. 1/3 as long as internodes, leathery, appressed pubescent, apex truncate; auricles minute; oral setae few, deciduous; ligule ca. 1 mm, ciliate; blade erect, triangular or ovate-triangular. Leaf sheaths glabrous; ligule ca. 1 mm; auricles absent; oral setae absent to 2, minute; blade lanceolate, 12–22 × 2.2–4 cm. Flowering branches leafy or leafless; internodes densely pubescent. Pseudospikelets minute. Glumes 2, 1.5–2 mm; rachilla internodes ca. 0.5 mm; lemma ca. 2 mm; palea membranous. Lodicules linear-lanceolate, 1–1.5 mm. Anthers ca. 1 mm. Ovary ovoid, glabrous. Caryopsis globose, ca. 2 cm.

● Tropical rain forests, secondary forests; 700–1900 m. S Yunnan.

This species was previously referred to by the name *"Dinochloa bambusoides"* (Q. H. Dai, Bamboo Spec. & Cultivation Guangxi, 9. 1987), which was not validly published.

6. BONIA Balansa, J. Bot. (Morot) 4: 29. 1890.

单枝竹属 dan zhi zhu shu

Xia Nianhe (夏念和); Chris Stapleton

Monocladus L. C. Chia et al.

Clump-forming scrambling bamboos, small to medium sized. Rhizomes short necked, pachymorph. Culms solid or nearly so; nodes slightly prominent. Branches solitary, nearly as thick as culms. Culm sheaths persistent, leathery; auricles subfalcate to broadly falcate, large; ligule short; blade erect. Leaf blade lanceolate to linear-lanceolate, usually large, base truncate; venation not tessellate. Inflorescence iterauctant, fully bracteate, arising from axil of persistent spathiform bracts; prophylls 2-keeled, gemmiferous, inserted at point of branching, closely followed by 2 or 3 closely spaced, gemmiferous bracts. Pseudospikelets 3–9-flowered, uppermost floret imperfect; first fertile lemma separated from gemmiferous bracts by rachilla segment to 1 cm. Rachilla disarticulating between florets, internodes to 1 cm. Lemma subleathery; palea of lowest floret slightly longer than lemma, subleathery; palea of other florets much shorter than lemma, membranous; lodicules 3, glabrous. Stamens 6; filaments free. Ovary glabrous; style very short; stigmas 3, plumose. Caryopsis terete, glabrous.

Five species: S China, Vietnam; four species (all endemic) in China.

1a. Culm sheath auricles inconspicuous ..... 4. *B. parvifloscula*
1b. Culm sheath auricles well developed.
2a. Ligules of culm sheath and leaf sheath long ciliate ..... 1. *B. saxatilis*
2b. Ligules of culm sheath and leaf sheath entire.
3a. Culm sheath blade obliquely cordate, amplexicaul; leaf blade abaxially glaucous, pubescent; culm internodes white powdery, sparsely brown strigose ..... 3. *B. amplexicaulis*
3b. Culm sheath blade nearly rounded, not amplexicaul; leaf blade abaxially pale green, glabrous; culm not white powdery, glabrous ..... 2. *B. levigata*

1. Bonia saxatilis (L. C. Chia et al.) N. H. Xia, Kew Bull. 51: 567. 1996.

单枝竹 dan zhi zhu

Culms 1–4 m, 4–8 mm in diam.; internodes 25–40 cm, glabrous, initially white powdery. Branches 0.5–1.5 m. Culm sheaths shortly tomentose and stiffly dull brown hairy, or gla-

brous; auricles subfalcate, amplexicaul; oral setae ca. 1 cm; ligule margin with 5–10 mm cilia; blade reflexed, lanceolate, base cordate. Leaf sheaths distally white powdery and shortly tomentose, sometimes stiffly dull brown hairy; auricles subfalcate; oral setae ca. 1 cm; ligule margin with cilia 5–10 mm; blade usually 20–35 × 3.5–6 cm, abaxially glaucous, subglabrous. Pseudospikelets 2–3 cm; prophylls 2-keeled, ca. 8 mm, keels ciliate; gemmiferous bracts ovate-elliptic, ca. 9-veined, abaxially slightly hairy. Spikelets with 5–9 florets, first floret longest; first internode of rachilla longest, 7–10 mm, terete, angular, apex slightly hairy, other internodes progressively shorter and flattened on one side. Glumes lanceolate, ca. 11-veined, apex mucronate, lower glume ca. 1 cm, upper ca. 1.2 cm; lemma ovate-lanceolate, ca. 1.3 cm, 9–11-veined, apex acute or mucronate. Palea narrowly lanceolate, 2-keeled, brown hairy, 4-veined between keels, 2-veined on each side of keels, apex obtuse. Lodicules 3, heteromorphic, ca. 1 mm. Anthers 2–3 mm; filaments very short. Ovary ellipsoid, ca. 0.7 mm; stigmas 3, 1.5–1.8 mm. Fruit unknown.

● Limestone hills and mountains. Guangdong, Guangxi.

1a. Culm sheaths shortly tomentose with stiff, dull brown hairs ..... 1a. var. *saxatilis*
1b. Culm sheaths abaxially glabrous ..... 1b. var. *solida*

1a. Bonia saxatilis var. **saxatilis**

单枝竹(原变种) dan zhi zhu (yuan bian zhong)

Monocladus saxatilis L. C. Chia et al., Acta Phytotax. Sin. 26: 213. 1988.

Culm sheaths shortly tomentose, also with longer, stiff, dull brown hairs.

● Limestone mountains. Guangdong, Guangxi.

The culms are used for papermaking.

1b. Bonia saxatilis var. **solida** (C. D. Chu & C. S. Chao) D. Z. Li, Acta Bot. Yunnan. 22: 44. 2000.

箭秆竹 jian gan zhu

Indocalamus solidus C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 18: 26. 1980; *Bonia solida* (C. D. Chu & C. S. Chao) N. H. Xia; *Monocladus saxatilis* var. *solidus* (C. D. Chu & C. S. Chao) L. C. Chia.

Culm sheaths abaxially glabrous.

● Limestone hills. Guangxi.

2. Bonia levigata (L. C. Chia et al.) N. H. Xia, Kew Bull. 51: 568. 1996.

响子竹 xiang zi zhu

Monocladus levigatus L. C. Chia et al., Acta Phytotax. Sin. 26: 216. 1988.

Culms 1–5 m, 0.6–1 cm in diam.; internodes 25–35 cm, glabrous, without white powder. Branches 1–3 m. Culm sheaths shortly tomentose, stiffly dull brown hairy; auricles broadly falcate; oral setae ca. 2 mm bristles; ligule entire; blade ovate-lanceolate, base subcordate. Leaf sheaths white powdery, with stiff, dull brown hairs; auricles oblong or reniform; oral setae 5–7 mm; ligule entire; blade usually 20–35 × 4–6 cm, abaxially pale green. Inflorescence unknown.

● Forests; 200–700 m. Hainan.

3. Bonia amplexicaulis (L. C. Chia et al.) N. H. Xia, Kew Bull. 51: 568. 1996.

芸香竹 yun xiang zhu

Monocladus amplexicaulis L. C. Chia et al., Acta Phytotax. Sin. 26: 215. 1988.

Culms 2–5 m, 0.5–1.5 cm in diam.; internodes 30–50 cm, initially white powdery, with stiff, brown or pale hairs. Branches 0.5–3 m. Culm sheaths shortly tomentose, mixed with longer, stiff, dull brown hairs; auricles broadly falcate, one usually covered by base of blade; ligule entire; oral setae 1.5–2 mm; blade oblique, cordate to narrowly oblique-cordate, amplexicaul. Leaf sheaths slightly hairy and stiffly dull brown hairy; auricles ascending, broadly ovate, usually swollen on one side; oral setae ca. 6 mm; ligule entire; blade usually 25–40 × 4.5–8 cm, glaucous, abaxially pubescent. Inflorescence unknown.

● Limestone hills; 300–500 m. Guangxi.

The culms are used for papermaking.

4. Bonia parvifloscula (W. T. Lin) N. H. Xia, Novon 15: 601. 2005.

小花单枝竹 xiao hua dan zhi zhu

Monocladus parviflosculus W. T. Lin, J. Bamboo Res. 12(3): 3. 1993.

Culms 1–1.2 m, 4–6 mm in diam., solid or subsolid; internodes 16–39 cm, initially hispidulous, becoming glabrous; nodes flat. Culm sheaths tardily deciduous, abaxially sparsely hispid; auricles inconspicuous or small; oral setae absent; ligule ca. 0.8 mm, denticulate; blade suberect or deflexed, linear-lanceolate, base narrowed. Ultimate branchlets with 5–7 leaves. Leaf blade 11–22 × 1.5–3.2 cm, abaxially glaucous and pubescent. Pseudospikelets 1.7–2 cm; bracts 2 or 3; florets 4–6. Glumes absent; lemma 6–8 mm, abaxially sparsely hispidulous. Palea shorter than lemma, keels ciliolate, 1- or 2-veined between and 2-veined on either side of keels. Rachilla segments 3–5 mm. Lodicules unequal, 1.5–2.5 mm, glabrous, apex emarginate. Ovary ellipsoid, ca. 1 mm; style ca. 0.5 mm; stigmas 3. Fruit unknown.

● Limestone hills. Guangdong (Zhaoqing).

7. SCHIZOSTACHYUM Nees in Martius et al., Fl. Bras. Enum. Pl. 2: 535. 1829.

篦箒竹属 si lao zhu shu

Xia Nianhe (夏念和); Chris Stapleton

Leptocanna L. C. Chia & H. L. Fung.

Arborescent bamboos, sometimes shrubby or scrambling. Rhizomes short necked, pachymorph. Culms erect, pendulous, or clambering, straight or slightly flexuose; internodes terete, distally often white powdery; wall usually thin; nodal ridge not prominent; sheath scar prominent. Branches many, subequal. Culm sheaths deciduous, leathery to thickly papery, usually rigid, white powdery, apex truncate or concave, sometimes with subcircular projection at base of one margin; auricles usually inconspicuous; oral setae usually developed; ligule short, truncate, margin serrulate or fimbriate; blade usually reflexed, adaxially densely hispid, apex usually involute. Leaf sheaths usually grooved; auricles usually inconspicuous; blade large, transverse veins partially visible abaxially. Inflorescence fully bracteate, iterauctant; with several to many sessile pseudospikelets in loose, spicate clusters on leafy or leafless flowering branches. Pseudospikelet prophyll triangular to linear-lanceolate; gemmiferous bracts 1 to several; fertile florets 1 or 2, or florets 3 or 4 with only terminal or subterminal floret fertile; rachilla usually disarticulating (not in *S. chinense*), extending beyond fertile floret, glumes usually absent (2 in *S. chinense*); lemma convolute; palea similar to lemma, but longer, not keeled; lodicules usually absent, sometimes 1–3. Stamens 6. Ovary stalked; style 1; stigmas 3, plumose. Caryopsis fusiform, apex with persistent style base.

About 50 species: SE Asia; nine species (five endemic) in China.

In addition to the species treated below, *Schizostachyum brachycladum* (Munro) Kurz (*Melocanna zollingeri* (Steudel) Kurz ex Munro var. *brachyclada* Munro) was included in FRPS (9(1): 23. 1996), but it is only of limited cultivation and does not merit a full treatment here. *Schizostachyum subvexorum* Q. H. Dai & D. Y. Huang (J. Bamboo Res. 16(3): 27. 1997) was described from cultivated material from Guangxi (Nanning). In the protologue it was compared with *S. funghomii*.

1a. Culm sheath blade erect; spikelets with glume and sterile lemma; rachilla not disarticulating ..... 1. *S. chinense*
1b. Culm sheath blade reflexed; spikelets without glume and sterile lemma; rachilla disarticulating.
2a. Culms self-supporting, apically suberect, 4–10 cm in diam. ..... 8. *S. funghomii*
2b. Culms apically subscandent or long pendulous, 0.5–4(–5) cm in diam.
3a. Culm sheaths basally with rounded projection on outer margin.
4a. Culm 0.5–1.1 cm in diam., internodes to 60 cm; leaf sheath 2–3.5 cm, oral setae 3–5 mm ..... 5. *S. dumetorum*
4b. Culm 2–5 cm in diam., internodes 70–90 cm; leaf sheath 4–10 cm, oral setae 6–18 mm.
5a. Culm walls 3–5 mm thick; culm sheath yellow-brown, hairs brown, ligule margin with fimbriae 8–12 mm ..... 4. *S. hainanense*
5b. Culm walls 1–2 mm thick; culm sheath green, hairs white, ligule margin with fimbriae 1.5–2 mm ..... 7. *S. auriculatum*
3b. Culm sheaths basally truncate without projection.
6a. Culm sheaths apically truncate.
7a. Culm sheaths with deciduous, red-brown, stiff hairs, ligule fimbriate ..... 2. *S. jaculans*
7b. Culm sheaths with white strigose hairs, ligule ciliate ..... 6. *S. pseudolima*
6b. Culm sheaths apically concave.
8a. Culm sheaths stiffly brown hairy; leaf blade 1.5–2.5 cm wide, base rounded ..... 3. *S. diffusum*
8b. Culm sheaths yellow-brown tomentose; leaf blade 4–5 cm wide, base cuneate ..... 9. *S. sanguineum*

1. Schizostachyum chinense Rendle, J. Linn. Soc., Bot. 36: 448. 1904.

薄竹 bao zhu

Leptocanna chinensis (Rendle) L. C. Chia & H. L. Fung.

Culms 5–8 m, 2–3 cm in diam.; internodes straight, 30–45 cm, scabrous, white powdery, initially distally white pubescent, later glabrous. Branching from ca. 3rd node up, nearly horizontal. Culm sheaths initially purple-red, later straw-colored, triangular, usually ca. 1/2 as long as internodes, initially stiffly white hairy, later scabrous and white powdery, apex nearly truncate or concave; auricles very narrowly linear; ligule ca. 1 mm, subentire; blade erect, narrowly triangular, base ca. 1/3 as wide as apex of sheath, margin apically partly involute, apex long acuminate. Leaf sheaths apically purple-red, glabrous; auricles and oral setae absent; ligule subtruncate, ca. 1 mm, subentire; petiole purple-red, ca. 5 mm, glabrous; blade lanceolate to oblong-lanceolate, 15–26 × 3–4.5 cm, abaxially scabrous, adaxially glabrous. Ultimate flowering branches 5–10 cm; sheaths amplexicaul, glabrous, apex attenuate into a slender mucro; pseudospikelets to 1.4 cm, apex acuminate; prophylls linear-lanceolate, 6–8 mm, apex acute or obtuse, keels 2; bracts ovate-lanceolate to linear-lanceolate, 7–11 mm, apex usually mucronate; rachilla not disarticulating. Glumes 2, ovate-lanceolate to broadly lanceolate, 7–9 mm, apex acute or obtuse; fertile lemma ovate-lanceolate, 1–1.1 cm, 15-veined; palea 9–12 mm, 6-veined, apex acuminate with a cluster of short hairs; lodicules 3, 0.5–2 mm, margin ciliate, ventral 2 oblanceolate, apex obtuse, dorsal subovate, apex acute. Anthers 4–9 mm, base unequally bifid. Ovary clavate; stigmas short, plumose. Fruit unknown.

● Evergreen broad-leaved forests; 1500–2000 m. S Yunnan (Jinping, Mengzi, Pingbian).

2. Schizostachyum jaculans Holttum, Kew Bull. [8] 1953: 494. 1954.

岭南篲箒竹 ling nan si lao zhu

Culms to 15 m long, to 1.5 cm in diam., apex long pendulous or clambering; internodes terete, to 72 cm, lower half glossy, glabrous, initially white powdery distally, with appressed red-brown hairs; wall ca. 1.5 mm thick. Branches 40–50 cm. Culm sheaths deciduous, oblong, with deciduous, stiff, red-brown hairs, base without a projection, margins glabrous, apex truncate or nearly so; auricles usually inconspicuous; oral setae 1–2 mm;

ligule 1–2 mm, margin with fimbriae 8–15 mm; blade reflexed, linear-lanceolate, less than 1/2 length of sheath, abaxially glabrous, adaxially densely strigose, apex involute to acicular. Leaves 5–9 per ultimate branch; leaf blade linear-lanceolate or lanceolate, 5.5–15 × 0.6–1 cm, abaxially subglabrous, adaxially stiffly white hairy, margins glabrous, base rounded, apex acuminate. Inflorescence unknown.

Primary and secondary forests. Hainan [Malaysia].

3. Schizostachyum diffusum (Blanco) Merrill, Amer. J. Bot. 3: 62. 1916.

莎簕竹 sha le zhu

Bambusa diffusa Blanco, Fl. Filip. 269. 1837; *Dinochloa diffusa* (Blanco) Merrill.

Culms flexuose, slender, to 40 m long, 0.5–1.5 cm in diam., apically clambering; internodes 15–60 cm, with ring of white powder below node; wall 2–4 mm thick. Culm sheaths deciduous, leathery, rigid, with stiff, brown hairs, base without a projection, margins ciliate, apex concave; auricles inconspicuous; oral setae well developed, curved; ligule short or inconspicuous; blade reflexed, linear-lanceolate, apex involute to aciculate. Leaves 5–12 per ultimate branch; sheaths 5–12 cm, glabrous, outer margin ciliate; auricles inconspicuous; oral setae well developed, initially white, becoming brown; ligule suborbicular or subtruncate, dentate; petiole short; blade oblong-lanceolate, 10–25 × 1.5–2.5 cm, abaxially glabrous, margin densely scabrous to setaceous, base rounded, apex acute. Pseudospikelets 1.8–2.8 cm; bracts 2, oblong-lanceolate, ca. 1 cm, glabrous, many veined; rachilla disarticulating. Glumes absent; lemma ovate-oblong, ca. 14 × 6 mm, glabrous, many veined. Palea ca. 19 × 6 mm, many veined, apex shortly bifid, not keeled; lodicules 2, elliptic-lanceolate, membranous. Filaments long; anthers ca. 9 mm. Ovary glabrous; stigmas 3, short, plumose. Caryopsis obovate, 2–4 mm in diam., glabrous, apex with persistent style base. New shoots May–Aug.

Primary forests; 200–1200 m. E and S Taiwan [Philippines].

The identification of Chinese material as *Schizostachyum diffusum* requires further study.

This species is grown as an ornamental.

4. Schizostachyum hainanense Merrill ex McClure, Lingnan Sci. J. 14: 591. 1935.

山骨罗竹 shan gu luo zhu

Culms ascending, 8–30 m long, 2–3(–5) cm in diam., apically long pendulous or clambering; internodes to 75 cm or longer, smooth and glabrous near base, other portions white powdery and appressed stiffly hairy; wall 1.5–2 mm thick. Branches 40–80 cm. Culm sheaths deciduous, asymmetrical, pruinose, with appressed, stiff, brown hairs, base of outer margin usually with a conspicuous, subcircular projection below point of attachment, both sides of apex rounded and extending upward but unequal, yellow-brown; auricles absent; oral setae well developed, to 2.4 cm; ligule 1.5–2 mm, margin with fimbriae 8–12 mm; blade reflexed, more than 1/2 length of sheath proper. Leaves 5–10 per ultimate branch; sheaths 4–9 cm; auricles usually inconspicuous; oral setae numerous, pale, 6–18 mm; ligule ca. 1 mm; blade oblong-lanceolate or linear-lanceolate, 6–27 × 0.6–3.7 cm. Pseudospikelets fusiform, 1.2–1.5 cm; prophylls ovate-lanceolate, ca. 2.5 mm; bracts 3 or 4, ovate or ovate-lanceolate, margin ciliate or glabrous, apex obtuse to acute or mucronate. Glumes absent; lemma ovate-lanceolate, ca. 1.3 cm, margin with or without cilia, involute, many veined, apex acuminate, mucronate; palea to 1.4 cm, markedly involute, papery, lower portion pellucid, apex mucronate; lodicules absent. Filaments white, ca. 1.4 cm, basally connate in pairs; anthers yellow-brown, ca. 6 mm. Ovary ovoid, glabrous, stalked; stigmas 3, purple, 1–1.5 mm. Fruit unknown.

Primary tropical forests. Hainan [Vietnam].

The culms are split for weaving baskets, mats, etc.

5. Schizostachyum dumetorum (Hance ex Walpers) Munro, Bot. Voy. Herald 424. 1857.

苗竹仔 miao zhu zi

Culms flexuose, 3–10 m long, 0.5–1.1 cm in diam., apically clambering; internodes to 60 cm, smooth and glabrous near base, otherwise white powdery and white strigose; wall ca. 1 mm thick. Branches ca. 40 cm. Culm sheaths deciduous, abaxially slightly hairy or glabrous, base of outer margin usually with a conspicuous subcircular expansion below point of attachment, apex truncate with equal sides; auricles usually inconspicuous; oral setae many, straight, 5–7 mm; ligule less than 1 mm, glabrous, margin undulate; blade reflexed, those on lower nodes of culm less than 1/2 length of sheath, those on upper nodes of culm longer. Leaves 5–7 per ultimate branch; sheaths 2–3.5 cm, glabrous; auricles usually inconspicuous; oral setae several, 3–5 mm; ligule less than 1 mm; blade lanceolate, 5–18 × 1.2–7 cm. Pseudospikelets fusiform, 1–2.2 cm; prophylls small; bracts 4–6, navicular, 1–5.5 mm, papery, rigid, keeled, apex obtuse; rachilla disarticulating. Glumes absent; lemma oblong-lanceolate, 1.2–1.4 cm, involute, many veined, apex acute, mucronate; palea oblong-lanceolate, to 1.5 cm, markedly involute, thinly papery, apex truncate or emarginate; lodicules absent. Filaments white, ca. 2 cm, base ± connate; anthers yellow, 5–6 mm. Ovary ovoid, glabrous, stalked; style purple; stigmas 3, purple-red, 3–5 mm, plumose. Caryopsis fusiform, 10–13 × ca. 1.5 mm, glabrous, apex beaked.

● Thickets, forests; 100–200 m. Guangdong, Jiangxi.

This species is grown as an ornamental.

1a. Culm sheaths glabrous ..... 5a. var. *dumetorum*
1b. Culm sheaths stiffly yellow-brown hairy ..... 5b. var. *xinwuense*

5a. Schizostachyum dumetorum var. **dumetorum**

苗竹仔(原变种) miao zhu zi (yuan bian zhong)

Bambusa dumetorum Hance ex Walpers, Ann. Bot. Syst. 3: 781. 1853.

Culm sheaths glabrous.

● Guangdong.

5b. Schizostachyum dumetorum var. **xinwuense** (T. H. Wen & J. Y. Chin) N. H. Xia, J. Trop. Subtrop. Bot. 1: 7. 1993.

火筒竹 huo tong zhu

Schizostachyum xinwuense T. H. Wen & J. Y. Chin, J. Bamboo Res. 1: 28. 1982.

Culm sheaths stiffly yellow-brown hairy.

● Jiangxi (Xunwu).

6. Schizostachyum pseudolima McClure, Lingnan Sci. J. 19: 537. 1940.

篦笋竹 si lao zhu

Culms basally erect or suberect, to 10 m, to 4 cm in diam., apically long pendulous or clambering; internodes terete, straight, to 60 cm, basally glossy and glabrous, distally white powdery and stiffly white hairy; wall 1–2 mm thick. Branches 50(–100) cm. Culm sheaths tardily deciduous, straw-colored, white powdery and stiffly white hairy abaxially, distal margins with cilia 1–2 cm, base without a projection, apex truncate; auricles inconspicuous; oral setae many, 1–1.8 cm; ligule truncate, short, 1–1.5 mm, margin ciliate; blade reflexed, linear-lanceolate, more than 1/2 or 2/3 length of sheath, abaxially glabrous, apex acuminate. Leaves 6–8 per ultimate branch; sheaths 6–9 cm, often white powdery; auricles inconspicuous; oral setae numerous, 2–3 mm; blade oblong-lanceolate or linear-lanceolate, 18–30 × 2–3.5 cm. Pseudospikelets fusiform, 2–3.5 cm, glabrous; prophyll ovate or ovate-lanceolate, 4–8 mm, thin, translucent, apex obtuse, keels 2, ciliate; bracts 1 to several, oblong to oblong-lanceolate, 7–22 mm, papery, many veined, apex obtuse to acute or mucronate; rachilla disarticulating. Glumes absent; fertile lemma oblong-lanceolate, to 2.4 cm, many veined, apex acute, long mucronate, mucro ca. 3 mm; sterile lemma oblong-lanceolate, ca. 1.5 cm, mucro short. Palea to 2.7 cm, involute, papery, many veined, apex bifid; lodicules absent. Filaments to 25 mm, bases often connate; anthers initially dull green, pale yellow when mature, 7–9 mm. Pistil purple, 1.8–2.5 cm. Fruit unknown. New shoots Jul–Aug.

Forests, cultivated near villages. Hainan [Vietnam].

The culms are used for making flutes and walling and are split for weaving.

7. Schizostachyum auriculatum Q. H. Dai & D. Y. Huang, J. Bamboo Res. 16(3): 29. 1997.

耳垂竹 er chui zhu

Culms erect or suberect, to 10–14 m, 3–5 cm in diam.; internodes terete, straight, 70–90 cm, scabrous, ± white powdery, initially white appressed hispid; wall 3–5 mm. Branches ca. 50 cm. Culm sheaths deciduous, white powdery, stiffly pale yellow hairy, margin white ciliate; base of outer margin usually with a conspicuous subcircular expansion below point of attachment, apex truncate; auricles absent; oral setae many, 1.5–2 cm; ligule ca. 1 mm, with dense fimbriae 1.5–2 mm; blade reflexed, narrowly lanceolate, 14–18 × 1–1.5 cm, abaxially appressed, white hispidulous, adaxially white strigose. Leaves 5–8 per ultimate branch; sheaths 7–10 cm, white strigose; auricles absent; oral setae numerous, erect, straight, to 1 cm; ligule ca. 0.5 mm, white ciliate; blade narrowly lanceolate, 20–25 × 2–3 cm, abaxially white pubescent, lateral veins 6–8 pairs. Inflorescence unknown. New shoots Jun–Sep.

● Cultivated. Guangxi (Nanning).

8. Schizostachyum funghomii McClure, Lingnan Sci. J. 14: 585. 1935.

沙罗箪竹 sha luo dan zhu

Schizostachyum subvexorum Q. H. Dai & D. Y. Huang.

Culms erect, to 12 m, 4–10 cm in diam., apically suberect; internodes terete, straight, to 67 cm, scabrous, white powdery, initially often strigose; wall ca. 3 mm. Branches 50–70 cm. Culm sheaths tardily deciduous, straw-colored, white powdery, with stiff, pale yellow hairs, margins glabrous, apex truncate or slightly concave; auricles inconspicuous; oral setae many, ca. 5 mm; ligule truncate, short, 1–2 mm, glabrous, margin lobed, with fimbriae 3–5 mm; blade reflexed, linear-lanceolate, less than 1/2 length of sheath, abaxially glabrous, apex acuminate. Leaves 6–9 per ultimate branch; sheaths often white powdery; auricles inconspicuous; oral setae numerous, 5–6 mm; blade oblong-lanceolate or ovate-lanceolate, 20–30 × 2.5–4 cm. Pseudospikelets terete, ca. 3 cm, white villous; prophylls oblong-obovate, 5–7 mm, papery, apex obtuse, keels 2, ciliate; bracts 1 to several, oblong, 6–15 mm, papery, many veined, apex obtuse to acute and mucronate; florets 1 or 2, terminal floret usually fertile; rachilla disarticulating. Glumes absent; lemma oblong-lanceolate, 1.5–1.7 cm, densely white-villous, strongly involute, many veined, apex scabrous, acute, mucronate, mucro ca. 2 mm. Palea to 2.6 cm, base spirally involute, papery, distally obviously grooved, nearly glabrous, white ciliate, many veined, apex bifid (fertile spikelets) or unequally 2-keeled (sterile spikelets); lodicules absent. Filaments to 1.8 cm, bases usually connate in pairs; anthers yellow-brown, to 1.2 cm. Ovary glabrous, shortly stalked; style pale yellow; stigmas 3, purple, plumose. Fruit unknown. New shoots Jul–Aug.

● Hills, forests, cultivated near villages. Guangdong, Guangxi, Yunnan.

The culms are used for making paper pulp and are split for weaving. The species is also grown as an ornamental.

9. Schizostachyum sanguineum W. P. Zhang, Bamboo Res. 1989(4): 12. 1989.

红毛篦笋竹 hong mao si lao zhu

Culms 5–7 m, 2–3 cm in diam., apically scrambling; internodes 25–35 cm, scabrous, white powdery; wall thin; nodes flat, with a white powdery ring below sheath scar. Culm sheaths deciduous, suboblong, shorter than internodes, densely yellow-brown tomentose, base without a projection, apex arched-concave; auricles absent; ligule short, margin with brown cilia ca. 2 mm; blade reflexed, linear-lanceolate, abaxially with sparse, stiff hairs, adaxially densely yellow-brown tomentose, apex rugose. Leaves 4–6 per ultimate branch; leaf blade ovate-lanceolate, 18–20 × 4–5 cm, base cuneate, apex long acuminate. Inflorescence unknown.

● Forests; ca. 1600 m. SE Yunnan (Malipo).

8. CEPHALOSTACHYUM Munro, Trans. Linn. Soc. London 26: 138. 1868.

空竹属 kong zhu shu

Li Dezhu (李德铢); Chris Stapleton

Arborescent or shrubby bamboos. Rhizomes short necked, pachymorph. Culms straight, pendulous, or occasionally clambering; internodes terete, smooth, usually glabrous; wall usually thin; nodal ridge not prominent; sheath scar prominent. Branches many, subequal or occasionally with a dominant branch replacing main culm. Culm sheaths deciduous, thickly papery to leathery, usually rigid, apex truncate or concave; auricles usually conspicuous; oral setae usually developed, often fimbriate; ligule truncate, short, serrulate; blade reflexed, sometimes erect. Leaf sheaths pubescent; auricles usually conspicuous; blade lanceolate or ovate-elliptical, variable in size, transverse veins scarcely visible. Inflorescence fully bracteate, iterauctant, initially densely glomerate with many pseudospikelets, terminal to a leafy shoot, later spicate, lateral to leafless flowering branches, subtended by several large bracts. Spikelets 1-flowered, with a rachilla extension. Glumes 2 or 3, long mucronate or awned; lemma similar to glumes, convolute. Palea thin, 2-keeled. Lodicules 3. Stamens 6; filaments free. Ovary stalked; style long, hollow; stigmas 2 or 3, plumose. Caryopsis nutlike, terete, apex with persistent style base.

About nine species: S and SE Asia; six species in China (Xizang, Yunnan).

Several early names were based on fragmentary material collected in NE India and Myanmar. The Chinese specimens cannot be reliably identified until better gatherings have been made both in China and in neighboring countries.

1a. Culms climbing; culm sheath blade erect, not articulate with sheaths.
  2a. Culm internodes solid; culm sheaths abaxially sparsely white hairy, centrally and on distal margins brown hirsute ..... 1. *C. mannii*
  2b. Culm internodes with narrow cavity; culm sheaths abaxially dark brown or black tomentose ..... 2. *C. scandens*
1b. Culms erect; culm sheath blade reflexed, articulate with sheaths.
  3a. Culm sheaths thickly leathery, brown, smooth, glossy, with dark brown hairs; culm internodes glaucous, white hispid ..... 3. *C. pergracile*
  3b. Culm sheaths papery to leathery, yellow, grooved, dull, pubescent or hirsute.
    4a. Leaf blade ovate to elliptical, 8–10 cm wide; culm sheath apically projecting upward on each side of blade ..... 4. *C. latifolium*
    4b. Leaf blade lanceolate, 2–5 cm wide; culm sheath apically truncate.
      5a. Culms 1.5–2.5 cm in diam., culm sheaths pale pubescent ..... 5. *C. pallidum*
      5b. Culms 5–10 cm in diam.; culm sheaths yellow hispid ..... 6. *C. virgatum*

1. Cephalostachyum mannii (Gamble) Stapleton & D. Z. Li, Kew Bull. 52: 700. 1997.

独龙江空竹 du long jiang kong zhu

Arundinaria mannii Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 26. 1896; *Neomicrocalamus mannii* (Gamble) R. B. Majumdar.

Culms 12–20 m, 1.5–2.5 cm in diam., apically scrambling; internodes usually flexuose, 30–45 cm, solid. Branches many, central dominant. Culm sheaths persistent, base very tough, thinly white tomentose, brown hirsute centrally and on distal margins; auricles and ligule absent; blade erect, triangular, not articulate with sheath. Leaves 3–5 per ultimate branch; oral setae more than 10, brown hispid, 5–10 mm; ligule conspicuous; blade 12–15 × 1.5–2 cm, glabrous, base arched, apex acute. Inflorescence unknown.

Forests; 1300–1400 m, NW Yunnan [NE India].

The identification of Chinese material as this species is still rather speculative.

2. Cephalostachyum scandens Bor, Kew Bull. [12] 1957: 419. 1958.

真麻竹 zhen ma zhu

Cephalostachyum scandens Hsueh & C. M. Hui (1997), not Bor (1958); *Schizostachyum scandens* (Bor) H. B. Naithani & Bennet.

Culms climbing, 20–30(–50) m, 1–3.5 cm in diam., internodes 50–80(–120) cm, apically brown setose, thickly walled but hollow. Branches many, dominant branch often replacing main culm. Culm sheaths persistent, shorter than internode, base very tough, apex papery, with stiff, dark brown or black, appressed hairs; auricles absent; ligule truncate, ca. 1 mm; blade erect, not articulate with sheath, ciliate. Leaves 4 or 5 per ultimate branch; sheaths glabrous; auricles with setae 5–10 mm; ligule truncate, less than 1 mm; pseudopetiole ca. 5 mm; blade 17–25 × 2–3 mm, apex caudate. Inflorescence capitate, solitary at tip of leafy branch, subtended by several bracts; bracts marginally ciliate, long mucronate or awned. Glumes 2 or 3, long mucronate or awned; lemma similar to glume, margins distally ciliate; lodicules 3, conspicuous; membranous. Stamens 6; filaments long. Ovary broadly globose, stalked; style small. Fl. Mar–Apr.

Broad-leaved forests; 1600–2000 m. NW Yunnan [N Myanmar].

Bor described this species from Myanmar (where further gatherings are required). Hsueh and Hui were apparently unaware of Bor's name when they described the same species from Yunnan and coincidentally gave it the same name.

3. Cephalostachyum pergracile Munro, Trans. Linn. Soc. London 26: 141. 1868.

香糯竹 xiang nuo zhu

Schizostachyum pergracile (Munro) R. B. Majumdar.

Culms erect, 9–12 m, 5–7.5 cm in diam., apically drooping; internodes 30–45 cm, initially densely appressed setose; wall thin. Culm sheaths tardily deciduous, brown, shorter than culms, 10–15 × 15–20 cm, thickly leathery, smooth, densely glossy black-brown setose; auricles rounded, undulate, hirsute near margins; ligule inconspicuous; blade reflexed, ovate-acuminate, ca. 5 cm, articulate with sheath, adaxially densely hairy. Leaf sheath margins ciliate; ligule ciliate; blade narrowly lanceolate, 15–35 × 2.5–3.8(–6) cm, base rounded. Inflorescences capitate, at nodes of leafless branch, 1.5–3 cm in diam., subtended by bracts. Pseudospikelet 1.2–2 × ca. 0.2 cm, densely yellow hirtellous, rachilla extended, 5–6 mm. Glumes 2 or 3, 0.6–1.1 cm; lemma 1.3–1.8 cm, densely hairy, apex long mucronate or awned; palea about as long as or longer than lemma, apex bifid; lodicules lanceolate, narrow, membranous, apex acute. Anthers purple. Stigmas 3. Caryopsis 6–8 × 2–3 mm, glabrous, apex with persistent style base.

Hills; 500–1200 m. S Yunnan [Myanmar].

4. Cephalostachyum latifolium Munro, Trans. Linn. Soc. London 26: 140. 1868.

空竹 kong zhu

Cephalostachyum fuchsianum Gamble; *Schizostachyum fuchsianum* (Gamble) R. B. Majumdar; *S. latifolium* (Munro) R. B. Majumdar.

Culms erect, 16–20 m, 3–3.5 cm in diam.; internodes 50–80 cm, smooth, glabrous; wall thin; nodal ridge not prominent. Branches many, clustered at each node, subequal. Culm sheaths deciduous, yellow, 20–38 cm, papery, densely brown ciliate, apex rounded and projecting upward on both sides of blade; auricles conspicuous; oral setae developed; ligule short; blade reflexed, narrowly lanceolate, to 25 cm, papery, articulate with sheath, adaxially ciliate, apex acute. Leaf sheaths 7–8 cm, pubescent, auricles inconspicuous; ligule truncate, short; blade ovate-elliptic, 25–30 × 8–10 cm, glabrous. Inflorescence capitate, solitary at tip of leafy branch, 2.5–5 cm in diam., subtended by bracts. Pseudospikelet 2–2.5 × 0.3–0.4 cm, with a rachilla extension. Glumes 1.5–2 cm, long mucronate or awned; lemma similar to glumes; palea slightly longer than lemma, membranous; lodicules 3, lanceolate, apex ciliate. Stamens 6; anthers yellow. Ovary ovoid; style 1; stigmas 2 or 3, plumose. Caryopsis nutlike, shortly apiculate.

1200–2000 m. Yunnan [Bhutan, NE India, Myanmar].

Cephalostachyum fuchsianum was described from older material of *C. latifolium*, most of which lacked the distinctive but soon deciduous oral setae. This description from Chinese material is not entirely consistent with typical *C. latifolium*.

5. Cephalostachyum pallidum Munro, Trans. Linn. Soc. London 26: 139. 1868.

小空竹 xiao kong zhu

Culms 6–12 m, 1.5–2.5 cm in diam., subscandent; internodes 50–80 cm, smooth; wall thin; nodal ridge not prominent; sheath scar prominent. Branches many, clustered at each node, subequal. Culm sheaths deciduous, yellow, oblong-lanceolate, 15–20 cm, thickly papery, abaxially appressed ciliate, apex truncate; ligule short; blade reflexed, narrowly lanceolate, 5–10 × 1–3 cm. Leaf sheaths pubescent; ligule conspicuous; blade ovate-lanceolate, 15–25 × 2–4 cm. Inflorescence capitate, solitary at tip of leafy branch, 1.5–2.5 cm in diam., subtended by many bractlets. Pseudospikelet 1.2–1.7 × 0.3–0.4 cm. Glumes ovate, long mucronate or awned; lemma similar to glumes; palea thin; lodicules 3, apex ciliate. Ovary ovoid-coniform; stigmas 2. Caryopsis ovoid, apex with persistent style base.

Broad-leaved forests; 1200–2000 m. Xizang, Yunnan [India, Myanmar].

This species was misidentified as *Cephalostachyum capitatum* Munro in Fl. Xizang. (5: 55. 1987).

6. Cephalostachyum virgatum (Munro) Kurz, Prelim. Rep. Forest Pegu, App. A: 137. 1875.

金毛空竹 jin mao kong zhu

Melocanna virgata Munro, Trans. Linn. Soc. London 26: 133. 1868.

Culms erect, 12–15 m, 5–10 cm in diam.; internodes 50–88 cm, with white, appressed setae and powder, becoming smooth and glabrous; wall thin. Culm sheaths deciduous, triangular, 15–20 cm, thinly leathery to leathery, densely yellow hirsute, mouth truncate; auricles conspicuous; oral setae developed; ligule short, fimbriate; blade reflexed or erect, triangular, 10–12.5 cm, adaxially with appressed bristles. Leaf sheaths smooth; auricles inconspicuous; ligule short, fimbriate; blade oblong-lanceolate to linear-lanceolate, 15–30 × 2–4.5 cm. Pseudospikelets glomerate at tips of leafy branches, 1.5–2 cm in diam., subtended by membranous bracts. Spikelets 1.25–1.5 cm, hispidulous; rachilla smooth. Glumes ovate, long mucronate or awned; lemma ca. 1 cm, hispidulous, apiculate. Palea slightly longer than lemma, nearly glabrous, weakly 2-keeled. Lodicules lanceolate, apex ciliate. Anthers narrow, apex obtuse. Ovary ovoid, glabrous; style robust; stigmas 2 or 3, purple, plumose. Fruit unknown.

Hills; 700–1000 m. Yunnan [India, Myanmar].

9. PSEUDOSTACHYUM Munro, Trans. Linn. Soc. London 26: 141. 1868.

泡竹属 pao zhu shu

Xia Nianhe (夏念和); Chris Stapleton

Shrubby bamboo. Rhizome long necked, pachymorph. Culms diffuse, basally erect with pendulous or clambering tips; internodes terete, glabrous; wall very thin; nodal ridge and sheath scar flat. Branches many, clustered at each node, subequal. Culm

sheath deciduous, shorter or longer than internode, basally initially with dense, deep brown, bristly hairs, apex truncate or shallowly arched-concave; auricles very small; ligule short; blade deciduous, usually erect. Leaf blade large, transverse veins scarcely visible abaxially. Inflorescence fully bracteate, iterauctant, subtended by scaly bracts. Pseudospikelets solitary or several clustered in axils of bracts, small, with 1 fertile floret. Rachilla extending beyond palea of fertile floret, with 1 sterile floret. Glume 1, long mucronate to awned; lemma similar to glume. Palea thin, 2-keeled. Lodicules 3–5, persistent. Stamens 6; filaments free; anthers apiculate at apex. Ovary stalked, glabrous; style long, hollow; stigmas 2. Fruit globose, base with persistent glume, lemma, palea, and lodicules, beaked at apex; pericarp crustaceous, readily separable from endosperm.

One species: Bhutan, China, NE India, Myanmar, Vietnam.

1. Pseudostachyum polymorphum Munro, Trans. Linn. Soc. London 26: 142. 1868.

泡竹 pao zhu

Schizostachyum leviculme McClure.

Rhizome neck to 1 m, to 1 cm in diam. Culms 5–10 m, 1.2–2 cm in diam.; internodes straight, 13–20 cm or longer, initially glaucous, with white powdery ring below node; nodes with level supra-nodal ridge and sheath scar; intranode ca. 3 mm; branching from ca. 5th node up. Branches ca. 50 cm. Culm sheaths broadly triangular, rather thin, proximally dark brown strigose, apex shallowly concave or truncate; auricles absent or very small; oral setae erect or curved; ligule short, ciliate, denticulate; blade narrowly triangular, striate, with some transverse veinlets. Leaf sheaths initially white powdery to slightly pubescent, glabrescent; auricles inconspicuous or absent; oral setae few or absent; ligule short; petiole 3–6 mm, glabrous; blade oblong-lanceolate, ca. 12.5 × 2–6.8 cm, glabrous, base subrounded to cuneate, asymmetrical, apex acuminate with twisted strigose tip. Pseudospikelets in axil of narrow bracts. Spikelets ca. 5 mm; rachilla extending beyond palea of fertile floret and with a sterile or incomplete floret; fertile floret 1. Glumes large, usually 7-veined, apex mucronate; lemma similar to glume, upper margin ciliate; palea margin strongly involute; lodicules (3 or)4(or 5), large, margin ciliate. Filaments short, separate; anthers apiculate. Ovary narrowly ellipsoid; style long, hollow, apex bifid. Fruit compressed-globose; pericarp crustaceous, readily separable from endosperm.

Forest understories on slopes and hills; 200–1200 m. Guangdong, Guangxi, Yunnan [Bhutan, India, Myanmar, Vietnam].

The rhizomes are used for weaving sieves for selecting young fish; the culms are split for weaving fences.

10. MELOCANNA Trinius in Sprengel, Neue Entdeck. Pflanzenk. 2: 43. 1820 [“1821”].

梨竹属 li zhu shu

Xia Nianhe (夏念和); Chris Stapleton

Arborescent bamboo, moderately sized. Rhizome long necked, pachymorph. Culms diffuse or in open clumps, erect; internodes terete; wall thin; nodal ridge not prominent. Branches many, subequal. Culm sheaths persistent, shorter than internodes, distally corrugate, with external ligule; auricles absent; blade erect or basally erect, distally reflexed, sword-shaped, long. Leaves large, glabrous, transverse veins visible abaxially. Inflorescence fully bracteate, iterauctant, terminal. Pseudospikelets slightly compressed bilaterally, in clusters of 2–4 on flowering branches, with 1 fertile floret and 1 to several sterile florets. Rachilla articulate. Glumes 2–4, gemmiferous; lemma similar to glumes, ovate-lanceolate. Palea convolute, rounded. Lodicules 2. Stamens 6; filaments free or irregularly connate; anthers obtuse at apex. Ovary glabrous; style long, hollow; stigmas 2–4. Fruit pear-shaped, large, 5–13 cm, long beaked at apex; pericarp thick, fleshy, without endosperm, usually viviparous.

Two species: Bangladesh, India, Myanmar; one species (introduced) in China.

1. Melocanna humilis Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 251. 1873.

梨竹 li zhu

Melocanna arundina C. E. Parkinson, nom. illeg. superfl.

Rhizome terete, to 5 m long, ca. 2.5 cm in diam., solid. Culms upright, with nodding tip, 8–20 m, 3–7 cm in diam.; internodes green initially, straw-colored when old, terete, (12–)20–50 cm, slightly white powdery and pubescent initially, glabrous when old; wall 5–7.5 mm thick; nodal ridge not prominent; sheath scar evident. Branches many at upper nodes. Culm sheaths initially yellow-green, 10–15 cm, apex broadly concave, rigid, leathery, with deciduous, appressed, stiff, short, white hairs; uppermost part inflated; auricles inconspicuous; oral setae well developed; ligule short, serrulate at margin; blade erect, linear-triangular, 10–30 cm, base ca. 2.5 cm wide. Leaf sheaths glabrous; auricles tiny, usually absent; oral setae 8–10 per side, deciduous, white, undulate or curved, 8–15 mm; blade lanceolate to oblong-lanceolate, 15–24(–35) × 2.5–3.5 cm. Pseudospikelets in clusters of 3 or 4 in axils of bracts, ca. 1.3 cm, glabrous; bracts 2–4, lanceolate. Lemma ovate-lanceolate; palea convolute, not keeled; lodicules 2. Ovary globose, glabrous; style slender; stigmas 2–4, outcurved. Fruit pear-shaped, large, 4.5–12.5 × 5–7 cm, fleshy, apex with a long, curved beak.

Cultivated. Guangdong, Guangxi, Taiwan [native to Myanmar].

The only difference from *Melocanna baccifera* Kurz is apparently stature: *M. baccifera* is larger than *M. humilis*, although internode length and leaf sheath auricles also require comparison. *Melocanna humilis* was misidentified in FRPS (9(1): 13. 1996) as *M. baccifera*, for

which name *M. bambusoides* is a widely used synonym. *Melocanna baccifera* is also in cultivation in Guangzhou.

The culms are used for pulping and are split for weaving, the leaves are used for making wine, and the fruit is edible.

11. NEOMICROCALAMUS P. C. Keng, J. Bamboo Res. 2(2): 10. 1983.

新小竹属 xin xiao zhu shu

Li Dezhu (李德铢); Chris Stapleton

Microcalamus Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 59: 207. 1890, not Franchet (1889).

Climbing or scrambling bamboos. Rhizomes short necked, pachymorph. Culms unicaespitose, scrambling, slender, hollow to solid; internodes terete, long, very smooth; nodes level to slightly raised with persistent sheath-base collar. Branches many, central dominant, approaching size of culm, others short and subequal. Culm sheaths deciduous after branching, narrowly triangular, basally very tough, apically papery; ligule inconspicuous, auricles and oral setae absent; blade erect, acicular, short. Leaves broadly linear-lanceolate, small, venation indistinct, apex acicular. Inflorescence bracteate, lateral spikelets subtended by a bract and basally prophyllate. Prophyll and glumes not subtending buds. Spikelets sessile, several flowered, followed by a terminal incomplete floret. Rachilla disarticulating and florets separately deciduous. Glumes 1, or absent in terminal spikelets; lemma glabrous. Palea 2-keeled, usually equal in length to lemma. Lodicules 3. Stamens 6; filaments free. Ovary oblong or ovate, upper portion pubescent or glabrous; style 1; stigmas 3. Caryopsis shortly terete, grooved.

About five species: Bhutan, SW China, NE India, Vietnam; two species (one endemic) in China.

Although *Neomicrocalamus* has often been synonymized within the Malesian genus *Racemobambos* Holttum, there are substantial differences in vegetative and floral morphology, and molecular evidence has confirmed that they are not closely related.

In addition to the species treated below, *Neomicrocalamus microphyllus* Hsueh & T. P. Yi (in C. Y. Wu, Fl. Xizang. 5: 50. 1987) was described from SE Xizang (Mêdog). This name was previously published by the same authors (J. Bamboo Res. 2(1): 35. Jan 1983), but not validly so because the generic name was not validly published until July 1983. The new combination *"Racemobambos microphylla"* (P. C. Keng & T. H. Wen, J. Bamboo Res. 5(2): 13. 1986) was not validly published because its basionym was not validly published until 1987.

1a. Culm internodes glabrous; leaf sheaths glabrous, oral setae absent ..... 1. *N. prainii*
1b. Culm internodes white pubescent; leaf sheaths pubescent, with ciliate margins, oral setae present ..... 2. *N. yunnanensis*

1. Neomicrocalamus prainii (Gamble) P. C. Keng, J. Bamboo Res. 2(2): 10. 1983.

新小竹 xin xiao zhu

Arundinaria prainii Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 21. 1896; *Racemobambos prainii* (Gamble) P. C. Keng & T. H. Wen; *Thamnocalamus prainii* (Gamble) E. G. Camus.

Culms scrambling, 6–20 m, 5–25 mm in diam.; nodes level; internodes 20–50 cm, solid or nearly so on smaller culms, glabrous. Dominant branches equal in size to culm. Culm sheaths retrorsely brown scabrous, distally purple-brown spotted, lower portion very tough, upper papery and thin, margins glabrous; ligule inconspicuous, auricles and oral setae absent; blade persistent, erect, acicular, short, to ca. 1 cm. Leaf sheaths 2–4 cm, glabrous or slightly pubescent; ligule 1–1.5 mm; auricles and oral setae absent; blade lanceolate, 4–12 × 0.5–2 cm, apex softly acicular. Spikelets 3–6-flowered, 2–3.5 cm; prophylls to 0.5 cm. Lemma 5–7 mm; palea equal to lemma, obtuse; lodicules 1.5–2 mm. Anthers purple, 3–4 mm. Ovary oblong, upper portion pubescent; style short; stigma plumose. Caryopsis falcate, 4–5 mm, glabrous. Fl. Apr–Jun.

Mountain forests, river banks, rocks; 1200–2600 m. S Xizang, W Yunnan [India (Meghalaya), Myanmar].

2. Neomicrocalamus yunnanensis (T. H. Wen) Ohrnberger, Bamboos World Introd. 4: 19. 1997.

云南新小竹 yun nan xin xiao zhu

Racemobambos yunnanensis T. H. Wen, J. Bamboo Res. 5(2): 11. 1986.

Culms scrambling, 6–15 m, 5–10 mm in diam.; internodes 20–60 cm, smaller culms solid or nearly so, white pubescent, densely so below corky nodes. Dominant branches equal in size to culm. Culm sheaths brown scabrous, distally purple-brown spotted, lower portion very tough, upper papery and thin, margins glabrous; ligule inconspicuous, auricles and oral setae absent; blade persistent, erect, acicular, short, ca. 1 cm. Leaf sheaths slightly pubescent, margins ciliate; ligule 1–1.5 mm; auricles absent; oral setae erect to spreading, short; blade lanceolate, 4–7 × 0.8–1.3 cm, glabrous, without tessellation. Flowers unknown.

● S Yunnan (Jinping).

12. YUSHANIA P. C. Keng, Acta Phytotax. Sin. 6: 355. 1957.

玉山竹属 yu shan zhu shu

Li Dezhu (李德铢), Guo Zhenhua (郭振华); Chris Stapleton

Burmabambus P. C. Keng; *Butania* P. C. Keng; *Monospatha* W. T. Lin.

Shrubby spreading bamboos, sometimes subarborescent. Rhizomes facultatively long necked, pachymorph, neck to (0.3–)0.5 (–2) m, solid or hollow. Culms pluricaespitose or diffuse, erect or ascending; internodes terete, often scabrous, usually without prominent vertical ridges; wall thick; nodes (supra-nodal ridges) slightly prominent; buds lanceolate or rarely ovate, with reduced sheathing. Branches often 1 at lower nodes, initially 5–7(–12) at middle nodes, 9–11(–45) at upper nodes, on promontory, erect or deflexed, subequal or central branch strongly dominant at lower nodes; internodes ± terete. Culm sheaths tardily deciduous or persistent, usually initially setose, usually shorter than internodes; ligule usually truncate; blade usually reflexed, lanceolate or triangular. Leaves usually small to medium-sized; blade with prominent transverse veins. Inflorescence ebracteate, semelauctant, open, usually paniculate. Spikelets robust, long pedicellate, several to many flowered, apical floret sterile. Glumes 2; lemma mucronate or rarely obtuse, many veined; palea equal to or shorter than lemma, 2-keeled, obtuse; lodicules 3, transparent. Stamens 3; filaments free, long exserted; anthers yellow. Ovary appendage absent or inconspicuous; style 1, short or absent; stigmas usually 2, plumose.

About 80 species: Africa, E, S, and SE Asia; 58 species (57 endemic) in China.

Because of the poor knowledge of many taxa and their relatively recent description, often from a limited number of sterile gatherings, certain critical characteristics, notably rhizome neck lengths and culm and leaf proportions, are not accurately known, and many species boundaries remain untested.

In addition to the species treated below, *Yushania pingshanensis* T. P. Yi (J. Bamboo Res. 19(1): 21. 2000) was described from sterile material from Sichuan (Pingshan). In the protologue it was compared with *Y. straminea*. *Yushania pubescens* T. P. Yi (J. Bamboo Res. 19(1): 24. 2000) was described from sterile material from Sichuan (Pingshan). In the protologue it was compared with *Y. pingshanensis*.

1a. Culms with 5–9 branches or more per mid-culm node (often fewer in *Y. canoviridis*).
2a. Culm sheath auricles present.
3a. Culms 1.2–3 cm in diam.; culm sheaths equal in length to internodes or slightly longer, apex acuminately narrowly triangular ..... 1. *Y. vigens*
3b. Culms less than 1.7 cm in diam.; culm sheaths much shorter than internodes, apex arcuate or broadly triangular.
4a. Culm sheaths with dense, dark brown blotches or spots.
5a. Culms 2–2.5 m, 5–10 mm in diam., internodes with purple spots when young; culm sheaths proximally sparsely pale fulvous setose ..... 2. *Y. brevipaniculata*
5b. Culms 3–7 m high, 9–17 mm in diam., internodes without purple spots when young; culm sheaths glabrous.
6a. Leaf sheath auricles oblong or falcate, petiole abaxially pubescent; leaf blade (7–)11–17 mm wide, abaxially pallid ..... 3. *Y. glauca*
6b. Leaf sheath auricles absent, petiole glabrous; leaf blade 4–11 mm wide, abaxially bright green ..... 4. *Y. lineolata*
4b. Culm sheaths without blotches or spots.
7a. Culm internodes initially setose; leaf blade abaxially initially pubescent ..... 5. *Y. hirticaulis*
7b. Culm internodes glabrous; leaf blades abaxially glabrous.
8a. Culms 2–2.5(–3.5) m, internodes 20–80 cm; branches to 15 per node; culm sheaths proximally nearly smooth; leaf sheath auricles well developed, oral setae radiating ..... 6. *Y. falcatiaurita*
8b. Culms to 1.6 m, internodes 15–25 cm; branches (1 or)2–6 per node; culm sheaths conspicuously longitudinally ribbed; leaf sheath auricles absent or fairly small, oral setae erect ..... 7. *Y. canoviridis*
2b. Culm sheath auricles absent.
9a. Rhizome necks hollow.
10a. Culm sheaths hairy (sometimes glabrous in *Y. weixiensis* and *Y. qiaojiaensis* var. *nuda*); leaf sheath auricles present, oblong or minute.
11a. Rhizome necks thick, 7–10 mm in diam.; culm sheath blades reflexed; leaf blades glabrous, delicate ... 8. *Y. weixiensis*
11b. Rhizome necks thin, 5–7 mm in diam.; culm sheath blades erect; leaf blades adaxially sparsely pubescent, tough ..... 9. *Y. qiaojiaensis*
10b. Culm sheaths glabrous; leaf sheath auricles absent.
12a. Culm sheath apically rounded, longitudinal ribs inconspicuous; culm sheath blades erect; leaf blades thick, with densely tessellate venation ..... 10. *Y. cava*
12b. Culm sheath apically acuminate, longitudinal ribs prominent; culm sheath blades reflexed; leaf blades thin, with sparsely tessellate venation ..... 11. *Y. yadongensis*
9b. Rhizome necks solid.
13a. Culm sheaths nearly as long as internodes or longer (rarely only 1/2 internode length in *Y. exilis* and *Y. varians*).
14a. Culm internodes initially entirely or distally setulose.
15a. Culms to 2 m; internodes with fine prominent ridges ..... 12. *Y. violascens*
15b. Culms to 5 m, internodes smooth.
16a. Culm internodes not pruinose; culm sheaths with conspicuous longitudinal ribs, tessellate venation not evident; leaf sheath oral setae 1.5–3 mm ..... 13. *Y. crassicollis*
16b. Culm internodes densely pruinose; culm sheaths with conspicuous longitudinal ribs, tessellate venation distinct; leaf sheath oral setae to 6 mm ..... 14. *Y. bojieiana*

14b. Culm internodes glabrous.
17a. Culm internodes proximally flattened above branches.
18a. Culms to 4.5 m; leaf blades to 14 cm, with 4 or 5 pairs of secondary veins (E Guizhou) ..... 15. *Y. complanata*
18b. Culms to 1.5 m; leaf blades to 9 cm, with 3 or 4 pairs of secondary veins (N Fujian) ..... 16. *Y. longissima*
17b. Culm internodes not proximally flattened above branches.
19a. Culms to 5 m; culm sheaths densely setose ..... 17. *Y. flexa*
19b. Culms to 2.5 m; culm sheaths sparsely setose.
20a. Culm internodes to 28 cm; branches 1–1.5 mm thick, apically pendulous; culm sheath oral setae 4–6; culm sheath blades revolute; leaf sheath auricles absent, oral setae erect; leaf blades to 8 mm wide ..... 18. *Y. exilis*
20b. Culm internodes to 15 cm; branches to 3.5 mm thick, erect; culm sheath oral setae absent to 2; culm sheath blades usually erect; leaf sheath auricles oblong, oral setae radiating; leaf blades to 12 mm wide ..... 19. *Y. varians*
13b. Culm sheaths less than 1/2(–3/5) internode length (to 2/3 in *Y. baishanzuensis*).
21a. Culm internodes initially apically pubescent or setose.
22a. Culm internodes solid or subsolid, cavity to 1/3 culm wall thickness.
23a. Culm sheaths cartilaginous, with dense purple-brown spots, glabrous or sparsely brown ciliate at base ..... 20. *Y. maculata*
23b. Culm sheaths leathery, without spots, gray or fulvous setose or thickly hairy.
24a. Culm internodes initially apically densely pruinose and sparsely gray setose below nodes; leaf blade to 2 cm wide, tessellation distinct; lemma glabrous ..... 21. *Y. longiuscula*
24b. Culm internodes densely pruinose, sparsely brown setose below nodes; leaf blade to 1.2 cm wide, tessellation indistinct; lemma initially sparsely pubescent ..... 22. *Y. crispata*
22b. Culm internodes hollow, cavity more than 1/2 culm wall thickness.
25a. Leaf blade abaxially gray pubescent ..... 23. *Y. lacera*
25b. Leaf blade abaxially glabrous.
26a. Culms 4–7 m, to 3(–6) cm in diam.; culm sheaths densely fulvous setose, especially at base; leaf sheath oral setae absent to 3; leaf blade secondary veins 2- or 3-paired ..... 24. *Y. elevata*
26b. Culms 1.5–2 m, to 0.5 cm in diam.; culm sheaths sparsely white setose toward margins; leaf sheath oral setae more than 10; leaf blade secondary veins 4-paired ..... 25. *Y. baishanzuensis*
21b. Culm internodes apically glabrous (sometimes setose in *Y. mitis* and *Y. xizangensis*).
27a. Culms to 7 m, to 3 cm in diam.
28a. Culm internodes with fine ridges, hollow.
29a. Culm internodes initially pruinose; branches 3–7 per node; culm sheaths densely purple-brown blotched; pseudopetioles glabrous ..... 29. *Y. mitis*
29b. Culm internodes of young culms not pruinose; branches 10–19 per node; culm sheaths without blotches; pseudopetioles adaxially slightly setose ..... 30. *Y. xizangensis*
28b. Culm internodes smooth, solid or subsolid.
30a. Culm sheaths densely brown to black setose, not striped, oral setae absent or scarce ..... 26. *Y. farcticaulis*
30b. Culm sheaths glabrous or with adnate fulvous seta at base, initially with sporadic longitudinal stripes, oral setae absent.
31a. Culm internodes solid; leaf blades to 10(–12.5) cm, secondary veins 3–5-paired ..... 27. *Y. levigata*
31b. Culm internodes hollow; leaf blades to 7.5 cm, secondary veins 2-paired ..... 28. *Y. ailuropodina*
27b. Culms to 3(–4) m, to 1 cm in diam.
32a. Leaf blade abaxially proximally pale pubescent initially.
33a. Culms 4–6 mm in diam.; internodes terete; culm sheaths glabrous or basally yellow-brown setose; leaf blades 9–13 mm wide, with 3 or 4 pairs of secondary veins ..... 31. *Y. brevis*
33b. Culms 10–13 mm in diam.; internodes flattened above branches; culm sheaths more uniformly yellow-brown setose; leaf blades 14–23 mm wide, with 4 or 5 pairs of secondary veins ..... 32. *Y. menghaiensis*
32b. Leaf blades completely glabrous.
34a. Culm internodes with fine conspicuous ridges; leaf sheaths 4.2–6 cm ..... 33. *Y. collina*
34b. Culm internodes smooth or with inconspicuous fine ridges; leaf sheaths no longer than 5 cm.
35a. Culm sheaths persistently retrorsely setose, oral setae ca. 5; leaf blades with 4–6 pairs of secondary veins ..... 34. *Y. farinosa*
35b. Culm sheaths glabrous or rarely gray setose, oral setae absent to 2; leaf blades with 3 or 4 pairs of secondary veins.
36a. Culm internodes hollow; branches 5–9 per node; culm sheath margins glabrous, ligules 1–1.4 mm; leaf sheath margins glabrous, auricles ca. 1 mm, leaf blade basally cuneate ..... 35. *Y. laetevirens*

36b. Culm internodes solid or subsolid; branches (3–)8–30(–45) per node; culm sheath margins glabrous or initially ciliate; leaf sheath margin initially gray ciliate, auricles ca. 0.3 mm, leaf blade basally broadly cuneate or suborbicular ..... 36. *Y. multiramea*

1b. Culms with 1 branch per mid-culm node, or 1 branch on lower nodes and 3–5(–8) on mid-culm and upper culm regions, rarely branches absent.

37a. Culm sheath auricles conspicuous.

38a. Culm internodes initially distally pubescent or setose.

39a. Leaf blades abaxially glabrous.

40a. Culms 4–8 mm in diam., branches with secondary branching ..... 37. *Y. mabianensis*

40b. Culms 1.5–2.5 mm in diam., branches absent or solitary and without secondary branching ..... 38. *Y. andropogonoides*

39b. Leaf blades abaxially pubescent.

41a. Branches solitary at all nodes; leaf sheath auricles and oral setae absent ..... 39. *Y. grammata*

41b. Branches 3(–5) per node on upper culm; leaf sheath auricles conspicuous, oral setae radiating.

42a. Culm internodes to 25(–37) cm, initially with dense purple spots; culm sheaths with longitudinal ribs inconspicuous or distally conspicuous, oral setae 2–5 mm ..... 40. *Y. polytricha*

42b. Culm internodes to 15(–37) cm, without spots; culm sheaths with longitudinal ribs conspicuous, oral setae 4–15 mm ..... 41. *Y. basihirsuta*

38b. Culm internodes glabrous.

43a. Branches 1.5–3 mm in diam.; leaf blade 1.2–1.7 cm wide, secondary veins 4- or 5-paired ..... 42. *Y. longiaurita*

43b. Branches 3–8(–12) mm in diam.; leaf blade 3–5.7 cm wide, secondary veins 7–11-paired.

44a. Branches always 1 per node; leaf blade (13–)19–26(–33) cm ..... 43. *Y. chingii*

44b. Branches several per node on upper culm; leaf blade 7–19 cm.

45a. Culm sheaths densely setose.

46a. Culm internodes without spots; culm sheath oral setae to 2 cm; pseudopetioles villosulous, leaf blade secondary veins (3 or)4- or 5(or 6)-paired, tessellations rectangular ..... 46. *Y. straminea*

46b. Culm internodes initially purple spotted; culm sheath oral setae 3–6 mm; pseudopetioles glabrous, leaf blade secondary veins 5–9-paired, tessellations square.

47a. Culms to 2.5 m, internodes 16–22 cm; oral setae 2–7 mm ..... 44. *Y. auctiaurita*

47b. Culms to 3(–4) m, internodes to 32 cm; oral setae 10–12 mm ..... 45. *Y. dafengdingensis*

45b. Culm sheaths glabrous.

48a. Culms to 4.5 m; leaf sheath oral setae 3–5 mm; pseudopetiole 7–9 mm; leaf blade 3.6–4 cm wide ... 47. *Y. oblonga*

48b. Culms to 2.5 m; leaf sheath oral setae 4–14 mm; pseudopetiole 2–3.5 mm; blade 1.8–2.8 cm wide ..... 48. *Y. cartilaginea*

37b. Culm sheath auricles absent or reduced to small protuberances.

49a. Culm sheaths glabrous or basally yellow-gray setose.

50a. Culm internodes without purple spots when young; branches solitary at lower nodes, 3–5 at upper nodes.

51a. Culms to 10 mm in diam., internodes hollow, initially thickly pruinose below nodes and distally with siliceous stubble, longitudinal ribs inconspicuous; branchlets with 6–8 leaf blades; leaf sheaths 2.5–4 cm; blades to 13 cm ..... 49. *Y. wuyishanensis*

51b. Culms 4–5 mm in diam., internodes subsolid, initially pruinose under nodes and distally villosulous, longitudinal ribs conspicuous; branchlets with 1–3 leaf blades; leaf sheaths 4–9 cm; blades to 19(–27) cm ..... 50. *Y. glandulosa*

50b. Culm internodes with purple blotches when young, branches solitary at nodes.

52a. Culm shoots pruinose, brown setose at base; leaf blade oblong-lanceolate or ovate-elliptical, 3–5 cm wide, conspicuously rugose when dried ..... 51. *Y. rugosa*

52b. Culm shoots not pruinose, glabrous; leaf blade lanceolate, 1.5–2.6 cm wide, usually flat when dried ..... 52. *Y. uniramosa*

49b. Culm sheaths setose or initially so.

53a. Culm internodes terete.

54a. Culm internodes uniformly pruinose; sheath scars yellow setose initially; leaf blades 0.6–1.5(–2.1) cm wide, abaxially proximally gray-yellow pubescent by midrib and on pseudopetiole ..... 53. *Y. confusa*

54b. Culm internodes only apically pruinose; sheath scars glabrous; leaf blades 1.5–2.2(–2.8) cm wide, glabrous.

55a. Culms to 3.5 m; culm sheaths cartilaginous, with erect setae; branchlets with 2–5 blades ..... 54. *Y. pauciramificans*

55b. Culms to 1.8 m; culm sheaths leathery, with sparse, appressed setae; branchlets with 4–9 blades ..... 55. *Y. punctulata*

53b. Culm internodes grooved above branches, especially in lower culm.

56a. Culm internodes glabrous ..... 56. *Y. pachyclada*

56b. Culm internodes initially hispidulous.

57a. Leaf sheath distally villosulous, oral setae present, brown, 2–4 mm; leaf blade glabrous, 0.3–1.3 cm wide, secondary veins 2–4-paired ..... 57. *Y. niitakayamensis*

57b. Leaf sheaths glabrous, oral setae absent (rarely 1–3, erect); leaf blade abaxially initially villosulous, 1–2.5 cm wide, secondary veins 4–8-paired ..... 58. *Y. suijiangensis*

1. Yushania vigens T. P. Yi, J. Bamboo Res. 5(1): 40. 1986.

长肩毛玉山竹 chang jian mao yu shan zhu

Rhizome neck ca. 50 cm. Culms 2.5–7 m, 1.2–3 cm in diam.; internodes green, rarely light yellow striped, terete, 20–23 cm, glabrous, smooth, solid or nearly so; nodes with level supra-nodal ridge; sheath scar prominent with or without persistent remains of sheath base. Branches 5–9, roughly horizontal. Culm sheaths persistent, narrowly triangular, equal to or longer than internodes, basally cartilaginous, distally leathery, abaxially densely brown or dark brown setose, margins densely brown ciliate initially; auricles dark purple, triangular or elliptic; oral setae dense; ligule purple, arcuate, densely ciliate initially; blade erect, linear-lanceolate, glabrous. Leaves 3–5 per ultimate branch; leaf sheath margins glabrous; auricles absent; oral setae few, light yellow, 4–9 mm; ligule purple, arcuate, glabrous; blade linear-lanceolate, 8.5–19 × 1–1.6 cm, glabrous, secondary veins 5-paired, transverse veins indistinct, base cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots Jul–Aug.

● 1900–2500 m. W Yunnan.

The culms are used for weaving.

2. Yushania brevipaniculata (Handel-Mazzetti) T. P. Yi, J. Bamboo Res. 5(1): 44. 1986.

短锥玉山竹 duan zhui yu shan zhu

Arundinaria brevipaniculata Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 57: 237. 1920; *A. chungii* Keng; *Sinarundinaria brevipaniculata* (Handel-Mazzetti) Keng ex P. C. Keng; *S. chungii* (Keng) P. C. Keng; *Yushania chungii* (Keng) Z. P. Wang.

Rhizome neck to 20 cm. Culms 2–2.5 m, 5–10 mm in diam.; internodes initially purple-brown spotted, terete, ca. 32 cm, densely white powdery, glabrous; wall ca. 2.5 mm thick; nodes with level or weakly prominent supra-nodal ridge; sheath scar prominent, initially brown setulose. Branches 3–7. Culm sheaths persistent, abaxially spotted, narrowly rounded, ca. 1/3 as long as internodes, cartilaginous, basally sparsely light yellow setulose, margins apically light yellow-brown ciliate; auricles very strongly developed, purple, falcate; oral setae radiating, 7–8 mm; ligule arcuate, ca. 4 mm, glabrous; blade linear-lanceolate, revolute, glabrous. Leaves ca. 3 per ultimate branch; leaf sheath glabrous; auricles brown, falcate, oral setae radiating, yellow-brown, 2–5 mm; ligule arcuate, 1–2 mm, glabrous; blade lanceolate, 7–12 × 0.8–1.6 cm, glabrous, secondary veins 3–5-paired, base cuneate or broadly cuneate, margins spinescent-serrulate. Inflorescence paniculate; pedicel with axillary verruculose glands. Spikelets more than 20, 2.5–5 cm; rachilla 5–8 mm, hairy; florets 4–7, purple. Lemma purple, hairy at base, apex obtuse or acuminate; palea keels hairy. Caryopsis dark brown, trilateral, with persistent style base. New shoots Jun–Aug.

● 1800–3800 m. W Sichuan.

The shoots are edible and are an important food for the giant panda.

3. Yushania glauca T. P. Yi & T. L. Long, J. Bamboo Res. 8(2): 33. 1989.

白背玉山竹 bai bei yu shan zhu

Rhizome neck 15–45 cm. Culms 3–7 m, 1.1–1.7 cm in diam.; internodes terete, 26–33 cm, initially thickly white powdery, glabrous; wall 2.5–5 mm thick; nodes with weakly prominent supra-nodal ridge; sheath scar prominent, woody. Branches 3–5, roughly horizontal. Culm sheaths persistent, abaxially purple spotted, narrowly rounded, 1/3–1/2 as long as internodes, cartilaginous, glabrous, longitudinal ribs purple, margins glabrous; auricles prominent, purple-red, falcate; oral setae many, radiating, 3–4 mm; ligule arcuate, 1–4 mm; blade erect, triangular or lanceolate, glabrous, base excurrent. Leaves 1–5 per ultimate branch; leaf sheath margins glabrous; auricles gradually deciduous, oblong or falcate; oral setae present; ligule inclined, 1–2 mm; blade abaxially pale, lanceolate, 4–13.5 × (0.7–)1.1–1.7 cm, glabrous, secondary veins 3–5-paired, transverse veins dense, thin, tessellate, base cuneate or broadly cuneate, margins serrulate. Inflorescence unknown. New shoots May.

● 2500–3200 m. S Sichuan.

This species would appear to be very similar to the preceding one.

The shoots are an important food for the giant panda.

4. Yushania lineolata T. P. Yi, J. Bamboo Res. 4(2): 31. 1985.

石棉玉山竹 shi mian yu shan zhu

Rhizome neck 9–16 cm. Culms ca. 3.5 m, 9–15 mm in diam.; internodes terete, 16–24 cm, initially densely white powdery, glabrous; wall 2–3 mm thick; nodes with level supra-nodal ridge; sheath scar prominent, initially yellow-brown setulose. Branches 3–7. Culm sheaths gradually deciduous, brown spotted, narrowly rounded, ca. 2/3 as long as internodes, cartilaginous, glabrous, margins gray-yellow ciliate; auricles falcate; oral setae radiating, yellow-brown or purple, 4–9 mm; ligule arcuate, 2–3 mm; blade linear-lanceolate, revolute, initially apically sparsely setulose. Leaves 1–3 per ultimate branch; leaf sheath glabrous; auricles absent; oral setae present or absent; ligule truncate or arcuate, ca. 1 mm; blade abaxially bright green, lanceolate, 3.5–9.5 × 0.4–1.1 cm, glabrous, secondary veins 3- or 4-paired, transverse veins prominent, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence paniculate; pedicels without glands. Spikelets 6–12, 2.4–4 cm; rachilla 4–5 mm, hairy, margins densely ciliate, apex swollen; florets 3–7, purple. Glumes 2, unequal; lemma purple, hairy at base, margins ciliate, apex obtuse or acuminate; palea keels ciliate. Ovary ovoid, glabrous. Caryopsis unknown. New shoots May–Jun.

● 2600–2700 m. SW Sichuan.

The shoots are edible and are an important food for the giant panda.

5. Yushania hirticaulis Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 94. 1981.

毛竿玉山竹 mao gan yu shan zhu

Culms 0.7–3 m, 0.45–1 cm in diam.; internodes terete, 12–20 cm, initially densely white powdery, later basally white powdery only below nodes, initially setose; wall 1.2–2 mm thick; nodes with weakly prominent supra-nodal ridge; sheath scar prominent, initially densely yellow-brown setose with persistent remains of sheath base. Branches 3 to many, thickly white powdery below nodes. Culm sheaths persistent or gradually deciduous, triangularly narrowly rounded, shorter than internode, leathery, brown setose, especially densely so at base, margins densely brown ciliate; auricles elliptic, narrowly triangular, or falcate, small, puberulous; oral setae erect, yellow-brown, to 1.5 cm; ligule dark purple, arcuate, abaxially slightly hairy and white powdery; blade erect, triangular or linear-triangular, glabrous. Leaves 3–5 per ultimate branch; leaf sheath apically hairy; auricles small or obscure, subcircular or triangular; oral setae several, light yellow, 5–12 mm; ligule arcuate, glabrous; blade linear-lanceolate, 5–12 × 0.5–1 cm, abaxially initially pubescent, secondary veins 3–5-paired, transverse veins obscure, base cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots May.

● 1300–2000 m. E Jiangxi.

6. Yushania falcatiaurita Hsueh & T. P. Yi, J. Bamboo Res. 5(1): 22. 1986.

粉竹 fen zhu

Culms 2–3.5 m, 0.8–1.5 cm in diam.; internodes 20–28 cm, flattened, grooved, thickly white powdery below nodes, nearly solid; nodes with level or weakly prominent supra-nodal ridge; sheath scar prominent, with persistent remains of sheath base. Branches 5–15, deflexed. Culm sheaths gradually deciduous, ca. 1/2 as long as internodes, conspicuously longitudinally ribbed only toward their apex, cartilaginous, gray or yellow-gray setose, margins densely yellow-brown setulose; auricles falcate, unequal; oral setae yellow-brown, 2–7 mm; ligule arcuate, short; blade erect, linear-lanceolate, glabrous. Leaves 2–4 per ultimate branch; leaf sheath initially gray setose, margins densely gray-yellow ciliate; auricles developed, purple, falcate; oral setae several, radiating, yellow-brown, 5–12 mm; ligule truncate or arcuate; blade lanceolate, 2–8.5 × 0.5–1.3 cm, glabrous, secondary veins 3–5-paired, transverse veins slightly visible, base nearly rounded or broadly cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots May–Jun.

● About 1200 m. W Yunnan.

The culms are split for weaving.

7. Yushania canoviridis G. H. Ye & Z. P. Wang, Acta Phytotax. Sin. 27: 228. 1989.

灰绿玉山竹 hui lü yu shan zhu

Monospatha canoviridis (G. H. Ye & Z. P. Wang) W. T. Lin; *M. triloba* W. T. Lin.

Rhizome neck 20–50 cm. Culms ca. 1.6 m, 4–5 mm in diam.; internodes terete, 15–25 cm, initially slightly white powdery, glabrous, nearly solid. Branches (1 or)2–6, deflexed; nodes with weakly prominent supra-nodal ridge; sheath scar prominent, glabrous. Culm sheath persistent, cartilaginous, narrowly rounded, 2/5–1/2 as long as internodes, abaxially gray or yellow-gray adnately clavate-setose, setae especially dense at base, longitudinal ribs prominent, margins densely ciliate, apex rounded; auricles falcate, with 5–15 oral setae 5–16 mm; ligule arcuate, short; blade erect or reflexed, linear-lanceolate or striped. Leaves 2–5 per ultimate branch. Leaf sheath purple, glabrous; auricle absent or small, oral setae 3–5, erect, 3–6 mm; ligule arcuate, ca. 0.2 mm; blade linear-lanceolate, 4.5–10 × 0.5–0.9 cm, glabrous, secondary veins 3- or 4-paired, transverse veins prominent, base cuneate. Inflorescence unknown. New shoots Jun.

● About 1100 m. NW Hunan.

8. Yushania weixiensis T. P. Yi, J. Bamboo Res. 5(1): 42. 1986.

竹扫子 zhu sao zi

Rhizome neck 20–50 cm; internodes 7–10 mm in diam., hollow. Culms 1–2 m, 3–10 mm in diam.; internodes terete, 18–25 cm, initially white powdery, white-gray setulose; wall ca. 2 mm thick; nodes with level or weakly prominent supra-nodal ridge; sheath scar prominent, initially yellow-brown setose. Branches 3–7. Culm sheath persistent, narrowly rounded, glabrous or sparsely yellow-brown setose, longitudinal ribs prominent; auricles and oral setae absent; ligule truncate or arcuate, ca. 0.5 mm, glabrous; blade conical or linear-lanceolate, revolute. Leaves 3–5 per ultimate branch; sheath margins glabrous; auricles absent; oral setae 3–5, yellow, 1–4 mm; ligule truncate or arcuate, glabrous; blade narrowly lanceolate, 3.4–7 × 0.3–0.6 cm, glabrous, secondary veins 2- or 3-paired, transverse veins slightly visible, base broadly cuneate, margins smooth. Inflorescence unknown. New shoots Jul.

● 2300–2600 m. W Yunnan.

9. Yushania qiaojiaensis Hsueh & T. P. Yi, J. Bamboo Res. 5(1): 8. 1986.

海竹 hai zhu

Rhizome neck 15–40 cm. Culms 0.5–3.1 m, to 1.5 cm in diam.; internodes terete, to 11 cm, glabrous, initially white powdery, longitudinal ribs prominent; wall 1–1.5 mm thick; pith membranous; nodes with level or weakly prominent supra-nodal ridge; sheath scar prominent. Branches 5 or 6. Culm sheath deciduous, narrowly triangular, shorter than internodes, thickly papery, retrorsely gray-yellow setose or glabrous, longitudinal ribs prominent; auricles and oral setae absent; ligule truncate or arcuate, ca. 0.5 mm, glabrous; blade erect, linear-triangular, glabrous. Leaves 1–3 per ultimate branch; sheath margins glabrous; auricles absent; oral setae 1–5, yellow, 1–2 mm; ligule purple-brown, truncate or irregularly fissured, glabrous; blade lanceolate or linear-lanceolate, 1.7–3.2 × 0.3–0.6 cm, abaxially glabrous, adaxially sparsely white-gray pubescent, secondary veins 2- or 3-paired, transverse veins slightly distinct, base broadly cuneate or nearly rounded, one margin densely serrulate, other margin nearly smooth. Inflorescence unknown. New shoots May or Aug.

● 2000–3100 m. NE Yunnan.

1a. Culms 0.5–0.6 m, to 0.4 cm in diam.; culm sheath retrorsely gray-yellow setose or glabrous; new shoots May ..... 9a. var. *qiaojianensis*

1b. Culms 2–3.1 m, to 1.5 cm in diam., culm sheath glabrous; new shoots Aug ..... 9b. var. *nuda*

9a. Yushania qiaojiaensis var. **qiaojiaensis**

海竹(原变种) hai zhu (yuan bian zhong)

Culms 0.5–0.6 m, to 0.4 cm in diam. New shoots May.

● About 3100 m. NE Yunnan.

9b. Yushania qiaojiaensis var. **nuda** (T. P. Yi) D. Z. Li & Z. H. Guo, **stat. nov.**

裸鞭海竹 luo tuo hai zhu

Basionym: *Yushania qiaojiaensis* f. *nuda* T. P. Yi, J. Bamboo Res. 9(3): 42. 1990.

Culms 2–3.1 m, to 1.5 cm in diam., culm sheaths glabrous. New shoots Aug.

● 2000–2100 m. NE Yunnan.

The shoots are edible, and the culms provide material for weaving.

10. Yushania cava T. P. Yi, J. Bamboo Res. 4(2): 33. 1985.

空柄玉山竹 kong bing yu shan zhu

Rhizome neck 14–42 cm, internodes and nodes hollow. Culms 3.5–6 m, 6–15 mm in diam.; internodes terete, 14–34 cm, with white powdery ring below nodes, glabrous; wall 1.5–2.5 mm; pith initially lamellate, later granular; nodes with level or weakly prominent supra-nodal ridge; sheath scar weakly prominent. Branches 4–9 with white powdery internodes. Culm sheaths deciduous, narrowly rounded, shorter than internodes, inconspicuously longitudinally ribbed, cartilaginous, glabrous, abaxially waxy, margins initially white-gray ciliate; auricles absent; oral setae absent to 3, yellow-brown, 1–6 mm; ligule 1–1.5 mm, convex, margins initially ciliate; blade erect, linear-triangular or linear-lanceolate, glabrous. Leaves 2–5 per ultimate branch; sheath margins initially gray ciliolate; auricles absent; oral setae 5–7, yellow, 1.5–7 mm; ligule truncate, glabrous; blade linear-lanceolate, 3.3–5 × 0.5–0.6 cm, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots May–Jun.

● 2000–2600 m. N Sichuan.

Yushania cava is an important food for the giant panda.

11. Yushania yadongensis T. P. Yi, J. Bamboo Res. 4(2): 33. 1985.

亚东玉山竹 ya dong yu shan zhu

Yushania longissima T. P. Yi, J. Bamboo Res. 2(2): 46. 1983, not K. F. Huang & Q. F. Zheng (1982); *Fargesia longissima* T. P. Yi, nom. illeg. superfl.

Rhizome neck 11–65 cm, internodes hollow. Culms to 4 m, 1–2 cm in diam.; internodes terete, 21–34 cm, white powdery in ring below nodes, slightly setulose initially; wall 2–3 mm; longitudinal ribs prominent; nodes with weakly prominent supra-nodal ridge; sheath scar level, glabrous. Branches 3–7. Culm sheath gradually deciduous, rectangular, conspicuously longitudinally ribbed, leathery, abaxially glabrous and waxy, margins dark gray ciliolate; auricles and oral setae absent; ligule truncate, ca. 0.5 mm, glabrous; blade linear-triangular, adaxially yellow-brown hairy proximally, revolute. Leaves 2 or 3 per ultimate branch; sheath apically puberulous with glabrous margins; auricles absent; oral setae gray, 3–4 mm; ligule truncate, glabrous; blade lanceolate, 3.3–6 × 0.5–0.8 cm, basally broadly cuneate or rounded, abaxially gray pubescent, secondary veins 2-paired, transverse veins distinct, margins scabrous. Inflorescence unknown. New shoots May–Jun.

Forests, pastures; 2000–2800 m. S Xizang [Bhutan].

12. Yushania violascens (Keng) T. P. Yi, J. Bamboo Res. 5(1): 45. 1986.

紫花玉山竹 zi hua yu shan zhu

Arundinaria violascens Keng, J. Wash. Acad. Sci. 26(10): 396. 1936; *Sinarundinaria violascens* (Keng) P. C. Keng.

Rhizome neck 18–60 cm. Culms 1.5–2 m, 5–10 mm in diam.; internodes terete, 15–28 cm, initially densely white powdery, apically sparsely white or yellow-brown setose; wall 2–4 mm thick; nodes with level supra-nodal ridge; sheath scar prominent, initially light yellow setulose. Branches 7 or 8, nearly solid. Culm sheath gradually deciduous, green or purple striped, nearly as long as internodes or longer, conspicuously longitudinally ribbed, leathery, sparsely light yellow setose, margins initially ciliolate; auricles small; oral setae 3–6, yellow-brown, curved, 3–8 mm; ligule purple, truncate, ca. 1 mm, apically puberulous; blade revolute or rarely erect, linear-lanceolate, margins serrulate, rolled when dry. Leaves 2–4 per ultimate branch; sheath margins yellow-brown ciliate; auricles absent; oral setae present, 1–2.5 mm; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 4.5–8.5 × 0.5–0.9 cm, glabrous, secondary veins 3- or 4-paired, transverse veins well-defined, base cuneate, margins spinescent-serrulate or one margin smooth. Inflorescence racemose. Spikelets 3–5, 2.7–4 cm; rachilla ca. 4 mm, apex pubescent; florets 5–9, dark purple. Glumes 2, unequal, slightly hairy apically; lemma hairy, apex mucronate or acuminate. Palea bifid, keels ciliate. Lodicules 3, margins fimbriate. Anthers yellow. Ovary fusiform; styles 2–4, very short; stigma plumose; caryopsis unknown. New shoots Jun–Jul.

● 2400–3400 m. W Sichuan, NW Yunnan.

13. Yushania crassicollis T. P. Yi, Bull. Bot. Res., Harbin 8(4): 68. 1988.

粗柄玉山竹 cu bing yu shan zhu

Rhizome neck 26–62 cm. Culms 3–5 m, 1–2.5 cm in diam.; internodes terete, 15–24 cm, initially gray or light yellow clavate-setose, solid or nearly so; nodes ridged, prominent, with prominent sheath scar. Branches 6–11, solid, 1–3 dominant, setose at base of internodes and sheath scar. Culm sheaths persistent, narrowly triangular, longer than internodes, abaxially variably yellow or yellow-brown adnately clavate-setose, promi-

nently longitudinally ribbed, cross veinlets obscure, margins yellow-brown setose, apex narrowly triangular; auricles absent; oral setae 3–7, white-gray, 2–7 mm; ligule short, convex, glabrous; blade erect or revolute, linear-lanceolate, glabrous, rugose, margins revolute, serrulate. Leaves 3–6 per ultimate branch; sheath purple, glabrous; auricles absent; oral setae 3–5, gray, 1.5–3 mm; ligule very short, glabrous; blade lanceolate, 3–11 × 0.5–1.3 cm, glabrous, secondary veins 2–4-paired, transverse veins slightly visible, base cuneate or broadly cuneate, one margin serrulate, other margin obscurely so. Inflorescence unknown. New shoots Aug.

● 2400–2600 m. W Yunnan.

The shoots are edible, and the split culms are used for weaving.

14. Yushania bojieiana T. P. Yi, J. Bamboo Res. 5(1): 8. 1986.

金平玉山竹 jin ping yu shan zhu

Rhizome neck 15–50 cm. Culms 3–5 m, 1–1.5 cm in diam.; internodes terete, 23–32 cm, initially basally densely white powdery and brown setose; wall 1.5–5 mm thick; nodes with level or weakly prominent supra-nodal ridge; sheath scar prominent. Branches 6–8. Culm sheath persistent, narrowly triangular, shorter than internode but at least 3/5 as long, thinly leathery, abaxially sparsely yellow or yellow-brown setose, setae especially dense at base, margins densely yellow or yellow-brown setose apically, longitudinal ribs and cross veinlets very prominent, apex triangular; auricles absent; oral setae deciduous, absent or light yellow; ligule truncate, ca. 1 mm, initially ciliate; blade linear or linear-lanceolate, glabrous, revolute. Leaves 3–6 per ultimate branch; sheath glabrous or basally yellow setose; auricles absent; oral setae 3–9, gray-yellow, ca. 6 mm; ligule truncate, ca. 0.5 mm, glabrous; blade lanceolate, 4.3–9.2 × 1–1.5 cm, glabrous, secondary veins 4- or 5-paired, transverse veins slightly distinct, base broadly cuneate or rounded, one margin serrulate, other obscurely so. Inflorescence unknown. New shoots Sep.

● 2100–2300 m. S Yunnan.

15. Yushania complanata T. P. Yi, J. Bamboo Res. 5(1): 15. 1986.

梵净山玉山竹 fan jing shan yu shan zhu

Rhizome neck more than 15 cm; internodes solid. Culms 3–4.5 m, 0.5–1.2 cm in diam.; internodes terete, 16–24 cm, longitudinally ribbed, flattened above branches, initially densely waxy, white powdery, glabrous; wall 1.5–2 mm; supra-nodal ridge weakly prominent; sheath scar prominent. Branches 3–6. Culm sheath deciduous, triangular-rectangular, longer than internode, thinly leathery, with sparse adnate light yellow or yellow-brown setae, apical margins densely yellow-brown setulose, longitudinal ribs greatly prominent; auricles absent; oral setae present initially; ligule convex, irregularly fissured, initially ciliate; blade linear-triangular or linear-lanceolate, glabrous, revolute. Leaves 5–7 per ultimate branch; sheath glabrous; auricles absent, oral setae absent or present initially; ligule truncate, glabrous; blade lanceolate, 7–14 × 1–1.6 cm, glabrous, secondary veins 4- or 5-paired, transverse veins well-defined, one margin serrulate, other obscurely so. Inflorescence unknown. New shoots Apr.

● 2100–2400 m. E Guizhou.

16. Yushania longissima K. F. Huang & Q. F. Zheng, Wuyi Sci. J. 2(2): 20. 1982.

长鞘玉山竹 chang qiao yu shan zhu

Rhizome neck ca. 30 cm; internodes solid. Culms to 1.5 m, to 1.2 cm in diam.; internodes terete, ca. 13 cm, longitudinally ribbed, flattened above branches, initially with white powdery ring below node, glabrous; wall 1.5–3 mm thick; supra-nodal ridge weakly prominent; sheath scar prominent, with persistent remains of sheath base. Branches 3–7. Culm sheath gradually deciduous, narrowly triangular, longer than internodes, brown setulose, apically more densely so, longitudinal ribs greatly prominent, margins ciliate; auricles absent or small; oral setae initially 3 or 4, 8–10 mm; ligule arcuate, ca. 5 mm, margin glabrous; blade linear-lanceolate, glabrous, revolute. Leaves 5 or 6 per ultimate branch; sheath glabrous; auricles absent, oral setae 1–4, erect, yellow-brown, 2–5 mm; ligule truncate, ca. 0.5 mm, glabrous; blade linear-lanceolate, 4–9 × 0.5–0.9 cm, glabrous, secondary veins 3- or 4-paired, transverse veins not distinct, base cuneate, one margin serrulate, other obscurely so, apex acuminate. Inflorescence unknown.

● About 2100 m. N Fujian.

17. Yushania flexa T. P. Yi, Acta Phytotax. Sin. 25: 480. 1987.

弯毛玉山竹 wan mao yu shan zhu

Rhizome neck more than 37 cm; internodes solid, 6–10 mm in diam. Culms 3–5 m, 1–2.5 cm in diam.; internodes terete, 25–40 cm, not ribbed, initially thickly white powdery below nodes, glabrous, nearly solid; supra-nodal ridge weakly prominent; sheath scar prominent. Branches 5–8, deflexed. Culm sheaths persistent, triangularly narrowly rounded, shorter than internodes, prominently longitudinally ribbed, leathery, with densely appressed brown clavate-setose, margins glabrous; auricles absent; oral setae absent or present; ligule convex or truncate, 1–3 mm, sparsely ciliate; blade easily deciduous, linear-lanceolate, glabrous, margins serrulate, revolute. Leaves 4–6 per ultimate branch; sheath purple or purple-green, glabrous; auricles absent; oral setae absent or rarely present; ligule arcuate, 1–2 mm, glabrous; blade lanceolate, 7.5–15.5 × 1.2–2.1 cm, glabrous, secondary veins 3–5-paired, transverse veins slightly visible, base cuneate, one margin serrulate, other obscurely so. Inflorescence unknown. New shoots Aug–Sep.

● 2100–2300 m. S Yunnan.

The culms are used for weaving, furniture, and farm tools.

18. Yushania exilis T. P. Yi, J. Bamboo Res. 5(1): 20. 1986.

沐川玉山竹 mu chuan yu shan zhu

Rhizome neck ca. 50 cm; internodes less than 8 mm in diam., solid. Culms 1.5–2.5 m, 5–8 mm in diam.; internodes initially purple spotted, terete, 25–28 cm, white powdery especially below nodes, glabrous, not ribbed; wall 1.5–2 mm; nodes with level or weakly prominent supra-nodal ridge; sheath scar prominent. Branches 1–8, pendent toward apex. Culm sheaths persistent, purple-brown, narrowly triangular, shorter than or equal to internodes, leathery, sparsely brown setulose,

margins initially brown setulose, longitudinal ribs prominent; auricles absent; oral setae 4–6, erect, 5–12 mm; ligule purple-brown, truncate, 1–2 mm, glabrous; blade linear-lanceolate, glabrous, margins serrulate, rolled, revolute. Leaves 4–6 per ultimate branch; sheath glabrous; auricles absent; oral setae 1–3, erect, gray-brown or brown, 2–5 mm; ligule arcuate, ca. 1 mm, glabrous; blade linear-lanceolate, 2.3–9.5 × (0.35–)0.5–0.8 cm, glabrous, secondary veins 3-paired, transverse veins visible, base cuneate, margins serrulate. Inflorescence unknown. New shoots May.

● 1200–1500 m. S Sichuan.

19. Yushania varians T. P. Yi, J. Bamboo Res. 5(1): 38. 1986.

庐山玉山竹 lu shan yu shan zhu

Rhizome neck more than 21 cm; internodes solid, less than 8 mm in diam. Culms 1–2 m, 3–8 mm in diam.; internodes terete, 8–15 cm, initially white powdery, densely so below nodes, glabrous, not ribbed; wall 1.5–2 mm thick; supra-nodal ridge level or prominent; sheath scar prominent, yellow-brown setose. Branches 1–7, erect or ascending. Culm sheath persistent, purple-brown, narrowly rounded-triangular, ca. 1/2 as long as internodes to equal in length, leathery, sparsely appressed brown setose, setae especially dense at base, margins glabrous or initially brown setulose, longitudinal ribs prominent; auricles absent; oral setae absent or present; ligule arcuate or truncate, 1–1.5 mm, glabrous; blade erect or rarely revolute, linear-lanceolate, glabrous. Leaves 2–7 per ultimate branch; sheath glabrous; auricles erect, narrowly rounded or small; oral setae 2–4, radiating, purple or yellow, 2–5 mm; ligule truncate, ca. 1 mm, glabrous; blade linear-lanceolate, 6–11.5 × 0.8–1.2 cm, glabrous, secondary veins 3–5-paired, transverse veins distinct, base cuneate, one margin densely serrulate, other sparsely so, apex long acuminate. Inflorescence unknown. New shoots May–Jul.

● About 1400 m. N Jiangxi.

20. Yushania maculata T. P. Yi, J. Bamboo Res. 5(1): 33. 1986.

斑壳玉山竹 ban ke yu shan zhu

Rhizome neck ca. 40 cm; internodes solid. Culms 2–3.5 m, 0.8–1.5 cm in diam.; internodes terete, 30–40 cm, initially densely white powdery, with gray or light yellow setae; wall 2–3 mm thick; supra-nodal ridge level or weakly prominent; sheath scar prominent, initially densely brown setose. Branches 7–12. Culm sheaths persistent, dark purple-brown spotted, oblong-triangular, ca. 1/3 as long as internodes, cartilaginous, mainly glabrous but sparsely brown setose at base, margins initially brown setulose, longitudinal ribs prominent; auricles absent; oral setae 3–5, erect, purple, 5–10 mm; ligule truncate, 1–2.5 mm; blade linear-lanceolate, glabrous, revolute. Leaves 3–5 per ultimate branch; sheath glabrous; auricles absent; oral setae 3–5, erect, purple, 4–7 mm; ligule truncate or arcuate, ca. 1 mm, glabrous; blade linear-lanceolate, 9–15 × 0.9–1.1 cm, glabrous, secondary veins 4-paired, transverse veins not distinct, base cuneate, margins initially serrulate, apex long acuminate. Inflorescence unknown. New shoots Aug.

● 1800–3500 m. SW Sichuan, NE Yunnan.

21. Yushania longiuscula T. P. Yi, J. Bamboo Res. 5(1): 30. 1986.

蒙自玉山竹 meng zi yu shan zhu

Rhizome neck ca. 50 cm; internodes solid. Culms 4–5 m, 1–2 cm in diam.; internodes terete, 32–45 cm, thickly white powdery below nodes, distally sparsely gray setulose, solid or nearly so; supra-nodal ridge weakly prominent; sheath scar prominent. Branches 8–13, deflexed. Culm sheaths persistent, narrowly rounded-triangular, ca. 1/2 as long as internodes, leathery, sparsely brown setose, margins apically yellow-brown setulose; auricles absent or small; oral setae deciduous; ligule truncate or convex, ca. 1 mm; blade deciduous, linear-lanceolate, glabrous, revolute. Leaves 2–4 per ultimate branch; sheath initially white powdery, glabrous; auricles absent; oral setae present; ligule truncate or convex, ca. 1 mm; blade lanceolate, 7.2–19 × (1.2–)1.5–2 cm, glabrous, secondary veins 4- or 5-paired, transverse veins conspicuous, base cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence paniculate. Spikelets purple-red, 2–4 cm, robust; rachilla 3.5–5 mm, apically pubescent and swollen; florets 4–10, terminal one sterile. Glumes 2, unequal, glabrous; lemma glabrous, lowermost 1–1.6 cm, apex acuminate; palea keels ciliate, apex bifid. Ovary ovoid. Caryopsis unknown. New shoots Aug.

● 2100–2800 m. S Yunnan.

22. Yushania crispata T. P. Yi, J. Bamboo Res. 10(1): 26. 1991.

波柄玉山竹 bo bing yu shan zhu

Rhizome neck 7–60 cm; internodes solid. Culms 2–7 m, 1–3 cm in diam.; internodes terete, 30–35 cm, nearly solid, initially densely white powdery and sparsely brown setose below nodes, longitudinal ribs prominent; nodes with level supra-nodal ridge; sheath scar prominent. Branches 5–15, subequal, nearly solid. Culm sheaths persistent, shorter than internode, leathery, rigid, sparsely gray-yellow or brown setose, margins initially yellow-brown setulose, apex narrowly rounded; auricles absent; oral setae 8–15; ligule truncate or arcuate, 1–1.5 mm, glabrous; blade deciduous, linear-lanceolate, slightly hairy, margins serrulate, revolute. Leaves 2–5 per ultimate branch; sheath apically white powdery, glabrous or densely yellow setose, margins initially ciliate; auricles absent; oral setae present; ligule truncate or convex, ca. 1 mm, glabrous; blade lanceolate, 5–16 × 0.7–1.2 cm, glabrous, secondary veins 3–5-paired, transverse veins obscure, base cuneate, margins spinescent-serrulate. Inflorescence paniculate. Spikelets purple-green or purple, 1.6–4 cm, slender; rachilla 2–5 mm, apically pubescent and swollen, margins ciliate; florets 4–14, terminal one sterile. Lemma abaxially pale hairy, hairs deciduous, to 8–11 mm, apex acuminate; palea apically bifid, 2-keeled, keels ciliate; lodicules 3, margins apically ciliate. Anthers yellow. Ovary ovoid, yellow-brown; style 1; stigmas 3, plumose. Caryopsis oblong, ventrally grooved, with persistent style. New shoots Jun.

● 2100–3400 m. SW Sichuan.

23. Yushania lacera Q. F. Zheng & K. F. Huang, Acta Phytotax. Sin. 22: 218. 1984.

撕裂玉山竹 si lie yu shan zhu

Rhizome neck ca. 27 cm; internodes solid. Culms to 2 m, to 0.8 cm in diam.; internodes terete, 11–23 cm, distally white setulose with a thickly white powdery ring below each node; wall 1.5–2.2 mm thick; nodes with weakly prominent supra-nodal ridge; sheath scar prominent. Branches 3–6. Culm sheath gradually deciduous or persistent, shorter than internode, thinly leathery, purplish setulose, margins purplish ciliate, longitudinal ribs greatly prominent; auricles absent or small; oral setae absent; ligule ca. 1.5 mm, fissured, tomentulose, purple ciliate; blade linear-lanceolate, revolute. Leaves 3–8 per ultimate branch; sheath glabrous; auricles absent or small; oral setae 2–6, easily deciduous, erect, 3–8 mm; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 4.5–13 × 1–1.2 cm, abaxially gray pubescent, secondary veins 4- or 5-paired, transverse veins not distinct, base cuneate or broadly cuneate, one margin densely serrulate, other margin sparsely so, apex acuminate. Inflorescence unknown. New shoots May.

● 1700–1800 m. N Fujian.

24. Yushania elevata T. P. Yi, J. Bamboo Res. 5(1): 17. 1986.

腾冲玉山竹 teng chong yu shan zhu

Rhizome neck to 70 cm; internodes solid. Culms 4–7 m, 1.4–6 cm in diam.; internodes terete, 24–60 cm, initially brown setulose below nodes; wall 4–8 mm thick; nodes with weakly prominent to prominent supra-nodal ridge; sheath scar initially brown setose. Branches 10–20, solid or nearly so. Culm sheaths gradually deciduous, narrowly triangular, shorter than internodes, leathery to cartilaginous, densely yellow-brown woolly setose, margins densely brown setose, longitudinal ribs prominent; auricles absent; oral setae gradually deciduous; ligule convex or rarely truncate, ca. 1 mm, glabrous; blade linear-lanceolate, revolute, glabrous. Leaves 4–6 per ultimate branch; sheath glabrous; auricles absent; oral setae absent or few, erect, brown, 0.5–1 mm; ligule convex, ca. 0.5 mm, glabrous; blade narrowly lanceolate, 4.5–9.5 × 0.4–0.9 cm, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, base cuneate, one margin serrulate, other margin smooth, apex acuminate. Inflorescence unknown. New shoots Jul.

● 2000–2300 m. W Yunnan.

25. Yushania baishanzuensis Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1983(3): 494. 1983.

百山祖玉山竹 bai shan zu yu shan zhu

Rhizome neck ca. 25 cm; internodes solid. Culms 1.5–2 m, to 0.5 cm in diam.; internodes terete, ca. 19 cm, initially sparsely setose, thickly white powdery below nodes; wall 1.5–2 mm thick; nodes with weakly prominent supra-nodal ridge; sheath scar weakly prominent. Branches 3 to many. Culm sheaths gradually deciduous, 1/2–2/3 as long as internodes, abaxially or marginally sparsely white setose; auricles absent or obscure; oral setae absent or few, erect, purple; ligule convex or truncate, ca. 1 mm, ciliate; blade erect, linear or conical, glabrous. Leaves 3–5 per ultimate branch; sheath glabrous, initially white powdery; auricles absent or obscure; oral setae 5–8, erect, 0.5–1 mm; ligule truncate or convex, ca. 0.5 mm, glabrous; blade linear-lanceolate, 6–14 × 0.7–1.2 cm, glabrous or abaxially hairy at base, secondary veins 4-paired, transverse veins slightly obscure, one margin serrulate, other margin smooth. Inflorescence unknown. New shoots Apr–May.

● 1000–1100 m. S Zhejiang.

26. Yushania farcticaulis T. P. Yi, J. Bamboo Res. 5(1): 24. 1986.

独龙江玉山竹 du long jiang yu shan zhu

Rhizome neck to 70 cm; internodes solid. Culms 4–7 m, 1–2 cm in diam.; internodes purple spotted when dry, terete, 32–45 cm, solid or nearly so, glabrous; supra-nodal ridge level or weakly prominent; sheath scar prominent, initially yellow-brown setose. Branches many. Culm sheaths persistent, triangularly narrowly rounded, 1/2–3/5 as long as internodes, leathery, prominently longitudinally ribbed, densely brown to dark brown setose, margins densely yellow-brown setulose; auricles absent; oral setae few, gradually deciduous, erect, yellow, 2–6 mm; ligule truncate or arcuate, ca. 1 mm, initially ciliate, later slightly fissured; blade reflexed, linear-lanceolate, glabrous, margins serrulate. Leaves 4–6 per ultimate branch; sheaths sometimes gray-brown setose; auricles absent; oral setae few, erect, brown, 3–5 mm; ligule truncate, glabrous; blade lanceolate, 5–15 × 0.6–1.2 cm, abaxially sparsely gray pubescent, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate, apex acuminate. Inflorescence unknown. New shoots Aug.

● 1900–2000 m. W Yunnan.

27. Yushania levigata T. P. Yi, J. Bamboo Res. 5(1): 27. 1986.

光亮玉山竹 guang liang yu shan zhu

Rhizome neck to 62 cm; internodes solid. Culms 2–4.5 m, 1–3 cm in diam.; internodes terete, 16–40 cm, initially white powdery, glabrous, nearly solid; supra-nodal ridges level; sheath scar prominent. Branches 3–15 per node, erect or deflexed. Culm sheaths persistent, dark purple or with light yellow stripes, narrowly rounded-triangular or narrowly triangular, 2/5–1/2 as long as internodes, cartilaginous, glabrous or basally yellow-brown setulose, margins initially setulose; auricles and oral setae absent; ligule truncate or convex, glabrous; blade reflexed, linear-lanceolate, glabrous, margins initially serrulate. Leaves 3–5 per ultimate branch; sheath margins glabrous or initially ciliate; auricles absent; oral setae present or absent; ligule truncate, glabrous; blade lanceolate or linear-lanceolate, 3–12.5 × 0.7–1.2 cm, glabrous, secondary veins 3–5-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin smooth. Inflorescence a panicle or raceme. Spikelets 2–12, dark purple, 2.2–7 cm; rachilla 3–4 mm, margins densely ciliolate, apically setulose and swollen; florets 4–9, terminal one sterile. Lemma mucronate or acuminate at apex; palea 2-keeled, keels ciliolate, apically bifid. Ovary ovoid; style 1. Caryopsis purple, oblong, with persistent style base. New shoots Sep.

● 2300–3000 m. SW Yunnan.

The culms are split for weaving.

28. Yushania ailuropodina T. P. Yi, J. Bamboo Res. 15(3): 6. 1996.

紫斑玉山竹 zi ban yu shan zhu

Rhizome neck (10–)20–45 cm; internodes solid. Culms 3–4(–5) m, 0.8–1.5 cm in diam.; internodes terete, 22–26(–36) cm, glabrous, white powdery and with purple spots when young; wall 2–3 mm thick; sheath scar prominent, brown, glabrous. Branches 6–10. Culm sheaths persistent, with dense, brown to deep purple spots, narrowly rounded, 1/3–1/2 as long as internodes, cartilaginous, adaxially glabrous; auricles and oral setae absent; ligule purple, truncate, 1–2 mm; blade reflexed, linear-lanceolate, (4–)10–40 × 1.5–2.5 mm, glabrous. Leaves 2–4(or 5) per ultimate branch; sheath 2–3 cm, glabrous; auricles absent; oral setae absent to 3; ligule truncate, glabrous; blade linear-lanceolate, 4–7.5 × 0.5–0.7 cm, glabrous, secondary veins 2-paired, transverse veins distinct, base cuneate, margin initially serrulate. Inflorescence unknown. New shoots Jun.

● 2600–3000 m. Sichuan.

This species is named after the giant panda, *Ailuropoda melanoleuca*.

29. Yushania mitis T. P. Yi, J. Bamboo Res. 9(3): 35. 1990.

泡滑竹 pao hua zhu

Rhizome neck 8–40 cm; internodes solid. Culms 3–4.5 m, 1–2 cm in diam.; internodes terete, 18–45 cm, longitudinally ribbed, initially white powdery, glabrous or initially white-gray setose; wall 2–4 mm thick; supra-nodal ridge weakly prominent; sheath scar prominent, initially slightly setose. Branches 3–7. Culm sheath deciduous, densely purple-brown spotted, triangularly narrowly rounded or narrowly triangular, ca. 1/2 as long as internodes, leathery, prominently longitudinally ribbed, sparsely yellow setulose, margins initially yellow-brown ciliolate; auricles absent, oral setae absent or 1, ca. 1 cm; ligule truncate, 1.5–4 mm; blade erect or reflexed, linear-triangular or triangular-lanceolate. Leaves 3–6 per ultimate branch; sheath margins initially ciliate; auricles absent; oral setae few, 1–5 mm; ligule truncate or arcuate, external ligule ciliate; blade narrowly lanceolate, 1.2–10.5 × 0.4–0.8 cm, glabrous, secondary veins 2–4-paired, transverse veins distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots Apr.

● 1800–2500 m. NE Yunnan.

The culms are used for weaving.

30. Yushania xizangensis T. P. Yi, J. Bamboo Res. 2(2): 50. 1983.

西藏玉山竹 xi zang yu shan zhu

Rhizome neck 4–20 cm; internodes solid. Culms to 4.5 m, 1–2 cm in diam.; internodes terete, 25–40 cm, glabrous or initially distally brown setulose; wall 2–3.5 mm thick; nodes with level supra-nodal ridge; sheath scar prominent, glabrous or initially slightly setose. Branches 10–19. Culm sheaths gradually deciduous or persistent, triangularly narrowly rounded, shorter than internode, leathery, prominently longitudinally ribbed, brown to dark brown setose, margins densely brown ciliolate; auricles absent; ligule arcuate, ca. 1 mm; blade readily deciduous, revolute. Leaves 2–4 per ultimate branch; sheath glabrous; auricles absent; oral setae few, 2–4 mm; ligule truncate or convex, glabrous, margins slightly fissured; blade narrowly lanceolate, 3–11 × 0.5–0.8 cm, secondary veins 3- or 4-paired, transverse veins distinct, adaxially and basally sparsely setose, base cuneate or broadly so, margins serrulate. Inflorescence unknown.

● About 2400 m. S Xizang.

31. Yushania brevis T. P. Yi, J. Bamboo Res. 5(1): 11. 1986.

绿春玉山竹 lü chun yu shan zhu

Rhizome neck 4.5–20 cm; internodes solid. Culms 1–2.5 m, 4–6 mm in diam.; internodes terete, 20–30 cm, glabrous, initially with white powdery ring below nodes, nearly solid; supra-nodal ridges level; sheath scar prominent. Branches 1–6 per node. Culm sheaths persistent, narrowly rounded, ca. 1/5 as long as internodes, leathery, slightly prominently longitudinally ribbed, glabrous or basally yellow-brown setose, margins densely brown-ciliolate; auricles absent; oral setae few, deciduous; ligule truncate, ca. 0.5 mm, glabrous; blade deflexed or erect, linear-triangular or linear-lanceolate. Leaves 2–6 per ultimate branch; sheath glabrous; auricles absent; oral setae 7–9, yellow, 2–3 mm; ligule truncate or convex, external ligule initially gray-puberulous; blade linear-lanceolate, 4–14.5 × (0.6–)0.9–1.3 cm, glabrous or abaxially proximally sparsely setose, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, one margin serrulate, other margin smooth. Inflorescence unknown. New shoots Aug–Sep.

● About 2000 m. S Yunnan.

32. Yushania menghaiensis T. P. Yi, Acta Bot. Yunnan. 10: 441. 1988.

隔界竹 ge jie zhu

Rhizome neck 18–55 cm; internodes solid. Culms 2–3.5 m, 1–1.3 cm in diam.; internodes terete, 23–32 cm, initially thinly white powdery, especially below nodes; wall 2–5 mm thick; supra-nodal ridges level; sheath scar prominent. Branches 5–20 per node. Culm sheath persistent, triangularly narrowly rounded, 1/3–1/2 as long as internodes, thinly leathery, prominently longitudinally ribbed, appressed yellow or brown clavate-setose, margins initially ciliolate; auricles absent; oral setae 1 or 2 initially, erect, gray, 3–4 mm; ligule truncate or convex, ca. 1 mm; blade reflexed, triangular or linear, glabrous, margins rolled. Leaves 4–7 per ultimate branch; sheath glabrous; auricles absent or small; oral setae 3 or 4, yellow, 1.5–4 mm; ligule truncate, initially hairy; external ligule initially puberulous; blade lanceolate, 10–24 × (0.8–)1.4–3.1 cm, abaxially densely gray pubescent, secondary veins 4- or 5-paired, transverse veins not prominent, base cuneate, margins serrulate. Inflorescence unknown. New shoots Sep.

● About 2300 m. S Yunnan.

33. Yushania collina T. P. Yi, J. Bamboo Res. 5(1): 13. 1986.

德昌玉山竹 de chang yu shan zhu

Rhizome neck more than 20 cm; internodes solid. Culms

to 3 m, 0.5–1 cm in diam.; internodes terete, 25–40 cm, conspicuously longitudinally ribbed, glabrous, initially with white powdery ring below each node, nearly solid; supra-nodal ridges weakly prominent; sheath scar weakly prominent. Branches 6–10 per node. Culm sheaths persistent, narrowly triangular, 1/3–1/2 as long as internodes, leathery, conspicuously longitudinally ribbed, glabrous or sparsely brown setulose, margins initially densely brown setulose, longitudinal ribs prominent; auricles absent; oral setae 2–8, erect, yellow-brown, 5–10 mm; ligule truncate or convex, ca. 1 mm, glabrous; blade linear-lanceolate, revolute, glabrous, margins serrulate. Leaves 2–5 per ultimate branch; sheaths glabrous; auricles absent; oral setae absent or initially 1–3, gray, 2–3 mm; ligule truncate, glabrous; blade lanceolate, 11–22.5 × 1.2–1.8 cm, glabrous, secondary veins 4- or 5-paired, transverse veins not prominent, base cuneate, one margin serrulate, other margin obscurely so. Inflorescence unknown. New shoots Jul–Aug.

● About 2200 m. SW Sichuan.

34. Yushania farinosa Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 93. 1981.

湖南玉山竹 hu nan yu shan zhu

Rhizome neck ca. 22 cm; internodes solid. Culms to 2.5 m, ca. 6 mm in diam.; internodes terete, 12–22.5 cm, obscurely longitudinally ribbed, glabrous, initially thinly white powdery, especially in ring below nodes; wall 1.2–2 mm thick; supra-nodal ridges level or prominent; sheath scar prominent, glabrous or initially gray-yellow hairy. Branches 3 to many per node. Culm sheaths gradually deciduous, triangularly narrowly rounded, shorter than internode, thinly leathery, prominently longitudinally ribbed, appressed yellow-brown clavate-setose, margins yellow-brown ciliate; auricles absent; oral setae ca. 5, readily deciduous; ligule truncate or convex, ca. 1 mm, margin ciliolate, cilioles readily deciduous; blade erect or decumbent, narrowly lanceolate or linear, glabrous. Leaves 3–5 per ultimate branch; sheath glabrous; auricles absent; oral setae 2–5, yellow, 2–4 mm; ligule arcuate or truncate, glabrous; blade oblong-lanceolate, 9–12 × 1.3–1.6 cm, glabrous, secondary veins 4–6-paired, transverse veins obscure, base cuneate or broadly so, one margin serrulate, other margin smooth. Inflorescence unknown. New shoots May.

● About 1600 m. S Hunan.

35. Yushania laetevirens T. P. Yi, J. Bamboo Res. 9(3): 33. 1990.

亮绿玉山竹 liang lü yu shan zhu

Rhizome neck 17–42 cm; internodes solid. Culms 2.5–3.5 m, 6–10 mm in diam.; internodes terete, 20–45 cm, obscurely longitudinally ribbed, initially white powdery, glabrous; wall 1.5–2.5 mm thick; supra-nodal ridges level or prominent; sheath scar prominent. Branches 5–9. Culm sheath persistent, triangularly narrowly rounded, ca. 1/2 as long as internodes, leathery, prominently longitudinally ribbed, glabrous; auricles and oral setae absent; ligule truncate, 1–1.4 mm; blade reflexed, linear-triangular or linear-lanceolate. Leaves 3–9 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule truncate, ca. 1 mm, usually white powdery; blade linear-lanceolate, 7.5–13 × 1–1.3 cm, glabrous, secondary veins 3- or 4-paired, transverse veins slightly distinct, base cuneate, one margin serrulate, other margin smooth. Inflorescence unknown. New shoots Aug.

● 1300–1500 m. NE Yunnan.

36. Yushania multiramea T. P. Yi, Bull. Bot. Res., Harbin 8(4): 69. 1988.

多枝玉山竹 duo zhi yu shan zhu

Rhizome neck 20–55 cm. Culms 3–4 m, 5–10 mm in diam.; internodes terete, 24–43 cm, initially white powdery, glabrous, solid or nearly so; supra-nodal ridges level or prominent, initially white powdery; sheath scar prominent, initially purple and white-gray setose, becoming light yellow-brown and glabrous. Branches 3–45. Culm sheaths persistent, triangularly narrowly rounded, 1/3–1/2 as long as internodes, leathery, prominently longitudinally ribbed, abaxially glabrous or gray setose, adaxially waxy, margins glabrous or initially ciliolate; auricles absent; oral setae absent to 2, gray, 1–8 mm; ligule truncate or convex, ca. 0.5 mm, glabrous; blade reflexed, linear-lanceolate, glabrous. Leaves 3–6 per ultimate branch; sheath initially slightly hairy; auricles absent; oral setae 3–5, yellow, 1.5–4.5 mm; ligule truncate, glabrous; blade lanceolate, 4.5–13 × 0.8–1.3 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base broadly cuneate or nearly rounded, margins serrulate. Inflorescence unknown. New shoots Aug.

● 2300–2600 m. W Yunnan.

37. Yushania mabianensis T. P. Yi, J. Bamboo Res. 5(1): 47. 1986.

马边玉山竹 ma bian yu shan zhu

Rhizome neck 20–35 cm. Culms 1–2 m, 4–8 mm in diam.; internodes initially purple spotted, terete, 17–27 cm, white powdery and gray-brown setulose below nodes, smooth; wall ca. 2 mm; supra-nodal ridges level or prominent; sheath scar weakly prominent, initially densely retrorsely brown setose. Branches 1 at lower nodes to more than 3 at upper nodes. Culm sheaths persistent, yellow-brown, narrowly triangularly rounded, shorter than internodes, leathery, retrorsely yellow-brown setose, margins densely ciliate; auricles falcate; oral setae erect, ca. 5 mm; ligule truncate or arcuate, ca. 0.5 mm, glabrous; blade readily deciduous, reflexed, linear-lanceolate, glabrous. Leaves 3–5 per ultimate branch; sheath glabrous or setulose, margins initially ciliate; auricles falcate or elliptic; oral setae ca. 11, radiating, 5–7 mm; ligule truncate or arcuate, glabrous; blade lanceolate or linear-lanceolate, 7–20 × 1.4–2.8 cm, glabrous, secondary veins 5- or 6-paired, transverse veins distinct, base broadly cuneate, one margin densely serrulate, other margin obscurely so. Inflorescence unknown. New shoots Sep.

● 1400–2000 m. S Sichuan.

38. Yushania andropogonoides (Handel-Mazzetti) T. P. Yi, J. Bamboo Res. 5(1): 66. 1986.

草丝竹 cao si zhu

Indocalamus andropogonoides Handel-Mazzetti, Anz.

Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 255. 1925; *Arundinaria andropogonoides* (Handel-Mazzetti) Handel-Mazzetti; *Sinarundinaria andropogonoides* (Handel-Mazzetti) Keng ex P. C. Keng.

Rhizome neck 18–38 cm. Culms 0.35–1.1 m, 1.5–2.5 mm in diam.; internodes terete, 12–18 cm, sparsely yellow setose and white powdery below nodes, nearly solid; supra-nodal ridge prominent; sheath scar prominent, initially sparsely retrorsely yellow-brown setose. Branches absent or rarely 1, without secondary branches. Culm sheaths persistent, light yellow-brown, narrowly rounded, leathery, glabrous; auricles purple, falcate; oral setae many, 2–3 mm; ligule truncate, ca. 1 mm, glabrous; blade readily deciduous, reflexed, triangular-lanceolate, glabrous. Leaves 3–5 per ultimate branch; sheath margins glabrous; auricles purple, elliptic; oral setae many, yellow-brown, 3–5 mm; ligule truncate, margins slightly fissured; blade lanceolate, 11–16 × 0.9–2.2 cm, glabrous, secondary veins 4–7-paired, transverse veins distinct, base broadly cuneate or rounded, margins serrulate. Inflorescence paniculate; spikelets with 5 or 6 florets; rachilla internodes ca. 1/2 as long as florets, apex puberulous. Lemma scabrous; palea margins ciliate at apex. Anthers white. New shoots Aug–Sep.

● 2000–2300 m. E Yunnan.

The inflorescence details are based on Handel-Mazzetti's type, whereas the vegetative description is based on a non-flowering specimen from the same locality assumed to represent the same species.

39. Yushania grammata T. P. Yi, J. Bamboo Res. 9(3): 30. 1990 [*"grummata"*].

棱纹玉山竹 leng wen yu shan zhu

Rhizome neck 20–50 cm. Culms 1.5–3 m, 4–15 mm in diam.; internodes terete, 13–37 cm, longitudinally ribbed, initially white powdery and brown clavate-setulose below nodes; wall 2–3 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent. Branches 1 per node, about as wide as culm. Culm sheath persistent, narrowly triangularly rounded, short, leathery, densely appressed brown clavate-setose, margins brown ciliate; auricles readily deciduous, elliptic, small; oral setae 2–5, 2–4.5 mm; ligule truncate, ca. 1 mm, slightly hairy; blade reflexed, linear-lanceolate, erect or abaxially slightly hairy at base. Leaves 4–14 per ultimate branch; sheath margins glabrous; auricles absent; oral setae absent or few; ligule truncate; blade lanceolate, 16–25 × 1.6–2.5 cm, abaxially white-gray pubescent, secondary veins 5–7-paired, transverse veins distinct, base cuneate. Inflorescence unknown. New shoots Jul–Aug.

● About 1300 m. NE Yunnan.

40. Yushania polytricha Hsueh & T. P. Yi, J. Bamboo Res. 5(1): 58. 1986.

滑竹 hua zhu

Rhizome neck 13–40 cm. Culms 1–2 m, 3–8 mm in diam.; internodes initially densely purple spotted, terete, 13–37 cm, smooth, thinly white powdery and yellow-brown setulose below nodes, solid; supra-nodal ridges weakly prominent or prominent; sheath scar prominent, initially densely yellow-brown retrorse-setose. Branches 1–5 per node, central branch dominant. Culm sheaths persistent, narrowly triangularly rounded, ca. 2/3 as long as internodes, cartilaginous, yellow-brown setose, margins yellow-brown setose; auricles purple, falcate; oral setae many, radiating, yellow-brown, 2–4 mm; ligule truncate or arcuate, ca. 1 mm, glabrous, margins irregularly fissured; blade reflexed, linear-lanceolate, abaxially sparsely white-gray setose. Leaves 4–6 per ultimate branch; sheath densely brown setose, margins densely yellow ciliate; auricles purple, falcate or elliptic; oral setae several, erect or radiating, yellow-brown, 2–5 mm; ligule truncate, margins initially densely yellow ciliate; blade lanceolate, 9–21 × 1.2–2.5 cm, abaxially gray pubescent, secondary veins 4–6-paired, transverse veins obscure, base broadly cuneate, margins scabrous. Inflorescence unknown. New shoots Aug.

● 1900–2000 m. C and W Yunnan.

The culms are used for making chopsticks.

41. Yushania basihirsuta (McClure) Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 92. 1981.

毛玉山竹 mao yu shan zhu

Indocalamus basihirsutus McClure, Sunyatsenia 6: 35. 1941; *Sinarundinaria basihirsuta* (McClure) C. D. Chu & C. S. Chao; *S. papillosa* W. T. Lin; *Yushania actinoseta* W. T. Lin & Z. M. Wu; *Y. longipilosa* T. H. Wen & S. C. Chen; *Y. papillosa* (W. T. Lin) W. T. Lin.

Rhizome neck ca. 50 cm. Culms 1.5–3 m, 3–8 mm in diam.; internodes terete, 10–29 cm, white powdery below nodes, initially light yellow setose; wall 1.5–3 mm thick; supra-nodal ridges level; sheath scar prominent, initially densely yellow-brown retrorse-setose, with persistent remains of sheath base. Branches 1 per node at lower nodes and 3 at upper nodes. Culm sheaths persistent, narrowly triangularly rounded, 2/5–2/3 as long as internodes, leathery, densely yellow-brown clavate-setose, margins densely yellow-brown setose; auricles purple, falcate; oral setae many, radiating, yellow-brown, 4–10 mm; ligule truncate or arcuate, ca. 1 mm, initially densely brown ciliate; blade reflexed, linear-lanceolate, margins serrulate. Leaves 5–9 per ultimate branch; sheath retrorsely white setose, margins densely white ciliate; auricles purple, falcate; oral setae many, radiating, yellow-brown, 4–15 mm; ligule truncate, margins ciliate; blade lanceolate, 7–18.5 × 0.7–1.8 cm, abaxially initially gray setose, secondary veins 4–6-paired, transverse veins distinct, base cuneate, one margin serrulate, other margin obscurely so. Inflorescence paniculate; spikelets 12–17, dark purple; rachilla internodes ca. 5 mm, margins gray ciliate, apex swollen. Lemma glabrous, apex acuminate; palea glabrous, apex bifid. Other parts unknown. New shoots Apr.

● 1500–1600 m. N Guangdong, S Hunan.

42. Yushania longiaurita Q. F. Zheng & K. F. Huang, Acta Phytotax. Sin. 22: 217. 1984.

长耳玉山竹 chang er yu shan zhu

Rhizome neck ca. 27 cm. Culms to 1.5 m, 4–6 mm in diam.; internodes terete, 9.5–14 cm, initially white powdery below nodes, glabrous; wall ca. 2 mm thick; supra-nodal ridges

prominent or weakly so; sheath scar prominent, glabrous. Branches 1–5 per node. Culm sheath gradually deciduous, shorter than internodes, thickly papery, abaxially glabrous, margins brown ciliate; auricles falcate or subcircular, tomentulose; oral setae radiating, 6–8 mm; ligule arcuate, ca. 1 mm; blade reflexed, narrowly lanceolate, glabrous. Leaves 5–9 per ultimate branch; sheath margins glabrous; auricles falcate or subcircular; oral setae radiating; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 4–12 × 1.2–1.7 cm, glabrous, secondary veins 4- or 5-paired, transverse veins distinct, base broadly cuneate, one margin densely serrulate, other margin obscure so. Inflorescence unknown.

● About 1500 m. SE Fujian.

43. Yushania chingii T. P. Yi, J. Bamboo Res. 5(1): 45. 1986.

仁昌玉山竹 ren chang yu shan zhu

Rhizome neck 25–45 cm. Culms 1–2.5 m, 3–8 mm in diam.; internodes terete, 15–22 cm, initially with white powdery ring below nodes, glabrous, nearly solid; supra-nodal ridges level or weakly prominent; sheath scar weakly prominent. Branches 1 per node. Culm sheaths persistent, triangularly narrowly rounded, 1/4–1/3 as long as internodes, cartilaginous, glabrous, margins densely yellow-brown setulose; auricles purple, falcate; oral setae 3–5, purple or yellow, 5–8 mm; ligule truncate, glabrous; blade reflexed, linear-lanceolate, glabrous. Leaves 5–13 per ultimate branch; sheath apically white powdery, margins densely yellow-brown ciliate; auricles purple, elliptic; oral setae 7–12, purple or yellow, 5–12 mm; ligule truncate, glabrous; blade lanceolate, (13–)19–26(–33) × 1.2–4 cm, glabrous, secondary veins 7–9-paired, transverse veins distinct, base cuneate, margins serrulate and obscure or one margin prominent, other margin obscurely so. Inflorescence unknown. New shoots Jul.

● 1400–1500 m. W Guangxi, S Guizhou.

44. Yushania auctiaurita T. P. Yi, Acta Bot. Yunnan. 13: 145. 1991.

显耳玉山竹 xian er yu shan zhu

Rhizome neck 15–35 cm. Culms 1–2.5 m, 3–8 mm in diam.; internodes initially purple spotted, terete, 16–22 cm, white powdery below nodes, glabrous; wall 1–3 mm thick; supra-nodal ridges level or prominent; sheath scars prominent, initially retrorsely brown setose, with persistent remains of sheath base. Branches 1 at lower nodes and more than 3 at upper nodes. Culm sheaths persistent, 1/3–2/5 as long as internodes, cartilaginous, yellow-brown setose, margins densely ciliate; auricles falcate, large; oral setae many, radiating, yellow-brown, 3–6 mm; ligule arcuate, ca. 0.5 mm, glabrous; blade erect or decumbent, narrowly triangular or lanceolate, glabrous, margins serrulate. Leaves 3–8 per ultimate branch; sheath glabrous or gray pubescent, apically white powdery, margins yellow-brown ciliate; auricles purple, falcate; oral setae many, 2–7 mm; ligule arcuate, ca. 1 mm, glabrous; blade lanceolate, 8–16 × 1.3–3 cm, glabrous, secondary veins 5–9-paired, transverse veins distinct, base broadly cuneate, one margin densely serrulate, other margin obscurely so. Inflorescence unknown. New shoots Jul.

● 1700–1800 m. SE Guizhou.

45. Yushania dafengdingensis T. P. Yi, J. Bamboo Res. 15(3): 9. 1996.

大风顶玉山竹 da feng ding yu shan zhu

Rhizome neck 13–70 cm, 6–11 mm in diam. Culms 2–3 (–4) m, 1.2–1.6(–2) cm in diam.; basal internodes 5–10 cm, upper internodes purple spotted, terete, 18–22(–32) cm, initially white powdery below nodes, glabrous; wall 2.5–5 mm thick; supra-nodal ridges level or prominent; sheath scars prominent, initially purple, gradually brown, glabrous; intranode 4–9 mm. Branches 1 per node, nearly as thick as culm. Culm sheaths persistent, 1/3–1/2 as long as internodes, cartilaginous, glabrous, margins initially purple ciliate; auricles falcate; oral setae many, ca. 1.2 cm; ligule purple, truncate, 1–2.5 mm, glabrous; blade erect, narrowly triangular or linear-lanceolate, 8–25 × 3–6 mm, glabrous. Leaves 3 or 4(–6) per ultimate branch; sheath (4–)6–10 cm, glabrous; auricles purple, falcate; oral setae many, ca. 1 cm; ligule truncate, 1–1.5 mm, glabrous; blade lanceolate, (4.5–)12–18 × (1.2–)2–3.7 cm, glabrous, secondary veins (4 or)5–7(or 8)-paired, transverse veins distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots Jun–Jul.

● 2200–2600 m. Sichuan.

46. Yushania straminea T. P. Yi, J. Bamboo Res. 9(3): 37. 1990.

黄壳竹 huang ke zhu

Rhizome neck 17–58 cm. Culms 2–4 m, 0.6–1 cm in diam.; internodes gray-green, terete, 18–29 cm, thinly white powdery, glabrous; wall 2–3 mm thick, rigid; supra-nodal ridges level or weakly prominent; sheath scar prominent, woody, initially retrorsely setose. Branches 1 at lower nodes and more than 3 at upper nodes. Culm sheaths persistent, yellow-brown, narrowly rounded-triangular, 1/3–2/5 as long as internodes, leathery, densely setose, margins densely ciliate; auricles purple, falcate, 6–7 mm, 1.5–3 mm in diam.; oral setae many, ca. 2 cm; ligule 1–2 mm, glabrous; blade erect or decumbent, narrowly triangular or elliptic-lanceolate. Leaves 3–9 per ultimate branch; sheath glabrous, usually white powdery; auricles falcate; oral setae radiating, ca. 6 mm; ligule arcuate, 1–2 mm; blade linear-lanceolate, 7–19 × 1.6–2.6 cm, basally gray hairy, secondary veins 3–6-paired, transverse veins distinct, base cuneate, margins sparsely serrulate. Inflorescence unknown. New shoots Aug.

● 2300–2600 m. NE Yunnan.

The culms are used for weaving.

47. Yushania oblonga T. P. Yi, J. Bamboo Res. 5(1): 52. 1986.

马鹿竹 ma lu zhu

Rhizome neck 8–40 cm. Culms 3–4.5 m, 1–2 cm in diam.; internodes terete, 28–40 cm, initially white powdery, glabrous; wall ca. 2 mm thick; supra-nodal ridges level or prominent; sheath scar prominent, with persistent remains of sheath base. Branches 1–5 per node. Culm sheaths persistent, rectangular, ca. 2/3 as long as internodes, cartilaginous, rigid, white pow-

dery, glabrous, margins densely yellow setulose; auricles purple, oblong; oral setae 5–8, yellow, 5–10 mm; ligule truncate, ca. 1 mm, glabrous; blade erect, purple-green, sometimes white powdery, linear-lanceolate, margins fissured. Leaves 3–7 per ultimate branch; sheath glabrous, usually initially white powdery; auricles elliptic, small; oral setae 5–12, yellow, 3–5 mm; ligule truncate, glabrous; blade broadly lanceolate, 14–17 × 3.6–4 cm, glabrous, secondary veins 7- or 8-paired, transverse veins obscure, base rounded, margins sparsely serrulate. Inflorescence unknown. New shoots Aug–Sep.

● 2600–3000 m. SE Yunnan.

The shoots are edible and are highly prized; the culms are used for weaving.

48. Yushania cartilaginea T. H. Wen, J. Bamboo Res. 3(2): 28. 1984.

硬壳玉山竹 ying ke yu shan zhu

Rhizome neck 16–35 cm. Culms 0.2–2.5 m, 5–7 mm in diam.; internodes terete, 15–17 cm, initially with white powdery ring below nodes, glabrous; wall 2–3 mm thick, pith initially spongy, becoming granular; supra-nodal ridges level or weakly prominent; sheath scar prominent. Branches 1 at lower nodes and 2 at upper nodes. Culm sheath persistent, triangularly narrowly rounded, 1/2–4/5 as long as internodes, cartilaginous, abaxially glabrous and waxy, margins glabrous or gray ciliolate; auricles purple, oblong to falcate; oral setae several, yellow, ca. 7 mm; ligule truncate or convex, ca. 0.25 mm, glabrous; blade erect or reflexed, linear-lanceolate. Leaves 4–6 per ultimate branch; sheath margins gray ciliolate; auricles well developed, elliptic to falcate; oral setae 7–11, purple, 4–14 mm; ligule truncate or convex, glabrous, margin fissured; blade broadly lanceolate to oblong, 10–15 × 1.8–2.8 cm, glabrous, secondary veins 5–9-paired, transverse veins distinct, base cuneate or rounded, margins smooth or one margin serrulate. Inflorescence unknown. New shoots Apr.

● About 1700 m. N Guangxi.

49. Yushania wuyishanensis Q. F. Zheng & K. F. Huang, Acta Phytotax. Sin. 22: 219. 1984.

武夷山玉山竹 wu yi shan yu shan zhu

Rhizome neck ca. 23 cm. Culms to 4 m, to 1 cm in diam.; internodes terete, 10–30 cm, scabrous, initially thickly white powdery below nodes; wall 1.5–2 mm thick; supra-nodal ridges weakly prominent; sheath scar prominent. Branches 1 at lower nodes, 3–5 at upper nodes. Culm sheaths gradually deciduous or persistent, shorter than internodes, thinly leathery, basally purple setose, margins purple ciliate; auricles absent or small; oral setae few; ligule truncate, 1–1.5 mm, tomentose, margin fissured; blade erect, linear-lanceolate, glabrous. Leaves 6–8 per ultimate branch; sheath margins glabrous; auricles absent; oral setae 4–6, 5–7 mm; ligule truncate, ca. 1 mm, glabrous; blade linear-lanceolate, (4–)6–13 × 0.8–1.2 cm, glabrous, secondary veins 4- or 5-paired, transverse veins obscure, one margin serrulate, other margin obscurely so. Inflorescence unknown. New shoots May.

● About 1800 m. N Fujian.

50. Yushania glandulosa Hsueh & T. P. Yi, Bull. Bot. Res., Harbin 8(4): 73. 1988.

盈江玉山竹 ying jiang yu shan zhu

Rhizome neck 14.5–23 cm. Culms 2–3 m, 4–5 mm in diam.; internodes terete, 20–23 cm, with white powdery ring below nodes, initially thinly setulose, nearly solid; supra-nodal ridges prominent; sheath scar prominent. Branches 1 at lower nodes, to 3 at upper nodes. Culm sheaths persistent, triangularly narrowly rounded, leathery, glabrous or yellow setulose at base, margins glabrous or ciliate; auricles and oral setae absent; ligule truncate or convex, ca. 0.5 mm, margins glabrous or ciliate; blade erect or reflexed, linear-lanceolate. Leaves 1–3 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule purple, arcuate, 0.5–0.8 mm, glabrous, margin fissured; blade narrowly rounded-lanceolate, (3.5–)8–19(–27) × (1–)1.8–5 cm, glabrous, secondary veins 3–10-paired, transverse veins distinct, base rounded to broadly cuneate, margins serrulate. Inflorescence paniculate; spikelets 13–33, purple, 1.2–2.5 cm; florets 3–5; rachilla internodes 3–3.5 mm, white or yellow setulose. Lemma lanceolate, glabrous or apically ciliate, apex mucronate; palea keels setulose, apex bifid. Anthers yellow. Ovary oblong, glabrous. Caryopsis unknown.

● About 1800 m. W Yunnan.

51. Yushania rugosa T. P. Yi, J. Bamboo Res. 5(1): 61. 1986.

皱叶玉山竹 zhou ye yu shan zhu

Rhizome neck 20–40 cm. Culms 1–2 m, 5–8 mm in diam.; internodes initially purple spotted, terete, 12–18 cm, white powdery below nodes, glabrous; wall 1.5–2.3 mm thick; supra-nodal ridges weakly prominent; sheath scar weakly prominent, initially brown setulose. Branches 1 per node, nearly as wide as culm. Culm sheath persistent, triangularly narrowly rounded, leathery, base sparsely purple-brown setose, margins purple setose; auricles purple, small; oral setae 3–5, purple, 2–3 mm; ligule convex, ca. 1 mm; blade reflexed, lanceolate, glabrous, margins slightly serrulate. Leaves 5–9 per ultimate branch; sheath glabrous, initially white powdery; auricles absent; oral setae 3–5, readily deciduous, 2–3 mm; ligule purple, truncate, ca. 1 mm, glabrous; blade broadly lanceolate or ovate-elliptic, 9–20 × 3–5 cm, glabrous, secondary veins 7–9-paired, transverse veins distinct, base rounded or broadly cuneate, margins serrulate. Inflorescence unknown. New shoots Aug.

● 1400–1600 m. NW Guangxi, S Guizhou.

52. Yushania uniramosa Hsueh & T. P. Yi, J. Bamboo Res. 5(1): 64. 1986.

单枝玉山竹 dan zhi yu shan zhu

Rhizome neck 20–50 cm. Culms 0.6–1.6 m, 3–5 mm in diam.; internodes initially purple spotted, terete, 8–15 cm, white powdery below nodes, glabrous, nearly solid; supra-nodal ridges level or weakly prominent; sheath scar prominent, glabrous. Branches 1 per node. Culm sheaths persistent, triangularly narrowly rounded, 1/2–2/3 as long as internodes, cartilaginous, glabrous, margins densely brown ciliate; auricles and oral setae absent; ligule truncate or convex, ca. 0.5 mm; blade reflexed or erect, narrowly lanceolate or conical, gla-

brous. Leaves 6–11 per ultimate branch; sheath glabrous, margins sometimes gray ciliate; auricles and oral setae absent; ligule truncate or convex, ca. 0.5 mm, glabrous; blade narrowly lanceolate, 11–22 × 1.5–2.6 cm, glabrous, secondary veins 5–7-paired, transverse veins distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots Jul.

● 1300–1600 m. N Guizhou.

53. Yushania confusa (McClure) Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 92. 1981.

鄂西玉山竹 e xi yu shan zhu

Indocalamus confusus McClure, Lingnan Univ. Sci. Bull. 9: 20. 1940; *Sinarundinaria confusa* (McClure) P. C. Keng.

Rhizome neck 10–40 cm, (2–)4–7 mm in diam. Culms 1–2 m, 2–10 mm in diam.; internodes purple spotted, terete, 10–33 cm, initially white powdery, glabrous, nearly solid; supra-nodal ridges level; sheath scar prominent, initially yellow setose. Branches 1 or 2 at lower nodes and 3–5 at upper nodes. Culm sheaths persistent, narrowly triangular, leathery, brown setose, margins setose; auricles absent; oral setae readily deciduous; ligule truncate, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate or linear, basally slightly hairy adaxially, margins serrulate. Leaves 2–5(–7) per ultimate branch; sheath margins white-gray ciliate; auricles absent; oral setae 2–5 mm; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 8–13 × 0.6–1.5(–2.1) cm, abaxially thinly hairy basally, secondary veins 4–6-paired, transverse veins distinct, base cuneate, one margin serrulate, other margin obscurely so. Inflorescence paniculate; spikelet 1.2–3.4 cm; florets 2–6, green-purple; rachilla 3–4 mm, hairy. Lemma lanceolate, margins ciliolate; palea keels ciliate, apex bifid. Anthers yellow. Ovary ovoid, glabrous. Caryopsis unknown. New shoots Apr–Aug.

● 1000–2300 m. N Guizhou, W Hubei, W Hunan, SW Shanxi, E Sichuan.

54. Yushania pauciramificans T. P. Yi, Bull. Bot. Res., Harbin 8(4): 71. 1988.

少枝玉山竹 shao zhi yu shan zhu

Rhizome neck 14–50 cm, 6–12 mm in diam. Culms 2–3.5 m, 0.6–1.2 cm in diam.; internodes purple, terete, 15–27 cm, initially with a white powdery ring below each node, glabrous; wall 2.5–3.5 mm thick; nodes with weakly prominent supra-nodal ridge; sheath scar greatly prominent, woody, glabrous. Branches 1–3 at lower nodes, ca. 5 at upper. Culm sheaths persistent, triangularly narrowly rounded, 2/5–1/2 as long as internodes, cartilaginous, erectly gray setose, adaxially waxy, margins densely gray-yellow setose; auricles absent; oral setae present initially; ligule truncate or convex, 1–1.5 mm, glabrous; blade linear-lanceolate, glabrous, revolute. Leaves 2–5 per ultimate branch; sheath margins glabrous; auricles absent; oral setae 5–7, gray-yellow, 3–9 mm; ligule truncate, glabrous; blade lanceolate or elliptic-lanceolate, 5.2–16 × 1.1–2.8 cm, glabrous, secondary veins 4–6-paired, transverse veins distinct, base broadly cuneate or rounded, one margin serrulate, other margin obscurely so. Inflorescence unknown. New shoots Aug.

● About 2500 m. C Yunnan.

55. Yushania punctulata T. P. Yi, J. Bamboo Res. 5(1): 59. 1986.

抱鸡竹 bao ji zhu

Rhizome neck to 46 cm, 2.5–4.5 mm in diam. Culms 1–1.8 m, 3–5 mm in diam.; internodes initially purple spotted, terete, 18–25 cm, with white powdery ring below each node, glabrous, nearly solid; supra-nodal ridge level or weakly prominent; sheath scar prominent, glabrous. Branches 1 at lower nodes to 3 at upper nodes. Culm sheaths persistent, triangularly narrowly rounded, ca. 1/3 as long as internodes, leathery, sparsely adnately gray setose, becoming glabrous, margins densely yellow-brown setose; auricles absent or small; oral setae radiating; ligule truncate or convex, ca. 0.5 mm, glabrous; blade reflexed, linear-lanceolate, glabrous. Leaves 2–12 per ultimate branch; sheath margins glabrous; auricles absent; oral setae absent or present; ligule truncate or arcuate, glabrous; blade lanceolate, 13–23 × 1.5–2.7 cm, glabrous, secondary veins 5- or 6-paired, transverse veins distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots May.

● 1200–1500 m. S Sichuan.

56. Yushania pachyclada T. P. Yi, J. Bamboo Res. 5(1): 54. 1986.

粗枝玉山竹 cu zhi yu shan zhu

Rhizome neck 15–35 cm. Culms 1–2 m, 3–10 mm in diam.; internodes 20–30 cm, grooved or flattened above branches, glabrous, initially with white powdery ring below each node, nearly solid; supra-nodal ridges weakly prominent; sheath scar prominent. Branches 1 at lower nodes, 2–5 at upper nodes. Culm sheaths persistent, narrowly rounded, leathery, usually glabrous, margins glabrous; auricles and oral setae absent; ligule truncate or arcuate, ca. 1 mm, glabrous; blade conical or linear-lanceolate, glabrous, revolute. Leaves 2–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 6–14 × 1.1–2 cm, glabrous, secondary veins 4–6-paired, transverse veins slightly distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots Jun.

● 1700–1800 m. S Sichuan, NE Yunnan.

57. Yushania niitakayamensis (Hayata) P. C. Keng, Acta Phytotax. Sin. 6: 357. 1957.

玉山竹 yu shan zhu

Arundinaria niitakayamensis Hayata, Bot. Mag. (Tokyo) 21: 49. 1907; *A. oiwakensis* Hayata; *Indocalamus niitakayamensis* (Hayata) Nakai; *I. oiwakensis* (Hayata) Nakai; *Pleioblastus niitakayamensis* (Hayata) Ohki; *P. oiwakensis* (Hayata) Ohki; *Pseudosasa oiwakensis* (Hayata) Makino; *Sasa niitakayamensis* (Hayata) E. G. Camus; *S. niitakayamensis* var. *microcarpa* E. G. Camus; *Sinarundinaria niitakayamensis* (Hayata) P. C. Keng.

Rhizome neck ca. 30 cm. Culms 1–4 m, 5–20 mm in diam.; internodes 10–30 cm, grooved or flattened above branches, initially setulose, becoming glabrous and waxy; supra-nodal ridge level; sheath scar with persistent remains of

sheath base. Branches 1 at lower nodes, 3 or 4 at upper nodes. Culm sheaths gradually deciduous or persistent, light brown, leathery, densely setose; auricles small; oral setae brown, ca. 2 mm; ligule truncate, ca. 0.5 mm, margin fissured; blade deciduous, linear, glabrous. Leaves 3–10 per ultimate branch; sheath sparsely hairy on margins and apex; auricles small; oral setae several, 2–3 mm; ligule truncate, ca. 1 mm, margin fissured, ciliate; blade lanceolate, 2–18 × 0.3–1.3 cm, glabrous, secondary veins 2–4-paired, transverse veins distinct, base rounded, one margin serrulate, other margin obscurely so. Inflorescence paniculate; spikelet 2–4 cm; florets 2–7, purple-brown; rachilla internodes ca. 5 mm, hairy. Lemma lanceolate, margins ciliate at apex; palea keels ciliate, apex bifid. Anthers yellow-green. Ovary fusiform, glabrous. Caryopsis olivaceous.

● 1000–3000 m. Taiwan.

58. Yushania suijiangensis T. P. Yi, J. Bamboo Res. 9(3): 40. 1990.

绥江玉山竹 sui jiang yu shan zhu

Rhizome neck 20–30 cm. Culms 1–2 m, 3–6 mm in diam.; internodes 14–23 cm, grooved or flattened above branches, white powdery in a ring below each node, initially distally gray-yellow setose, nearly solid; supra-nodal ridge weakly prominent; sheath scar prominent, initially setose. Branches 1 at lower nodes, to 3 or 4 at upper nodes. Culm sheaths persistent, triangularly narrowly rounded, 1/3–1/2 as long as internodes, leathery, adnately gray-brown setose; auricles and oral setae absent; ligule truncate, ca. 0.5 mm; blade reflexed, triangular to linear-lanceolate, margins smooth. Leaves 3–11 per ultimate branch; sheath glabrous; auricles absent; oral setae absent or present; ligule truncate, ca. 1 mm; blade narrowly rounded-lanceolate, 4.5–17 × 1–2.5 cm, abaxially slightly hairy initially, secondary veins 4–8-paired, transverse veins easily seen, base cuneate. Inflorescence unknown. New shoots Aug.

● 1300–1500 m. NE Yunnan.

13. THAMNOCALAMUS Munro, Trans. Linn. Soc. London 26: 33. 1868.

筱竹属 xiao zhu shu

Li Dezhu (李德铢); Chris Stapleton

Shrubby bamboos. Rhizomes short necked, pachymorph, neck to 25(–30) cm. Culms loosely to densely unicaespitose, basally erect, apically nodding to pendulous; internodes ± terete, glabrous, smooth, hollow; nodes prominent; buds ovoid, with complete sheathing, 2 branch initials visible. Branches initially 5 in mid-culm, without promontory, central slightly dominant, deflexed; internodes distinctly flattened; branchlets becoming long pendulous with very many nodes. Culm sheaths deciduous, usually shorter than internodes, apically rounded and narrow; blade usually erect and superficially contiguous with sheath, triangular or lanceolate. Leaves usually small; blade with conspicuous transverse veins. Inflorescence partially ebracteate, semelauctant, a partially condensed racemose panicle on leafy or leafless flowering branches, basal branches initially subtended by prominent spathelike bracts, not unilateral. Spikelets robust, 1- to many flowered, followed by a sterile floret, shortly pedicellate. Glumes 2; lemma many veined, long mucronate or shortly awned. Palea usually shorter than lemma, 2-keeled, obtuse. Lodicules 3, transparent. Stamens 3; filaments free, long exserted; anthers yellow. Ovary appendage absent or inconspicuous; style 1; stigmas usually 3, plumose. New shoots late summer–early autumn, fl. summer–autumn.

Two to four species: Bhutan, China, NE India, Nepal; one species in China.

Other species published in *Fargesia* may also belong in this genus, but insufficient generic characteristics were given in their descriptions.

1. Thamnocalamus spathiflorus (Trinius) Munro, Trans. Linn. Soc. London 26: 34. 1868.

筱竹 xiao zhu

Rhizome neck 3.5–6 cm, 7–20 mm in diam. Culms 3–4 (–5.5) m, 1–2 cm in diam.; internodes terete or slightly flattened above branches, 15–18 cm, grooved, ridged, initially densely white powdery, glabrous; wall 2–3(–4) mm thick; nodes slightly to distinctly swollen; sheath scar prominent, with persistent remains of sheath base. Branches (1–)3–6, erect or deflexed, densely white powdery, glabrous. Culm sheaths deciduous, narrowly rounded or narrowly triangular-rounded, equal to or slightly longer than internodes, leathery, white powdery, glabrous or densely setose, margins yellow-brown ciliate, longitudinal ribs conspicuous; auricles absent or falcate, oral setae absent or prominent; ligule arcuate, ca. 1 mm, glabrous, margins fissured; blade erect, gray or gray-brown, triangular or linear-lanceolate, glabrous, margins usually rolled, serrulate. Leaves 2–5(or 6) per ultimate branch; sheath glabrous; auricles absent or prominent, oral setae absent, or many and readily deciduous, gray, 1–1.5 mm; ligule truncate, ca. 1 mm, margins puberulous; blade narrowly lanceolate, 4.5–9 × 0.5–1 cm, glabrous, secondary veins 2-paired, transverse veins distinct, base broadly cuneate or nearly rounded, margins serrulate. Inflorescence unknown from China. New shoots May–Jun.

Coniferous and mixed subalpine forests; 2500–2900 m. S Xizang [Bhutan, NE and NW India, Nepal].

1a. Culm nodes only slightly swollen; culm sheaths densely setose; leaf sheath auricles prominent ..... 1a. var. *spathiflorus*

1b. Culm nodes distinctly swollen; culm sheaths glabrous; leaf sheath auricles absent ..... 1b. var. *crassinodus*

1a. Thamnocalamus spathiflorus var. **spathiflorus**

筱竹(原变种) xiao zhu (yuan bian zhong)

Arundinaria spathiflora Trinius, Mém. Acad. Imp. Sci. Saint-Pétersbourg, Sér. 6, Sci. Math., Seconde Pt. Sci. Nat. 1:

617. 1835; *A. aristata* Gamble; *Thamnocalamus aristatus* (Gamble) E. G. Camus.

Culm nodes only slightly swollen. Culm sheath densely setose; auricles falcate; oral setae prominent. Leaf sheath auricles prominent; oral setae absent or many.

Coniferous and mixed subalpine forests; 2500–2900 m. S Xizang [Bhutan, NE and NW India, Nepal].

1b. Thamnocalamus spathiflorus var. **crassinodus** (T. P. Yi) Stapleton, Edinburgh J. Bot. 51: 284. 1994.

粗节筱竹 cu jie xiao zhu

Fargesia crassinoda T. P. Yi, J. Bamboo Res. 2(2): 24. 1983.

Culms nodes distinctly swollen. Culm sheaths glabrous; auricles absent; oral setae absent or rarely present. Leaf sheath auricles absent; oral setae present.

Coniferous and mixed subalpine forests; 2500–2900 m. S Xizang (Gyirong) [Nepal].

14. FARGESIA Franchet, Bull. Mens. Soc. Linn. Paris 2: 1067. 1893.

箭竹属 jian zhu shu

Li Dezhu (李德铢), Guo Zhenhua (郭振华); Chris Stapleton

Borinda Stapleton; *Sinarundinaria* Nakai.

Small (ca. 1 m) to subarborescent (to 15 m) bamboos. Rhizomes pachymorph, short relative to culm height, 10–30(–50) cm, with short neck. Culms unicaespitose, basally erect, apically nodding to pendulous; internodes terete, smooth or finely ridged; nodes with level or weakly prominent supra-nodal ridge, usually narrower than sheath scar. Buds ovoid to lanceolate, branch sheathing reduced. Branches initially 7–15 per node in mid-culm, above promontory, initially erect, becoming deflexed, subequal. Culm sheaths linear, rounded, or triangular; blade usually reflexed. Leaves small to medium-sized; blades glossy and thickened, or matte and delicate, transverse veins prominent. Inflorescence racemose to paniculate, compressed or open, ebracteate or branches subtended by a series of persistent, small, delicate sheaths, unilateral or not. Spikelets several flowered. Glumes (1 or)2, unequal; lemma apically obtuse or acute, mucronate to awned; palea equal to or shorter than lemma, 2-keeled, apex bifid; lodicules 3. Stamens 3; filaments free, slender; anthers yellow or purple. Style 1 or 2; stigmas 2 or 3, plumose. Caryopsis oblong to ovoid. New shoots May–Sep.

About 90 species: China, E Himalayas, Vietnam; at least 78 species (77 endemic) in China.

Fargesia was originally described for a single species from central China with dense, spathed, unilateral racemes and short rhizomes. Some authors have suggested that on this basis, it should be referred to the earlier, Himalayan genus *Thamnocalamus*, which also has rather dense, initially spathed inflorescences. However, bud and branch morphology and molecular evidence suggest that the genera are not so closely related.

Many species in *Fargesia* lack dense, spathed, unilateral inflorescences. As their flowers have become known, several have been moved into a genus established specifically to accommodate such clump-forming species, *Borinda*. In order for all these species to be listed under the same genus, they are all temporarily maintained under *Fargesia*, as in FRPS (9(1), 1996). The relationships among *Fargesia*, *Thamnocalamus*, *Yushania*, and allies are under investigation (Guo and Li, Molec. Phylogen. Evol. 30: 1–12. 2004).

Fargesia brevipes, *F. cuspidata*, *F. ungulata*, and *F. vicina* (species nos. 75–78) could not be included in the following key because of lack of information on their culms and culm sheaths.

1a. Culm sheaths deciduous; culm nodes with supra-nodal ridge prominent to very prominent, usually more prominent than sheath scar.
2a. Branches obviously unequal, larger branches 1.5–6 mm in diam., smaller branches 1–1.5 mm in diam. ..... 1. *F. canaliculata*
2b. Branches ± subequal, all 1–1.5 mm in diam.
3a. Internodes 21–25(–30) cm, initially sparsely white powdery; branches 10–40 per node, secondary branching absent or only at basal 1 or 2 nodes of branches; leaves 1 or 2 per ultimate branch ..... 2. *F. stenoclada*
3b. Internodes 10–15 cm, initially densely white powdery; branches 4–8 per node, secondary branching well developed; leaves 2–4 per ultimate branch ..... 3. *F. brevissima*
1b. Culm sheaths late deciduous or persistent; culm nodes with supra-nodal ridge level, rarely prominent, usually less prominent than sheath scar.
4a. Culm sheaths oblong or narrowly elliptical, glabrous or sparsely setose, apically rounded, apex as wide as base or nearly so.
5a. Culm sheath blade reflexed.
6a. Culm sheaths sparsely gray-brown setose.
7a. Culm internodes densely white powdery when young, gray-white setose below node, conspicuously finely ridged in, nearly solid, wall 2.5–5.5 mm thick ..... 12. *F. frigidis*
7b. Culms internodes thinly white powdery only below each node, glabrous, obscurely finely ridged, hollow, wall 1.5–2 mm thick ..... 4. *F. zayuensis*
6b. Culm sheaths glabrous.
8a. Internodes to ca. 40 cm, to 2.5 cm in diam.; culms densely white powdery when young ..... 5. *F. orbiculata*
8b. Internodes shorter than 33 cm, not more than 2 cm in diam.; culms sparsely white powdery when young.

9a. Culm sheaths distally asymmetrically rounded; leaf sheath oral setae usually present ..... 6. *F. murielae*
9b. Culm sheaths distally oblong-ovate; leaf sheath oral setae absent ..... 7. *F. denudata*
5b. Culm sheath blades erect at least on lower nodes, sometimes on all nodes.
10a. Culm sheath blade base much narrower than culm sheath apex.
11a. Culm sheath apically broadly triangular or arcuate, shoulders not projecting, ligules truncate ..... 8. *F. similaris*
11b. Culm sheath shoulders projecting, ligules triangular or arcuate.
12a. Culm sheaths longer than internodes, to 26 cm, very sparsely yellow-brown setose, apex leathery and flat ..... 9. *F. utilis*
12b. Culm sheaths shorter than internodes, to 14 cm, glabrous, apex papery and undulate when dry ..... 10. *F. extensa*
10b. Culm sheath blade base widened and nearly as wide as, to as wide as culm sheath apex.
13a. Culm sheaths glabrous; leaf blade broadly lanceolate, base asymmetrically rounded ..... 11. *F. obliqua*
13b. Culm sheaths initially gray-white or gray-yellow setulose; leaf blade lanceolate, basally cuneate, nearly symmetrical.
14a. Culms to 3 cm in diam.; internodes 26–28(–40) cm, initially densely white powdery; culm sheath blade to 22 mm wide; leaf blade abaxially glabrous, secondary veins 3-paired ..... 13. *F. melanostachys*
14b. Culms to 1.5 cm in diam.; internodes 17–25 cm, initially thinly white powdery or lacking powder, culm sheath blade to 5 mm wide; leaf blade abaxially white pubescent, secondary veins 4-paired ..... 14. *F. scabrida*
4b. Culm sheaths narrowly triangular or narrowly orbicular-triangular, setose, rarely glabrous, apex triangular or linear, much narrower than base.
15a. Culm sheath longer than internode.
16a. Culm sheath apically leathery, broadly triangular, narrowed for distal ca. 1/5 of length.
17a. Leaf blade abaxially initially ± gray or gray-brown pubescent, especially proximally.
18a. Culm sheath red-brown ..... 15. *F. rufa*
18b. Culm sheath yellow-brown or purple-brown.
19a. Culm internodes solid or nearly so; leaf sheath auricles absent, oral setae erect or curved ..... 16. *F. dura*
19b. Culm internodes hollow; leaf sheath auricles triangular or subfalcate (rarely absent in *F. macclureana*), oral setae radiating.
20a. Culm internodes 18–28(–53) cm, thinly white powdery when young, fine longitudinal ridges prominent ..... 17. *F. macclureana*
20b. Culm internodes 11–17 cm, densely white powdery when young, fine longitudinal ridges obscure ..... 18. *F. sylvestris*
17b. Leaf blade abaxially glabrous.
21a. Culm internodes hollow.
22a. Culm internodes initially gray-white setose or gray-brown setose, either entirely or only below nodes.
23a. Culms slightly flexuose, internodes 22–25 cm; leaf sheath 5–6.6 cm, blade 12–16 × 2–3 cm, secondary veins 4- or 5-paired ..... 19. *F. subflexuosa*
23b. Culms straight, internodes 15–20 cm; leaf sheath 1.8–3.5 cm, blade 3.5–10.5 × 0.5–0.9(–1.2) cm, secondary veins 2- or 3-paired ..... 20. *F. mairei*
22b. Internodes glabrous.
24a. Culm internodes 20–25(–39) cm; leaf blade 1.3–2.3 cm wide ..... 21. *F. tenuilignea*
24b. Culm internodes to 20 cm; leaf blade less than 1.3 cm.
25a. Culm sheaths yellowish; leaf blades not conspicuously tessellate ..... 22. *F. spathacea*
25b. Culm sheaths purple or purple-brown; leaf blades conspicuously tessellate.
26a. Culm sheaths sparsely brown setose or rarely glabrous; culm sheath auricles falcate; leaf sheath auricles elliptic ..... 23. *F. qinlingensis*
26b. Culm sheaths glabrous or sparsely gray-white setose; culm sheaths and leaf sheaths without auricles ..... 24. *F. nitida*
21b. Culm internodes solid or nearly so.
27a. Culms to 6 cm in diam.; internodes blue-gray, distally gray-brown to yellow-brown setose when young; leaf blade 10–18 × 1.6–2.3 cm ..... 25. *F. papyrifera*
27b. Culms to 2 cm in diam.; internodes often light green, glabrous; leaf blade 3.2–9.5 × 0.4–1.2 cm.
28a. Culm sheath oral setae erect, ligule subtruncate, blade reflexed; leaf blade 0.5–1.2 cm wide ..... 26. *F. albocerea*
28b. Culm sheath oral setae absent, ligule ± arcuate, blade erect; leaf blade 0.4–0.7 cm wide.
29a. Culm sheaths uniformly leathery; culms 1–2 cm in diam.; branches deflexed ..... 27. *F. solida*
29b. Culm sheaths proximally thinly leathery or papery, distally membranous; culms 0.5–1 cm in diam.; branches ascending ..... 28. *F. elegans*
16b. Culm sheath apically thickly papery, linear or narrowly triangular, narrowed for distal 1/3–1/2 of length.
30a. Leaf blade abaxially proximally or uniformly gray-white or gray-brown pubescent (sometimes glabrous in *F. edulis*).
31a. Culm sheaths densely spotted.

32a. Culm internodes 35–41 cm, with prominent longitudinal ridge above branching; internode cavity hollow when young, not filled with pith; nodes level, intranode 4–6 mm; leaf blade 3.6–10 × 0.3–0.7 mm, secondary veins 2- or 3-paired ..... 29. *F. ferax*

32b. Culm internodes 20–23(–36) cm, without longitudinal ridge above branching; internode cavity filled with pith when young; nodes slightly to conspicuously prominent, intranode 2–4 mm; leaf blade (7–)10–16 × 1–1.7 cm, secondary veins 4-paired ..... 30. *F. fungosa*

31b. Culm sheaths not densely spotted.

33a. Culm internodes with conspicuous fine ridges.

34a. Leaf sheath glabrous; leaf blade thick, 8.5–12(–16) × 0.5–1(–1.4) cm, secondary veins 3-paired; leaf blade proximally glabrous; culm sheath oral setae yellow-brown ..... 31. *F. communis*

34b. Leaf sheath distally pubescent; leaf blade thin, 3.4–9.5 × 0.3–0.7 cm, secondary veins 2-paired; pseudopetiole gray-white pubescent when young; culm sheath oral setae white-gray ..... 32. *F. angustissima*

33b. Culm internodes smooth, without fine ridges.

35a. Culm sheaths yellow, densely brown setose.

36a. Culms 5–8 m tall, 2–4 cm in diam., internodes 28–40 cm; first branch ca. 4 mm in diam.; culm sheath ligule ca. 1 mm; leaf sheath oral setae present; leaf blade 10–14(–22) mm wide ..... 33. *F. edulis*

36b. Culms to 5 m tall, to 2 cm in diam., internodes ca. 30 cm; first branch ca. 2 mm in diam.; culm sheath ligule ca. 7 mm; leaf sheath oral setae absent; leaf blade 4–9 mm wide ..... 34. *F. jiulongensis*

35b. Culm sheaths purple-brown with lighter yellow-brown stripes, sparsely brown setose.

37a. Culm internodes hollow; leaf blade with transverse veins distinct; pseudopetiole glabrous ..... 35. *F. gongshanensis*

37b. Culm internodes solid or nearly so; leaf blade with transverse veins obscure; pseudopetiole gray-white pubescent when young ..... 36. *F. contracta*

30b. Leaf blade abaxially glabrous.

38a. Culm internodes hollow, wall much narrower than cavity.

39a. Culms 0.5–2 cm in diam.

40a. Culm internodes white powdery when young, glabrous; culm sheaths glabrous or apically sparsely brown setose, sometimes purple spotted; leaf sheaths to 5 cm ..... 37. *F. semicoriacea*

40b. Culm internodes densely white powdery when young, glabrous or gray-yellow setose below node; culm sheaths yellow-brown setose; leaf sheaths to 7 cm ..... 38. *F. hygrophila*

39b. Culms (1.2–)2–6 cm in diam.

41a. Culm sheath blade erect; leaf blade 3–6 mm wide ..... 39. *F. sagittatinea*

41b. Culm sheath blade reflexed; leaf blade 6–22 mm wide.

42a. Culm sheaths purple-brown, sometimes purple spotted ..... 40. *F. altior*

42b. Culm sheaths yellow or yellow-brown, not spotted.

43a. Culm internodes gray-green, initially gray or gray-yellow setose below nodes; culm sheath ligule 1–6 mm; leaf blade 1.3–2.2 cm wide ..... 41. *F. concinna*

43b. Culm internodes green, glabrous; culm sheath ligule to 1 mm; leaf blade 0.8–1.3 cm wide ..... 42. *F. praecipua*

38b. Culm internodes solid or nearly so, wall much thicker than any inner cavity.

44a. Culm internodes proximally white powdery when young; culm sheath blade erect ..... 43. *F. yuanjiangensis*

44b. Culm internodes not white powdery; culm sheath blade reflexed (unknown in *F. perlonga*).

45a. Culm sheath auricles small or absent; leaf sheath oral setae scarce; leaf blade thick, 10–19.5 × 1.3–1.7 cm, secondary veins 5- or 6-paired ..... 44. *F. perlonga*

45b. Culm sheath auricles formed by sheath shoulders rolled; leaf sheath oral setae conspicuous, erect; leaf blade thin, 5.5–14 × 0.8–1.5 cm, secondary veins 3–5-paired ..... 45. *F. circinata*

15b. Culm sheath shorter than or about as long as internodes.

46a. Culm sheath blade always reflexed.

47a. Culm internodes solid or thickly walled, wall thicker than cavity if hollow.

48a. Leaf blade abaxially glabrous.

49a. Culm internodes initially sparsely white-gray setose; culm sheath distal margins flat; leaf blades 4–8(–15) per twig ..... 46. *F. hsuehiana*

49b. Culm internodes glabrous; culm sheath distal margins wrinkled; leaf blades ca. 2 per twig ..... 47. *F. pleniculmis*

48b. Leaf blade abaxially densely pubescent at least proximally.

50a. Leaf blade 4–12 × 0.5–1.1 cm, secondary veins 2–4-paired; culms 0.5–1.5 cm in diam.

51a. Culms apically pendulous to scrambling; leaf sheath 3–5 cm; leaf blade abaxially glabrous, secondary veins 3- or 4-paired ..... 51. *F. declivis*

51b. Culms erect; leaf sheath 1.5–2.5 cm; leaf blade abaxially white pubescent, secondary veins 2- or 3-paired ..... 52. *F. farcta*

50b. Leaf blade 12–21 × 1.1–2.3 cm, secondary veins 4- or 5(or 6)-paired; culms (1–)1.6–5(–6) cm in diam.

52a. Shoots usually white powdery; nodal sheath scar glabrous; culm sheaths glabrous or setose in patches ..... 48. *F. yunnanensis*
52b. Shoots not white powdery; nodal sheath scar brown setose; culm sheaths densely brown setose.
53a. Culm internodes prominently finely ridged, initially black-green; culm sheath ligule ca. 1 mm, truncate or arcuate ..... 49. *F. acuticontracta*
53b. Culm internodes obscurely finely ridged, initially; culm sheath ligule ca. 3 mm, serrulate .... 50. *F. longiuscula*
47b. Culm internodes hollow, wall much thinner than central cavity.
54a. Leaf blade abaxially entirely or proximally pubescent.
55a. Older culm internodes scabrid after setae break off, wall 1–1.5 mm thick; culm sheaths papery ... 65. *F. plurisetosa*
55b. Older culm internodes usually smooth and glabrous, wall 2–5 mm thick; culm sheaths leathery.
56a. Culm internodes densely white powdery when young.
57a. Culm sheaths densely appressed brown setose; leaf sheath oral setae present, persistent ..... 53. *F. adpressa*
57b. Culm sheaths glabrous or sparsely yellow-brown setose; leaf sheath oral setae absent ..... 54. *F. pauciflora*
56b. Culm internodes not white powdery.
58a. Culm sheaths proximally glabrous or setose; culm sheath auricles minute, blade wrinkled ..... 55. *F. grossa*
58b. Culm sheath proximally densely brown setose; culm sheath auricles absent, blade flat.
59a. Culm internodes glabrous; leaf sheath 1.2–3 cm; leaf blade abaxially proximally pubescent ..... 56. *F. hainanensis*
59b. Culm internodes initially distally gray setose; leaf sheath 5.5–7.5 cm; leaf blade abaxially uniformly pubescent ..... 57. *F. porphyrea*
54b. Leaf blade abaxially glabrous.
60a. Culm internodes not white powdery; leaf blade 1.2–1.6 cm wide ..... 58. *F. lincangensis*
60b. Culm internodes initially white powdery; leaf blade 0.4–1.2 cm wide.
61a. Culm internodes initially gray-white setose above nodes, usually densely brown setose below node when young ..... 60. *F. strigosa*
61b. Culm internodes glabrous.
62a. Culm internodes grooved above branches; leaf blades 8–10 per ultimate branch; leaf sheath oral setae absent ..... 62. *F. dulcicula*
62b. Culm internodes terete; leaf blades 2–4 per ultimate twig; leaf sheath oral setae present.
63a. Culm internode nearly solid or wall 4–8 mm thick; culm sheath densely pale yellow setose; leaf blades 3 or 4 per ultimate branch; leaf sheath to 3.8 cm, pseudopetiole 1.5–2.5 mm; blade 8–12 mm wide; secondary veins 3- or 4-paired ..... 63. *F. wuliangshanensis*
63b. Culm internode wall 2–4 mm thick; culm sheath sparsely gray-white to gray-yellow setose; leaf blades 2(or 3) per ultimate branch; leaf sheath to 2.5 cm, pseudopetiole to 1 mm; blade 4–5 mm wide; secondary veins 2-paired ..... 64. *F. glabrifolia*
46b. Culm sheath blade erect at least on lower part of culm, sometimes reflexed on upper parts.
64a. Leaf sheath auricles present.
65a. Culm internodes initially densely gray setose; culm sheath ligule ciliate.
65b. Culm internodes glabrous when young.
66a. Culm sheath blade much narrower than apex of culm sheath; leaf sheath auricles narrowly elliptic, oral setae terminal ..... 66. *F. dracocephala*
66b. Culm sheath blade about as wide as culm sheath apex; leaf sheath auricles nearly circular, oral setae marginal ..... 67. *F. decurvata*
64b. Leaf sheath auricles absent.
67a. Leaf sheath oral setae present, erect.
68a. Culm internodes initially distally white-gray setose, not white powdery; culm sheaths persistent, densely adnately brown-black setose, ligule 2–6 mm ..... 68. *F. conferta*
68b. Culm internodes glabrous, white powdery; culm sheaths deciduous, ligule to 2 mm.
69a. Leaf sheath to 16 cm, apex broadly triangular; leaves 2–4 per ultimate branch; leaf sheath margins densely ciliate, blade with secondary veins 4–7-paired ..... 69. *F. robusta*
69b. Leaf sheath to 27.5 cm, apex narrowly triangular; leaves 7–9 per ultimate branch; leaf sheath margins glabrous, blade with secondary veins 3- or 4-paired ..... 70. *F. caduca*
67b. Leaf sheath oral setae absent.
70a. Culm internodes setose when young, at least near nodes, culm sheath brown setose.
71a. Culm internodes 35–45 cm; leaf blade with both margins spinescent-serrulate ..... 59. *F. yulongshanensis*
71b. Culm internodes 18–25 cm; leaf blade with one margin slightly serrulate, other margin smooth ..... 71. *F. emaculata*
70b. Culm internodes glabrous; culm sheath glabrous or sparsely setose.
72a. Culms 1.2–2(–2.5) m, internodes 8–12 cm; culm sheath persistent ..... 61. *F. funiushanensis*
72b. Culms 3–6 m, internodes 14–38 cm; culm sheath deciduous, sometimes gradually so.

73a. Culm internodes grooved above branches; culm sheath ligule truncate, lower culm sheath blades erect, upper blades reflexed ..... 72. *F. lushuiensis*
73b. Culm internodes terete; culm sheath blades always erect.
74a. Culm sheaths gradually deciduous, ligule not broader than base of sheath blades, arcuate ..... 73. *F. mali*
74b. Culm sheaths soon deciduous, ligule broader than base of sheath blade, truncate or concave ..... 74. *F. exposita*

1. Fargesia canaliculata T. P. Yi, J. Bamboo Res. 4(1): 19. 1985.

岩斑竹 yan ban zhu

Rhizome neck 5–15 cm, 1.4–3 cm in diam.; internodes 3–8 mm. Culms 3–5 m, 1–2 cm in diam.; internodes terete, 20 (–25) cm, conspicuously grooved above branches, smooth, very rigid, initially white powdery, especially below nodes, solid or nearly so, cavity filled with lamellate or spongy pith; supra-nodal ridges prominent. Branches 5–7 per node, deflexed, unequal, thickly walled. Culm sheaths soon deciduous, gray-yellow, narrowly triangular, longer than internodes, basally leathery, distally papery, sparsely brown setose, margins densely ciliate; auricles and oral setae absent; ligule convex, irregularly fissured; blade reflexed, linear-lanceolate, glabrous. Leaves 2 or 3 per ultimate branch; sheath glabrous, margin glabrous or ciliolate; auricles and oral setae absent; ligule arcuate or convex, ca. 1 mm; blade linear-lanceolate, 2.8–5 × 0.25–0.5 cm, narrow, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, one margin spinescent-serrulate, other margin obscure. Inflorescence unknown. New shoots Jun.

● W Sichuan.

The shoots are delicious, and the culms are used for making paper, chopsticks, and farm tools.

2. Fargesia stenoclada T. P. Yi, J. Bamboo Res. 8(1): 30. 1989.

细枝箭竹 xi zhi jian zhu

Rhizome neck 4–8 cm, 0.8–1.8 cm in diam. Culms 2.5–5.5 m, 1–1.7 cm in diam.; internodes terete, 21–25(–30) cm, smooth, initially sparsely white powdery; wall 3–5 mm thick; nodes and sheath scars weakly prominent. Branches 10–40 per node, subequal, slender, secondary branching only from lowermost branches. Culm sheaths deciduous, narrowly triangular-rounded, 1/2–3/5 as long as internodes, thinly leathery, radially white-gray setose, longitudinal ribs conspicuous, margins densely ciliate; auricles and oral setae absent; ligule arcuate or nearly truncate, 0.5–1 mm; blade erect, triangular to linear-triangular, width nearly equal to apex of culm sheath. Leaves 1 or 2 per ultimate branch; sheath margins ciliolate; auricles absent, oral setae few, 1–2 mm; ligule truncate, ca. 0.4 mm; blade linear-lanceolate, 4–9.4 × 0.5–0.9 cm, glabrous, secondary veins 2- or 3-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence unknown. New shoots Apr–May.

● 1600–1900 m. W Sichuan.

The multiple branches and short buds of this species are atypical for *Fargesia*.

The shoots are edible, and the culms provide weaving material and fishing rods. The species is a source of food for the giant panda.

3. Fargesia brevissima T. P. Yi, J. Bamboo Res. 5(4): 128. 1985.

窝竹 wo zhu

Rhizome neck 7–14 cm, 1.1–2.5 cm in diam., internodes 2–12 mm. Culms 3–5 m, 1–3 cm in diam.; internodes terete, 10–15 cm, rigid, initially glaucous and densely white powdery, longitudinal ribs obscure; wall 1–4 mm thick; supra-nodal ridge prominent, initially white powdery; sheath scar prominent, sometimes with persistent remains of sheath base. Branches 4–8 per node, deflexed, subequal, slender. Culm sheaths gradually deciduous, distally broadly rounded, cartilaginous, glabrous, white powdery at base, longitudinal ribs conspicuous marginally and distally; auricles and oral setae absent; ligule steeply arcuate, ca. 1 mm, glabrous; blade erect, triangular or linear-lanceolate, glabrous. Leaves 2–4 per ultimate branch; sheath margins yellow-brown ciliolate; auricles and oral setae absent; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 5–11 × 0.7–1.5 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base broadly cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence unknown. New shoots Jun.

● 2000–2400 m. E Sichuan.

The shoots are edible, and the culms are used for weaving.

4. Fargesia zayuensis T. P. Yi, J. Bamboo Res. 7(2): 20. 1988.

察隅箭竹 cha yu jian zhu

Rhizome neck 3–7 cm, 0.9–1.5 cm in diam., internodes 3–5 mm. Culms to 6 m, to 1.5 cm in diam.; internodes terete, 25–35 cm, initially sparsely white powdery; wall 1.5–2 mm thick; supra-nodal ridges level; sheath scar prominent. Branches 5–10 per node, deflexed, subequal. Culm sheaths gradually deciduous, narrowly rounded, shorter than internode, leathery, abaxially slightly gray-brown setulose, margins brown ciliolate or not, longitudinal ribs conspicuous; auricles absent; oral setae not persistent; ligule truncate, ca. 1 mm, glabrous, margin fissured; blade readily deciduous, reflexed, rarely erect, linear-lanceolate, articulate with apex of culm sheath. Leaves 1–3 per ultimate branch, readily deciduous; sheath glabrous; auricles and oral setae absent; ligule truncate, glabrous; blade lanceolate, 5–8.5 × 0.4–0.6 cm, glabrous, secondary veins 2-paired, transverse veins obscure, base cuneate, margins serrulate. Inflorescence unknown. New shoots Jul–Aug.

● 2500–3000 m. SE Xizang.

The shoots are edible, and the culms are used for weaving and for brooms.

5. Fargesia orbiculata T. P. Yi, J. Bamboo Res. 7(2): 22. 1988.

长圆鞘箭竹 chang yuan qiao jian zhu

Rhizome neck 5–10 cm, 1–2.5 cm in diam. Culms 4–6 m,

1–2.5 cm in diam.; internodes terete, 28–40 cm, initially densely white powdery, longitudinal ribs conspicuous; wall 2–3 mm thick; supra-nodal ridges level, initially white powdery; sheath scar prominent. Branches 5–18 per node, deflexed, slender, densely white powdery. Culm sheaths persistent, gray-yellow to yellow-brown, distally rounded, leathery, glabrous, longitudinal ribs conspicuous and curved at apex of culm sheath; auricles absent; oral setae usually absent; ligule ca. 1 mm, convex; blade readily deciduous, reflexed, linear-lanceolate, glabrous, usually revolute, articulate with sheath. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule truncate or arcuate, ca. 1 mm; blade lanceolate, 5–8 × 0.8–1.3 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base nearly rounded, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots Jul.

● About 3800 m. NW Yunnan.

The shoots are edible, and the culms are used for furniture.

6. Fargesia murielae (Gamble) T. P. Yi, J. Bamboo Res. 2(1): 39. 1983.

神农箭竹 shen nong jian zhu

Arundinaria murielae Gamble, Bull. Misc. Inform. Kew 1920: 344. 1920, nom. cons. prop.; *A. sparsiflora* Rendle (1904), nom. rej. prop.; *Fargesia parvifolia* T. P. Yi; *F. maluo* T. P. Yi; *F. sparsiflora* (Rendle) Ohrnberger; *Sinarundinaria murielae* (Gamble) Nakai; *S. sparsiflora* (Rendle) P. C. Keng; *Thamnocalamus murielae* (Gamble) Demoly; *T. sparsiflorus* (Rendle) P. C. Keng.

Culms 1–5 m, 0.5–1.4 cm in diam.; internodes terete, 15–23 cm, initially sparsely white powdery, longitudinal ribs weakly conspicuous; wall 1.5–2.5 mm thick, cavity filled with lamellate pith; supra-nodal ridges level or weakly prominent; sheath scar prominent. Branches 3–10 per node, deflexed, solid. Culm sheaths deciduous, distally asymmetrically rounded, leathery, glabrous or sometimes distally gray setose, margins initially yellow-brown ciliolate, longitudinal ribs conspicuous; auricles and oral setae absent; ligule arcuate or truncate, 0.5–1 mm, glabrous; blade reflexed, triangular, narrowly triangular, or linear, glabrous, margins level or rolled. Leaves 1 or 2(–6) per ultimate branch; sheath glabrous; auricles absent, oral setae present, yellow-brown; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 6–10 × 0.8–1.2 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base nearly rounded or broadly cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots May.

● 2800–3000 m. Hubei (Shennongjia), Sichuan.

This species is very important in Western horticulture as one of the hardiest bamboos introduced. It was widely cultivated as *Thamnocalamus spathaceus*, after being erroneously placed in synonymy of *Fargesia spathacea*, which was then transferred, also in error, into *Thamnocalamus* (Soderstrom, Brittonia 31: 495. 1979). The earlier name *Arundinaria sparsiflora* is frequently considered conspecific, and the conservation of *A. murielae* against that name has been proposed.

The shoots are edible.

7. Fargesia denudata T. P. Yi, J. Bamboo Res. 4(1): 20. 1985.

缺苞箭竹 que bao jian zhu

Rhizome neck 4–13 cm, 7–10 mm in diam., internodes 2–8 mm. Culms 3–5 m, 0.6–1.3 cm in diam.; internodes terete, 15–18 cm, smooth, initially slightly white powdery; wall 2–3 mm thick; nodes with level or prominent supra-nodal ridge on branching nodes; sheath scar prominent. Branches 4–15 per node, slender. Culm sheaths deciduous, light yellow, oblong-ovate, ca. 2/3 as long as internodes, leathery, glabrous, longitudinal ribs conspicuous; auricles and oral setae absent; ligule truncate, ca. 0.7 mm, glabrous; blade reflexed, linear or linear-triangular, glabrous. Leaves 2–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule truncate or arcuate, ca. 1 mm, glabrous; blade linear-lanceolate or lanceolate, 7–11 × 0.4–1 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate or broadly cuneate, margins smooth or spinescent-serrulate initially. Inflorescence racemose, subtended by 1–4 purple spathes; spikelets 5–10, 1.5–2.5 cm, unilateral, rachilla internodes 0.5–1 mm; florets 2–4. Glumes narrowly lanceolate, papery, abaxially puberulous at apex; lemma ovate-lanceolate, puberulous, apex mucronate to long mucronate; palea keels serrulate, apex bifid; lodicules ovate. Anthers yellow. Ovary ovoid, glabrous; style 1; stigmas 3. Caryopsis ovoid. New shoots May.

● 1900–3200 m. S Gansu, N Sichuan.

The shoots are fragrant and are eaten by the giant panda.

8. Fargesia similaris Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 25. 1988.

秃鞘箭竹 tu qiao jian zhu

Shrubby bamboo. Culms 0.8–1.2 cm in diam.; internodes light yellow, terete, 9.5–18.2 cm, white or black powdery below nodes, longitudinal ribs obscure; wall 2–3 mm thick, cavity filled with lamellate pith; supra-nodal ridges prominent; sheath scar weakly prominent. Branches 3–8(–15) per node, deflexed. Culm sheaths yellow, triangular to narrowly rounded, shorter than internodes, basally cartilaginous, distally leathery, glabrous, longitudinal ribs conspicuous on upper part; margins densely ciliolate, apex slightly white powdery; auricles absent; oral setae few; ligule truncate, ca. 1 mm, glabrous; blade erect, triangular-conical, glabrous. Leaves 2–4 per ultimate branch; sheath purple, glabrous or with white pubescent margins; auricles absent; oral setae few, erect, yellow-brown or gray, 2–4 mm, undulate; ligule truncate, ca. 1 mm, glabrous; blade narrowly lanceolate, 1.3–6.5 × 0.4–0.6 cm, glabrous or abaxially white-gray pubescent, secondary veins 2- or 3-paired, transverse veins distinct, base broadly cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown.

● Yunnan.

9. Fargesia utilis T. P. Yi, J. Bamboo Res. 7(2): 28. 1988.

伞把竹 san ba zhu

Rhizome neck 5–10 cm, 1.8–2.5 cm in diam. Culms to 4 m, 1.5–2.5 cm in diam.; internodes terete, 15–17(–20) cm, initially slightly white powdery, longitudinal ribs absent; wall

2.5–5 mm thick; nodes with level or prominent supra-nodal ridge at branching nodes, slightly white powdery initially; sheath scar prominent, glabrous or initially slightly setose. Branches (3–)7–18 per node, deflexed. Culm sheaths persistent, narrowly triangular to rounded, longer than internodes, leathery, sometimes slightly white powdery and sparsely yellow-brown setose, shoulders with steep triangular projections, longitudinal ribs conspicuous; auricles and oral setae absent; ligule irregular, steeply arcuate, glabrous; blade erect or reflexed, narrowly triangular to linear-lanceolate, glabrous, level. Leaves 1 or 2 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule truncate, glabrous; blade narrowly lanceolate, 4–10 × 0.5–1 cm, secondary veins 2- or 3-paired, transverse veins indistinct, base broadly cuneate, margins serrulate. Inflorescence unknown. New shoots Aug.

● 2700–3700 m. NE Yunnan.

The shoots are edible, and the culms are used for making furniture.

10. Fargesia extensa T. P. Yi, J. Bamboo Res. 2(2): 27. 1983.

喇叭箭竹 la ba jian zhu

Borinda extensa (T. P. Yi) Stapleton.

Rhizome neck 10–20 cm, 1–2 cm in diam. Culms 4–6.5 m, 1–2.8 cm in diam.; internodes terete, or slightly flattened above branching, 20–32 cm, initially sparsely white powdery, glabrous; wall 3–6 mm thick, cavity filled with lamellate pith; supra-nodal ridges prominent, glabrous. Branches 3–7 per node, deflexed. Culm sheaths rectangular, shorter than internodes, basally leathery, distally papery, undulate and fragile when dry, glabrous, longitudinal ribs greatly conspicuous, apex and 2 shoulders projecting steeply; auricles and oral setae absent; ligule steeply arcuate, ca. 1 mm, glabrous; blade erect, triangular-conical, glabrous. Leaves 3 or 4(–8) per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule arcuate, ca. 2 mm, glabrous; blade narrowly lanceolate, 5.5–16.5 × 0.7–1.4 cm, secondary veins 2–4-paired, transverse veins distinct, base broadly cuneate, margins serrulate. Inflorescence unknown. New shoots Aug.

● 2200–2500 m. SE Xizang.

11. Fargesia obliqua T. P. Yi, Acta Bot. Yunnan. 8: 48. 1986.

团竹 tuan zhu

Rhizome neck 2.5–5 cm, 6–10 mm in diam. Culms 2–4 m, 0.5–1.2 cm in diam.; internodes terete, 18–24 cm, initially slightly white powdery, glabrous; wall 1.5–3.5 mm thick, pith granular; supra-nodal ridges weakly prominent; sheath scar prominent. Branches (1–)3(–5) per node, deflexed. Culm sheaths persistent, narrowly rounded or triangularly narrowly rounded, ca. 1/2 as long as internodes, leathery, glabrous, longitudinal ribs prominent, margins densely gray ciliolate; auricles and oral setae absent; ligule arcuate, ca. 1 mm, glabrous; blade not readily deciduous, erect, triangular or triangular-lanceolate, glabrous, not articulate with sheath. Leaves 2 or 3(or 4) per ultimate branch; sheath glabrous; auricles and oral setae absent or obscure; ligule inclined-truncate, ca. 0.7 mm, glabrous; blade irregular, narrowly ovate-lanceolate, 6.5–9 × 1.2–1.8 cm, secondary veins 4-paired, transverse veins obscure, base rounded, margins spinescent-serrulate. Inflorescence unknown. New shoots Jul.

● 2400–3300(–3700) m. N Sichuan.

This species appears similar to *Fargesia frigidis* from Yunnan, but it is not known whether it is also deciduous.

The shoots are an important source of food for the giant panda.

12. Fargesia frigidis T. P. Yi, J. Bamboo Res. 7(2): 17. 1988.

凋叶箭竹 diao ye jian zhu

Borinda frigidis (T. P. Yi) Stapleton [*"frigidorum"*]; *Fargesia alpina* Hsueh & C. M. Hui.

Rhizome neck 3–7 cm, 1–1.8 cm in diam., internodes 2–5 mm, solid. Culms 1.5–3.5 m, 1–1.7 cm in diam.; internodes terete, 22–24 cm, conspicuously longitudinally ribbed, initially densely white waxy and white-gray setose below nodes, glabrescent, nearly solid; wall 2.5–5.5 mm thick; supra-nodal ridges level; sheath scar very prominent, woody. Branches 4–13 per node, deflexed. Culm sheaths gradually deciduous to persistent, narrowly rounded, 1/5–2/5 as long as internodes, leathery, very sparsely appressed light yellow setulose, upper margins yellow-brown ciliolate initially, longitudinal ribs conspicuous, apex asymmetrical; auricles absent, one shoulder rising to triangular point; oral setae absent; ligule inclined-truncate or truncate, 1–1.5 mm, glabrous, often rising in center; blade readily deciduous, reflexed, triangular to linear-lanceolate, articulating with apex of culm sheath. Leaves 1–4 per ultimate branch, mostly deciduous in winter; sheath glabrous; auricles absent, one shoulder rising to triangular point; oral setae absent or sometimes few; ligule inclined-truncate, ca. 0.4 mm; blade lanceolate, 2.3–5.2 × 0.45–0.7 cm, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, base broadly cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence unknown. New shoots Aug.

● 3100–3700 m. W Yunnan.

The boundaries between this species and the earlier-named *Fargesia melanostachys*, *Arundinaria forrestii*, and *A. acutissima* require clarification. The types lack sufficient vegetative material for satisfactory comparison without revisiting type localities.

The epithet *frigidis* means "from cold places," whereas the epithet *frigida*, which is sometimes used, implies a subtly different and less appropriate meaning: "cold bamboo."

The culms are used for weaving and for brooms.

13. Fargesia melanostachys (Handel-Mazzetti) T. P. Yi, J. Bamboo Res. 2(1): 39. 1983.

黑穗箭竹 hei sui jian zhu

Arundinaria melanostachys Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 61: 23. 1925; *A. acutissima* Keng; *A. forrestii* Keng; *Sinarundinaria acutissima* (Keng) P. C. Keng; *S. forrestii* (Keng) P. C. Keng; *S. melanostachys* (Handel-Mazzetti) Keng ex P. C. Keng.

Culms 4–6 m, 1–3 cm in diam.; internodes terete or slightly flattened, 26–28(–40) cm, ridged, initially densely white powdery, glabrous; wall 2–5 mm thick; supra-nodal ridges

obscure or level; sheath scar prominent. Branches 3–11 per node. Culm sheaths persistent, narrowly rounded to triangularly narrowly rounded, 1/2–3/5 as long as internodes, leathery, glabrous or sometimes white-gray setulose, initially white powdery, longitudinal ribs conspicuous, margins white-gray ciliate; auricles and oral setae absent; ligule ca. 1 mm, triangular, glabrous; blade erect, triangular or narrowly so, glabrous. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule arcuate, ca. 1 mm, glabrous; blade lanceolate, 3.5–7.5 × 0.7–1.4 cm, glabrous, secondary veins 3-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence a raceme or simple panicle, with 1 lanceolate or triangular bract at base; spikelets 2–8, 1.8–5 cm, rachilla 4–5 mm; florets 3–8, apical floret sterile, apex densely puberulous. Glumes 2, unequal, glabrous; lemma ovate-lanceolate, abaxially slightly puberulous, apex acuminate; palea keels serrulate, apex bifid; lodicules 3, margins apically ciliate. Anthers yellow. Ovary ovoid, glabrous; styles 2; stigmas 3, white, plumose. Caryopsis unknown. New shoots Jul–Aug.

● 3100–3800 m. W Yunnan.

The boundaries between this species, its synonyms, and the later-named *Fargesia frigidis* and its synonym require detailed investigation through gatherings of new material from type localities.

The culms are used for fishing rods.

14. Fargesia scabrida T. P. Yi, J. Bamboo Res. 4(2): 24. 1985.

糙花箭竹 cao hua jian zhu

Rhizome neck 4.5–26 cm, 6–16 mm in diam. Culms 1.8–3.5 m, 0.5–1 cm in diam.; internodes terete, 17–20 cm, initially slightly white powdery or not, glabrous; wall 2–4 mm thick; supra-nodal ridges level or weakly prominent; sheath scar greatly prominent, broad, thick, initially gray setulose. Branches 3–8 per node, erect or deflexed. Culm sheaths persistent, light red-brown, triangular to narrowly rounded, 1/3–1/2 as long as internodes, leathery, abaxially sparsely gray to gray-yellow setulose, longitudinal ribs prominent, margins densely gray-yellow setulose; auricles and oral setae absent or obscure; ligule arcuate, ca. 1 mm, margins densely gray ciliolate; blade erect, triangular or linear-triangular, margins usually sparsely setulose. Leaves 2 or 3 per ultimate branch; sheath margins gray-yellow ciliate; auricles and oral setae absent or obscure; ligule truncate, ca. 1 mm, ciliate; blade lanceolate, 12–18 × 1.1–1.8 cm, abaxially pubescent, secondary veins 4-paired, transverse veins obscure, base broadly cuneate, margins spinescent-serrulate. Inflorescence a panicle, initially terminal to a leafy shoot. Spikelets 6–12, 1.5–3 cm, rachilla internodes 1–2 mm; florets 5–7. Glumes 2, setulose, apex long mucronate; lemma lanceolate, setulose, apex long mucronate; palea keels serrulate; lodicule margins sparsely ciliolate. Anthers yellow. Ovary oblong, glabrous; styles 2 or 3; stigmas 3. Caryopsis unknown. New shoots late Apr–early May.

● 1500–2000 m. S Gansu, N Sichuan.

This species is somewhat intermediate between *Fargesia* and *Yushania* in having a less condensed inflorescence, suggesting that *Borinda* may be the appropriate genus.

The shoots are sweet and are an important source of food for the giant panda.

15. Fargesia rufa T. P. Yi, J. Bamboo Res. 4(2): 27. 1985.

青川箭竹 qing chuan jian zhu

Rhizome neck (6–)10–18 cm, 4–15 mm in diam. Culms 2.5–3.5 m, 0.8–1 cm in diam.; internodes terete, 15–17(–20) cm, smooth, initially slightly white powdery, later white waxy, glabrous; wall 1.5–3.2 mm thick, pith thin and closely adnate to inner wall; supra-nodal ridges weakly prominent; sheath scar greatly prominent as a thick broad ridge, initially brown setose. Branches 6–16 per node, deflexed. Culm sheaths gradually deciduous, red-brown, narrowly triangular, much longer than internodes, basally leathery, distally more papery, sparsely brown setose, longitudinal ribs prominent, margins apically densely gray ciliolate; auricles and oral setae absent; ligule truncate or convex, ca. 1 mm, margins usually ciliolate; blade readily deciduous, reflexed, linear-lanceolate, glabrous, margins dentate-serrulate. Leaves 2–4 per ultimate branch; sheath abaxially glabrous, ridged, margins gray ciliate; auricles absent; oral setae few, erect, yellow, 1–1.5 mm; ligule arcuate, ca. 1 mm, glabrous; blade linear-lanceolate, 6–10 × 0.6–0.8 cm, proximally often slightly pilose, secondary veins 2- or 3-paired, transverse veins weakly prominent, base cuneate, margins spinescent-serrulate, apex long acuminate. Inflorescence unknown. New shoots Jun.

● 1600–2300 m. S Gansu, N Sichuan.

The bamboo cultivated in the West under the cultivar name *Fargesia* ‘Rufa’ is not this species.

Fargesia rufa is an important source of food for the giant panda.

16. Fargesia dura T. P. Yi, J. Bamboo Res. 7(2): 34. 1988.

马斯箭竹 ma si jian zhu

Rhizome neck 5–7 cm, 1.6–3 cm in diam. Culms 3–4 m, 1–2 cm in diam.; internodes terete, 20–27 cm, rigid, initially densely white powdery and gray to white setose, waxy when old, longitudinal ribs prominent, solid or nearly so; nodes initially white powdery and sparsely setulose, supra-nodal ridge level or weakly prominent; sheath scar prominent, initially densely brown setulose. Branches 3–7 per node, initially setose. Culm sheaths persistent, narrowly rounded, longer than internodes, leathery, densely brown setulose, longitudinal ribs greatly prominent, margins initially gray ciliate, apex broadly triangular; auricles and oral setae absent; ligule truncate or convex, 1–2 mm, glabrous; blade readily deciduous, reflexed, linear-lanceolate, glabrous or adaxially slightly pilose at base. Leaves 2–6 per ultimate branch; sheath margins initially densely yellow-brown ciliolate; auricles absent; oral setae few, erect or curved, 2–4 mm; ligule truncate, ca. 1 mm, initially slightly pilose; blade linear-lanceolate, 4.5–12 × 0.4–0.9 cm, abaxially slightly puberulous, secondary veins 2- or 3-paired, transverse veins distinct, base broadly cuneate, margins spinescent-serrulate, apex acuminate. Inflorescence unknown. New shoots Jul.

● About 3200 m. W Yunnan.

17. Fargesia macclureana (Bor) Stapleton, Bamboo Soc. Newslett. 17: 17. 1993.

西藏箭竹 xi zang jian zhu

Arundinaria macclureana Bor, Kew Bull. [12] 1957: 420. 1958; *Borinda macclureana* (Bor) Stapleton; *B. setosa* (T. P. Yi) Stapleton; *Fargesia setosa* T. P. Yi; *Sinarundinaria macclureana* (Bor) C. S. Chao & G. Y. Yang.

Rhizome neck 3–5 cm, 4–20 mm in diam. Culms 1–7 m, 0.5–3.5 cm in diam.; internodes terete, 18–28(–53) cm, initially sparsely white powdery, initially densely brown or gray-brown setose below each node, longitudinal ribs prominent; wall 2–8 mm thick; supra-nodal ridge weakly prominent; sheath scar prominent, initially brown setose. Branches 3–7 per node, deflexed, subequal. Culm sheaths persistent or gradually deciduous, narrowly triangular, slightly longer than internodes, leathery, densely brown-yellow to brown setose, longitudinal ribs prominent, margins brown ciliolate or not; auricles absent; oral setae few, deciduous, erect, purple, 3–12 mm, undulate; ligule truncate or convex, 1–1.5 mm, margins usually serrulate, ciliolate; blade readily deciduous, reflexed, triangular-linear or linear-lanceolate, adaxially slightly pilose, one margin dentate-serrulate. Leaves 3–5 per ultimate branch; sheath purple-green, puberulous; auricles obscure or absent, purple; oral setae few, deciduous, curved, purple or yellow-brown, 1.5–3 mm; ligule arcuate or truncate, 0.5–1.5 mm; blade lanceolate, 4–17 × 0.4–1.8 cm, abaxially slightly puberulous, secondary veins 3- or 4-paired, transverse veins weakly prominent, base broadly cuneate, margins spinescent-serrulate. Inflorescences terminal on leafy branchlets, open panicles, 9–12 cm. Spikelets 2–3 cm, tinged with purple; glumes 2, florets 5–7 plus a terminal sterile floret; lemmas ca. 1.6 cm, awned, awns ca. 2 mm; palea ca. 11 mm; lodicules 3, ciliate, 2 lateral ones larger; stamens 3, anthers yellow; style 1, stigmas 2. Caryopses unknown. New shoots Jul.

● Dominant bamboo in understory of *Picea* or *Pinus densata* and *Quercus* forests; 2100–3800 m. SE Xizang.

This is the type species of the genus *Borinda*.

18. Fargesia sylvestris T. P. Yi, J. Bamboo Res. 7(2): 31. 1988.

德钦箭竹 de qin jian zhu

Culms 3–4 m, 0.6–1 cm in diam.; internodes initially gray-green, terete, 11–17 cm, densely white powdery, gray setose; wall 2–3 mm thick; supra-nodal ridges weakly prominent; sheath scar prominent. Branches 6–10 per node, deflexed. Culm sheaths persistent, narrowly rounded, leathery, yellow-brown setose, longitudinal ribs prominent, margins initially ciliolate, apex triangular; auricles and oral setae absent; ligule truncate, ca. 1 mm, margins initially densely yellow-brown ciliate; blade readily deciduous, reflexed, linear-lanceolate, glabrous, margins dentate-serrulate. Leaves 3–5 per ultimate branch; sheath margins gray-yellow ciliolate; auricles nearly falcate, small; oral setae few, radiating, ca. 1 mm; ligule purple, truncate, ca. 1 mm, margin initially ciliolate; blade narrowly lanceolate, 5–9.2 × 0.5–0.8 cm, abaxially densely pilose, secondary veins 3-paired, transverse veins weakly prominent, base cuneate or broadly cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence unknown. New shoots Jul.

● 3200–3300 m. W Yunnan.

19. Fargesia subflexuosa T. P. Yi, J. Bamboo Res. 7(2): 36. 1988.

曲秆箭竹 qu gan jian zhu

Rhizome neck 5–10 cm, 1.5–2 cm in diam. Culms slightly zigzag, 3–6 m, 1.5–3 cm in diam.; internodes gray-green, terete, 22–25 cm, initially white powdery and white-gray setose, initially densely yellow setose below node, longitudinal ribs prominent; wall 3–5 mm thick; supra-nodal ridges weakly prominent to prominent; sheath scar prominent. Branches 3–7 per node, erect or deflexed. Culm sheaths deciduous, triangularly narrowly rounded or narrowly triangular, longer than internodes, leathery, sparsely yellow adnate-setulose, setae erect and long, longitudinal ribs prominent, margins glabrous or yellow-brown ciliate, apex broadly triangular; auricles and oral setae absent; ligule truncate or convex, 1–2 mm, glabrous; blade readily deciduous, reflexed, triangular or linear-lanceolate, glabrous. Leaves 3–5 per ultimate branch; sheath 5–6.6 cm, margins glabrous; auricles absent or obscure; oral setae few, divergent, yellow-brown, 1.5–3 mm; blade lanceolate, 12–16 × 2–3 cm, thin, usually rugose when dry, glabrous, secondary veins 4- or 5-paired, transverse veins slightly distinct, base cuneate or broadly cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots Sep.

● 2900–3300 m. W Yunnan.

The culms are used for weaving.

20. Fargesia mairei (Hackel ex Handel-Mazzetti) T. P. Yi, J. Bamboo Res. 7(2): 50. 1988.

大姚箭竹 da yao jian zhu

Arundinaria mairei Hackel ex Handel-Mazzetti, Symb. Sin. 7: 1273. 1936; *Indocalamus mairei* (Hackel ex Handel-Mazzetti) McClure; *Sinarundinaria mairei* (Hackel ex Handel-Mazzetti) Keng ex P. C. Keng; *Yushania mairei* (Hackel ex Handel-Mazzetti) J. J. N. Campbell.

Rhizome neck 2–10 cm, 1–1.8 cm in diam. Culms 2–4 m, 1–3 cm in diam.; internodes terete, 15–20 cm, initially densely white powdery, distally white or light yellow setulose; wall 1.5–2.5 mm thick; supra-nodal ridge level, initially white powdery; sheath scar prominent, with remains of sheath base. Branches 6–10 per node. Culm sheaths persistent, triangularly narrowly rounded, longer than internodes, leathery, sparsely brown setulose, longitudinal ribs prominent, margins densely brown ciliate apically; auricles and oral setae absent or obscure; ligule truncate or slightly arcuate, 1–2.7 mm; blade reflexed, linear-lanceolate, glabrous. Leaves 2 or 3 per ultimate branch; sheath 1.8–3.5 cm, glabrous; auricles and oral setae absent or obscure; ligule purple, truncate, 1–1.5 mm; blade narrowly lanceolate, 3.5–10.5 × 0.5–0.9(–1.2) cm, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, base broadly cuneate or nearly rounded, one margin spinescent-serrulate, other margin obscure. Inflorescence paniculate, exserted from spathe. Spikelets ca. 8, rachilla 3–4 mm. Glumes 1 or 2, purple, scabrous, apex long mucronate; lemma setose on margins, apex acuminate; palea setose. Anthers yellow. Ovary oblong; styles 2. Caryopsis unknown. New shoots Jul.

● 2900–3600 m. N Yunnan.

The inflorescence of this species was described from *R. P. Maire 7534*, whereas vegetative details are from *T. P. Yi 84014*.

The shoots are edible, and the split culms are used for weaving.

21. Fargesia tenuilignea T. P. Yi, J. Bamboo Res. 7(2): 39. 1988.

薄壁箭竹 bao bi jian zhu

Fargesia aurita Hsueh & C. M. Hui (1998), not T. P. Yi (1985).

Rhizome neck 5.5–10.5 cm, 1.5–3 cm in diam. Culms 4–8(–10) m, 1–3 cm in diam.; internodes terete, 20–25(–40) cm or longer, initially often slightly white powdery, glabrous; wall 2–3 mm thick; supra-nodal ridge level or weakly prominent; sheath scar prominent, narrow, initially brown setose. Branches 8–11 per node. Culm sheaths persistent, narrowly triangularly rounded, equal to or longer than internodes, leathery, densely yellow to yellow-brown setose, longitudinal ribs prominent, margins apically ciliate; auricles absent; oral setae few, erect or slightly curved, yellow-brown, 2–8 mm; ligule truncate, 2–5 mm, margins sometimes ciliate; blade readily deciduous, reflexed, linear-lanceolate, adaxially slightly pilose proximally. Leaves 2–5 per ultimate branch; sheath initially white powdery apically, margins initially ciliate; auricles absent; oral setae few, erect, gray-yellow, 3–11 mm, undulate; ligule light green, truncate, ca. 1 mm, glabrous; blade lanceolate, 13–18(–20) × 1.3–2.3(–2.5) cm, usually rugose when dry, glabrous, secondary veins 4- or 5(or 6)-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin obscure, apex acuminate. Inflorescence unknown. New shoots Aug.

● 2400–3100 m. SW Yunnan.

The shoots are edible, and the culms are used for papermaking and weaving.

22. Fargesia spathacea Franchet, Bull. Linn. Soc. Paris 2: 1067. 1893.

箭竹 jian zhu

Arundinaria spathacea (Franchet) D. McClintock; *Thamnocalamus spathaceus* (Franchet) Soderstrom.

Rhizome neck 7–13 cm, 7–20 mm in diam. Culms 1.5–4 m, 0.5–2 cm in diam.; internodes terete, 15–18 cm, initially with or without light white powder, glabrous; wall 1.5–2.5 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent, initially white-gray setulose. Branches 9–17 per node, deflexed, slightly white powdery, solid or nearly so. Culm sheaths persistent or gradually deciduous, yellowish, narrowly rounded to triangular, longer, equal to, or shorter than internodes, leathery, brown setulose, longitudinal ribs prominent, margins initially brown ciliate; auricles and oral setae absent; ligule truncate, ca. 1 mm, margin densely gray ciliate; blade reflexed or erect, triangular or linear-lanceolate, adaxially proximally white-gray pilose. Leaves 2 or 3 per ultimate branch; sheath glabrous or margin initially yellow-brown ciliate; auricles obscure, purple; oral setae present; ligule truncate or slightly arcuate, ca. 1 mm, glabrous; blade linear-lanceolate, 6–10 × 0.5–1.3 cm, glabrous, secondary veins 3–5-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence a raceme, subtended by 3 or 4 spathes; spikelets 8–14, 1.3–2.5 cm, rachilla internodes 1.5–3 mm, white-gray pilose, apically swollen; florets 2 or 3. Glumes 1 or 2, leathery; lemma setulose, apex long mucronate. Palea slightly setose, keels serrulate; lodicule ciliate on margins. Anthers yellow. Ovary oblong, glabrous; style 1; stigmas 2. Caryopsis light purple, ovoid, glabrous. New shoots May.

● 1300–2400 m. W Hubei, E Sichuan.

This is the type species of *Fargesia*. It was described from flowers of uncertain origin, and correlation with living plants has been controversial. *Fargesia murielae* was included in this species after the initiation of flowering in *F. murielae* in Europe revealed that it also has tight unilateral inflorescences, which were initially considered (Soderstrom, Garden (New York, 1977+) 3(4): 22–27. 1979) to be a character specific to this species, within a broad *Thamnocalamus*, although they are now considered a characteristic of the genus *Fargesia* instead.

The shoots are edible, and the culms are used for weaving.

23. Fargesia qinlingensis T. P. Yi & J. X. Shao, J. Bamboo Res. 6(1): 42. 1987.

秦岭箭竹 qin ling jian zhu

Rhizome neck 3–9 cm, 0.4–1.2 cm in diam. Culms 1–3.3 m, 0.4–0.9 cm in diam.; internodes terete, 4–16 cm, initially densely white powdery, glabrous; wall 1–2 mm thick, pith membranous; supra-nodal ridges level or weakly prominent; sheath scar prominent. Branches 4–10 per node; buds oblong, densely gray-brown pubescent, margins light brown ciliate. Culm sheaths persistent, yellowish, narrowly triangularly rounded, much longer than internodes, thinly leathery, sparsely brown setose, rarely glabrous, longitudinal ribs prominent, margins deciduously ciliate; auricles readily deciduous, falcate; oral setae few, erect or slightly curved, light brown, 4–5 mm; ligule inclined, truncate, ca. 1.5 mm, apex fissured and with erect, light brown cilia 2–4 mm; blade reflexed, initially erect, linear or linear-lanceolate, glabrous or initially pilose proximally. Leaves 4 or 5 per ultimate branch; sheath glabrous; auricles purple or light purple-brown, ovate or elliptic; oral setae white-gray, short; ligule arcuate, ca. 1 mm, margins white-gray ciliolate; blade lanceolate or narrowly lanceolate, 2–9 × 0.4–1 cm, both surfaces glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots May–Jun.

● 1000–1200 m. S Shaanxi.

This species is an important source of food for the giant panda.

24. Fargesia nitida (Mitford) P. C. Keng ex T. P. Yi, J. Bamboo Res. 4(2): 30. 1985.

华西箭竹 hua xi jian zhu

Arundinaria nitida Mitford, Bull. Misc. Inform. Kew 1896: 20. 1896; *Fargesia demissa* T. P. Yi; *Sinarundinaria nitida* (Mitford) Nakai.

Rhizome neck 10–13 cm, 1–2 cm in diam. Culms 2–4 m, 1–2 cm in diam.; internodes terete, 11–20 cm, initially sparsely

white powdery, glabrous; wall 2–3 mm thick; supra-nodal ridges weakly prominent; sheath scar prominent. Branches 15–18 per node, deflexed. Culm sheaths persistent, purple or purple-brown, triangular-elliptic, usually longer than internodes, leathery, glabrous or sparsely white-gray setose, longitudinal ribs prominent, margins glabrous, apex triangular; auricles and oral setae absent; ligule purple, arcuate, ca. 1 mm, margin densely ciliolate; blade reflexed or erect, triangular or linear-lanceolate. Leaves 2 or 3 per ultimate branch; sheath purple, margin densely gray-brown ciliate apically; auricles absent; oral setae absent or obscure; ligule truncate or arcuate, ca. 1 mm, margin initially white ciliolate; blade linear-lanceolate, 3.8–7.5 × 0.6–1 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence a raceme, subtended by 1–3 spathes; spikelets 1.1–2.5 cm; rachilla 1.5–3 mm; florets 2 or 3. Glumes 1 or 2, leathery, apex acuminate or obtuse; lemma slightly setulose, apex obtuse; palea sparsely setose, keels serrulate, apex bifid; lodicules ciliate. Anthers yellow. Ovary ovoid, glabrous; style 1; stigmas 3. Caryopsis yellow-brown to dark brown, ovoid, glabrous. New shoots late Apr–May.

● 1900–3200 m. E and S Gansu, S Ningxia, E Qinghai, W Sichuan.

As the type species of *Sinarundinaria*, the close similarities between this and *Fargesia spathacea* show that *Sinarundinaria* is a synonym of *Fargesia*. *Fargesia demissa* is a short and beautiful variant, but it has not been given any new status within *F. nitida*.

This species is an important source of food for the giant panda.

25. Fargesia papyrifera T. P. Yi, J. Bamboo Res. 7(2): 42. 1988.

云龙箭竹 yun long jian zhu

Borinda papyrifera (T. P. Yi) Stapleton.

Rhizome neck 5–12 cm, 3–6 cm in diam. Culms 4–6(–8 m), 2–4(–6) cm in diam.; internodes blue-gray, terete, 22–28 cm, densely white powdery, distally gray-brown to yellow-brown setose, longitudinal ribs prominent, nearly solid; nodes initially white powdery, supra-nodal ridges weakly prominent; sheath scar very prominent, initially brown tomentose. Branches 3–7 per node, strong; buds yellow, ovoid, waxy, basally white powdery, marginally densely yellow-brown ciliate. Culm sheaths deciduous, slightly longer than internode, leathery to thickly so, rigid, triangularly narrowly rounded, sparsely yellow-brown setose, longitudinal ribs prominent, margins densely brown setose; auricles absent; oral setae few, erect or slightly curved, brown, 3–6 mm; ligule dark purple, level or convex, 2–3 mm, margins gray-brown ciliate; blade reflexed, linear-lanceolate, glabrous, margins serrulate, apex long acuminate. Leaves 3–5 per ultimate branch; sheath glabrous, longitudinal ribs prominent; auricles absent; oral setae sparse, yellow-brown, ca. 2 mm; ligule truncate or arcuate, glabrous, setulose; blade lanceolate, 10–18 × 1.6–2.3 cm, both surfaces glabrous, secondary veins 5- or 6-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Aug–Sep.

● 2700–3600 m. W Yunnan.

The shoots are edible, and the culms are used for weaving and making paper and farm tools.

26. Fargesia albocerea Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 45. 1988.

片马箭竹 pian ma jian zhu

Borinda albocerea (Hsueh & T. P. Yi) Stapleton; *Fargesia pachyclada* Hsueh & C. M. Hui.

Culms 3–4 m, 0.8–2 cm in diam.; internodes terete, 8–14 cm, rigid, densely white powdery, glabrous, nearly solid; nodes waxy, supra-nodal ridges prominent to greatly so; sheath scar prominent to very prominent. Branches 3–5 per node, deflexed; buds yellow-brown, ovoid, area near to margins puberulous. Culm sheaths gradually deciduous, triangularly narrowly rounded, leathery, brown setose, longitudinal ribs prominent, margins glabrous, apex triangular; auricles absent or obscure; oral setae few, erect, yellow-brown, 1.5–4 mm; ligule nearly truncate, 1–1.5 mm, glabrous; blade readily deciduous, reflexed, linear-lanceolate, proximally slightly pilose. Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles absent or obscure; oral setae scarce, yellow-brown, short; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 3.5–8 × 0.5–1.2 cm, both surfaces glabrous, secondary veins 3–5-paired, transverse veins elongated-tessellate, dense, not very distinct, base nearly rounded or broadly cuneate, margins spinescent-serrulate, apex long acuminate. Inflorescence unknown.

● About 2900 m. W Yunnan.

27. Fargesia solida T. P. Yi, J. Bamboo Res. 7(2): 47. 1988.

腾冲箭竹 teng chong jian zhu

Rhizome neck 2.5–12.5 cm, 0.6–1.8 cm in diam. Culms 3–5 m, 1–2 cm in diam.; internodes light green, terete, 13–16 cm, densely white powdery, glabrous, solid; supra-nodal ridges weakly prominent; sheath scar prominent, woody. Branches 4–9 per node, deflexed; buds oblong, basally white powdery, setulose, margins yellow-brown ciliate. Culm sheaths persistent, narrowly rounded-triangular, longer than internodes, leathery, appressed yellow setose, longitudinal ribs prominent, margins light yellow ciliate; auricles and oral setae absent; ligule arcuate, ca. 1 mm, glabrous; blade persistent, erect, green-purple, triangular or linear-triangular, glabrous. Leaves 3–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule arcuate, ca. 0.5 mm; blade narrowly lanceolate, 4–9.5 × 0.4–0.7 cm, glabrous, secondary veins 2–4-paired, transverse veins slightly distinct, base cuneate, one margin densely serrulate, other margin obscurely so, apex long acuminate. Inflorescence unknown. New shoots Jul.

● 2300–2500 m. W Yunnan.

28. Fargesia elegans T. P. Yi, Acta Bot. Yunnan. 14: 136. 1992.

雅容箭竹 ya rong jian zhu

Rhizome neck 2–4.5 cm, 0.8–1.5 cm in diam., solid. Culms 2–3.5 m, 0.5–1 cm in diam.; internodes light green, terete, (5–)10–12(–15) cm, initially white powdery, glabrous, solid; supra-nodal ridges level or prominent; sheath scar promi-

nent. Branches 6–11 per node, ascending; bud 1, oblong-ovoid, appressed or adnate. Culm sheaths persistent, purple, narrowly oblong-triangular, longer than internodes, proximally thinly leathery or papery, distally membranous, sparsely yellowish white punctate, longitudinal ribs prominent; auricles and oral setae absent; ligule arcuate-truncate, 0.6–1 mm, glabrous; blade erect, linear-lanceolate. Leaves 3–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule arcuate, ca. 0.6 mm; blade linear-lanceolate, 3.2–6 × 0.4–0.6 cm, glabrous, secondary veins 2(or 3)-paired, transverse veins distinct, base cuneate, margin serrulate, apex acuminate. Inflorescence unknown.

● 2700–2800 m. S Sichuan (Mianning).

29. Fargesia ferax (Keng) T. P. Yi, J. Bamboo Res. 2(1): 39. 1983.

丰实箭竹 feng shi jian zhu

Arundinaria ferax Keng, Sinensia 7: 408. 1936; *Sinarundinaria ferax* (Keng) P. C. Keng.

Rhizome neck 4–7 cm, 2.2–4 cm in diam. Culms to 5 m, 2–3.6 cm in diam.; internodes terete, 35–41 cm, longitudinal ribs prominent above branches, initially densely white powdery, glabrous or brown setose below nodes; wall 2–5 mm thick, pith initially spongy, becoming granular; supra-nodal ridges level; sheath scar prominent; intranode 4–6 mm. Branches 6–12 per node. Culm sheaths persistent, spotted, triangular to narrowly triangular, longer than internodes, leathery, brown setulose, longitudinal ribs prominent, margins initially densely brown ciliate, apex linear-triangular; auricles absent; oral setae erect, brown, slender; ligule convex, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate, glabrous. Leaves 2–4 per ultimate branch; sheath margins yellow-brown ciliate or not ciliate; auricles absent; oral setae erect, yellow-brown, slender; ligule light green, convex, ca. 1 mm, glabrous; blade narrowly lanceolate, 3.6–10 × 0.3–0.6 cm, proximally white-gray pubescent, secondary veins 2- or 3-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence a racemose panicle; spikelets 3–6, 1.4–2.8 cm; rachilla internodes 2–3 mm; florets 2–7, terminal one sterile. Glumes 1 or 2, unequal, membranous, apex acuminate or obtuse; lemma puberulous, apex long acuminate. Palea keels ciliate, apex bifid; lodicules 3, apex ciliate. Anthers yellow-brown. Ovary red-brown; stigmas 2, plumose. Caryopsis unknown. New shoots Jul.

● 1700–2600 m. W Sichuan.

The culms are used for weaving and making furniture and farm tools.

30. Fargesia fungosa T. P. Yi, Bull. Bot. Res., Harbin 5(4): 121. 1985.

棉花竹 mian hua zhu

Rhizome neck 5–11 cm. Culms 4–6 m, 1.5–2.5 cm in diam.; internodes terete, 20–23 cm, longitudinal ribs absent, initially white powdery, glabrous; wall 3–6 mm thick, pith initially spongy; supra-nodal ridges weakly prominent; sheath scar prominent, yellow-brown setose, with persistent remains of sheath base; intranode 2–4 mm. Branches 9–25 per node. Culm sheaths persistent, yellow-brown, spotted purple-brown, narrowly triangular or narrowly rounded, proximally leathery, distally papery, brown to dark brown setulose, longitudinal ribs prominent, margins sometimes brown to dark brown setose; auricles absent; oral setae deciduous, brown; ligule yellow-brown, truncate, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate, glabrous. Leaves 3 or 4 per ultimate branch; sheath margins initially ciliate; auricles purple, falcate, small; oral setae erect, gray-brown; ligule arcuate, margins initially ciliate; blade lanceolate, (7–)10–16 × 1–1.7 cm, proximally white-gray pubescent, secondary veins 4-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence a racemose panicle, initially terminal to leafy shoot; spikelets 3–7, 2.5–4.3 cm, rachilla internodes 3–4 mm, white-gray setose, apex densely white-gray ciliate; florets 3–7, terminal one sterile. Glumes 1 or 2, papery; lemma densely white-gray setose abaxially, margins ciliate; palea keels setose; lodicules ciliate. Anthers yellow. Ovary ovoid, glabrous; styles 2; stigma white. Caryopsis unknown. New shoots Jul–Aug.

● 1800–2700 m. W Guizhou, SW Sichuan, NE Yunnan.

The shoots are edible, and the split culms are used for weaving.

31. Fargesia communis T. P. Yi, J. Bamboo Res. 7(2): 50. 1988.

马亨箭竹 ma heng jian zhu

Rhizome neck 3–10 cm. Culms 4–8 m, 1–3 cm in diam.; internodes terete, 20–25 cm, white powdery, glabrous or initially yellow-brown setose; wall 2–4 mm thick; sheath scars weakly prominent. Branches 4–10 per node, subequal; buds oblong, margins densely gray ciliate. Culm sheaths persistent, red-brown, narrowly triangular, much longer than internodes, proximally leathery, distally papery, sparsely brown setulose, longitudinal ribs prominent, margins initially brown ciliate, apex linear and narrow; auricles absent; oral setae erect, yellow-brown; ligule truncate, ca. 1 mm, glabrous; blade readily deciduous, reflexed, linear-lanceolate, glabrous, margins usually serrulate. Leaves 4 or 5 per ultimate branch; sheath margins gray-yellow ciliate; auricles absent; oral setae erect, light yellow-brown; ligule truncate, glabrous; blade lanceolate, 8.5–12(–16) × 0.5–1(–1.4) cm, abaxially white-gray pubescent proximally, secondary veins 3-paired, transverse veins obscure, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Jul–Aug.

● 2600–3300 m. W Yunnan.

The culms are used for weaving and for making farm tools, furniture, and paper.

32. Fargesia angustissima T. P. Yi, J. Bamboo Res. 4(2): 21. 1985.

油竹子 you zhu zi

Rhizome neck 1–3 cm. Culms 4–7 m, 1–2 cm in diam.; internodes terete, 28–35 cm, initially white powdery, glabrous, longitudinal ribs very prominent; wall 1.5–2.5 mm thick; supra-nodal ridges weakly prominent or prominent; sheath scar

prominent. Branches 5–10 per node, slender; buds oblong, margins ciliate. Culm sheaths persistent, much longer than internodes, proximally leathery, distally papery and sparsely brown setulose, longitudinal ribs greatly prominent, margins rolled, initially densely ciliate, apex linear and narrow; auricles absent; oral setae erect or curved, white-gray; ligule truncate or convex, ca. 1 mm, glabrous; blade readily deciduous, reflexed, linear, glabrous, margins usually serrulate. Leaves 3–5 per ultimate branch; sheath glabrous or distally sparsely pilose; auricles absent; oral setae few, erect or curved, yellow-brown, 2–3 mm; ligule convex; external ligule white-gray pubescent; blade narrowly lanceolate, 3.4–9.5 × 0.3–0.7 cm, abaxially proximally gray pubescent, secondary veins 2- or 3-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Jul–Aug.

● 800–1600 m. W Sichuan.

This species is sometimes considered a synonym of *Fargesia ferax*, but it would appear to be a somewhat smaller bamboo with some slightly different characters.

The culms are used for making furniture and farm tools. The shoots are a source of food for the giant panda.

33. Fargesia edulis Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 53. 1988.

空心箭竹 kong xin jian zhu

Borinda edulis (Hsueh & T. P. Yi) Stapleton.

Rhizome neck 6–10 cm. Culms 5–8 m, 2–4 cm in diam.; internodes terete, 28–40 cm, densely white powdery, glabrous or setose below node; wall 2–4 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent, glabrous or initially erectly brown setose. Branches 4–7 per node. Culm sheaths gradually deciduous, yellow-brown, leathery, densely brown to dark brown setose, longitudinal ribs prominent, margins densely brown setose, apex sharply narrow; auricles absent; oral setae deciduous; ligule truncate, ca. 1 mm, glabrous, fissured; blade erect, lanceolate to linear-lanceolate, glabrous, margins serrulate. Leaves 5–7 per ultimate branch; sheath glabrous; auricles present; oral setae few; ligule truncate, glabrous; blade lanceolate, 10–15 × 1–1.4(–2.2) cm, abaxially pubescent or glabrous, secondary veins 4- or 5-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence a raceme, upper part extended from spathe; spikelets 4–7, 2.5–3.2 cm, rachilla 4–5 mm, glabrous or apically white puberulous; florets 3 or 4. Glumes 2, papery, glabrous; lemma glabrous or pilose, apex acuminate; palea keels ciliolate; lodicules ciliate. Anthers 7–9 mm. Ovary yellow-brown, ovoid, glabrous, apex swollen; styles 2; stigma linear. Caryopsis unknown. New shoots May.

● 1900–2800 m. W Yunnan.

The shoots are edible, and the culms are used for weaving and papermaking.

34. Fargesia jiulongensis T. P. Yi, J. Bamboo Res. 4(2): 22. 1985.

九龙箭竹 jiu long jian zhu

Rhizome neck 4–6.5 cm. Culms 3–5 m, 1–2 cm in diam.; internodes terete, 20–30 cm, initially white powdery, glabrous, longitudinal ribs absent; wall 2.5–3.5 mm thick, pith spongy, becoming granular; supra-nodal ridges level or weakly prominent; sheath scar prominent to greatly prominent. Branches 5–15 per node; buds subcircular or elliptic, pubescent, margins ciliate. Culm sheaths deciduous, narrowly triangular, longer than internodes, proximally leathery, distally papery, densely yellow-brown setulose, longitudinal ribs prominent, margins brown setose; auricles and oral setae absent; ligule truncate, 1.5–7 mm, sparsely ciliate; blade reflexed, linear-lanceolate, proximally sparsely pilose, articulate with sheath. Leaves 3–5 per ultimate branch; sheath initially gray-yellow pubescent on ventral ridge, margins yellow-brown ciliolate; auricles and oral setae absent; ligule purple, truncate, ca. 1 mm, ciliate; blade narrowly lanceolate, 5.5–13 × 0.4–0.9 cm, abaxially proximally gray or gray-yellow pubescent, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Jul.

● 2800–3400 m. W Sichuan.

The shoots are edible and are a source of food for the giant panda. The split culms are used for weaving.

35. Fargesia gongshanensis T. P. Yi, J. Bamboo Res. 7(2): 57. 1988.

贡山箭竹 gong shan jian zhu

Rhizome neck 2.5–9 cm. Culms 3–4 m, 1–2 cm in diam.; internodes terete, 22–32 cm, initially densely white powdery, glabrous, longitudinal ribs obscure; wall 3–5 mm thick; supra-nodal ridges prominent; sheath scar prominent to very prominent. Branches 5–15 per node; buds oblong, pubescent, margins light yellow ciliate. Culm sheaths persistent or gradually deciduous, purple-brown, narrowly triangular, shorter than internodes, proximally leathery, distally papery, glabrous or sparsely brown setulose, longitudinal ribs prominent, margins glabrous; auricles and oral setae absent; ligule truncate, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate, articulate with sheath. Leaves 4–7 per ultimate branch; sheath glabrous; auricles absent; oral setae few, erect, yellow-brown; ligule truncate, ca. 1 mm; blade narrowly lanceolate, 10–12.5 × 0.7–0.9 cm, abaxially proximally white-gray pubescent, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Aug.

● 1400–1500 m. W Sichuan.

36. Fargesia contracta T. P. Yi, J. Bamboo Res. 7(2): 60. 1988.

带鞘箭竹 dai qiao jian zhu

Fargesia contracta f. *evacuata* T. P. Yi; *F. contracta* f. *fugonensis* Hsueh & J. K. Duan.

Rhizome neck 5–6 cm. Culms 3–5 m, 1–2.5 cm in diam.; internodes terete, 18–22 cm, initially densely white powdery, glabrous or initially yellow-brown setose below node, prominently ribbed, usually solid or nearly so, sometimes hollow (f. *evacuata*); supra-nodal ridges level or weakly prominent; sheath scar prominent, initially light yellow setulose. Branches

3–6 per node; buds broadly ovate to oblong, margins gray to gray-brown ciliate. Culm sheaths persistent, purple-brown, equal to or longer than internodes, proximally leathery, distally papery, proximally very sparsely yellow-brown setose, longitudinal ribs prominent, margins initially densely gray to yellow-brown ciliate, apex sharply narrow and linear; auricles absent; oral setae deciduous, erect, pale yellow to yellow-brown; ligule truncate, glabrous, uniformly fissured; blade erect, linear, glabrous. Leaves 5–7 per ultimate branch; sheath margins white-gray ciliate; auricles absent; oral setae few, gray-yellow, curved; ligule obliquely truncate, ca. 1 mm, tomentose, initially gray ciliolate; blade narrowly lanceolate, 9–13 × 0.5–0.9 cm, abaxially initially sparsely white-gray pubescent, proximally more densely so, secondary veins 3-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots Apr–May.

● 2000–3000 m. W Yunnan.

Gatherings from Lushui with hollow culm internodes have been described as *Fargesia contracta* f. *evacuata*.

37. Fargesia semicoriacea T. P. Yi, J. Bamboo Res. 7(2): 71. 1988.

白竹 bai zhu

Rhizome neck 4–8 cm. Culms 1–3.5 m, 0.5–1.2 cm in diam.; internodes terete, 20–28 cm, initially white powdery, glabrous; wall 2–3 mm thick; supra-nodal ridges level or weakly prominent; sheath scar weakly prominent. Branches 5–17 per node; buds oblong, margins densely gray ciliolate. Culm sheaths persistent, sometimes purple spotted, triangularly narrowly rounded, proximally leathery, distally papery, glabrous or distally sparsely brown setose, longitudinal ribs prominent, margins initially densely brown ciliate, apex triangular; auricles absent; oral setae absent or few initially; ligule truncate, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate, glabrous, margins usually rolled. Leaves 3–5 per ultimate branch; sheath glabrous; auricles absent; oral setae few, erect, gray-yellow or gray-brown, truncate, 2–3 mm; ligule ca. 1 mm, glabrous; external ligule white-gray puberulous, sparsely white powdery; blade narrowly lanceolate, 5.5–11 × 0.6–1 cm, glabrous, secondary veins 3- or 4-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots Aug.

● 2000–3000 m. NE Yunnan.

38. Fargesia hygrophila Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 74. 1988.

喜湿箭竹 xi shi jian zhu

Rhizome neck 3–11 cm. Culms 3–5 m, 1–2 cm in diam.; internodes terete or grooved above branches, 15–18 cm, initially densely white powdery, glabrous or gray-yellow setose below node; wall 2.5–6 mm thick; supra-nodal ridge level; sheath scar prominent. Branches 5–14 per node, deflexed; buds oblong, margins densely yellow-brown ciliate. Culm sheaths persistent, narrowly triangular, much longer than internodes, leathery, yellow-brown to brown setose, margins glabrous, longitudinal ribs prominent, apex narrowly triangular; auricles absent; oral setae absent or few; ligule truncate, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate, glabrous, margins smooth, usually rolled. Leaves 3–5 per ultimate branch; sheath glabrous; auricles absent; oral setae few, deciduous, erect, yellow-brown, 1–2.5 mm; ligule arcuate, ca. 0.5 mm, glabrous; blade lanceolate, 6–14 × 0.6–1.35 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, apex long acuminate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots Aug.

● 1600–3000 m. N Yunnan.

The culms are used for weaving and for making furniture and farm tools.

39. Fargesia sagittatinea T. P. Yi, J. Bamboo Res. 7(2): 63. 1988.

独龙箭竹 du long jian zhu

Rhizome neck 5–8 cm. Culms 7–9 m, 3–6 cm in diam.; internodes terete, 20–28 cm, initially white powdery, glabrous; wall 3–7 mm thick; supra-nodal ridge level; sheath scar weakly prominent, glabrous. Branches 7–10 per node; buds elliptic or oblong, margins densely light yellow ciliate. Culm sheaths persistent, narrowly triangular, much longer than internodes, leathery, sparsely brown setose, longitudinal ribs prominent, margins densely brown ciliate, apex triangular; auricles absent; oral setae few, erect, yellow-brown, 5–8 mm; ligule purple, truncate or convex, ca. 1 mm, glabrous; blade erect, linear-lanceolate, usually slightly rugose. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles absent; oral cilia few, erect, light yellow, 1–2 mm; ligule truncate, ca. 1 mm, margins glabrous; external ligule densely pubescent with long, erect, gray hairs; blade narrowly lanceolate, 5–10.5 × 0.3–0.6 cm, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence unknown. New shoots Aug.

● 2400–2900 m. NW Yunnan.

The culms are considered the best for making arrows.

40. Fargesia altior T. P. Yi, J. Bamboo Res. 7(2): 65. 1988.

船竹 chuan zhu

Rhizome neck 6–8.5 cm. Culms 4–10 m, 1.3–3.5 cm in diam.; internodes terete, 22–45 cm, initially white powdery, glabrous; wall 4.5–8 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent. Branches 5–15 per node, thin; buds oblong, margins yellow ciliolate. Culm sheaths deciduous, purple-brown, sometimes dark spotted, triangular, longer than internodes, leathery, sparsely appressed yellow-brown setose, longitudinal ribs prominent, margins glabrous, apex narrowly triangular; auricles absent; oral setae few, erect, yellow-brown, 2–5 mm; ligule convex, 1–1.5 mm, glabrous; blade reflexed, linear-lanceolate or linear, glabrous. Leaves 3–6 per ultimate branch; sheath glabrous; auricles absent; oral setae absent or few, erect, yellow-brown, 1–2 mm; ligule purple, truncate, ca. 0.5 mm, glabrous; blade narrowly lanceolate, 6–14 × 0.6–1.1 cm, glabrous, secondary veins 3- or 4-paired, transverse veins obscure, base cuneate, one margin spinescent-ser-

rulate, other margin obscurely so. Inflorescence unknown. New shoots Aug.

● 2300–2500 m. W Yunnan.

The culms are used for weaving and for making furniture and farm tools.

41. Fargesia concinna T. P. Yi, Acta Bot. Yunnan. 10: 437. 1988.

美丽箭竹 mei li jian zhu

Rhizome neck 4–6 cm. Culms 6–10 m, 2–5 cm in diam.; internodes gray-green, terete, 28–33 cm, rigid, gray or gray-yellow setose below each node; wall 4–8 mm thick; nodes light yellow-green to purple, supra-nodal ridges weakly prominent; sheath scar weakly prominent, gray. Branches 6–13 per node; buds oblong to elliptic, margins gray-yellow ciliolate. Culm sheaths persistent, yellow-brown, narrowly triangular or narrowly rounded, much longer than internodes, leathery, sparsely appressed yellow or yellow-brown setose, longitudinal ribs very prominent, margins initially yellow ciliolate, apex triangular; auricles absent; oral setae absent or few, yellow-brown, curved; ligule truncate or convex, 1–6 mm; blade reflexed, curved, narrowly triangular or linear-lanceolate, margins rolled, serrulate. Leaves 3–6 per ultimate branch; sheath glabrous, sometimes distally white powdery; auricles absent; oral setae absent or few; ligule truncate or convex, ca. 1 mm; blade lanceolate, 6–12 × 1.3–2.2 cm, glabrous, secondary veins 4- or 5-paired, transverse veins distinct, base cuneate or broadly cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Aug.

● 2900–3100 m. C Yunnan.

The culms are used for papermaking.

42. Fargesia praecipua T. P. Yi, J. Bamboo Res. 7(2): 68. 1988.

弩箭竹 nu jian zhu

Rhizome neck 4–8 cm. Culms 4–8 m, 2–5 cm in diam.; internodes green, terete, 22–30 cm, white powdery in apical ring, glabrous; wall 2–4 mm thick; supra-nodal ridges level or weakly prominent; sheath scar weakly prominent to prominent. Branches 6–12 per node; buds elliptic or broadly elliptic, white powdery, margins light yellow ciliate. Culm sheaths persistent, yellow-brown, narrowly triangular or narrowly rounded, much longer than internodes, leathery, glabrous or apically sparsely brown setose, longitudinal ribs prominent, margins glabrous, apex triangular; auricles and oral setae absent; ligule truncate or convex, ca. 1 mm, glabrous; blade reflexed, linear-lanceolate or linear, articulate with sheath. Leaves 4–10 per ultimate branch; sheath glabrous; auricles absent; oral setae few, gray-yellow, curved; ligule arcuate or truncate, ca. 1 mm; blade lanceolate, 8.5–16.5 × 0.8–1.3 cm, glabrous, secondary veins 3–5-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin obscurely so, apex long acuminate. Inflorescence unknown. New shoots Aug.

● 1800–2600 m. NW Yunnan.

The culms are used for making arrows.

43. Fargesia yuanjiangensis Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 76. 1988.

秀叶箭竹 xiu ye jian zhu

Shrubby bamboo. Culms 0.8–1.3 cm in diam.; internodes terete, 8–20 cm, initially lower parts white powdery, powdery-black when old, glabrous; wall 2.5–4 mm thick; supra-nodal ridges level; sheath scar prominent, initially appressed brown setulose. Branches 15–18 per node, deflexed; buds elliptic, setose near ciliate margins. Culm sheaths persistent, narrowly triangular, longer than internodes, proximally leathery, distally papery, brown setose, margins glabrous, longitudinal ribs prominent, apex linear-triangular; auricles absent; oral setae few, erect, white-gray; ligule truncate, ca. 1 mm, glabrous; blade erect, linear-lanceolate, glabrous, margins usually rolled and smooth. Leaves 3–6 per ultimate branch; sheath glabrous; auricles absent; oral setae few, erect or curved; ligule purple, truncate, ca. 1 mm, glabrous; blade narrowly lanceolate, 5.5–10.6 × 0.4–0.9 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate, apex long acuminate. Inflorescence unknown.

● S Yunnan.

44. Fargesia perlonga Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 79. 1988.

超包箭竹 chao bao jian zhu

Borinda perlonga (Hsueh & T. P. Yi) Stapleton.

Culms to 5 m, to 2.2 cm in diam.; internodes terete, 18–20 cm, light yellow waxy below node, glabrous, nearly solid; nodes smooth, supra-nodal ridges weakly prominent; sheath scar prominent, glabrous. Branches many per node. Culm sheaths persistent, linear to narrowly triangular, much longer than internodes, proximally leathery, distally papery, brown to dark brown setose, longitudinal ribs prominent; auricles absent or small; oral setae erect, yellow, 3–4 mm; ligule truncate, ca. 1 mm, glabrous; blade unknown. Leaves 2–4 per ultimate branch; sheath glabrous; auricles absent; oral setae few, erect, yellow or gray-yellow; ligule purple, truncate, ca. 1 mm, glabrous; blade lanceolate, 10–19.5 × 1.3–1.7 cm, glabrous, secondary veins 5- or 6-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate, apex long acuminate. Inflorescence unknown. New shoots autumn.

● C Yunnan.

45. Fargesia circinata Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 81. 1988.

卷耳箭竹 juan er jian zhu

Shrubby bamboo. Culms to 1.5 cm in diam.; internodes terete, to 24 cm, glabrous, nearly solid; supra-nodal ridges level; sheath scar prominent, with persistent remains of sheath base. Branches 7–11 per node. Culm sheaths narrowly triangular, longer than internodes, leathery, waxy, purple spotted adaxially, brown setose, proximal setae curved, distal setae straight, longitudinal ribs prominent, margins usually densely brown setose, apex linear-triangular; auricles formed by rolled sheath shoulders; oral setae erect, yellow-brown, 4–15 mm;

ligule truncate, 1–2 mm, margins initially ciliate, external ligule densely brown setose; blade readily deciduous, reflexed, linear-lanceolate, glabrous, usually rolled or rugose. Leaves 2–4 per ultimate branch; sheath margins initially densely ciliate; auricles absent; oral setae few, erect or curved, light yellow, 3–11 mm; ligule truncate, ca. 0.5 mm, glabrous; external ligule densely gray pubescent; blade lanceolate, thin, 5.5–14 × 0.8–1.6 cm, glabrous, secondary veins 3–5-paired, transverse veins distinct, base broadly cuneate, margins spinescent-serrulate, apex long acuminate. Inflorescence unknown.

● Yunnan.

46. Fargesia hsuehiana T. P. Yi, J. Bamboo Res. 7(2): 104. 1988.

冬竹 dong zhu

Borinda hsuehiana (T. P. Yi) Stapleton.

Rhizome neck 3–6 cm. Culms 3–7 m, 1–3 cm in diam.; internodes terete, 18–25 cm, initially sparsely white-gray setose, longitudinal ribs prominent; wall 3–5 mm thick, pith spongy; supra-nodal ridges weakly prominent; sheath scar prominent, initially densely yellow-brown setose. Branches 6–9 per node. Culm sheaths persistent, triangularly narrowly rounded, shorter than internodes, leathery, proximally brown setose and woolly, margins glabrous, apex triangular; auricles and oral setae absent; ligule truncate, ca. 0.7 mm; blade deciduous, reflexed, linear-lanceolate. Leaves 4–8(–15) per ultimate branch; sheath becoming red-brown, glabrous; auricles absent; oral setae 3–10 mm; ligule arcuate, ca. 1 mm, glabrous; blade narrowly lanceolate, 6–14 × 0.7–1.2 cm, glabrous or abaxially sparsely pilose proximally, secondary veins 3- or 4-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence a raceme, exserted from spathe; spikelets 5–11, 2.5–4.2 cm, rachilla internodes 2.5–6 mm, white-gray setulose; florets 4 or 5, green. Glumes 2, glabrous, apex acuminate; lemma glabrous, apex acuminate; palea keels ciliate; lodicules apically ciliate. Anthers yellow. Ovary ovoid, light yellow, glabrous; style 1; stigmas 2. Caryopsis dark brown, oblong. New shoots Sep.

● About 2000 m. S Yunnan.

47. Fargesia pleniculmis (Handel-Mazzetti) T. P. Yi, J. Bamboo Res. 7(2): 113. 1988.

皱壳箭竹 zhou ke jian zhu

Arundinaria pleniculmis Handel-Mazzetti, Symb. Sin. 7: 1276. 1936.

Rhizome neck 4–10 cm. Culms 4–8 m, 1–3 cm in diam.; internodes terete, 24–30 cm, initially densely white powdery, glabrous, longitudinal ribs prominent; wall 4–5 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent, initially gray-yellow setose. Branches 7–15 per node, initially white powdery; culm sheaths persistent, triangularly narrowly rounded, proximally papery, distally leathery, glabrous or sparsely yellow-brown setose, longitudinal ribs very prominent, margins densely yellow-brown setose; auricles absent; oral setae deciduous, yellow-brown, 1–2 mm; ligule truncate or arcuate, 1–2 mm, glabrous, initially densely yellow-brown ciliate; blade reflexed or erect, lanceolate or triangular-lanceolate, glabrous. Leaves 1–3 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule purple, truncate, glabrous; blade narrowly lanceolate, 4–8 × 0.5–0.8 cm, thin, both surfaces glabrous, secondary veins 2- or 3-paired, transverse veins distinct, base broadly cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots Aug.

● 2500–3000 m. NW Yunnan.

The shoots are edible.

48. Fargesia yunnanensis Hsueh & T. P. Yi, Bull. Bot. Res., Harbin 5(4): 125. 1985.

云南箭竹 yun nan jian zhu

Sinarundinaria yunnanensis (Hsueh & T. P. Yi) Hsueh & D. Z. Li; *Yushania yunnanensis* (Hsueh & T. P. Yi) P. C. Keng & T. H. Wen ex T. H. Wen.

Rhizome neck, 12–35 cm. Culms 4–7 m, 3–6 cm in diam.; internodes terete, 28–36 cm, glabrous or sparsely setose below node, basal internodes solid, upper internodes hollow; supra-nodal ridges level or weakly prominent; sheath scar prominent or very prominent, with persistent remains of sheath base, glabrous. Branches 6–25 per node. Culm sheaths persistent, longitudinally purple striped, triangularly narrowly rounded, slightly shorter than internode, leathery, glabrous or setose in patches, margins glabrous; auricles and oral setae absent; ligule purple, truncate, 1–2 mm, glabrous; blade reflexed, purple-green, linear-lanceolate, glabrous, margins smooth. Leaves 3–7 per ultimate branch; sheath glabrous, sometimes distally white powdery; auricles and oral setae absent; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 13–19 × 1.2–1.8 cm, abaxially proximally pubescent, secondary veins 4- or 5-paired, transverse veins obscure, base cuneate, margins spinescent-serrulate. Inflorescence an open panicle, terminal to leafy branch; spikelets 13–23, 1.6–2.5 cm, rachilla internodes ca. 4 mm, apically densely ciliate; florets 4 or 5, purple or green-purple. Glumes 2, glabrous; lemma glabrous, apex acuminate; palea keels white ciliate; lodicules ciliate. Anthers yellow. Ovary ovoid, light yellow, glabrous; stigmas 2. Caryopsis unknown. New shoots Jul–Sep.

● 1700–2500 m. SW Sichuan, Yunnan.

This species is often placed in *Yushania* because of its open panicles and the relatively long rhizome necks producing well-separated culms.

The shoots are delicious, and the culms are used for making farm tools.

49. Fargesia acuticontracta T. P. Yi, J. Bamboo Res. 7(2): 98. 1988.

尖鞘箭竹 jian qiao jian zhu

Rhizome neck 5–20 cm. Culms 3–7 m, 1–5 cm in diam.; internodes initially black-green, terete, 30–50 cm, very rigid, with a brown setose ring below each node, longitudinal ribs prominent, solid, supra-nodal ridge level or prominent; sheath scar prominent, initially brown setose. Branches 3–11 per node. Culm sheaths persistent, narrowly triangular, shorter than internode, leathery, rigid, densely brown to dark brown setose,

longitudinal ribs prominent, margins densely brown setose; auricles absent; oral setae deciduous, erect, yellow, 5–8 mm; ligule purple, truncate or arcuate, ca. 1 mm, initially densely brown ciliate, becoming fissured; blade reflexed, linear-lanceolate, glabrous, usually rolled. Leaves 3–6 per ultimate branch; sheath glabrous; auricles absent; oral setae few, readily deciduous, erect, yellow; ligule truncate, initially sparsely pilose, uniformly fissured; blade lanceolate, 12–21 × 1.1–2.1 cm, initially pubescent, secondary veins 4–6-paired, transverse veins distinct, margins serrulate. Inflorescence unknown. New shoots Jul–Aug.

● 2000–3200 m. NW Yunnan.

50. Fargesia longiuscula (Hsueh & Y. Y. Dai) Ohrnberger, Bamboos World Introd. 3: 14. 1996.

长节箭竹 chang jie jian zhu

Sinarundinaria longiuscula Hsueh & Y. Y. Dai, J. Bamboo Res. 6(2): 19. 1987.

Culms 4.5–6 m, 1.6–2.4 cm in diam.; internodes terete, 45–52 cm, longitudinal ribs prominent, initially densely white powdery; wall ca. 3 mm thick; supra-nodal ridges level or slightly prominent; sheath scar prominent, with remains of sheath base, brown ciliate. Branches many per node. Culm sheaths gradually deciduous, triangularly narrowly rounded, shorter than internodes, thick papery to leathery, densely brown or black setose, longitudinal ribs prominent; auricles and oral setae absent or obscure; ligule ca. 3 mm, serrulate; blade revolute. Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles absent; ligule purple, ca. 1 mm, fimbriate at top; blade lanceolate, 17–20 × 1.8–2.3 cm, proximally white ciliate, secondary veins 4-paired. Inflorescence unknown. New shoots Jul–Aug.

● 1400–1500 m. NE Yunnan (Yongshan).

The shoots are not edible, and the culms are used for weaving.

51. Fargesia declivis T. P. Yi, J. Bamboo Res. 7(2): 101. 1988.

斜倚箭竹 xie yi jian zhu

Rhizome neck 6–13 cm. Culms 3–4 m, 5–8 mm in diam., middle and upper part of culm pendulous or scrambling; internodes terete, 20–33 cm, white powdery, initially gray to gray-brown setose, longitudinal ribs greatly prominent, solid or nearly so, supra-nodal ridges prominent; sheath scar prominent to greatly prominent, initially setose. Branches 3–5 per node. Culm sheaths persistent, triangularly narrowly rounded, shorter than internodes, leathery, glabrous or sparsely yellow-brown setose, longitudinal ribs very prominent, margins densely yellow-brown setulose; auricles absent; oral setae present; ligule purple, truncate, 1–2 mm, glabrous, fissured; blade reflexed, linear, glabrous, margins initially serrulate, usually rolled when dry. Leaves 3–5 per ultimate branch; sheath margins initially ciliate; auricles absent; oral setae few, readily deciduous, erect, yellow; ligule truncate, glabrous; blade narrowly lanceolate, 8–12 × 0.7–1.1 cm, abaxially proximally pubescent, secondary veins 3- or 4-paired, transverse veins distinct, base broadly cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots Aug–Sep.

● 2400–2500 m. NW Yunnan.

52. Fargesia farcta T. P. Yi, J. Bamboo Res. 2(2): 29. 1983.

勒布箭竹 le bu jian zhu

Borinda farcta (T. P. Yi) Stapleton.

Rhizome neck 2.5–6 cm. Culms 2–3.5 m, 0.5–1.5 cm in diam.; internodes terete or slightly flattened, 22–28 cm, initially slightly white powdery, distally white-gray setose, longitudinal ribs greatly prominent, solid; supra-nodal ridges weakly prominent to prominent; sheath scar prominent, with persistent remains of sheath base. Branches (1–)3–10, solid, glabrous. Culm sheaths gradually deciduous, shorter than internodes, leathery, initially setose, longitudinal ribs prominent; auricles small; oral setae 3–5 mm; ligule ca. 1 mm; blade readily deciduous, reflexed. Leaves 2–5 per ultimate branch; sheath slightly white powdery, margins densely gray-brown ciliate; auricles absent; oral setae few, erect, yellow, 1–4 mm; ligule truncate, ca. 1 mm, glabrous; blade narrowly lanceolate, 4–7.5 × 0.5–0.8 cm, abaxially white pubescent, adaxially sparsely white-puberulous, secondary veins 2- or 3-paired, transverse veins distinct, base broadly cuneate, margins serrulate, apex acuminate. Inflorescence unknown.

● About 2300 m. S Xizang.

53. Fargesia adpressa T. P. Yi, J. Bamboo Res. 4(2): 26. 1985.

贴毛箭竹 tie mao jian zhu

Rhizome neck 5–9 cm. Culms 4–6 m, 2–3 cm in diam.; internodes terete, 35–40 cm, initially white powdery, glabrous or setose below node, gray waxy when old; wall 2–3 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent. Branches many per node. Culm sheaths persistent, triangularly narrowly rounded, shorter than internode, leathery, thinly white powdery, densely adnately brown setose, margins initially brown ciliate, apex triangular; auricles absent or present; oral setae present; ligule truncate or arcuate, 1–2 mm, glabrous, irregularly fissured; blade reflexed, linear-lanceolate, glabrous. Leaves 3–5 per ultimate branch; sheath thinly white powdery, glabrous; auricles absent; oral setae present; ligule brown-purple, arcuate, margins ciliate; blade linear-lanceolate, 10–15 × 0.9–1.4 cm, abaxially pubescent, secondary veins 3–5-paired, transverse veins obscure, base cuneate, one margin spinescent-serrulate, other margin obscurely so. Inflorescence a raceme, terminal to leafy shoot; spikelets 7–9, 1.7–2.7 cm, rachilla 3–4 mm, pilose; florets 3–7. Glumes 2, slightly pilose, papery; lemma glabrous, apex acuminate; palea keels and apices ciliolate; lodicules ciliate. Anthers yellow. Ovary ovoid, glabrous; style 1; stigmas 2. Caryopsis unknown. New shoots May.

● About 2000 m. W Sichuan.

The shoots are edible and are a source of food for the giant panda. The culms are used for weaving and papermaking.

54. Fargesia pauciflora (Keng) T. P. Yi, J. Bamboo Res. 4(2): 25. 1985.

少花箭竹 shao hua jian zhu

Arundinaria pauciflora Keng, J. Wash. Acad. Sci. 26: 397.

1936; *Fargesia pallens* Hsueh & C. M. Hui; *Sinarundinaria pauciflora* (Keng) P. C. Keng.

Rhizome neck 4–8 cm. Culms 2–4 m, 1–3 cm in diam.; internodes terete or slightly flattened, 35–40 cm, initially densely white powdery, glabrous; wall 2–3 mm thick; supra-nodal ridge level or weakly prominent; sheath scar prominent, initially densely yellow-brown setose. Branches 6–10 per node. Culm sheaths persistent or gradually deciduous, triangularly narrowly rounded, shorter than internode, leathery, glabrous or sparsely yellow-brown setose, margins brown ciliate, longitudinal ribs prominent; auricles and oral setae absent; ligule truncate or arcuate, 1–2.5 mm, slightly fissured; blade reflexed, linear-lanceolate, glabrous, margins serrulate. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule arcuate or truncate, glabrous; blade narrowly lanceolate, 9–14 × 0.7–1.2 cm, secondary veins 2–4-paired, transverse veins obscure, abaxially pubescent, base cuneate, margin spinescent-serrulate. Inflorescence a raceme, enclosed by spathe; spikelets ca. 3, 2–3 cm, rachilla internodes 2.5–4 mm, pilose; florets 4 or 5, purple. Glumes 2, glabrous or sparsely pilose; lemma acuminate at apex; palea keels ciliolate; lodicules ciliate. Anthers ca. 5 mm. Stigmas 2 or 3. Caryopsis unknown. New shoots late May–Jul.

● 2000–3200 m. SW Sichuan, NW Yunnan.

The shoots are edible and are a source of food for the giant panda. The culms are used for weaving and papermaking.

55. Fargesia grossa T. P. Yi, J. Bamboo Res. 2(2): 35. 1983.

错那箭竹 cuo na jian zhu

Borinda grossa (T. P. Yi) Stapleton.

Rhizome neck ca. 10 cm. Culms 8–12 m, 2–3.5 cm in diam.; internodes terete, 15–45 cm, glabrous; wall 3–5 mm thick; supra-nodal ridges level; sheath scar prominent, with persistent remains of sheath base. Branches many per node. Culm sheaths narrowly triangular, leathery, initially yellow-brown setose, longitudinal ribs distally prominent, margins yellow-brown setose, apex linear-triangular; auricles present or absent; oral setae yellow-brown, curved, 4–16 mm; ligule truncate or convex, 1–2 mm, margins densely yellow-brown ciliate, cilia 1–5 mm; blade reflexed, linear-lanceolate, slightly rugose, glabrous, margins usually rolled, serrulate. Leaves 3–5 per ultimate branch; sheath margins ciliate; auricles absent; oral setae few, erect, yellow, 3–5 mm; ligule truncate, ca. 1 mm, glabrous; external ligule white-gray pubescent; blade linear-lanceolate, 4.5–8 × 0.5–0.8 cm, thin, abaxially gray pubescent at base, secondary veins 2–4-paired, transverse veins obscure, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Jun.

About 2600 m. S Xizang [Bhutan].

The culms are used for weaving.

56. Fargesia hainanensis T. P. Yi, Bull. Bot. Res., Harbin 3(3): 151. 1983.

海南箭竹 hai nan jian zhu

Rhizome neck 5–7 cm. Culms 3–7 m, 2–3.5 cm in diam.; internodes terete, 24–28 cm, glabrous; wall 2–3.5 mm thick; supra-nodal ridges level or weakly prominent; sheath scar weakly prominent. Branches 3–7 per node. Culm sheaths persistent, orange-red or gray, triangularly narrowly rounded, nearly as long as internodes, leathery, densely setose, margins apically brown ciliate; auricles absent; oral setae deciduous, erect, light yellow; ligule arcuate, 1–1.5 mm, margins initially densely light yellow ciliate; blade reflexed, linear-lanceolate, glabrous, margins serrulate. Leaves 3–5 per ultimate branch; sheath glabrous; auricles absent; oral setae present; ligule arcuate or truncate, ca. 1 mm; blade linear-lanceolate, 4–12 × 0.5–0.9 cm, pubescent basally, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence a raceme, terminal to leafy shoot; spikelets 4–7, 2.3–3 cm, rachilla 2.5–5 mm; florets 3–5, light green to dark purple. Glumes 2, papery, glabrous; lemma pilose, apex acuminate; palea keels ciliolate; lodicules densely ciliate. Anthers yellow. Ovary light yellow, ovoid, glabrous; style 1; stigmas 2. Caryopsis unknown. New shoots Aug.

● 1500–1800 m. Hainan (Wuzhi Shan).

57. Fargesia porphyrea T. P. Yi, J. Bamboo Res. 7(2): 84. 1988.

红壳箭竹 hong ke jian zhu

Rhizome neck 2.5–4 cm. Culms 3–5 m, 1–2.5 cm in diam.; internodes terete, 28–35 cm, initially distally gray setose, glabrescent; wall 2–3 mm thick, pith initially spongy, becoming granular; supra-nodal ridges weakly prominent; sheath scar prominent. Branches 5–11 per node. Culm sheaths persistent, red-brown, narrowly rounded or triangularly narrowly rounded, shorter than internodes, leathery, brown setose, margins glabrous or apically very sparsely gray ciliate, apex triangular; auricles and oral setae absent; ligule purple-brown, truncate or convex, 1–1.5 mm, margins initially densely yellow-brown ciliate, cilia 2–4 mm; blade reflexed, linear-lanceolate, initially gray ciliolate, margins rolled, articulate with sheath. Leaves 3–10 per ultimate branch; sheath red-brown when dry, glabrous; auricles absent; oral setae initially present; ligule truncate, ca. 1 mm, glabrous; blade linear-lanceolate, 9–19 × 0.7–1.7 cm, thin, abaxially white-gray pubescent, secondary veins 3- or 4-paired, transverse veins obscure, base cuneate, margins spinescent-serrulate, apex long acuminate. Inflorescence unknown. New shoots Aug–Sep.

● 1200–2500 m. S Yunnan.

The shoots are edible.

58. Fargesia lincangensis T. P. Yi, J. Bamboo Res. 7(2): 96. 1988.

雪山箭竹 xue shan jian zhu

Rhizome neck 5–9 cm. Culms 4–8 m, 2–5 cm in diam.; internodes terete, 25–45 cm, glabrous; wall 3.5–6 mm thick, pith granular; supra-nodal ridges prominent; sheath scar prominent, with persistent remains of sheath base. Branches 3–18 per node. Culm sheaths gradually deciduous to persistent, narrowly triangular, shorter than internodes, leathery, yellow to yellow-brown setose, setae especially dense and long at base, longitudinal ribs prominent, margins ciliate; auricles present or

absent; oral setae erect or curved, yellow, 4–12 mm; ligule purple, truncate or convex, 1–1.5 mm, setulose, fimbriate, yellow ciliate; blade readily deciduous, reflexed, linear-lanceolate, adaxially puberulous proximally, glabrous. Leaves 2 or 3 per ultimate branch; sheath glabrous or margins initially slightly ciliate; auricles absent or obscure; oral setae yellow, few, 3–6 mm; ligule purple, truncate, glabrous; blade narrowly rounded to lanceolate, 7–10 × 1.2–1.6 cm, glabrous, secondary veins 3–5-paired, transverse veins slightly distinct, base broadly cuneate, margins nearly smooth. Inflorescence unknown. New shoots Sep.

● 2900–3200 m. SW Yunnan.

The shoots are edible, and the culms are used for weaving.

59. Fargesia yulongshanensis T. P. Yi, J. Bamboo Res. 7(2): 87. 1988.

玉龙山箭竹 yu long shan jian zhu

Rhizome neck 6–12 cm. Culms 5–7 m, 1–2.5 cm in diam.; internodes terete, 35–45 cm, initially white powdery, brown setose immediately below node, white-gray setose above; wall 2–4 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent, initially yellow-brown setose. Branches many per node. Culm sheaths gradually deciduous to persistent, triangularly narrowly rounded, leathery, longitudinal ribs obscure, densely yellow-brown setose, margins yellow-brown setose; auricles absent; oral setae few, yellow-brown, 1–5 mm, slender; ligule truncate or convex, 1–2 mm, initially ciliate; blade reflexed or erect, linear-lanceolate, glabrous, margins smooth. Leaves 2–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule arcuate, 1–1.5 mm; blade narrowly lanceolate, 5–8 × 0.4–0.9 cm, glabrous, secondary veins 2–4-paired, transverse veins distinct, base broadly cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Jun–Jul.

● 3000–4200 m. NW Yunnan.

The shoots are edible, and the split culms are used for weaving.

60. Fargesia strigosa T. P. Yi, J. Bamboo Res. 7(2): 90. 1988.

粗毛箭竹 cu mao jian zhu

Rhizome neck 3–5 cm. Culms 2.5–6 m, 1–2.5 cm in diam.; internodes terete, 22–28 cm, densely and prominently longitudinally ribbed, initially densely white powdery, white-gray setulose below node; wall 3.5–6 mm thick; supra-nodal ridges weakly prominent; sheath scar prominent. Branches 5–10 per node, nearly solid. Culm sheaths persistent, narrowly triangular, shorter than internode, leathery, proximally densely gray setose, margins glabrous, apex triangular; auricles absent; oral setae absent or few, yellow, 2–6 mm; ligule truncate or arcuate, 1–2 mm, glabrous; blade reflexed, linear-lanceolate. Leaves 2–4 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule arcuate or truncate, ca. 0.5 mm, glabrous; blade narrowly lanceolate, 4–8.5 × 0.6–0.8 cm, glabrous, secondary veins 3- or 4-paired, transverse veins slightly distinct, base cuneate, margins nearly smooth, or one margin spinescent-serrulate and other margin smooth, apex long acuminate. Inflorescence unknown. New shoots late Aug–early Sep.

● About 2900 m. SW Yunnan.

61. Fargesia funiushanensis T. P. Yi, Acta Bot. Yunnan. 13: 375. 1991.

伏牛山箭竹 fu niu shan jian zhu

Rhizome neck (2.3–)6–12 cm, (0.5–)0.8–1.4 cm in diam. Culms 1.2–2(–2.5) m, (0.3–)0.5–0.8(–1.2) cm in diam.; internodes terete, 8–12 cm, initially sparsely white powdery, glabrous; wall 1.5–2(–3) mm thick; supra-nodal ridges weakly prominent; sheath scar prominent. Branches 2–5 per node. Culm sheaths persistent, triangular-elliptic, usually shorter than internode, leathery, glabrous, longitudinal ribs prominent, margins glabrous; auricles and oral setae usually absent; ligule arcuate, 5–7 mm; blade erect, linear-triangular or linear. Leaves 2–4(or 5) per ultimate branch; sheath purple, margin densely gray-brown ciliate distally; auricles absent; oral setae absent or obscure; ligule truncate or arcuate, 0.5–1 mm, margin initially white ciliolate; blade lanceolate, (4–)5–8 × (0.6–)0.9–1.2 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margin serrulate. Inflorescence unknown.

● 1400–2100 m. Henan (Laojun Shan, Luanchuan).

62. Fargesia dulcicula T. P. Yi, J. Bamboo Res. 11(2): 9. 1992.

清甜箭竹 qing tian jian zhu

Rhizome neck 8–10 cm, 1.8–2.5 cm in diam. Culms erect, 3–4 m, 1–1.8 cm in diam.; internodes terete but grooved above branches, 20–25(–30) cm, initially thinly white powdery below nodes; glabrous; wall 2.5–4.5 mm thick; supra-nodal ridges level or slightly prominent; sheath scar prominent, glabrous or initially stiffly white hairy. Branches 8–10 per node; culm bud 1, narrowly ovoid, appressed, margins white ciliate. Culm sheaths gradually deciduous, purple, triangular-ovate, ca. 1/3 as long as internodes, leathery, white or yellowish setose, longitudinal ribs prominent; auricles absent; oral setae deciduous, erect or curved, yellow; ligule purple, truncate or convex, 1–2 mm; blade reflexed, triangular linear or linear-lanceolate, glabrous. Leaves 4 or 5 per ultimate branch; sheath glabrous; auricles absent; oral setae few, yellow; ligule slightly green, convex, 1–1.5 mm, glabrous; blade lanceolate, 4.5–10.5 × 0.6–1.1 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots Jul.

● About 3500 m. S Sichuan (Mianning).

The shoots are edible and are one of the favorite foods of the giant panda. The split culms are used for weaving.

63. Fargesia wuliangshanensis T. P. Yi, Acta Bot. Yunnan. 10: 438. 1988.

无量山箭竹 wu liang shan jian zhu

Rhizome neck 4–8 cm. Culms 3–7 m, 1.5–2.5 cm in diam.; internodes terete, 26–30 cm, initially white powdery; wall 4–8 mm thick or nearly solid; supra-nodal ridges level or weakly prominent; sheath scar prominent, initially pale yellow setose. Branches 4–23 per node. Culm sheaths triangularly narrowly rounded, shorter than internode, leathery, rigid, setose, proximally more densely so, longitudinal ribs prominent, mar-

gins densely ciliate, apex broadly triangular; auricles absent or small; oral setae few, 2–5 mm; ligule convex or concave, 1–3 mm; blade reflexed, narrowly triangular, margins apically rolled. Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles absent; oral setae few, 3–6 mm; ligule convex, ca. 0.5 mm; blade linear-lanceolate, 4–9.5 × 0.8–1.2 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate, apex long acuminate. Inflorescence unknown. New shoots Aug.

● 3000–3100 m. C Yunnan.

The culms are used for weaving.

64. Fargesia glabrifolia T. P. Yi, J. Bamboo Res. 2(2): 32. 1983.

光叶箭竹 guang ye jian zhu

Borinda glabrifolia (T. P. Yi) Stapleton.

Rhizome neck 2.5–4.5 cm. Culms 4–6 m, 0.8–2 cm in diam.; internodes terete, 30–35 cm, initially densely white powdery, glabrous; wall 2–4 mm thick; supra-nodal ridges level; sheath scar weakly prominent. Branches many per node, subequal, initially white powdery. Culm sheaths gradually deciduous, triangularly narrowly rounded, leathery, sparsely gray-white to gray-yellow setose, longitudinal ribs prominent, margins glabrous; auricles absent or small; oral setae few, readily deciduous, erect; ligule truncate, 1–4 mm, initially pubescent, uniformly fissured; blade reflexed, linear-lanceolate to triangular-lanceolate, glabrous, margins serrulate and rolled. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles absent; oral setae yellow-brown; ligule truncate or convex, short, fimbriate, ciliate; blade narrowly lanceolate, 5–8 × 0.4–0.5 cm, glabrous, secondary veins 2-paired, transverse veins obscure, base broadly cuneate, margins obscurely spinescent-serrulate. Inflorescence unknown. New shoots late Jun.

● 3100–3500 m. S Xizang.

65. Fargesia plurisetosa T. H. Wen, J. Bamboo Res. 3(2): 27. 1984.

密毛箭竹 mi mao jian zhu

Rhizome neck 1–2.5 cm. Culms ca. 2 m, to 1 cm in diam.; internodes terete, 16–18 cm, initially densely gray setose, scabrid after setae fall, longitudinal ribs dense and prominent; wall 1–1.5 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent, densely gray setose. Branches 2–8 per node. Culm sheaths persistent, narrowly triangular, much shorter than internode, papery, appressed pale yellow setose, longitudinal ribs greatly prominent, margins light yellow ciliate, apex triangular; auricles absent; oral setae absent or scarce; ligule truncate, 0.8–1 mm, sparsely pilose, margins ciliate, cilia deciduous; blade deciduous, reflexed, linear-lanceolate or triangular-conical, slightly pilose. Leaves 2–10 per ultimate branch; sheath gray pubescent, margins gray ciliate; auricles erect, oblong, ca. 1.5 mm; oral setae few, yellow, 2–6 mm; ligule truncate, slightly pilose; blade lanceolate or linear-lanceolate, 5–10 × 0.7–1.4 cm, abaxially white pubescent with hairs 1–2 mm, secondary veins 3–5-paired, transverse veins obscure, base rounded or broadly cuneate, one margin serrulate, other margin nearly smooth. Inflorescence unknown.

● About 1500 m. S Yunnan.

66. Fargesia dracocephala T. P. Yi, Bull. Bot. Res., Harbin 5(4): 127. 1985.

龙头箭竹 long tou jian zhu

Rhizome neck 8–20 cm. Culms 3–5 m, 0.3–2 cm in diam.; internodes terete, 15–18 cm, initially white powdery; wall 4–5 mm thick; supra-nodal ridges weakly prominent; sheath scar very prominent, ridged. Branches 7–14 per node. Culm sheaths gradually deciduous, pale red-brown, narrowly rounded-triangular or narrowly rounded, shorter than internode, leathery, gray-yellow setose or nearly glabrous, margins initially yellow-brown setose, longitudinal ribs prominent; auricles small; oral setae absent or sparse, brown; ligule truncate, ca. 1 mm, initially ciliolate; blade erect, triangular or linear-lanceolate, glabrous. Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles oblong, with oral setae; ligule purple, truncate, ca. 1 mm, glabrous; blade lanceolate, 5–12 × 0.6–1.3 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, one margin spinescent-serrulate, other margin obscurely serrulate. Inflorescence raceme or simple panicle, partially exserted from spathe; spikelets 1–1.5 cm; rachilla internodes 0.5–3 mm, glabrous; florets 1–3, green. Glumes 2, sparsely pilose, apex acuminate; lemma acuminate and long mucronate at apex; palea keels ciliate; lodicules ciliate. Anthers yellow or purple. Ovary ovoid, glabrous; style 1; stigmas 3, plumose. Caryopsis unknown. New shoots May–Oct.

● 1500–2200 m. S Gansu, W Hubei, S Shaanxi, N Sichuan.

Fargesia dracocephala is one of the main food species for the giant panda.

A bamboo cultivated under this name in the West differs substantially from this description.

67. Fargesia decurvata J. L. Lu, J. Henan Agric. Coll. 1981(1): 74. 1981.

毛龙头竹 mao long tou zhu

Fargesia aurita T. P. Yi.

Rhizome neck 10–15 cm. Culms 1.5–3.5 m, 0.5–1.5 cm in diam.; internodes terete, 15–20 cm, initially thinly white powdery, glabrous; wall 3–5 mm thick; supra-nodal ridges prominent; sheath scar greatly prominent, ridged. Branches 5–12 per node, deflexed. Culm sheaths deciduous, pale yellow-brown, narrowly triangular or narrowly rounded-triangular, shorter than internode, papery, pale yellow or yellow-brown setose, longitudinal ribs very prominent, margins glabrous, apex triangular; auricles and oral setae absent; ligule purple, arcuate, ca. 1 mm, initially white-gray ciliolate; blade erect, linear-triangular or triangular, glabrous, margins serrulate. Leaves 2–5 per ultimate branch; sheath margins yellow-brown ciliate; auricles purple, nearly circular; oral setae few, gray-yellow, 2–5 mm; ligule arcuate, glabrous; blade lanceolate, 7–14.5 × 0.6–1.6 cm, abaxially proximally white-gray pubescent, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots late Apr–early May.

● 1100–1700 m. W Hubei, NW Hunan, SW Shaanxi, E Sichuan.

This species is an important source of food for the giant panda in Fuping, Shaanxi Province.

68. Fargesia conferta T. P. Yi, Bull. Bot. Res., Harbin 5(4): 123. 1985.

笼笼竹 long long zhu

Rhizome neck 3–6 cm. Culms 3–5 m, 1–2 cm in diam.; internodes terete, 25–35 cm, initially distally white-gray setose; wall 2.5–5 mm thick; supra-nodal ridges weakly prominent; sheath scar prominent, with persistent remains of sheath base, glabrous or initially sparsely white-gray setose. Branches many per node, deflexed, subequal. Culm sheaths persistent, gray-red-brown, narrowly triangular, shorter than internode, thickly papery, densely appressed brown to dark brown setose, longitudinal ribs distally prominent, margins brown ciliate, apex triangular; auricles triangular or absent; oral setae several, gray, 2–5 mm; ligule arcuate, 2–6 mm, ciliate; blade erect, linear-lanceolate, glabrous, margins rolled. Leaves 2–6 per ultimate branch; sheath margins glabrous; auricles absent; oral setae few, gray, 3–5 mm; ligule brown, truncate or arcuate, glabrous; blade narrowly lanceolate, 9–13 × 0.5–1 cm, thin, abaxially gray-puberulous proximally, secondary veins 4-paired, transverse veins obscure, base cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots Jun.

● 1100–1700 m. W Guizhou, S Sichuan.

69. Fargesia robusta T. P. Yi, J. Bamboo Res. 4(2): 28. 1985.

拐棍竹 guai gun zhu

Rhizome neck 9–20 cm. Culms 2–7 m, 1–3 cm in diam.; internodes terete, 15–30 cm, initially white powdery; wall 3–5 mm thick; supra-nodal ridges weakly prominent; sheath scar very prominent, ridged. Branches 15–20 per node. Culm sheaths deciduous or gradually deciduous, triangular-elliptic, shorter than internode, leathery, light yellow or yellow-brown setulose, setulae especially dense proximally, longitudinal ribs prominent, margins glabrous; auricles absent or small; oral setae absent, or few and deciduous; ligule truncate, 1–2 mm, initially densely ciliate; blade erect or reflexed, triangular or linear-lanceolate, glabrous. Leaves 2–4 per ultimate branch; sheath to 16 cm, glabrous, margins apically densely ciliate, apex broadly triangular; auricles absent; oral setae present; ligule purple, truncate, ca. 1 mm, glabrous; blade lanceolate, 6–23 × 0.5–2.3 cm, glabrous or abaxially sparsely pilose proximally, secondary veins 4–7-paired, transverse veins distinct, base cuneate, margins spinescent-serrulate. Inflorescence a condensed raceme, partially exserted from spathe; spikelets 5–11, 1–1.5 cm, rachilla internodes 1–2 mm; florets 2–4, green. Glumes 2, sparsely pilose, apex acuminate or long mucronate; lemma long mucronate at apex; palea keels serrulate; lodicules purple, margins ciliate, apex pubescent. Anthers yellow. Ovary ovoid, glabrous; style 1; stigmas 3. Caryopsis unknown. New shoots Jun–Aug.

● 1700–2800 m. W Sichuan.

The shoots are edible and are an important source of food for the giant panda. The culms provide material for weaving.

70. Fargesia caduca T. P. Yi, J. Bamboo Res. 7(2): 108. 1988.

景谷箭竹 jing gu jian zhu

Rhizome neck 6–23 cm. Culms 3–5 m, 1–1.5 cm in diam.; internodes terete, 21–30 cm, initially white powdery, glabrous; wall 1.5–2.5 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent, narrow, thin. Branches 10–18 per node, deflexed, subequal. Culm sheaths deciduous, narrowly triangular, shorter than internode, proximally leathery, distally papery, sparsely appressed gray-yellow or yellow setose, margins glabrous, apex narrowly triangular; auricles absent; oral setae absent or several, gray, 3–6 mm; ligule purple, triangular or truncate, ca. 0.5 mm, glabrous; blade erect, triangular or linear-lanceolate, glabrous. Leaves 7–9 per ultimate branch; sheath to 28 cm, margins glabrous, apex narrowly triangular; auricles absent; oral setae few, gray, 2–5 mm; ligule truncate, glabrous; blade narrowly lanceolate, 5–13 × 0.5–1.1 cm, abaxially gray puberulous proximally, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, one margin serrulate, other margin obscurely so, apex acuminate. Inflorescence unknown. New shoots Sep.

● 1800–1900 m. S Yunnan.

71. Fargesia emaculata T. P. Yi, J. Bamboo Res. 4(2): 29. 1985.

牛麻箭竹 niu ma jian zhu

Rhizome neck 7–14 cm. Culms 2.5–3.5 m, 0.8–1.2 cm in diam.; internodes terete, 18–25 cm, initially white powdery, yellow-brown setose below each node; wall 2–3 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent. Branches 10–17 per node, purple-red. Culm sheaths persistent, triangularly narrowly rounded, shorter than internode, leathery, brown setose, margins distally densely yellow-brown ciliate, apex triangular; auricles absent; oral setae absent or several, white-gray, 3–4 mm; ligule arcuate, ca. 1 mm, gray-yellow ciliolate; blade erect or reflexed, linear-lanceolate, margins white-gray ciliolate. Leaves 3 or 4 per ultimate branch; sheath margins glabrous; auricles and oral setae absent; ligule arcuate or truncate, glabrous; blade narrowly lanceolate, 1.5–7 × 0.3–0.75 cm, glabrous, secondary veins 2- or 3-paired, transverse veins obscure, base broadly cuneate, one margin slightly serrulate, other margin smooth, apex acuminate. Inflorescence unknown. New shoots Jul.

● 2800–3800 m. W Sichuan.

This species is a source of food for the giant panda.

72. Fargesia lushuiensis Hsueh & T. P. Yi, J. Bamboo Res. 7(2): 111. 1988.

泸水箭竹 lu shui jian zhu

Borinda lushuiensis (Hsueh & T. P. Yi) Stapleton.

Culms 3–5 m, 0.8–1 cm in diam.; internodes terete but grooved above branches, 14–32 cm, initially white powdery, glabrous; wall 1.5–3.2 mm thick; supra-nodal ridges prominent to very prominent; sheath scar prominent. Branches 2–9 per node. Culm sheaths deciduous, narrowly triangular, shorter than internodes, leathery, glabrous or sparsely setose, margins glabrous, apex narrowly triangular; auricles and oral setae absent; ligule purple, truncate, ca. 1 mm, glabrous; blade erect or

reflexed, triangular or linear-triangular, glabrous, adaxially scabrous, margins rolled. Leaves 3–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule purple, truncate, glabrous; blade narrowly lanceolate, 7–11 × 0.6–1 cm, glabrous, secondary veins 3- or 4-paired, transverse veins distinct, base cuneate, margin nearly smooth or slightly scabrous, apex long acuminate. Inflorescence unknown.

● 1700–1800 m. NW Yunnan.

This species is a source of food for the giant panda.

73. Fargesia mali T. P. Yi, Acta Bot. Yunnan. 11: 37. 1989.

马利箭竹 ma li jian zhu

Rhizome neck 3–8 cm. Culms 3–6 m, 1.2–2.5 cm in diam.; internodes green, terete, 25–38 cm, waxy; wall 3–4 mm thick; supra-nodal ridges level or weakly prominent; sheath scar prominent, initially yellow-brown setulose. Branches 10–15 per node. Culm sheaths gradually deciduous, gray to gray-brown, narrowly triangular, ca. 4/5 as long as internodes, leathery, sparsely yellow clavate-setose, margins initially yellow ciliate, apex broadly triangular; auricles and oral setae absent; ligule purple, arcuate, ca. 1 mm, margins slightly undulate; blade erect, narrowly triangular, margins smooth, rolled. Leaves 2–4 per ultimate branch; sheath margins glabrous; auricles and oral setae absent; ligule purple, truncate; blade linear-lanceolate, 5–7.5 × 0.4–0.7 cm, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, base cuneate, one margin serrulate, other margin obscure. Inflorescence unknown. New shoots Aug.

● 3000–3200 m. SW Sichuan.

The culms are used for weaving.

74. Fargesia exposita T. P. Yi, J. Bamboo Res. 11(2): 12. 1992.

露舌箭竹 lu she jian zhu

Rhizome neck (1.5–)2–5.5 cm, (0.8–)1–2 cm in diam. Culms 3–4.5(–5) m, 0.8–1.6(–2.5) cm in diam.; internodes terete, 20–23 cm, initially white powdery, glabrous; wall 3–4 mm thick; supra-nodal ridges level or slightly prominent; sheath scar prominent. Branches 7–15 per node; culm bud 1, narrowly ovoid, appressed, margins white ciliate. Culm sheaths deciduous, oblong-triangular, ca. 3/5 as long as internodes, leathery, shoulders convex on sheaths of upper culm, grayish white or yellow setose, margins slightly yellow or gray ciliate; auricles and oral setae absent; ligule purple, truncate or concave, 0.5–1 mm, wider than base of sheath blade, glabrous; blade erect or reflexed, triangular or linear-triangular, glabrous, margins serrulate. Leaves 3–6 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule purple, truncate or arched, ca. 0.5 mm, glabrous; blade narrowly linear-lanceolate, 4–9.5 × 0.4–0.8 cm, glabrous, secondary veins (2 or)3-paired, transverse veins distinct, base cuneate, margins serrulate. Inflorescence unknown. New shoots Jul.

● 2700–2800 m. S Sichuan (Mianning).

The shoots are edible, and the culms are used for weaving.

75. Fargesia brevipes (McClure) T. P. Yi, J. Bamboo Res. 7(2): 113. 1988.

短柄箭竹 duan bing jian zhu

Arundinaria brevipes McClure, Sunyatsenia 6(1): 28. 1941; *Sinarundinaria brevipes* (McClure) Keng ex P. C. Keng.

Rhizome, culm, and culm sheath unknown. Leaf sheath purple or purple-brown, initially apically white-gray setose; auricles absent or small; oral setae several, curved, yellow-brown, 1–5 mm; ligule purple, truncate, ca. 1 mm, glabrous; blade narrowly lanceolate, 2.5–6 × 0.3–0.4 cm, glabrous or abaxially initially setulose proximally, secondary veins 2-paired, transverse veins obscure, base cuneate or rounded, one margin serrulate, other margin obscurely so, apex acuminate. Inflorescence a raceme, exserted from spathe; spikelets 3–6, 1.8–3 cm, rachilla 3–4 mm, gray-yellow setose, margins ciliate, apex swollen; florets 3–5, purple. Glumes 2, glabrous, apex long mucronate; lemma narrowly triangular, apex long mucronate; palea keels sparsely setulose; lodicules ciliate. Anthers yellow, glabrous. Ovary ovoid, glabrous; style 1; stigmas 3, white. Caryopsis unknown.

● Yunnan.

The type locality remains unknown.

76. Fargesia cuspidata (Keng) Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 95. 1981.

尖尾箭竹 jian wei jian zhu

Arundinaria cuspidata Keng, Sinensia 7(3): 410. 1936; *Sinarundinaria cuspidata* (Keng) P. C. Keng; *Thamnocalamus cuspidatus* (Keng) P. C. Keng.

Culms ca. 5 m, ca. 2 cm in diam.; internodes terete, 14–19 cm, initially white powdery. Branches many, to 60 cm, glabrous. Culm sheaths unknown. Leaf sheath 3–6 cm, glabrous; auricles absent; oral setae deciduous; ca. 3 mm; ligule truncate, ca. 1 mm, rigid; blade narrowly rectangular, 3.5–12 × 0.5–1 cm, glabrous or slightly pilose basally, secondary veins 3–5-paired, transverse veins present, base broadly cuneate, margins scabrous or nearly smooth, apex long acuminate. Inflorescence a raceme or contracted panicle, exserted from spathe; spikelets many, 2.5–3 cm, rachilla internodes 4–6 mm, slightly pilose apically; florets 3 or 4, light yellow. Glumes 2, sparsely hairy, apex obtuse; lemma hairy, apex obtuse; palea keels ciliate; lodicules ciliate, obtuse at apex. Ovary ca. 2 mm; styles 3; stigma unknown. Caryopsis red-brown.

● About 1600 m. N Guangxi.

77. Fargesia ungulata T. H. Wen, J. Bamboo Res. 8(1): 22. 1989.

鸡爪箭竹 ji zhua jian zhu

Culms ca. 1.5 m, 0.5–0.8 cm in diam.; internodes dark purple-brown, 7–12 cm, pubescent, nearly solid; supra-nodal ridges weakly prominent; sheath scar woody. Branches 6–8 per node, slender. Culm sheaths unknown. Leaves 3 or 4 per ultimate branch, deciduous; sheath 2.5–2.7 cm, initially densely setose; auricles deflexed, falcate; oral setae short; ligule arcuate, ca. 1 mm; blade narrowly lanceolate, 4–7 × 0.9–1.2 cm, abaxially setose, secondary veins 3- or 4-paired, transverse veins obscure, base broadly cuneate or nearly rounded, margins serru-

late, apex acuminate and obtuse. Inflorescence a raceme; spikelets 2–4; florets 2 or 3. Glumes 2, glabrous; lemma glabrous, apex obtuse; palea glabrous, apex sharply obtuse; lodicules ciliate. Ovary cylindrical, ca. 2 mm; style 1, very short; stigmas 3, penicillate. Caryopsis unknown.

● NW Hunan.

78. Fargesia vicina (Keng) T. P. Yi, J. Bamboo Res. 7(2): 113. 1988.

紫序箭竹 zi xu jian zhu

Arundinaria vicina Keng, Sinensia 7: 410. 1936; *Pseudosasa vicina* (Keng) T. Q. Nguyen; *Sinarundinaria vicina* (Keng) P. C. Keng.

Rhizome, culm, and culm sheath unknown. Flowering branches 3 per node; ligule truncate or arcuate, ca. 1 mm, abaxially sparsely hairy. Leaves 1–3 per flowering branch; blade 2.5–8 × 0.4–0.7 cm, glabrous, secondary veins 3-paired, transverse veins distinct, one margin scabrous, other margin smooth. Inflorescence a raceme; spikelets 3–5, 2–3 cm, rachilla internodes 4–5 mm, slightly pilose; florets 4–6. Glumes 2, glabrous, apex acuminate; lemma sparsely hairy, apex obtuse or acuminate; palea keels setose; lodicules yellow-brown, margins apically ciliate. Stamens unknown. Stigmas 2. Caryopsis unknown.

● Yunnan.

The type locality remains unknown.

Taxa incertae sedis

Fargesia macrophylla Hsueh & C. M. Hui, Bull. Bot. Res., Harbin 18: 258. 1998.

阔叶箭竹 kuo ye jian zhu

Rhizome sympodial. Culms 2–3 m, 0.5–1 cm in diam.; internodes terete, 28–38 cm, initially thinly white powdery, glabrous, hollow; sheath scar prominent, glabrous. Branches very many per node, subequal. Culm sheaths persistent, shorter than internode, leathery, sometimes scattered setose, margins densely ciliate, longitudinal ribs only laterally conspicuous; auricles and oral setae absent; ligule truncate, 2–5 mm; blade reflexed, base narrower than mouth or sheath. Leaves 3–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule rounded or truncate, ca. 1 mm; blade 15–25 × 2–4 cm, proximally pilose, secondary veins 5–7-paired, transverse veins distinct. Inflorescence unknown.

● 1900–2000 m. Yunnan (Fugong).

This taxon appears to key out with *Fargesia pauciflora* (species no. 54); the authors compared it with *F. hsuehiana*, which could be distinguished by, e.g., the initially setose culm internodes and nodes, culm sheath ligules only ca. 0.7 mm, and smaller leaves, 6–14 × 0.7–1.2 cm.

Fargesia nujiangensis Hsueh & C. M. Hui, Bull. Bot. Res., Harbin 18: 261. 1998.

怒江箭竹 nu jiang jian zhu

Fargesia nujiangensis f. *lanpingensis* J. R. Hsueh & C. M. Hui; *F. nujiangensis* f. *striata* J. R. Hsueh & C. M. Hui.

Rhizome sympodial. Culms 3–5 m, 1–3 cm in diam.; internodes terete, 23–30 cm, prominently ridged, initially densely white powdery or waxy, filled with pith (hollow in f. *lanpingensis*); nodes glabrous. Branches 5 per node, equal. Culm sheaths soon or gradually deciduous, streaked with yellow in f. *striata*, shorter than internode, leathery, sparsely caducous-setose, margins distally ciliate, longitudinal ribs prominent, transverse veins not evident, apex truncate or sometimes retuse; auricles and oral setae absent; ligule 2–5 mm; blade reflexed (erect in f. *striata*), base narrower than mouth or sheath. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule ca. 1 mm; blade lanceolate, 5–10 × 0.5–0.6 cm, glabrous, secondary veins 2- or 3-paired, transverse veins obscure. Inflorescence unknown.

● 2500–2900 m. Yunnan (Gaoligong Shan).

Fargesia nujiangensis was compared by its authors with *F. hsuehiana*, which differs most obviously by having initially setose culm internodes, 6–9 branches per culm node, and persistent culm sheaths.

Fargesia stricta Hsueh & C. M. Hui, Bull. Bot. Res., Harbin 18: 266. 1998.

马兹箭竹 ma zi jian zhu

Culms 5–8 m, 2–3 cm in diam.; internodes terete, 30–37 cm, obscurely ridged, glabrous, hollow or filled with pith toward culm apex; wall about as thick as cavity; supra-nodal ridge prominent, remains of sheath base persistent. Branches 3–5(–8) per node, unequal. Culm sheaths soon deciduous, oblong, leathery, brown setose, setae densest proximally, longitudinal ribs prominent, margins not ciliate; auricles and oral setae absent; ligule 1–3 mm, shortly ciliate; blade reflexed, linear-lanceolate, narrower than mouth of sheath. Leaves 3 or 4(or 5) per ultimate branch; auricles and oral setae absent; ligule ca. 1 mm; blade lanceolate, 5–10 × 0.5–0.8 cm, secondary veins 2- or 3-paired, transverse veins obscure. Inflorescence unknown.

● 2200–2300 m. Yunnan (Lushui).

The authors compared this species with what is now *Himalayacalamus collaris*.

In addition, the following species have been described from China:

Fargesia brevistipedis T. P. Yi (J. Bamboo Res. 19(1): 14. 2000) was described from sterile material from Sichuan (Tianquan). In the protologue it was compared with *F. pauciflora*.

Fargesia incrassata T. P. Yi (J. Bamboo Res. 19(1): 16. 2000) was described from sterile material from Sichuan (Tianquan). In the protologue it was compared with *F. fractiflexa* (*Drepanostachyum fractiflexum* in this account).

Fargesia ostrina T. P. Yi (Acta Bot. Yunnan. 22: 251. 2000) was described from Sichuan (Wanyuan). In the protologue it was compared with *F. murielae*.

15. DREPANOSTACHYUM P. C. Keng, J. Bamboo Res. 2(1): 15. 1983.

镰序竹属 lian xu zhu shu

Li Dezhu (李德铢); Chris Stapleton

Shrubby bamboos. Rhizomes short necked, pachymorph. Culms unicaespitose, to 4 m tall, distally pendulous; internodes terete, glabrous, cavity not filled with pith; nodes raised. Mid-culm branch buds very broadly ovoid, bud scale open at front, branch sheathing reduced, very many branch initials visible in 2 ranks. Branches very numerous and congested; branchlets initially 8–16 in 2 or 3 rows, later to 80, verticillate, subequal, slender. Culm sheaths deciduous, narrowly triangular, papery, adaxially scabrous inside apically, apex narrowly acuminate with distally concave edges, blade subulate. Leaves small-sized, narrowly lanceolate to lanceolate, delicate, matte, transverse veins absent. Inflorescence ebracteate, interrupted falcate panicles and dense clusters on leafy or leafless flowering branches. Spikelets delicate, 2–6 flowered, followed by a sterile floret, pedicel curved, short to long. Glumes 2, membranous. Lemma longer than second glume, leathery, many veined, acuminate; palea equal to or shorter than lemma, 2-keeled, obtuse; lodicules 3, transparent. Stamens 3; filaments free, long exserted; anthers yellow. Ovary appendage absent; style 1; stigmas 2, plumose. Caryopsis grainlike, narrow. New shoots summer–early autumn.

About ten species: subtropical Himalayas in Bhutan, China, India, and Nepal; at least four species (all endemic) in China.

1a. Culms 1.5–2 m; culm sheaths purple, blades usually erect ..... 1. *D. membranaceum*
1b. Culms 2–5.4 m; culm sheaths yellowish brown, blades usually reflexed.
2a. Culm sheaths narrowly triangular; branches 5–17 ..... 2. *D. fractiflexum*
2b. Culm sheaths long acuminate; branches 15–80.
3a. Culm sheath blade adaxially glabrous; leaf sheath blade glabrous; leaf sheath auricles and oral setae present, small, deciduous ..... 3. *D. semiorbiculatum*
3b. Culm sheath blade adaxially proximally setose; leaf sheath blade abaxially proximally pubescent; leaf sheath auricles and oral setae absent ..... 4. *D. ampullare*

1. Drepanostachyum membranaceum (T. P. Yi) D. Z. Li, Novon 15: 600. 2005.

膜鞘镰序竹 mo tuo lian xu zhu

Fargesia membranacea T. P. Yi, Acta Bot. Yunnan. 14: 135. 1992.

Rhizome neck 2–5 cm, 1–1.7 cm in diam., solid. Culms 1.5–2 m, 5–10 mm in diam.; internodes cylindrical, (4–)13–15(–18) cm, glabrous; wall 1.8–3 mm thick; supra-nodal ridge prominent; sheath scar prominent. Branches 13–33 per node, ascending, subequal; buds 5–7, suborbicular. Culm sheaths persistent, purple, linear-triangular, longer than nodes, thinly leathery or thickly papery proximally, membranous distally; auricles and oral setae absent; ligule 1–2 mm, initially fimbriate; blade erect, linear, glabrous, involute. Leaves 4 or 5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligules triangular-arcuate, 1–1.5 mm; blade linear-lanceolate, 4–9 × 0.3–0.6 cm, glabrous, secondary veins 2(or 3)-paired, transverse veins slightly distinct, base cuneate, margins serrulate. Inflorescence unknown.

● 2300–2400 m. S Sichuan (Mianning).

2. Drepanostachyum fractiflexum (T. P. Yi) D. Z. Li, Fl. Yunnan. 9: 145. 2003 [*"fractiflexa"*].

扫把竹 sao ba zhu

Fargesia fractiflexa T. P. Yi, J. Bamboo Res. 4(1): 22. 1985.

Rhizome neck 3–20 cm, 0.7–2 cm in diam.; internodes 1–10 mm. Culms 2–4.5 m, 6–12 mm in diam.; internodes 12–15 (–20) cm, initially usually glaucous and white powdery, longitudinal ribs obscure; nodes initially purple; ridge and sheath scar prominent; culm solid or nearly so, cavity with lamellate pith. Branches 5–17 per node, secondary branches undeveloped. Culm sheaths yellowish brown, narrowly triangular, thinly leathery, longitudinal ribs conspicuous, very sparsely yellow-brown setose; auricles and oral setae absent; ligule arcuate, 1–3 mm, glabrous, uniformly fissured; blade reflexed, linear-lanceolate, glabrous. Leaves 3–5 per ultimate branch; sheath margins yellow-brown ciliolate; auricles and oral setae absent; ligule truncate or arcuate, 1–1.5 mm, glabrous; blade lanceolate, 7–13 × 0.5–1.2 cm, secondary veins 3- or 4-paired, transverse veins undeveloped, base cuneate, one margin spinescent-serrulate, other margin obscure. Inflorescence unknown. New shoots Jul–Sep.

● 1300–3200 m. SW Sichuan, N Yunnan.

The culms are used for weaving and making brooms.

3. Drepanostachyum semiorbiculatum (T. P. Yi) Stapleton, Novon 15: 600. 2005.

圆芽镰序竹 yuan ya lian xu zhu

Fargesia semiorbiculata T. P. Yi, J. Bamboo Res. 2(2): 40. 1983.

Rhizome neck 2–4 cm, 1.2–2.5 cm in diam., internodes 1–4 mm. Culms to 4.2 m, 6–13 mm in diam.; internodes cylindrical, 15–20(–29) cm, rigid, initially glaucous and densely white powdery, longitudinal ribs obscure; wall 2–4 mm thick. Branches many, deflexed, subequal, slender; nodes and sheath scars prominent; shoots purple when fresh, glabrous, sheath margins densely yellow-brown ciliolate. Culm sheaths yellowish brown, narrowly rounded or rarely narrowly triangular, leathery, sharply narrow in upper part, longitudinal ribs prominent, adaxially distally white-gray or gray-yellow setose, especially densely so close to apex, distal margins densely yellow-brown to brown setose; auricles and oral setae absent;

ligule prominent, 1–4 mm, initially densely white-gray to gray-yellow ciliolate, cilioles deciduous; blade usually reflexed, triangular to linear-lanceolate, glabrous. Leaves 2–5 per ultimate branch; sheath light green or purplish, 2–3 cm, glabrous, margins densely white-gray to gray-yellow ciliolate; auricles and oral setae absent; ligule truncate, ca. 1 mm, initially with dense, gray-yellow cilia ca. 1.5 mm; blade narrowly lanceolate, (2–)5–8.5(–10) × 0.4–0.5 cm, glabrous, secondary veins 2- or 3-paired, transverse veins distinct, margins spinescent-serrulate. Inflorescence unknown. New shoots Jun.

● 2400–2500 m. S Xizang (Cona).

4. Drepanostachyum ampullare (T. P. Yi) Demoly, Bambou 46: 7. 2005.

樟木镰序竹 zhang mu lian xu zhu

Fargesia ampullaris T. P. Yi, J. Bamboo Res. 2(2): 18. 1983.

Rhizome neck 3–7 cm, 1.3–2 cm in diam., internodes 1.5–7 mm. Culms erect, 2–5.4 m, 7–15 mm in diam.; internodes cylindrical, 20–25(–30) cm, rigid, initially glaucous and densely white powdery, longitudinal ribs obscure; wall 3–4 mm thick in mid-culm; nodes initially white powdery, supra-nodal ridge prominent; sheath scar prominent, initially yellow-brown setose. Branches many, subequal, secondary branch undeveloped. Culm sheaths pale yellow-brown, sharply narrow close to apex, leathery, abaxially yellow setose, adaxially apically white-gray or gray-yellow setose, especially densely so close to apex, distal margins densely yellow setulose; auricles and oral setae absent; ligule 1.5–4 mm, densely yellow-brown setose, irregularly fissured; blade reflexed, linear-lanceolate, adaxially proximally yellow-brown setose. Leaves 3–5 per ultimate branch; sheath light green, glabrous; auricles deciduous, small; oral setae gray-brown; ligule truncate, ca. 1 mm, glabrous; blade lanceolate, 7–11 × 0.6–1 cm, abaxially proximally gray hairy, secondary veins 2- or 3-paired, transverse veins undeveloped, base cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots May–Jul.

● About 2200 m. S Xizang (Nyalam).

The combination *Drepanostachyum ampullare* (T. P. Yi) Demoly was published in July 2005; the same combination was made on 12 December 2005 by Stapleton (Novon 15: 600. 2005).

The culms are used for weaving.

Taxa incertae sedis

Drepanostachyum exauritum W. T. Lin, J. Bamboo Res. 11(1): 30. 1992.

无耳镰序竹 wu er lian xu zhu

Rhizome sympodial. Culms erect, 3–4 m, 10–15 mm in diam.; internodes cylindrical, 7–18.5 cm; nodes flat; sheath scar slightly prominent. Branches many, one dominant, with a few, smaller ones 1–1.5 mm in diam.; buds 3. Culm sheaths yellow-brown setose; auricles and oral setae absent; ligule ca. 5 mm, margin laciniate; blade reflexed, linear, glabrous, involute. Leaves 5 or 6 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule ca. 1 mm, blade linear-lanceolate, 10–17.5 × 1.4–2.5 cm, abaxially white pubescent, adaxially glabrous, secondary veins 6- or 7-paired, transverse veins obscure. Inflorescence unknown.

● Guangxi (Guilin).

This species was based on an incomplete type specimen (*Z. M. Wu 58902*, CANT), which has not been seen. From the description and illustration, it seems that it might be a species of *Ampelocalamus*, having a prominent branch and lateral ones, developed culm sheath blades, and growing in a limestone area. However, the erect culms suggest a different genus altogether, possibly *Dendrocalamus*.

In addition, *Drepanostachyum naibunensoides* W. T. Lin & Z. M. Wu (J. S. China Agric. Univ. 13(2): 84. 1992) was described from Guangdong.

16. HIMALAYACALAMUS P. C. Keng, J. Bamboo Res. 2(1): 23. 1983.

喜马拉雅筱竹属 xi ma la ya xiao zhu shu

Li Dezhu (李德铢); Chris Stapleton

Shrubby to subarborescent bamboos. Rhizomes short necked, pachymorph. Culms unicaespitose, nodding to pendulous, to 12 m tall; internodes terete, glabrous, cavity not filled with pith; nodes not raised. Mid-culm branch buds broadly ovoid, bud scale open at front, branch sheathing reduced, several branch initials visible. Branches many and congested, to 25, subequal, with central dominant. Culm sheaths deciduous, papery, usually apically rounded, smooth inside; blade subulate. Leaves lanceolate to broadly lanceolate, usually small, transverse veins absent or inconspicuous. Inflorescence ebracteate, clustered racemes on leafy or leafless flowering branches. Spikelets delicate, 1(or 2)-flowered, followed by a sterile floret, pedicel short. Glumes 2, sometimes membranous; lemma longer than second glume, leathery, many veined, acuminate. Palea equal to or shorter than lemma, 2-keeled, obtuse. Lodicules 3, transparent. Stamens 3; anthers yellow; filaments free, long exserted. Ovary appendage absent; style 1; stigmas 2, plumose. Caryopsis grainlike, broad. New shoots summer–early autumn.

Eight species: Bhutan, China, India, Nepal; two species in China.

1a. Culm internodes smooth ..... 1. *H. falconeri*
1b. Culm internodes longitudinally striate ..... 2. *H. collaris*

1. Himalayacalamus falconeri (Munro) P. C. Keng, J. Bamboo Res. 2(1): 24. 1983.

喜马拉雅筱竹 xi ma la ya xiao zhu

Thamnocalamus falconeri Munro, Trans. Linn. Soc. London 26: 34. 1868; *Drepanostachyum falconeri* (Munro) J. J. N. Campbell ex D. C. McClintock; *Fargesia gyirongensis* T. P. Yi; *Himalayacalamus gyirongensis* (T. P. Yi) Ohrnberger.

Rhizome neck 2–3 cm, 8–20 mm in diam., internodes 1.5–3 mm. Culms 3–3.5 m, 1–1.2 cm in diam.; internodes terete, 15–19 cm, initially glaucous and white powdery; culms hollow; wall 1.5–2.5 mm thick, cavity with lamellate pith on inner wall; supra-nodal ridges prominent; sheath scar prominent, initially densely setose. Branches many, deflexed, slender, without secondary branching. Culm sheaths deciduous, narrowly triangular-rounded, leathery, glabrous or setose, longitudinal ribs conspicuous distally, distal margins yellow-brown ciliolate, apex asymmetrical; auricles and oral setae absent; ligule truncate or convex, 1–2 mm, glabrous; blade readily deciduous, linear-lanceolate, revolute, adaxially densely yellow-brown setose proximally, articulate. Leaves 4–6 per ultimate branch; sheath margins yellow-brown ciliolate; auricles absent; oral setae erect, gray-brown, 1–2 mm, rigid, undulate; ligule truncate, ca. 1 mm; blade lanceolate, 7–11 × 0.6–1.2 cm, abaxial midrib white-gray hairy proximally, secondary veins 3- or 4-paired, transverse veins distinct, base broadly cuneate or rarely rounded, margin spinescent-serrulate. Inflorescence unknown. New shoots May.

Mixed temperate forests; ca. 2400 m. SW Xizang (Gyirong) [Bhutan, India, Nepal].

The description is that of *Fargesia gyirongensis*, which differs somewhat from the type of *Himalayacalamus falconeri*, from near Kathmandu in Nepal, in its erect leaf sheath oral setae (Bamboo Soc. Newslett. 15: 12. 1992).

The culms are used for weaving.

2. Himalayacalamus collaris (T. P. Yi) Ohrnberger, Bamboos World Introd. 3: 14. 1996.

颈鞘筱竹 jing qiao xiao zhu

Fargesia collaris T. P. Yi, J. Bamboo Res. 2(2): 21. 1983; *Thamnocalamus collaris* (T. P. Yi) T. P. Yi.

Rhizome neck 3–4.5 cm, 1.3–3 cm in diam., internodes 2–6 mm, initially densely white-gray ciliolate. Culms 2–6 m, 1–3.5 cm in diam., hollow; internodes terete, 17–28 cm; longitudinal ridges prominent, initially glaucous and densely white powdery, especially in apical ring; wall 2–3 mm thick; nodes prominent; sheath scar prominent, with persistent remains of sheath base. Branches many. Culm sheaths yellow-brown when dry, rectangular, leathery, glabrous, distal margins densely yellow ciliolate, apex asymmetrical; auricles and oral setae absent; ligule truncate or inclined, ca. 1 mm, not ciliolate; blade reflexed, linear-lanceolate, white-gray setose. Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule usually purple, arcuate, ca. 1 mm, glabrous; blade lanceolate, 2–12.5 × 0.3–1.9 cm, abaxially slightly scabrous, secondary veins 3- or 4-paired, transverse veins undeveloped, base rounded or broadly cuneate, margins spinescent-serrulate. Inflorescence unknown. New shoots Apr–May.

Temperate forests; 2200–3000 m. S Xizang (Zhangmu) [Nepal].

This species was collected on the border with Nepal. The ridged and grooved culms distinguish it from *Himalayacalamus falconeri*, while the absence of oral setae distinguishes it from *H. porcatus* Stapleton from further east in Nepal.

The culms are used for weaving.

17. AMPELOCALAMUS S. L. Chen, T. H. Wen & G. Y. Sheng, Acta Phytotax. Sin. 19: 332. 1981.

悬竹属 xuan zhu shu

Li Dezhu (李德铢); Chris Stapleton

Patellocalamus W. T. Lin.

Shrubby bamboos. Rhizomes short necked, pachymorph. Culms unicaespitose, pendulous or scrambling; internodes terete, finely ridged; nodal sheath scars usually prominent, often with corky collar. Mid-culm bud broadly ovoid, bud scale thick, initially closed at front, branch sheathing reduced, several branch initials becoming visible. Branches many, geniculate, central often dominant. Culm sheaths deciduous, papery, shorter than internodes; ligule conspicuous; auricles usually developed, often with conspicuous oral setae; blade often foliar, reflexed, lanceolate or narrowly lanceolate. Leaves small to large; ligule conspicuous; auricles usually conspicuous; blade with inconspicuous transverse veins. Inflorescence ebracteate or with few reduced sheaths, semelauctant, interrupted clustered pendulous panicles on leafy or leafless flowering branches. Spikelets pendulous on long, wiry inflorescence branches and curved pedicels, 2–7 flowered, followed by a sterile floret; rachilla internodes disarticulating, ca. 1/2 as long as florets. Glumes 2, thin; lemma papery; palea equal to or longer than lemma, 2-keeled, obtuse; lodicules 3, transparent. Stamens 3; filaments free, long exserted; anthers yellow. Ovary appendage absent; style 1; stigmas 2, plumose. Caryopsis ovoid to oblong, glabrous. New shoots late summer.

About 13 species: from C Himalayas to S China; 13 species (12 endemic) in China.

In addition to the species treated below, *Ampelocalamus anhispidis* T. H. Wen (J. Bamboo Res. 4(2): 11. 1985) was described from Hunan. From the original description, its placement in *Ampelocalamus* would appear somewhat speculative. More gatherings are required.

1a. Mid- and upper culm sheath margins long fimbriate.
2a. Central branch dominant; culm sheaths persistent, densely white powdery, purple-brown setose, irregularly spotted; culm to 1.5 cm in diam. ..... 1. *A. mianningensis*
2b. Branches subequal; culm sheath deciduous, sparsely brown setose; culm 2.5–4(–6) cm in diam. ..... 2. *A. patellaris*
1b. Mid- and upper culm sheath margins not long fimbriate.
3a. Culm taller than 10 m.
4a. Mid-culm internodes to 30 cm; leaf blade 13–20 cm ..... 3. *A. scandens*
4b. Mid-culm internodes 8–20 cm; leaf blade usually 5–12 cm ..... 4. *A. luodianensis*
3b. Culm 2–6(–10) m, or shorter.
5a. Leaf sheath auricles and oral setae absent.
6a. Leaf blade 9–17 × 1–2.5 cm, abaxially white pubescent ..... 5. *A. yongshanensis*
6b. Leaf blade 3–9 × 0.4–0.8 cm, glabrous ..... 6. *A. microphyllus*
5b. Leaf sheath auricles small or conspicuous, with oral setae.
7a. Culm internode initially hispidulous below node, with persistent remnants visible later.
8a. Culms 2–3 m, branches climbing to 6(–15) m; leaf blade papery, tomentose ..... 7. *A. actinotrichus*
8b. Culms to 1.5 m; leaf blade leathery, glabrous ..... 8. *A. calcareus*
7b. Culm internodes glabrous, smooth.
9a. Mid-culm internodes 22–53 cm; leaf blade 1–2.2 cm wide.
10a. Leaf sheaths with prominent oral setae, ligule 2–5 mm ..... 9. *A. saxatilis*
10b. Leaf sheaths without prominent oral setae, ligule ca. 1 mm ..... 10. *A. melicoideus*
9b. Mid-culm internodes 12–28 cm; leaf blade 0.5–1.2 cm wide.
11a. Culm sheath auricles minute ..... 11. *A. naibunensis*
11b. Culm sheath auricles absent.
12a. Culm sheath margins brown ciliate; leaf blade (4.5–)11–17 cm ..... 12. *A. hirsutissimus*
12b. Culm sheath margins glabrous; leaf blade (4–)6–10.5 cm ..... 13. *A. breviligulatus*

1. Ampelocalamus mianningensis (Q. Li & X. Jiang) D. Z. Li & Stapleton, Kew Bull. 51: 811. 1996.

冕宁悬竹 mian ning xuan zhu

Dendrocalamus mianningensis Q. Li & X. Jiang, J. Yunnan Forest. Coll. 1984(1): 134. 1984; *Drepanostachyum mianningense* (Q. Li & X. Jiang) T. P. Yi; *Patellocalamus gongshanensis* T. P. Yi; *P. mianningensis* (Q. Li & X. Jiang) T. P. Yi.

Culms 4–8 m, to 1.5 cm in diam., internodes 22.5–27 cm; wall 3–6 mm thick. Branches several, dominant branch obvious. Culm sheaths persistent, irregularly brown spotted, triangular, leathery, white powdery, densely brown hairy, margins long ciliate; auricles absent; ligule ca. 1 cm, fimbriate; blade erect or reflexed. Leaf sheaths 7–8 cm, glabrous; ligule 1–2 mm, apex ciliate; blade 15–21 × 3–3.5 cm. Inflorescence unknown.

● Riverside slopes; 1000–1700 m. W Sichuan, W Yunnan.

2. Ampelocalamus patellaris (Gamble) Stapleton, Edinburgh J. Bot. 51: 321. 1994.

碟环竹 die huan zhu

Dendrocalamus patellaris Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 86. 1896; *Chimonobambusa jainiana* C. R. Das & D. C. Pal; *Drepanostachyum jainianum* (C. R. Das & D. C. Pal) R. B. Majumdar; *Patellocalamus patellaris* (Gamble) W. T. Lin.

Culms 6–10 m, 25–40(–60) mm in diam.; internodes 30–45 cm; wall thin. Branches several. Culm sheaths deciduous, leathery, abaxially striate, appressed brown setose; auricles absent; ligule fimbriate or ciliate; blade reflexed, lanceolate. Leaf sheath abaxially striate; ligule long, ciliate; blade variable in size, 19–24(–40) × 2.5–3.5(–10) cm. Inflorescence semelauctant, paniculate. Spikelets 2–3 cm; florets 4–7, apical one sterile with a reduced rachilla extension. Glumes 2, rounded, short, many veined; lemma broadly rounded, slightly scabrous, 9–11-veined, margins long pubescent, apex mucronate; palea keels scabrous, 2-veined between keels. Anthers yellow, apiculate. Ovary ovoid; style 1, oblong; stigmas 2, plumose. Caryopsis 1–1.2 cm.

Broad-leaved forests; 1000–1800 m. Yunnan [India, Laos, Myanmar, Nepal].

This species was initially described in *Dendrocalamus* after flowers of *D. hamiltonii* were mistakenly included in a gathering from NE India. In China, a new section of *Dendrocalamus* was established to accommodate this species along with several unrelated species of *Dendrocalamus*. The correct flowers were eventually found in Nepal, and also in NE India, where they were described as a new species of *Chimonobambusa*.

3. Ampelocalamus scandens Hsueh & W. D. Li, J. Bamboo Res. 4(2): 5. 1985.

爬竹 pa zhu

Drepanostachyum scandens (Hsueh & W. D. Li) P. C. Keng ex T. P. Yi.

Culms subscandent, to 10 m or more, ca. 8 mm in diam., internodes to 30 cm; nodes with persistent, raised sheath base; wall ca. 2.5 mm. Branches many, central branch obviously dominant, often similar to main culm, secondary branches slender. Culm sheaths tardily deciduous or persistent, narrowly triangular, thinly leathery, white setose, margins apically long ciliate; auricles minute; ligule truncate, ca. 5 mm, serrate, fimbriate; blade reflexed, lanceolate, readily deciduous. Leaves 3–5 per ultimate branch; sheath ca. 4.5 cm, margins ciliolate;

auricles projecting, hispidulous; oral setae pronounced, initially purple, curving, to 1.5 cm; ligule developed; blade lanceolate, 13–20 × 0.7–2.2 cm, transverse veins not distinct. Inflorescence unknown. New shoots Aug.

● Steep slopes; 200–300 m. Guizhou (Chishui).

4. Ampelocalamus luodianensis T. P. Yi & R. S. Wang, J. Bamboo Res. 4(2): 3. 1985.

小篷竹 xiao peng zhu

Drepanostachyum luodianense (T. P. Yi & R. S. Wang) P. C. Keng ex T. P. Yi.

Culms basally erect, apically drooping, ca. 10 m, 4–10 mm in diam., nearly solid, internodes terete, 8–20 cm, initially white powdery, becoming glabrous. Branches several, central dominant, to 5 m. Culm sheaths tardily deciduous, yellow-green, with purple spots, narrowly triangular, abaxially striate, appressed setose; auricles absent; ligule truncate, ciliate; blade erect or reflexed, lanceolate. Leaves 4–11 per ultimate branch. Leaf sheaths ca. 5 cm, ciliate; auricles developed; blade lanceolate, usually 5–12 × 0.7–1.7 cm, white powdery. Spikelet 1.2–1.7 cm; florets 3–5, apical one sterile. Glumes 2, membranous, 3–5-veined; lemma rigid, 8–9 mm, 7-veined; palea slightly longer than lemma, glabrous; lodicules 3, ovate, ca. 1 mm, margins ciliate. Anthers 8–9 mm. Ovary ovoid, glabrous; style 1; stigmas 2, plumose. Caryopsis unknown.

● Steep slopes; 600–1000 m. Guizhou (Chishui).

5. Ampelocalamus yongshanensis Hsueh & D. Z. Li, J. Bamboo Res. 6(2): 10. 1987.

永善悬竹 yong shan xuan zhu

Drepanostachyum yongshanense (Hsueh & W. D. Li) P. C. Keng ex T. P. Yi.

Culms erect, apically drooping, to 3 m, 5–10 mm in diam.; internodes terete, 15–19 cm, initially white powdery; node slightly projected, sheath ring obvious with woody rudiment. Branches 5–15, secondary branches slender. Culm sheaths deciduous, narrowly triangular, 9–14 cm, thinly leathery, sparsely brown ciliate; auricles absent; ligule ca. 1 mm, ciliate; blade reflexed, 0.5–3 cm, adaxially pubescent. Leaves 3–5 per ultimate branch; leaf sheath auricles absent; ligule truncate, ca. 1 mm; blade 9–17 × 1–2.5 cm, abaxially white silky. Inflorescence unknown. New shoots Aug–Sep.

● Slopes on hills; 600–700 m. SW Sichuan, Yunnan (Yongshan).

6. Ampelocalamus microphyllus (Hsueh & T. P. Yi) Hsueh & T. P. Yi, J. Bamboo Res. 4(2): 7. 1985.

坝竹 ba zhu

Sinocalamus microphyllus Hsueh & T. P. Yi, J. Yunnan Forest. Coll. 1982(1): 71. 1982 [*"microphylla"*]; *Drepanostachyum microphyllum* (Hsueh & T. P. Yi) Hsueh & T. P. Yi; *Neosinocalamus microphyllus* (Hsueh & T. P. Yi) P. C. Keng & T. P. Yi.

Culms 2–6 m, 5–15 mm in diam., internodes terete, 15–35 cm, initially white powdery, becoming glabrous; sheath ring elevated, woody; wall 1.5–2 mm thick; culm sheaths triangular, thickly papery, sparsely gray ciliate; auricles absent; ligule truncate or slightly concave, ca. 1 mm; blade reflexed, subulate or narrowly lanceolate, abaxially glabrous. Leaves 4–10 per ultimate branch; leaf sheath auricles absent; ligule truncate, ca. 1 mm, serrate; blade 3–9 × 0.4–0.8(–1.1) cm, glabrous, transverse veins not distinct. Inflorescence unknown. New shoots Aug.

● Steep slopes; 300–500 m. E and N Sichuan.

7. Ampelocalamus actinotrichus (Merrill & Chun) S. L. Chen, T. H. Wen & G. Y. Sheng, Acta Phytotax. Sin. 19: 332. 1981.

射毛悬竹 she mao xuan zhu

Arundinaria actinotricha Merrill & Chun, Sunyatsenia 2: 206. 1935; *Indocalamus actinotrichus* (Merrill & Chun) McClure; *Pleioblastus actinotrichus* (Merrill & Chun) P. C. Keng.

Culms apically drooping, 2–3 m; branches climbing to 6(–15) m, 1–1.5 cm in diam.; internodes initially light purple, becoming gray-green and scarred, to 30 cm, hispidulous. Branches 2 to several. Culm sheaths tardily deciduous, initially green, thickly papery or leathery, margins with red-brown bristles to 2(–3.7) cm; auricles readily deciduous, prominent, ovate; ligule short, fimbriate; blade reflexed, green, lanceolate. Leaf sheaths glabrous; auricles obvious; ligule truncate, rigid, fimbriate; blade elliptic-lanceolate, usually 6–30 × 1–4 cm. Spikelets 1.8–3.5 cm; florets 2–7, apical one sterile; internode of rachilla 6–7 mm. Glumes 2, narrowly lanceolate; 1–5-veined; lemma lanceolate, 7–9-veined, apex mucronate; palea about as long as or longer than lemma, keels ciliate; lodicules 3. Anthers slender. Ovary ovoid; styles 2, basally joined; stigmas plumose. Caryopsis oblong-ovoid. New shoots May, fl. Feb–Jul.

● Slopes of hills; 500–1200 m. Hainan.

8. Ampelocalamus calcareus C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 21: 204. 1983.

贵州悬竹 gui zhou xuan zhu

Culms apically drooping, to 1.5 m, 4–5 mm in diam., internodes terete, 8–18 cm, distally pubescent, later subglabrous; supra-nodal ridges prominently raised. Branches often 5–7, subequal, 0.5–1 m, 1–2 mm in diam. Culm sheaths persistent, irregularly spotted, shorter than internode, densely white pubescent, glabrescent, margins densely white ciliate; auricles subcircular, amplexicaul; oral setae many, radiating, ca. 1 cm; ligule short, apex densely white fimbriate; blade reflexed, green, ovate-lanceolate. Leaves 2 or 3 per ultimate branch; sheaths glabrous, glossy, margin ciliate; auricles present; oral setae deciduous, radiating, 5–7 mm; ligule short, apex long, white ciliate; blade 7–20 × 1.2–3 cm, thinly leathery, abaxially slightly glaucous, glabrous, secondary veins indistinct, 4–7 pairs. Inflorescence unknown. New shoots Apr.

● Broad-leaved forests; ca. 500 m. Guizhou.

9. Ampelocalamus saxatilis (Hsueh & T. P. Yi) Hsueh & T. P. Yi, J. Bamboo Res. 4(2): 7. 1985.

羊竹子 yang zhu zi

Sinocalamus saxatilis Hsueh & T. P. Yi, Yunnan Linxueyuan Xuebao [J. Yunnan. Forest. Coll.] 1982(1): 69. 1982; *Drepanostachyum saxatile* (Hsueh & T. P. Yi) P. C. Keng ex T. P. Yi; *Neosinocalamus saxatilis* (Hsueh & T. P. Yi) P. C. Keng & T. P. Yi.

Culms basally oblique, initially apically drooping, 3–6 m, 5–15 mm in diam.; internodes 5–12 cm at culm base, 22–53 cm at mid-culm, rough, densely striate, hollow; wall 1.5–2 mm thick; supra-nodal ridge level; sheath base persistent, elevated, thickened. Branches (6–)10–15 from 6th to 12th node up, central dominant. Culm sheaths gradually deciduous, oblong-triangular, thickly papery, apex truncate; auricles and oral setae absent; ligule truncate or slightly sunken, ca. 1 mm; blade readily deciduous, reflexed, linear or linear-lanceolate. Leaves 4–10 per ultimate branch; sheaths smooth, margins ciliate; auricles obvious; oral setae present; ligule 2–5 mm, apex serrate; blade 8–18 × 1–2.2 cm, glabrous, secondary veins 4–6 pairs, transverse veins indistinct. Inflorescence unknown. New shoots Aug–Sep.

● Forests; 600–1500 m. S Sichuan, NE Yunnan.

10. Ampelocalamus melicoideus (P. C. Keng) D. Z. Li & Stapleton, Novon 15: 599. 2005 [*"melicoides"*].

南川竹 nan chuan zhu

Drepanostachyum melicoideum P. C. Keng, J. Bamboo Res. 5(2): 35. 1986.

Culms initially apically drooping, 2–3 m, 7–10 mm in diam., internodes (8–)28–35 cm, glabrous; nodes without supra-nodal ridge; sheath ring elevated with persistent sheath base, hollow; wall 1.2–4 mm thick. Branches more than 10, central dominant. Culm sheaths unknown. Leaf sheaths 3.5–5 cm, basally glabrous, distally ciliate, auricles minute, densely ciliate; ligule truncate, ca. 1 mm, abaxially densely ciliate; blade lanceolate, 5.5–15 × 1–2 cm, abaxially sparsely tomentose, adaxially glabrous, secondary veins 2–4-paired, transverse veins not distinct. Spikelets 1.2–1.5 cm; florets 3–5. Glumes 2; lemma lanceolate, 9–11 mm, 7–9-veined, glabrous; palea 1–1.2 cm, apex truncate; lodicules 3. Ovary ovoid, glabrous; stigmas 2, plumose. Caryopsis unknown.

● Chongqing (Nanchuan).

11. Ampelocalamus naibunensis (Hayata) T. H. Wen, J. Bamboo Res. 6(3): 34. 1987.

内门竹 nei men zhu

*Arundinaria naibunensi*s Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30: 408. 1911; *Bambusa naibunensis* (Hayata) Nakai; *Chimonobambusa naibunensis* (Hayata) McClure & W. C. Lin; *Drepanostachyum naibunense* (Hayata) P. C. Keng; *Leleba naibunensis* (Hayata) Nakai; *Pleioblastus naibunensis* (Hayata) Kanehira & Sasaki; *Pseudosasa naibunensis* (Hayata) Makino & Nemoto.

Culms apically drooping, 3–6 m, 5–10 mm in diam.; internodes 12–28 cm, glabrous, hollow; nodes raised; wall 2–3 mm thick. Branches several per node. Culm sheaths thinly papery, sparsely setose; auricles minute, brown setose; blade readily deciduous, linear-subulate. Leaf sheaths 3–6 cm; glabrous; auricles minute; ligule arched, long, ciliate; blade lanceolate, (3–)4–14 × 0.5–1.2 cm, transverse veins not distinct. Spikelets 2–4 cm; florets 3–6. Glumes 2, narrowly rounded; lemma ovate, narrowly rounded, 10–12 × 3–4 mm, 7–11-veined; palea 7–11 × 2–3 mm; lodicules 3, ciliate. Anthers ca. 4 mm. Ovary obovoid; styles 2; stigmas 2, plumose. Caryopsis unknown. Fl. Feb.

● About 1000 m. S Taiwan (Pingdong).

12. Ampelocalamus hirsutissimus (W. D. Li & Y. C. Zhong) Stapleton & D. Z. Li, Novon 15: 599. 2005.

多毛悬竹 duo mao xuan zhu

Drepanostachyum hirsutissimum W. D. Li & Y. C. Zhong, J. Bamboo Res. 16(1): 52. 1997.

Culms caespitose, basally erect, apically drooping, to 3–5 m, 5–10(–15) mm in diam.; internodes 12–18(–23) cm, glabrous, hollow; wall 3–5(–7) mm thick; nodes with 3 bud groups, 2 lateral developing into sub-branches and center 1 developing into main branch. Culm sheaths needle-like, narrowly triangular, asymmetrical, ca. 22 cm, thinly leathery, base ca. 3.5 cm wide, apex ca. 1 mm wide, apex truncate; auricles absent; ligule ca. 1 mm, ciliate; blade readily deciduous, erect, linear, 1.5–2 cm. Leaves 5–11 per ultimate branch; sheaths smooth, margins ciliate; auricles falcate or subcircular; oral setae projecting, purple ciliate; ligule round-arched, margins purple ciliate; blades narrowly lanceolate, (4.5–)11–17 × 0.7–1.5 (–3.1) cm, abaxially tomentose. Inflorescence unknown. New shoots Sep–Oct.

● Guizhou (Guiyang).

13. Ampelocalamus breviligulatus (T. P. Yi) Stapleton & D. Z. Li, Novon 15: 599. 2005.

钓竹 diao zhu

Drepanostachyum breviligulatum T. P. Yi, J. Bamboo Res. 12(4): 42. 1993.

Culms scrambling, apically drooping, 3–6 m, 5–15(–20) mm in diam.; internodes green, terete, 18–20 cm, glabrous, hollow; wall 1.5–2 mm thick. Branches many per node, main branches climbing, to 5 m, 3–5.5 mm in diam. Culm sheaths gradually deciduous, narrowly triangular, (5.5–)12–27 cm, base 2.4–4.8 cm wide, apex 2.5–4 mm wide, leathery, apex acuminate, acumen 2.5–4 mm; auricles and oral setae absent; ligule purple, truncate, 1–2 mm, initially shortly ciliate; blades reflexed, purple-green, triangular, linear, or linear-lanceolate, (0.4–)0.8–9 × (0.1–)0.25–0.7 cm, glabrous, margins serrate. Leaves (2–)4–6(–9) per ultimate branch; sheaths initially gray ciliate; auricles purple, minute; oral setae projecting, purple-brown; ligules purple, rounded, ca. 1 mm, margins initially ciliate; blade abaxially light green, narrowly lanceolate, (4–)6–10.5 × 0.6–1 cm, papery, white-gray pubescent. Inflorescence unknown. New shoots Aug.

● Steep rocks, stony slopes; 400–900 m. Gansu, Guizhou, Sichuan.

18. CHIMONOCALAMUS Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 75. 1979.

香竹属 xiang zhu shu

Li Dezhu (李德铢); Chris Stapleton

Sinarundinaria Nakai sect. *Chimonocalamus* (Hsueh & T. P. Yi) C. S. Chao & Renvoize, Kew Bull. 44: 353. 1989.

Shrubby or arborescent bamboos. Rhizomes short necked, pachymorph. Culms unicaespitose, erect; internodes terete, glabrous, cavity not filled with pith; nodes with slightly prominent supra-nodal ridge and a ring of root thorns especially dense at lower nodes. Branch complement 3 at mid-culm nodes, 3–5 at upper culm nodes, promontory absent. Culm sheaths deciduous, usually longer than internodes, sparsely setose; auricles absent or inconspicuous; blade erect or recurved, lanceolate or triangular. Leaves usually small; blade with inconspicuous transverse veins. Inflorescence ebracteate, semelauctant, an open racemose panicle initially terminal to leafy flowering branches. Spikelets robust, 4–12 flowered, followed by a sterile floret, pedicels long. Glumes 2; lemma many veined, mucronate. Palea slightly longer than lemma, 2-keeled, obtuse. Lodicules 3, transparent. Stamens 3; filaments free; anthers yellow. Ovary glabrous, appendage absent; style 1; stigmas 2, plumose. Caryopsis slender, beaked. New shoots Jun–Jul, fl. Mar–May.

Eleven species: E Himalayas, Myanmar, SW China (S Yunnan); nine species (eight endemic) in China.

Most species in this genus produce delicious bamboo shoots and are known as “xiang zhu” (香竹), meaning “fragrant bamboo.” The culms are robust and are widely used in Yunnan for construction and agricultural tools. *Chimonocalamus pallens* and *C. dumosus* are attractive, subtropical ornamentals and have been introduced into gardens.

1a. Nodal sheath scar with a ring of tawny hairs; culm sheath blade 0.3–3 cm, twisted when dry; leaf blade lanceolate, broader than 1.2 cm ..... 1. *C. griffithianus*
1b. Nodes glabrous; sheath blade usually longer than 3 cm, straight; leaf blade linear-lanceolate, mostly narrower than 1.5 cm.
2a. Apex of culm sheath 2–4 cm wide, convex to projected, base of blade 1–2 cm wide, glabrous.
3a. Culms slightly quadrangular, initially purple, scabrous; sheaths densely tawny hairy; leaf blade gray-green; oral setae developed ..... 2. *C. delicatus*
3b. Culms terete, initially gray-green, glabrous; sheaths hairy; leaf blade green; oral setae absent or scarce ..... 3. *C. pallens*
2b. Apex of culm sheath narrower than 1.5 cm, truncate or concave; sheath blade less than 1 cm at base, slender, usually hairy.
4a. Culm sheath ligule conspicuous, 0.8–1.8 cm.
5a. Culm sheath ligule divided; leaf sheath auricles absent ..... 4. *C. longiligulatus*
5b. Culm sheath ligule fimbriate; leaf sheath auricles present ..... 5. *C. fimbriatus*
4b. Culm sheath ligule short, less than 0.5–0.7(–1.2) cm.
6a. Culm sheaths densely hairy, margins ciliate; root thorns short, robust, dense ..... 6. *C. montanus*
6b. Culm sheaths sparsely hairy, margins glabrous; root thorns longer but sparse.
7a. Apex of culm sheaths 11–13 mm wide; ligule 0.5–0.7 cm; culm sheath scars pubescent ..... 7. *C. makuanensis*
7b. Apex of culm sheath ca. 4 mm wide; ligule less than 0.5 cm; culm sheath scars glabrous.
8a. Arborescent bamboo, 4–6 m tall; young culms pubescent at nodes; internodes to 37 cm ... 8. *C. longiusculus*
8b. Shrubby bamboo, 1.5–3 m tall; young culms white powdery, internodes to 16 cm ..... 9. *C. dumosus*

1. Chimonocalamus griffithianus (Munro) Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 83. 1979.

西藏香竹 xi zang xiang zhu

Arundinaria griffithiana Munro, Trans. Linn. Soc. London 26: 20. 1868; *Chimonobambusa griffithiana* (Munro) Nakai; *C. tortuosa* Hsueh & T. P. Yi; *Sinarundinaria griffithiana* (Munro) C. S. Chao & Renvoize.

Culms 6–10 m, 1–3.5(–5) cm in diam.; internodes yellow-green, 18–22(–28) cm, distally pilose, hollow; wall 5–6 mm thick; nodes prominent, with a basal ring of tawny hairs. Culm sheaths longer than internode, 12–16 cm wide at base, gradually attenuate upward, papery, striate, base with a thick belt of soft tawny hairs, margins ciliate, apex 3–5 mm wide; auricles tiny; oral setae few; ligule short, sparsely ciliate; blade triangular, 0.3–3 cm, twisted when dry. Leaves 3–7 per ultimate branch; sheaths purple, glabrous; ligule truncate, ca. 1 mm; auricles absent; oral setae scarce; blade lanceolate, 12–20 × 1.2–2.4 cm. Inflorescence a terminal panicle, subtended by several sheathing bracts. Spikelets in verticillate clusters on thin, wavy, scabrous, hairy pedicels, 2.5–3.8 cm; florets 4–6. Glumes 2; rachilla internodes flattened, 5–7.5 mm; lemma lanceolate, 1.2–1.4 cm, papery, long mucronate; palea slightly shorter than lemma; lodicules obovate, one shorter and narrower. Anthers emarginate. Style short; stigmas 2. Caryopsis unknown. New shoots Jul–Aug.

Evergreen broad-leaved forests; 1700–2200 m. Xizang, Yunnan [NE India].

The inflorescence is unknown in China; its description is taken from NE Indian specimens.

2. Chimonocalamus delicatus Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 77. 1979.

香竹 xiang zhu

Culms 6–8 m, 4(–8) cm in diam.; internodes initially

purple-brown, yellow when old, slightly 4-angled, 20–30 cm, initially scabrous, glabrous when old; nodes prominent, glabrous. Culm sheaths distally attenuate and triangular, longer than internode, leathery, with thick, glossy, tawny hairs, apex 2–4 cm wide, centrally strongly convex or projected, slightly projected on 2 sides; auricles tiny; oral setae several, long; ligule 3–4 mm; blade lanceolate, 5–17 × 1.3–2.5 cm. Leaves 4–8 per ultimate branch; sheaths glabrous; auricles absent or tiny; oral setae ca. 8 mm; ligule truncate, ca. 1 mm; blade linear-lanceolate, 10–16 × 0.6–1.3 cm. Inflorescence a panicle, terminal to leafy shoot. Spikelets 2.7–4.5 cm; florets 5–8, plus a terminal, sterile floret. Glumes 2; rachilla internodes flattened, 4–6 mm, densely pubescent; lemma lanceolate, 0.7–1 cm, papery; palea equal to or slightly longer than lemma; lodicules obovate, one shorter and narrower. Anthers ca. 6 mm. Style short; stigmas 2. Caryopsis unknown. New shoots Jun–Jul, fl. Mar–Apr.

● Evergreen broad-leaved forests; 1400–2000 m. S Yunnan (Jinping).

The shoots are eaten, and the culms are used for construction.

3. Chimonocalamus pallens Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 78. 1979.

灰香竹 hui xiang zhu

Chimoncalamus bicorniculatus S. F. Li & Z. P. Wang, Acta Phytotax. Sin. 33: 614. 1995.

Culms 5–8 m, 2–5 cm in diam.; internodes terete, 12–29 cm, initially white powdery, later gray-green, glabrous; nodes prominent, slightly pubescent. Culm sheaths longer than internode, thinly leathery, striate, sparsely, glossy-tawny hairy, distally attenuate and triangular, apex centrally strongly convex or projected, slightly projected on 2 sides, apex 2–4 cm wide; auricles tiny; oral setae several, long; ligule 3–13 mm; blade lanceolate, 4–16 × 1–1.5 cm. Leaves 5 or 6 per ultimate branch; sheaths glabrous; auricles absent or tiny; oral setae 1 or 2; ligule truncate, ca. 1.5 mm; blade linear-lanceolate, 10–13 × 0.8–1.5 cm. Inflorescence and caryopsis unknown. New shoots Jun–Jul.

● Evergreen broad-leaved forests; 1400–2000 m. S Yunnan (Jinping).

The culms are used for construction.

4. Chimonocalamus longiligulatus Hsueh & T. P. Yi, Acta Phytotax. Sin. 23: 236. 1985.

长舌香竹 chang she xiang zhu

Culms 2.5–3.5 m, 1–1.8 cm in diam.; internodes green, terete, (6–)18–22(–32) cm, shallowly grooved above branches, sparsely gray-white setose, hollow; wall 2–4.5 mm thick; nodes prominent, dark brown, slightly pubescent; root thorns spreading or slightly reflexed, 2–4 mm. Branches 3(–10) per node. Culm sheaths deciduous, striate, concave or truncate, longer than internode, leathery, sparsely appressed tawny setose, attenuate, apex 0.8–1 cm wide; auricles absent; oral setae absent to 2; ligule conspicuous, often split, 8–18 mm, apex serrate; blade reflexed, triangular or lanceolate, 7–25(–90) × 2.5–3.5 mm. Leaves 3–6 per ultimate branch; sheaths glabrous; ligule truncate, ca. 1 mm, ciliate; auricles absent or inconspicuous; oral setae 5–8, 2.5–8 mm; blade linear-lanceolate, 4.5–14 × (0.4–)0.7–1.1 cm, secondary veins (2 or)3- or 4-paired, transverse veins distinct, one margin minutely serrulate-scabrid. Inflorescence and caryopsis unknown. New shoots Jun–Jul.

● Evergreen broad-leaved forests; 1800–2000 m. S Yunnan (Lüchun).

The culms are used for construction.

5. Chimonocalamus fimbriatus Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 78. 1979.

流苏香竹 liu su xiang zhu

Culms 5–8 m, 2–5 cm in diam.; internodes dark green or purple, 20–36 cm, minutely white setose and pubescent; nodes slightly prominent, slightly pubescent or glabrous; root thorns more than 30, dense, 7–14 mm. Culm sheaths deciduous, striate, gradually attenuate upward, longer than internodes, thickly leathery, sparsely appressed tawny setose, apex 1–1.5 cm wide, concave or truncate; auricles inconspicuous; oral setae few, deciduous; ligule conspicuous, 1–1.3 cm, fimbriate; blade erect or curved upward, lanceolate, 6–16 × 0.4–0.6 cm. Leaves 3–6 per ultimate branch; sheaths glabrous, ciliate; auricles inconspicuous; oral setae 5–11 mm; ligule truncate, ca. 1 mm, scabrous; blade linear-lanceolate, 5–15 × 0.5–1.1 cm, apex finely pointed, tip to 1 cm. Inflorescence unknown. New shoots Sep.

● Evergreen broad-leaved forests; 1500–1800 m. SW Yunnan.

6. Chimonocalamus montanus Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 79. 1979.

山香竹 shan xiang zhu

Culms ca. 5 m, to 1.5 cm in diam.; internodes terete, ca. 33 cm, glabrous; nodes slightly prominent, glabrous; root thorns dense, robust. Culm sheaths deciduous, striate, acuminate, longer than internodes, leathery, initially densely appressed tawny setose (setae ca. 1 mm), margin ciliate, apex truncate, ca. 8 mm wide; auricles absent; oral setae deciduous, to 2 cm; ligule truncate, ca. 2 mm, with fimbriae 2–5 mm; blade recurved, linear-lanceolate, 7–10 × ca. 0.35 cm. Leaves 2–4 per ultimate branch; sheaths ciliate; auricles absent or inconspicuous; oral setae several, ca. 1 cm; ligule truncate, pubescent; blade narrowly lanceolate, ca. 14 × 1 cm, apex finely pointed, tip to 8 mm. Inflorescence unknown. New shoots Jun–Jul.

● Evergreen broad-leaved forests; ca. 1700 m. NW Yunnan (Gaoligong Shan).

7. Chimonocalamus makuanensis Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 80. 1979.

马关香竹 ma guan xiang zhu

Culms 5–6 m, 1.5–2.5 cm in diam.; internodes pale green, 10–27 cm, initially brown setose, later glabrous; nodes strongly prominent, pubescent; root thorns dense, basally swollen. Culm sheaths deciduous, initially yellow striped, oblong-elliptical, distally broad, longer than internode, leathery, striate, sparsely appressed tawny setose; setae deciduous, ca. 1 mm; apex triangular, 1.1–1.3 cm wide, truncate; auricles absent; ligule trun-

cate or slightly convex, 5–7(–12) mm, apex membranous, fimbriate; blade erect, lanceolate, 5–7 × 0.5–0.7 cm. Leaves 3 or 4 per ultimate branch; sheaths glabrous, margins ciliate; auricles absent or inconspicuous; oral setae several, 4–7 mm; ligule convex, ca. 1.5 mm, pubescent; blade narrowly lanceolate, 9–13 × 0.9–1.3 cm, apex finely pointed, tip to 8 mm. Inflorescence unknown. New shoots Jun–Sep.

● Evergreen broad-leaved forests; 1700–1900 m. SE Yunnan (Maguan).

8. Chimonocalamus longiusculus Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 80. 1979.

长节香竹 chang jie xiang zhu

Culms 4–6 m, 1–2 cm in diam.; internodes terete, flattened above branches, to 37 cm, basally nearly solid, hollow further up culm; wall thick; nodes very prominent, minutely white hairy below nodes; root thorns few, short, conical. Culm sheaths gradually deciduous, oblong, thickly papery, proximally glossy-tawny hairy, distally pubescent, attenuate into slightly convex apex ca. 4 mm wide; auricles deciduous, tiny; ligule 1–1.5 mm, ciliate; blade linear, 3–5 × ca. 0.2 cm, both surfaces pubescent. Leaves 3–5 per ultimate branch; sheaths glabrous; auricles absent or tiny; ligule slightly convex, ca. 1 mm; blade linear, 5–14 × 0.5–0.9 cm. Inflorescence a panicle terminal to leafy branch. Spikelets 2.5–4 cm; florets 3–7. Glumes 2; rachilla internodes flattened, 4–5 mm, densely pubescent; lemma lanceolate, 0.9–1 cm, papery, pubescent; palea slightly longer than lemma; lodicules obovate, one shorter and narrower. Anthers unknown. Style short; stigmas 2. Caryopsis unknown. New shoots Apr–May, fl. May.

● Evergreen broad-leaved forests; 1600–1700 m. SE Yunnan (Xichou).

The shoots are eaten, and the culms are used for construction.

9. Chimonocalamus dumosus Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 81. 1979.

小香竹 xiao xiang zhu

Culms 1.5–3 m, 0.5–1.5 cm in diam.; internodes terete, 10–16 cm, sometimes nearly solid at culm base, hollow further up; wall thin or thick; nodes very prominent, glabrous; root thorns sharp and sparse, or blunt and dense. Culm sheaths deciduous, oblong, papery, tawny strigose, attenuate into slightly convex apex ca. 6 mm wide; auricles absent; ligule ca. 1.5 mm, irregularly serrate; blade linear, 4–11 × 0.4–0.5 cm, both surfaces pubescent. Leaves 3–7 per ultimate branch; sheaths glabrous, margins ciliate; ligule slightly convex, ca. 1 mm, puberulent; auricles absent or tiny; oral setae 0.5–1 cm; blade linear-lanceolate, 3–16 × 0.3–1.2 cm. Inflorescence a panicle, terminal to leafy, pubescent branches. Spikelets 0.8–1 cm; florets 2 or 3. Glumes 2; rachilla flattened, 4–5 mm, densely pubescent; lemma lanceolate, 0.8–1 cm, papery, pubescent; palea about as long as or slightly longer than lemma; lodicules ovate, one shorter and narrower. Anthers unknown. Style short; stigmas 2. Caryopsis brown, 3.5–8.5 mm, glabrous, with a persistent style. New shoots Sep–Oct.

● Montane, evergreen, broad-leaved forests. S Yunnan.

The young shoots are harvested, and the culms are used for construction.

1a. Culm walls thick, basally nearly solid; root thorns sharp, sparsely arranged; leaves 3–16 cm ..... 9a. var. *dumosus*

1b. Culm walls thin, basally hollow; root thorns obtuse, densely arranged on nodes; leaves 5–11 cm ..... 9b. var. *pygmaeus*

9a. Chimonocalamus dumosus var. **dumosus**

小香竹(原变种) xiao xiang zhu (yuan bian zhong)

Slightly larger in size. Culms subsolid or solid at base; root thorns acute and sparsely arranged; leaves only on basal nodes. Leaves relatively larger, 3–16 × 0.3–1.2 cm.

● Montane evergreen forests. SE Yunnan (Xichou).

9b. Chimonocalamus dumosus var. **pygmaeus** Hsueh & T. P. Yi, Acta Bot. Yunnan. 1(2): 82. 1979.

耿马小香竹 geng ma xiao xiang zhu

Slightly smaller in size. Culms basally hollow; root thorns obtuse and densely arranged on basal nodes. Leaves relatively smaller, 5–11 × 0.5–0.9 cm.

● Montane evergreen forests. SW Yunnan (Gengma).

19. GAOLIGONGSHANIA D. Z. Li, Hsueh & N. H. Xia, Acta Phytotax. Sin. 33: 598. 1995.

贡山竹属 gong shan zhu shu

Li Dezhu (李德铢); Chris Stapleton

Shrubby scrambling bamboo, sometimes epiphytic on trees. Rhizomes short necked, pachymorph. Culms unicaespitose, flexuose; internodes terete, glabrous; nodes flat. Branches solitary, reiterating culm. Culm sheaths persistent, leathery, densely setose, shorter than internodes; ligule short; auricles embracing culms, large; blade recurved, lanceolate. Leaves large; blade with several secondary veins and transverse veins. Inflorescence an open, large, ebracteate panicle on leafy or leafless flowering branches. Spikelets 4–9-flowered, followed by a sterile floret, long pedicellate. Glumes 2; lemma many veined, sometimes long mucronate. Palea subequal to lemma, 2-keeled, 2-cleft at apex. Rachilla internodes ca. 1/2 as long as florets, disarticulating. Lodicules 3, transparent. Stamens 3; anthers yellow; filaments free, long exserted. Ovary glabrous; style 1; stigmas 3, plumose. Caryopsis oblong. New shoots late summer–early autumn, fl. Mar–Jul.

● One species: China.

1. Gaoligongshania megalothyrsa (Handel-Mazzetti) D. Z. Li, Hsueh & N. H. Xia, Acta Phytotax. Sin. 33: 600. 1995.

贡山竹 gong shan zhu

Arundinaria megalothyrsa Handel-Mazzetti, Symb. Sin. 7: 1270. 1936; *Indocalamus megalothyrsus* (Handel-Mazzetti) C. S. Chao & C. D. Chu; *Monocladus megalothyrsus* (Handel-Mazzetti) T. P. Yi; *Yushania megalothyrsa* (Handel-Mazzetti) T. H. Wen.

Culms to 1–3.5(–8) m long, 0.5–1.5 cm in diam.; internodes 30–35 cm, initially white powdery, glabrous; wall 3–4 mm thick; nodes initially flat, prominent after branching. Culm sheaths persistent, yellow or green-brown, ca. 1/2 as long as internodes, leathery, marginally and abaxially with dense, short, spiny hairs, auricles well developed, purple, falcate; oral setae erect, yellow, 1–1.2 cm, strong; ligule truncate, 1–2 mm; blade reflexed, margins serrulate, base ca. 1/3 as wide as sheath apex. Leaf sheaths white powdery, densely yellow hispid; auricles purple, falcate; oral setae ca. 1.2 cm; ligule ca. 2 mm; blade oblong-lanceolate, 35–40(–50) × 7.5–9(–10) cm, transverse veins conspicuous, base cuneate, apex long acuminate. Panicles 35–45 cm. Spikelets linear, 2–4 cm. Glumes ca. 6 mm, long mucronate; lemma lanceolate, ca. 8 mm, long mucronate; palea ca. 0.8 mm; lodicules ca. 2 mm. Anthers yellow, ca. 5 mm. Ovary oblong. Caryopsis oblong, ca. 1 cm. New shoots Apr–May, fl. Oct.

● Evergreen broad-leaved forests, sometimes on trunks of old trees; 1600–2200 m. NW Yunnan (Gaoligong Shan).

20. ACIDOSASA C. D. Chu & C. S. Chao ex P. C. Keng, J. Bamboo Res. 1(2): 31. 1982.

酸竹属 suan zhu shu

Zhu Zhengde (朱政德 Chu Cheng-de), Yang Guangyao (杨光耀); Chris Stapleton

Metasasa W. T. Lin.

Shrubby to arborescent bamboos. Rhizomes leptomorph, with running underground stems. Culms diffuse, erect; internodes terete, weakly grooved basally above branches, cavity with spongy pith; nodes weakly prominent. Branch complement 3 at mid-culm nodes, 3–5 at distal nodes. Culm sheaths deciduous, sparsely setose; auricles small or absent, with or without oral setae; blade lanceolate or triangular. Leaves usually medium-sized; auricles small or absent; blade with many secondary veins, transverse veins distinct. Inflorescence ebracteate, semelauctant, a terminal raceme or racemose panicle. Spikelets robust, several to many flowered, long pedicellate. Glumes 2–4; lemma large, many veined, apex acuminate or shortly mucronate. Palea usually shorter than lemma, 2-keeled, veined between keels. Lodicules 3, membranous, usually transparent at margin. Stamens 6; filaments free; anthers yellow. Ovary appendage inconspicuous; style 1; stigmas 3, plumose. New shoots spring–early summer, fl. summer–autumn.

About 11 species: China, Vietnam; ten species (all endemic) in China.

The generic name *Acidosasa* and its type, *A. chinensis*, were previously published by Chu and Chao (J. Nanjing Technol. Coll. Forest Prod. 1979(1–2): 142–143. 1979), but not validly so (see Li, Taxon 46: 105–107. 1997).

Key based on vegetative features

1a. Culm sheath auricles absent.
  2a. Young culm internodes hairless.
    3a. Culm sheath sparsely spotted, sparsely shortly hispid; sheath blade short, usually 0.5–1 cm ..... 1. *A. breviclavata*
    3b. Culm sheath unspotted, initially densely setose, especially at base; sheath blade long, usually 5–10 cm .... 2. *A. purpurea*
  2b. Young culm internodes hispid or pubescent.
    4a. Leaf ligule strongly prominent, 5–15 mm tall ..... 3. *A. nanunica*
    4b. Leaf ligule truncate, less than 2 mm tall.
      5a. Culm internodes initially densely setose, with persistent traces of bristles; apex of culm sheath narrow, about as wide as base of sheath blade; leaf blade broad, usually 2.5–6.5 cm wide, transverse veins prominent ..... 4. *A. chinensis*
      5b. Culm internodes apically sparsely setose initially; apex of culm sheath truncate, wider than base of sheath blade; leaf blade narrow, 1.5–2.5 cm wide, transverse veins not very distinct ..... 5. *A. venusta*
1b. Culm sheath auricles present.
  6a. Young culm internodes setose, shortly hispid.
    7a. Culm sheath with thin, white powder; supra-nodal ridge strongly prominent ..... 6. *A. lingchuanensis*
    7b. Culm sheath without white powder; supra-nodal ridge weakly prominent ..... 7. *A. guangxiensis*
  6b. Young culm internodes without hairs.
    8a. Culm sheath purple spotted or purple striate; ligules of culm sheaths and leaf blades prominent, 4–8 mm ..... 8. *A. notata*
    8b. Culm sheath without spots or striae; ligules not prominent.
      9a. Culm sheath initially green; leaf blade small, 8–18 mm ..... 9. *A. chienouensis*
      9b. Culm sheath initially green with purple margins; leaf blade broad, 17–28 mm ..... 10. *A. edulis*

Key to fertile material

1a. Lemma glabrous.

2a. Lemma not powdery.
3a. Lemma slightly tessellate, not glossy, veins 21–24; palea 1.4–1.6 cm ..... 1. *A. breviclavata*
3b. Lemma glossy, veins 17–19; palea ca. 1.2 cm ..... 4. *A. chinensis*
2b. Lemma powdery.
4a. Spikelets short, 1.5–7.5 cm; lemma weakly glaucous, 9–13-veined; palea keels hairy ..... 9. *A. chienouensis*
4b. Spikelets long, ca. 11 cm; lemma farinose, 9–11-veined; palea keels ciliate ..... 6. *A. lingchuanensis*
1b. Lemma abaxially hairy or with tessellate venation.
5a. Lemma glabrous, venation tessellate; stigmas flagellate ..... 10. *A. edulis*
5b. Lemma pubescent; stigmas not flagellate.
6a. Lemma densely pubescent; palea ciliolate.
7a. Spikelets 6–8 in a panicle, subtended by a lanceolate bractlet ..... 3. *A. nanunica*
7b. Spikelets 1–6 in a raceme, not subtended by a bractlet.
8a. Spikelets 4–9 cm; florets 3–15 ..... 2. *A. purpurea*
8b. Spikelets 6–17 cm; florets 13–33 ..... 7. *A. guangxiensis*
6b. Lemma sparsely pubescent; palea pubescent or sparsely setose.
9a. Spikelets robust, 4–6 mm wide; lemma 1.4–1.9 cm, pedicel 2–13 mm ..... 8. *A. notata*
9b. Spikelets slender, 3–4 mm wide; lemma ca. 1.3 cm.
10a. Pedicel 0.5–1 cm, glabrous, shorter than lemma; palea shorter than lemma; lemma glaucous ..... 9. *A. chienouensis*
10b. Pedicel 1–3 cm, slightly hairy; longer than lemma; palea about as long as lemma or sometimes slightly longer; lemma not glaucous ..... 5. *A. venusta*

1. Acidosasa breviclavata W. T. Lin, Bamboo Res. 5: 27. 1986.

小叶酸竹 xiao ye suan zhu

Acidosasa gracilis W. T. Lin & X. B. Ye.

Culms 1–1.5 m, 5–6 mm in diam.; internodes terete, 13.5–18.5 cm, glabrous; nodes with sheath scars weakly prominent. Culm sheaths deciduous, abaxially shortly setose and spotted; auricles and oral setae absent; ligule short; blade lanceolate, ca. 5 mm. Leaves 4 or 5 per ultimate branch; sheath glabrous; auricles and oral setae usually absent; ligule ca. 1.5 mm, apex recurved; blade 12–18 × 1.8–2.5 cm, glabrous, secondary veins 6-paired, base narrow, margins serrulate, apex caudiform. Inflorescence incompletely known. Spikelets 5.5–6.5 × 0.6–0.7 cm; florets ca. 6; pedicel 1.5–2 cm. Glumes ca. 4, lemma-shaped, 1.1–1.7 cm, glabrous; rachilla 6–7 mm, glabrous; lemma 1.8–2.1 × ca. 0.8 cm, glabrous, 21–24-veined, slightly tessellate, apex acuminate; palea 1.4–1.6 cm, narrow, glabrous; lodicules lanceolate, margins ciliolate. Anthers ca. 8 mm. Style short; stigmas plumose.

● About 300 m. Guangdong (Gudou Shan).

The culms are used for papermaking and weaving.

2. Acidosasa purpurea (Hsueh & T. P. Yi) P. C. Keng, J. Wuhan Bot. Res. 4: 335. 1985.

毛花酸竹 mao hua suan zhu

Indosasa purpurea Hsueh & T. P. Yi, Acta Phytotax. Sin 21: 94. 1983; *Acidosasa dayongensis* T. P. Yi.

Culms 3–10 m, 2–8 cm in diam.; internodes 30–45 cm, initially glabrous, glaucous below nodes; wall 4–10 mm thick, cavity with spongy pith; nodes prominent, sheath base initially setose. Culm sheaths unspotted, leathery, setose, transverse veins obscure, base densely setose, apex truncate; auricles and cilia absent; ligule arched or triangular, 2–6 mm, ciliolate; blade lanceolate, base narrower than sheath apex. Leaves 4–7 per ultimate branch; sheath glabrous; auricles and cilia absent; ligule strongly prominent, 1.5–4 mm; blade lanceolate, 12–21 × 1.6–2.6 cm, secondary veins 5–7-paired, transverse veins distinct, serrulate. Raceme terminal or lateral. Spikelets 1–5, purple, 4–9 × 0.3–0.7 cm, compressed; rachilla ca. 5 mm, densely hairy; florets 3–15; pedicel 1–3 cm, apically pubescent. Glumes densely hairy; lemma 1.3–2.1 cm, densely setose. Palea short, 7–15 mm, narrow, ciliolate, apex rounded. Lodicules lanceolate, 2–3 mm, glabrous. Anthers yellow, 3–4 mm. Style 3–4 mm; stigmas 3-cleft, plumose. New shoots Apr, fl. May–Sep.

● NW Guangxi, Hunan, Jiangxi, SE Yunnan.

The earlier but not validly published name *"Acidosasa hirtiflora* Z. P. Wang & G. H. Ye" was applied to this species in FRPS (9(1): 565. 1996).

The shoots are edible, although rather bitter, and the culms are used for weaving and fencing.

3. Acidosasa nanunica (McClure) C. S. Chao & G. Y. Yang, Acta Phytotax. Sin. 39: 66. 2001.

长舌酸竹 chang she suan zhu

Indocalamus nanunicus McClure, Lingnan Univ. Sci. Bull. 9: 25. 1940; *Acidosasa xiushanensis* T. P. Yi; *Arundinaria bicorniculata* W. T. Lin & Z. J. Feng; *A. nanunica* (McClure) C. D. Chu & C. S. Chao; *A. projecta* W. T. Lin; *Metasasa albofarinosa* W. T. Lin; *M. carinata* W. T. Lin; *Pseudosasa altiligulata* T. H. Wen; *P. nanunica* (McClure) Z. P. Wang & G. H. Ye; *P. nanunica* var. *angustifolia* S. L. Chen & G. Y. Sheng; *P. projecta* (W. T. Lin) P. C. Keng.

Culms to 4 m, ca. 1 cm in diam.; internodes green-yellow, straight, terete, smooth, initially glaucous, black powdery when old; wall thick, pith spongy; nodes prominent, remains of sheath base persistent; intranode ca. 1 cm. Branches 1–3 per node at mid-culm, secondary branchlets undeveloped. Culm sheaths gradually deciduous, light purple-brown, densely white tomentose and brown setose, setae retrorse and adnate, base brown setose, margins ciliolate; auricles and oral setae absent;

ligule truncate or arcuate, 7–9 mm; blade linear-lanceolate, scabrous, margins sparsely serrulate. Leaves 2–4 per ultimate branch; sheath striate, densely tomentose to subglabrous; auricles and oral setae absent; ligule acute, 5–15 mm, ciliolate; blade elliptic to lanceolate, 10–30 × 2–4.5 cm, abaxially pubescent, adaxially glabrous, secondary veins 9–12-paired, base oblique, both margins distally serrulate, apex shortly acuminate. Panicle 18–25 cm; bract lanceolate, ca. 2 mm. Pedicels 1–2.5 cm, slender, glabrous; spikelets 6–8, 3–7 × 3–5 cm; florets 7–9; rachilla 5–7 mm, densely pubescent, apex densely long ciliate. Glumes 2, abaxially shortly pubescent and keeled, margin proximally glabrous but distally ciliate, 5–9-veined; lemma 1.5–1.7 cm, abaxially shortly pubescent, margin proximally glabrous, 13–18-veined, apex acute; palea narrow, keels ciliate, apex acute or 2-lobed; lodicules lanceolate, prominently striate, margin not ciliate. Ovary shortly setose. Caryopsis oblong, with long beak, glabrous. New shoots late Apr.

● Flat lands, slopes of hills, valleys, streams; below 500 m. Chongqing, Guangdong, S Hunan, Jiangxi, Zhejiang.

Acidosasa xiushanensis was described from Chongqing (Xiushan), which lies to the northwest of what is otherwise the distribution of *A. nanunica*.

4. Acidosasa chinensis C. D. Chu & C. S. Chao ex P. C. Keng, J. Bamboo Res. 1(2): 31. 1982.

酸竹 suan zhu

Culms to 8 m, 3–5 cm in diam.; internodes initially densely setose, traces of setae persistent, obviously striate; nodes weakly prominent. Culm sheaths red-brown, sparsely spotted, fragile when dry, initially shortly setose, transverse veins distinct, margins ciliate, apex narrow; auricles and oral setae absent; ligule arched, short, ciliate or fimbriate; blade lanceolate, 1.5–4.5 cm, base about as wide as sheath apex. Leaves 2–5 per ultimate branch; sheath glabrous; auricles and oral setae usually absent; blade oblong-lanceolate or lanceolate, (11–)16–22(–30) × (2–)2.5–3.5(–6.5) cm, glabrous, secondary veins 6–11-paired, base cuneate, margins serrulate, apex long acuminate. Flowering branchlets terminal, 10–26 cm; bracts triangular, minute, glabrous, apex long caudate. Spikelets 3–5, forming simple raceme or panicle, robust, (3–)5–6(–10) × 0.3–0.6 cm; pedicel 1.5–4 cm, glabrous; florets (3–)8 or 9(–18); rachilla 6–7 mm, glabrous. Glumes usually 4, apical 2 lemma-shaped; lemma ca. 2 cm, glossy, glabrous, 17–19-veined; palea narrow, glabrous; lodicules elliptic-lanceolate. Anthers yellow, ca. 5 mm. New shoots Apr–May, fl. Oct.

● Scattered in broad-leaved woodlands, open mountain areas; ca. 700 m. Guangdong (Hewei Shan).

The shoots are edible when salted, and the culms are used for papermaking and weaving.

5. Acidosasa venusta (McClure) Z. P. Wang & G. H. Ye ex C. S. Chao & C. D. Chu, Acta Phytotax. Sin. 29: 524. 1991.

黎竹 li zhu

Semiarundinaria venusta McClure, Lingnan Univ. Sci. Bull. 9: 55. 1940.

Culms ca. 1.4 m, 8–9 mm in diam.; internodes initially sparsely hairy, glaucous below nodes; nodes prominent. Culm sheaths initially proximally hairy, distally glabrous or nearly so, transverse veins obscure, margins ciliate, apex truncate; auricles and oral setae absent; ligule truncate, minutely ciliate; blade deciduous, initially green, slightly purple, strap-shaped, small, scabrous. Leaf sheaths glabrous; auricles absent, oral setae absent or scarce; ligule prominent; blade oblong-lanceolate, 9–20 × 1.7–2.6 cm, glabrous, secondary veins ca. 5-paired. Raceme terminal or lateral. Spikelets 3 or 4, lanceolate or linear, 11–15 × 0.3–0.4 cm; florets 5–10, slightly compressed; pedicel 1–3 cm, slightly hairy. Glumes 2, abaxially minutely setose, apex acute; rachilla 6–7 mm, apex hairy; lemma ca. 1.3 cm, minutely setose, many veined, ciliolate, apex acute or acuminate, mucronate; palea about as long as lemma, rarely slightly longer, sparsely setose; keels ciliolate, apex obtuse; lodicules 3, nearly equal, transparent, glabrous, margins ciliolate. Ovary and style glabrous; stigmas 3-cleft, plumose. Fl. Nov.

● Guangdong (Huaxian).

This species is cultivated in the botanical garden of Zhongshan (Sun Yat Sen) University.

6. Acidosasa lingchuanensis (C. D. Chu & C. S. Chao) Q. Z. Xie & X. Y. Chen, Bull. Bot. Res., Harbin 13: 74. 1993.

灵川酸竹 ling chuan suan zhu

Indosasa lingchuanensis C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 21: 69. 1983.

Culms ca. 4 m, to 3 cm in diam., internodes initially green, 30–40 cm, sparsely hispid, slightly coarse, hollow; wall unevenly thickened; nodes weakly prominent; sheath scars prominent. Branches 3 per node. Culm sheaths light yellow-green, proximally sparsely brown setose and slightly powdery, margin ciliate; auricles open; oral setae deciduous, radiate, 1–1.5 cm; ligule truncate or slightly arched, subglabrous or shortly fimbriate, proximally sparsely pubescent; blade reflexed, green, broadly linear-lanceolate. Leaves 3–5 per ultimate branch; sheath margin ciliate; auricles small; oral setae erect; blade linear to lanceolate, 6.5–14 × 1–2.3 cm, glabrous, secondary veins 5-paired. Spikelets solitary, forming simple raceme, pale to green, ca. 11 cm, slender; florets 8–12 pairs. Rachilla 4–5 mm; lemma ca. 1 × 0.5 cm, 9–11-veined, abaxially powdery, glabrous; palea slightly shorter than lemma, apex obtuse; keel ciliate; lodicules 3, abaxially light brown, adaxially transparent, base contracted, clawed. Stamens 6; filaments filiform; anthers ca. 5 mm. Ovary ellipsoid; stigma slender. Fruit unknown.

● Guangxi (Lingchuan).

The culms are used for papermaking and weaving.

7. Acidosasa guangxiensis Q. H. Dai & C. F. Huang in Ohrnberger, Bamboos World, 34. 1999.

广西酸竹 guang xi suan zhu

Culms 2–3 m, 1–2 cm in diam.; internodes initially green, 16–18 cm, shortly hispid, finally glabrous. Culm sheaths straw-colored when dry, deciduously densely hispid, margins ciliate; auricles oblong or falcate; oral setae radiate; ligule triangular, ca. 2 mm, margin shortly ciliate; blade erect, linear-lanceolate, scabrous. Leaves 4–8 per ultimate branch; sheath glabrous; auricles small; oral setae radiate; ligule arched; blade 10–16 × 1.5–2.3 cm, abaxially sparsely hairs, especially proximally.

Spikelets 3–6, forming simple raceme, 6–17 cm; florets 13–33; pedicels 1.5–3 cm, glabrous or pubescent. Glumes 2; lemma light green, 1.3–1.5 cm, abaxially densely coarsely pubescent, margins ciliate; palea narrow, keels ciliate; lodicules oblong-lanceolate, abaxially pubescent, margin long ciliate. Stigma purple.

● Guangxi (Nanning).

When Dai and Huang (Bamboo Res. 1986(3): 64. 1986) originally described this species they indicated two types, which rendered the name not validly published.

The culms are used for making broom handles and fences.

8. Acidosasa notata (Z. P. Wang & G. H. Ye) S. S. You, J. Bamboo Res. 12(3): 11. 1993.

斑箨酸竹 ban tuo suan zhu

Pseudosasa notata Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 97. 1981; *Acidosasa fujianensis* C. S. Chao & H. Y. Zou; *A. longiligula* (T. H. Wen) C. S. Chao & C. D. Chu; *Arundinaria concava* C. D. Chu & H. Y. Zou; *A. notata* (Z. P. Wang & G. H. Ye) H. Y. Zou ex C. S. Chao & G. Y. Yang; *Indosasa longiligula* T. H. Wen; ?*I. pusilloaurita* W. T. Lin; *I. wuningensis* T. H. Wen & H. Y. Zou; *Pleioblastus acutiligulatus* W. T. Lin.

Culms 3–6 m, 1.5–2 cm in diam.; internodes 20–25 cm, initially glabrous; wall ca. 3 mm thick, cavity with lamellate pith; nodes weakly prominent. Culm sheaths green, purple striate, sparsely purple spotted, initially shortly setose, margins ciliate; auricles oblong, small, ca. 4 mm; oral setae ca. 7 mm; ligule prominent, ca. 6 mm, ciliate, glaucous; blade reflexed, initially green, lanceolate. Leaves 2–5(–8) per ultimate branch; sheath initially pubescent, soon glabrous; auricles and oral setae developed but soon deciduous; ligule prominent, 5–8 mm, pubescent, erose; blade linear-lanceolate, 11–20(–30) × 1–2.3 (–3) cm, secondary veins 5–7-paired, margins obscurely serrulate. Raceme terminal or lateral. Spikelets 3–5, green, tinged purple, slightly compressed, 2.5–7 × 0.4–0.6 cm; florets 3–10; pedicel 2–13 mm, glabrous, terminal one longer. Rachilla ca. 7 mm, pubescent; glumes glabrous; lemma 1.4–1.9 cm, sparsely pubescent; palea 1.3–1.5 cm, pubescent; lodicules 5–6 mm, margin transparent. Anthers yellow. New shoots Apr, fl. Apr–May.

● Forming pure stands or mixed with other bamboos; 500–1000 m. C and S Fujian, Jiangxi.

This species and *Pseudosasa maculifera* are possibly synonymous.

The shoots are sweet, and the culms are commonly used to make containers and tools.

9. Acidosasa chienouensis (T. H. Wen) C. S. Chao & T. H. Wen, J. Bamboo Res. 7(1): 31. 1988.

粉酸竹 fen suan zhu

Indosasa chienouensis T. H. Wen, J. Bamboo Res. 2(1): 67. 1983; *Acidosasa glauca* B. M. Yang.

Culms 7–13 m, 4–10 cm in diam.; internodes initially green, 30–48 cm, glabrous, glaucous; wall 3–5 mm thick; nodes prominent, persistent sheath base initially setose. Culm sheaths glaucous-green, shorter than internodes, yellow-brown to brown setose, setae deciduous but leaving hairy traces, proximally denser and more persistent; auricles small, pubescent; oral setae radiating, ca. 5 mm; ligule prominent, arched, 2–3 mm; blade deciduous, erect or reflexed, green, narrowly lanceolate, margin serrulate. Leaves (3 or)4 per ultimate branch; sheath glabrous; auricles absent, cilia deciduous; ligule ca. 1 mm; blade lanceolate, 9–15 × 0.8–1.8 cm, secondary veins 4–6-paired. Inflorescence racemose, terminal. Spikelets 2–5, ± laterally compressed, 1.5–7.5 × 0.2–0.4 cm; florets 3–12(–15); pedicel 5–10 mm, glabrous. Rachilla ca. 5 mm, pubescent; glumes 2, glabrous; lemma 1.3–1.4 cm, sometimes sparsely pubescent, thinly glaucous, 7–13-veined, apex acuminate; palea shorter than lemma, apex rounded, ciliolate. Anthers ca. 4 mm. New shoots Mar–Apr, fl. Jun.

● 300–600 m. C Fujian, S Hunan.

10. Acidosasa edulis (T. H. Wen) T. H. Wen, J. Bamboo Res. 7(1): 31. 1988.

黄甜竹 huang tian zhu

Sinobambusa edulis T. H. Wen, J. Bamboo Res. 3(2): 30. 1984.

Culms to 12 m, to 6 cm in diam.; internodes initially green, flattened above branches, 25–40 cm, initially glabrous, smooth, white powdery or tuberculate below nodes; nodes glabrous, swollen, ca. 8 mm. Culm sheaths initially abaxially green, margin purple or light brown to brown, subtriangular, brown setose, base densely pubescent, margin ciliate, apex narrow; auricles narrowly falcate, expanded, ca. 1.2 cm; ligule short, margin ciliate; blade reflexed, purple, lanceolate to oblong-lanceolate, scabrid. Leaves 4 or 5 per ultimate branch; sheaths green, 5–5.5 cm, glabrous, striolate, margin ciliate; auricles and oral setae absent; ligule ovate, glabrous; blade lanceolate or oblong-lanceolate, 11–18 × 1.7–2.8 cm, proximally pubescent, distally glabrous, lateral veins 6 or 7, tessellate. Spikelets 2–4, 7–11 cm; pedicels 3–12 mm; florets 7–14; rachilla 4–5 mm. Glumes 2, 7–8 mm, 5–7-veined; lemma ca. 1.7 × 0.9 cm, 13-veined, tessellate; palea narrow, 4-veined between keels; lodicules apically ciliate. Stamens (5 or)6. Ovary oblong; stigmas flagellate.

● Fujian (Fuzhou).

The shoots are edible when salted, and the culms are used for papermaking and weaving.

21. SASA Makino & Shibata, Bot. Mag. (Tokyo) 15: 18. 1909.

赤竹属 chi zhu shu

Wang Zhengping (王正平 Wang Cheng-ping); Chris Stapleton

Shrubby bamboos. Rhizomes leptomorph, with long, running underground stems. Culms tillering, pluricaespitose; internodes terete, glabrous, sometimes white powdery or sparsely puberulent below nodes; wall thick; nodes flat in *Sasa* subg. *Sasamorpha* or prominent in *S.* subg. *Sasa*. Branches solitary, often about as large as culm. Culm sheaths persistent, longer than internodes in *S.* subg. *Sasamorpha*, otherwise shorter, papery to nearly leathery; auricles usually developed; blade lanceolate. Leaves usually large relative to culm, in palmate arrangement, transverse veins distinct, margins with substantial necrosis in winter. Inflorescence a loose panicle or raceme, usually subtended by tiny bracts. Spikelets purple or red at maturity, 4–8-flowered; rachilla disarticulating, extended on uppermost floret. Glumes 2, ± hairy, margins long ciliate; lemma ovate or oblong-lanceolate, nearly leathery, long mucronate; palea 2-keeled; lodicules 3, ovate, thin, transparent, margins ciliate. Stamens 6, long exserted; anthers yellow. Ovary ovoid; style 1, short; stigmas 3, plumose. Caryopsis dark brown at maturity.

Between 50 and 70 recognized species (with very extensive further synonymy): China, Japan, Korea, E Russia; eight species (all endemic) in China.

Chinese species for which the inflorescence is unknown can only tentatively be placed in *Sasa*. They may represent smaller species of genera such as *Pleioblastus*, several of which were also included in *Sasa* in FRPS (9(1), 1996).

Sasa hainanensis C. D. Chu & C. S. Chao (Acta Phytotax. Sin. 18: 31. 1981) and *S. subglabra* McClure (Lingnan Univ. Sci. Bull. 9: 24. 1940), both based on vegetative specimens, are of very uncertain placement and are not treated here. *Sasa guangdongensis* W. T. Lin & X. B. Ye (Acta Phytotax. Sin. 26: 148. 1988) was described from Guangdong; it is a little-known species. *Sasa magninoda* T. H. Wen & Liao (J. Bamboo Res. 10(1): 14. 1991, *"magnonoda"*) was described from Jiangxi; it is a species based on a poor gathering and is possibly not a member of *Sasa* at all.

1a. Culms and inflorescence axes thickly white powdery; culm sheath longer than internode, culm nodes not elevated; main branch very erect, at a ca. 10° angle to culm (*S.* subg. *Sasamorpha*).
  2a. Culm sheaths densely strigose, apex strongly concave with a triangular projection on both flanks ..... 8. *S. qingyuanensis*
  2b. Culm sheaths glabrous or sparsely strigose; apex truncate or weakly concave without triangular projections.
    3a. Leaf sheaths usually glabrous; branches hairy below nodes ..... 6. *S. sinica*
    3b. Leaf sheaths densely long white strigose; branches glabrous below nodes ..... 7. *S. hubeiensis*
1b. Culms and inflorescence axes not white powdery; culm sheath shorter than internode, culm nodes elevated (in Chinese species); main branch spreading at more than a 20° angle to culm (*S.* subg. *Sasa*).
  4a. Leaf blade 7–9 cm; culms 2–4 mm in diam. ..... 5. *S. oblongula*
  4b. Leaf blade to 26 cm; culms 5–10 mm in diam.
    5a. Leaf sheath auricles and oral setae absent.
      6a. Leaf sheath ligule to 5 mm; internodes 8–10 cm ..... 2. *S. guangxiensis*
      6b. Leaf sheath ligule less than 1 mm; internodes 15–22 cm ..... 4. *S. tomentosa*
    5b. Leaf sheath auricles large, falcate, oral setae 5–10 mm, radiate.
      7a. Internodes initially hairy below node; leaf sheath auricles and oral setae absent ..... 1. *S. longiligulata*
      7b. Internodes glabrous; leaf sheath auricles large, falcate, fimbriate with brown setae ca. 1 cm ..... 3. *S. rubrovaginata*

1. *Sasa* subg. *Sasa*

赤竹亚属 chi zhu ya shu

Culms and axis of inflorescence not white powdery; nodal ridge elevated (in Chinese species); culm sheaths shorter than internodes; auricles and oral setae present or absent; branch at 20–30° angle with culm; leaf blade dull.

More than 40 species: China, Japan, Korea, E Russia; five species (all endemic) in China.

1. *Sasa longiligulata* McClure, Lingnan Sci. J. 19: 536. 1940.

赤竹 chi zhu

Pseudosasa longiligulata (McClure) Koidzumi.

Culms 1–2 m or more, 5–10 mm in diam.; internodes usually tinged with purple, 8–10 cm, hirtellous and retrorsely brown hirsute below nodes, otherwise glabrous or sometimes initially hirtellous and sparsely hirsute, gradually glabrescent; wall 1–2 mm thick; nodal ridge strongly elevated, more prominent than sheath scar; sheath scar fringed with same hairs as those at apex of culm. Culm sheaths dull green, commonly tinged red-purple when fresh, rusty-straw-colored when dry, shorter than internode, thinly papery, loosely enclosing culm, scabrous with minute brown strigae or bases of fallen hairs, base densely brown hirsute and hirtellous, outer margin brown ciliate; auricles and oral setae absent; ligule purple-brown, to 5 mm or more, abaxially puberulent, margin sinuous, ciliolate; blade reflexed or erect, purple or purple-green, triangular to lanceolate. Leaves 3–15 per ultimate branch; sheaths glabrous, or hirtellous and sparsely hirsute; auricles and oral setae absent; ligule strongly developed, to 1–1.5 cm, basally rather rigid, hirtellous or subglabrous, brittle, usually lacerate, apically membranous; blade adaxially deep green, lanceolate, 6–25 × 1.5–3.5 cm, glabrous or hirtellous along midrib toward base, abaxially glaucous, scabrous with sparse antrorsely appressed setae, adaxially faintly glossy, base cuneate, apex acuminate. Inflorescence unknown. New shoots Apr–May.

● Moist ravines, brook banks; 1000–1400 m. Guangdong, Hunan.

Sasa sulcata W. T. Lin (J. Bamboo Res. 12(2): 35. 1993) was described from an abnormal gathering and is most probably a synonym of this species.

2. Sasa guangxiensis C. D. Chu & C. S. Chao, J. Nanjing Technol. Coll. Forest Prod. 1981(3): 34. 1981.

广西赤竹 guang xi chi zhu

Culms ca. 1 m, ca. 5 mm in diam.; internodes green, 8–10 cm, initially shortly pale yellow pubescent especially below nodes, glabrescent; nodes strongly elevated, weakly geniculate. Culm sheaths deciduous, yellow to purple, shorter than or equal to internode, with dense, fine, gray strigae or papillae left by fallen hairs; auricles falcate, large; oral setae radiate, 5–10 mm; ligule to 5 mm, apex lacerate; blade deciduous, lanceolate. Leaves 3–8 per ultimate branch; initially sheath densely pubescent, glabrescent; auricles falcate, large; oral setae radiate, 6–10 mm; ligule to 1.5 cm, membranous; blade adaxially green, elliptic-lanceolate, 13–26 × 2–4.5 cm, abaxially glaucous, both surfaces glabrous, secondary veins 7–9 pairs, transverse veins distinct, base broadly cuneate, apex long acuminate. Inflorescence unknown. New shoots Apr–May.

● Banks of mountain streams; 500–800 m. Guangxi, Jiangxi.

3. Sasa rubrovaginata C. H. Hu, Bamboo Res. 1985(2): 59. 1985.

红壳赤竹 hong ke chi zhu

Sasa duplicata W. T. Lin & Z. J. Feng.

Culms ca. 1.5 m, 5–6 mm in diam.; internodes 10–17 cm, initially white powdery below nodes, glabrous; wall thin, cavity with lamellate pith; nodal ridge strongly elevated. Culm sheaths straw-colored, ca. 1/3 as long as internodes, rigid and brittle at maturity, lower and middle portions with sparse deciduous strigae or imprints left by appressed hairs, base thickened with an elevated corky ring, margins ciliolate, otherwise glabrous; auricles and oral setae not developed; ligule truncate, short; blade deciduous. Leaves 5 or 6 per ultimate branch; sheath initially thinly white powdery, glabrous, margins ciliolate; auricles falcate, large, fimbriate with brown setae ca. 1 cm; ligule truncate, ca. 1 cm; blade broadly lanceolate or lanceolate, glabrous, secondary veins 9 or 10 pairs, transverse veins distinct, margins spinescent. Inflorescence unknown.

● Mountain areas; ca. 2000 m. Guangxi.

Sasa albosericea W. T. Lin & J. Y. Lin (Acta Phytotax. Sin. 26: 232. 1988) is probably a synonym of this species.

4. Sasa tomentosa C. D. Chu & C. S. Chao, J. Nanjing Technol. Coll. Forest Prod. 1981(3): 35. 1981.

绒毛赤竹 rong mao chi zhu

Culms ca. 2 m, ca. 5 mm in diam.; internodes 15–22 cm, glabrous; nodes weakly elevated. Culm sheaths shorter than internodes, densely strigose, with long, retrorse, swollen-based, yellow hairs; auricles falcate, ca. 5 mm; oral setae radiate, to 8–10 mm; ligule less than 1 mm; blade erect or spreading, lanceolate, 1.5–3.5 × 0.2–0.5 cm. Leaves 2 or 3 per ultimate branch; sheath strigose; auricles developed, falcate; oral setae radiate, 1–1.3 cm; ligule less than 2 mm; pseudopetiole 5–8 mm, both surfaces pilose; blade adaxially green, elliptic-lanceolate, 18–20 × 3–4.2 cm, both surfaces glabrous, abaxially glaucous, secondary veins 8 or 9 pairs, transverse veins distinct, base broadly cuneate, apex acuminate. Inflorescence unknown. New shoots Apr–May.

● Dense forests at mountain summits; ca. 400 m. Guangxi.

5. Sasa oblongula C. H. Hu, J. Bamboo Res. 6(4): 18. 1987.

矩叶赤竹 ju ye chi zhu

Culms 1–1.5 m, 2–4 mm in diam.; internodes initially yellow-green, later straw-colored, ca. 8 cm, initially ± white powdery below nodes; nodal ridge weakly elevated. Culm sheaths purple-green, about as long as internodes, glabrous or puberulent at base, margins ciliate; auricles ascending, purple-green, falcate, puberulent; oral setae developed, or on lower culm sheaths; auricles and oral setae absent or weakly developed; ligule ca. 1 mm, margins ciliolate; blade erect, dark purple, lanceolate. Leaves 3–5 per ultimate branch; sheath glabrous or initially sparsely appressed hirsute on upper sides, margins ciliate; auricles small; oral setae well developed; blade oblong-lanceolate, 7–9 × 1.7–2.6 cm, glabrous, secondary veins ca. 6 pairs, transverse veins distinct, base rounded or broadly cuneate, apex abruptly acute or awnlike. Inflorescence unknown. New shoots Mar–Apr.

● Cultivated. Guangdong (Guangzhou).

2. Sasa subg. **Sasamorpha** (Nakai) C. H. Hu, Bamboo Res. 1985(2): 60. 1985.

华箬竹亚属 hua ruo zhu ya shu

Sasamorpha Nakai, J. Fac. Sci. Hokkaido Univ., Ser. 5, Bot. 26: 180. 1931.

Culms and axis of inflorescence thickly white powdery; nodes flat or weakly elevated; culm sheath longer than internode, auricles and oral setae absent; branch ca. 10° angle with culm; leaf blade glossy.

Between five and twenty-two species: China, Japan, Korea, E Russia; three species (all endemic) in China.

6. Sasa sinica Keng, Sinensia 7(6): 748. 1936.

华箬竹 hua ruo zhu

Sasamorpha sinica (Keng) Koidzumi.

Culms ca. 1.5 m, ca. 4 mm in diam.; internodes white powdery especially below nodes, rigid, subsolid, with small lumen. Culm sheaths purplish, 6–10 cm, longer than internodes, pushed off by emerging branch but closely enclosing branch, with fine strigae especially near margins and base, margins long ciliate; auricles and oral setae absent; blade triangular-lanceolate. Leaves 2(or 3) per ultimate branch; sheath white powdery, glabrous or initially setose, margins long ciliate; ligule truncate, 0.5–2 mm; blade oblong-lanceolate, 10–20 × 1.3–3 cm, glabrous or abaxially pilose, secondary veins 6–8 pairs, transverse veins distinct. Inflorescence an open panicle, 5–11 cm, with 4–

8(–10) spikelets or a raceme of 2–4 spikelets; axis and pedicels densely setulose and white powdery, pedicels 3–17 mm, sometimes subtended by a minute, basal bract. Spikelets deep purple at maturity, 0.8–3.5 × 0.4–0.6 cm. Rachilla internodes 2–4 mm, puberulent, apex cup-shaped and ciliolate. Glumes 2, ovate, lower 3–6 mm, puberulent, 7–9-veined, margins ciliate, apex cuspidate; lemma 9–10 mm, puberulent, 11-veined, margins purple ciliate, apex cuspidate; palea slightly longer than lemma, abaxially puberulent, keels red ciliate, apex 2-cleft; lodicules 3, ovate-lanceolate, 2–2.5 mm, membranous, with distinct basal veins, margins fimbriate. Anthers pale yellow, 4–5 mm. Ovary 3–4 mm, narrow; style short; stigmas 3. New shoots May, fl. May–Jul.

● Forests, roadsides; 1000–1500 m. Anhui, Zhejiang.

7. Sasa hubeiensis (C. H. Hu) C. H. Hu, Bamboo Res. 1985(2): 60. 1985.

湖北华箬竹 hu bei hua ruo zhu

Sasamorpha hubeiensis C. H. Hu, J. Bamboo Res. 2(1): 51. 1983.

Culms 0.5–1 m, 3–5 mm in diam.; internodes yellow or light yellow when old, very thickly white powdery especially on upper portion; nodes weakly elevated. Culm sheaths persistent on deflexed branch, longer than internode, slightly glossy, thinly leathery, with long strigae; auricles and oral setae absent; ligule truncate, pubescent; blade erect, lanceolate. Leaves 3 or more per ultimate branch; sheath white powdery, initially long strigose; blade lanceolate, nearly leathery, glabrous, secondary veins 7–9 pairs, transverse veins distinct, base broadly cuneate or rounded. New shoots May–Jun.

● Mountain slopes; ca. 300 m. Hubei, Jiangxi.

8. Sasa qingyuanensis (C. H. Hu) C. H. Hu, Bamboo Res. 1985(2): 62. 1985.

庆元华箬竹 qing yuan hua ruo zhu

Sasamorpha qingyuanensis C. H. Hu, J. Bamboo Res. 2(1): 52. 1983.

Culms 1–1.5 m, 4–6 mm in diam.; internodes thickly white powdery, especially so distally; wall thick. Culm sheaths persistent on deflexed branch, straw-colored when dry, longer than internodes, with rather dense, long, tenuous, brown or white strigae, base with a ring of brown setulae and pubescence, margins ciliate or ciliolate, apex strongly concave; auricles and oral setae absent; ligule to 5 mm; blade erect or deflexed, lanceolate. Leaves commonly 3 per ultimate branch; sheath thinly white powdery, base strigose; auricles and oral setae absent; ligule to 5 mm or more, margin ciliate, apex truncate or slightly sinuous; blade adaxially green, abaxially pale green, oblong or narrowly ovate, 18–28 × 4.7–6 cm, glabrous, secondary veins 10–13 pairs, transverse veins distinct, margins entire or one minutely spinescent. New shoots Apr–May.

● Forests; ca. 1400 m. Zhejiang.

22. ARUNDINARIA Michaux, Fl. Bor.-Amer. 1: 73. 1803.

青篱竹属 qing li zhu shu

Zhu Zhengde (朱政德 Chu Cheng-de), Li Dezhu (李德铢); Chris Stapleton

Small to arborescent bamboos, spreading or loosely clumped. Rhizomes leptomorph. Culms diffuse to pluricaespitose, suberect to drooping, 1–7(–13) m tall, 0.5–4(–6) cm thick; internodes terete to flattened on one side above branches. Branch buds tall, with or without promontory, within 2-keeled prophyll, always open at front. Branches (1 or)2–5(–7), subequal. Lateral branch axes always subtended by sheaths, without replication of lateral branches. Culm sheaths deciduous to persistent, blade usually recurved or reflexed, lanceolate, articulate. Leaf sheaths persistent; blade oblong-lanceolate or narrowly lanceolate, small to medium-sized, without marginal necrosis in winter, arrangement random, transverse veins distinct. Inflorescence an open panicle or raceme, flowering branches usually subtended by tiny bracts. Spikelets several to many flowered, slender; rachilla internodes extended, disarticulating. Glumes 1 or 2, mucronate; lemma similar to glumes; palea 2-keeled, apex obtuse; lodicules 3. Stamens 3; filaments free, slender; anthers yellow. Style usually very short; stigmas 2 or 3, plumose. Caryopsis dry, oblong. New shoots May–Jun.

About eight species: SW China, E Himalayas, Vietnam, SE United States; five species (four endemic) in China.

In FRPS (9(1), 1996), *Arundinaria* was considered a unispecific, North American genus with no Asian representatives at all. A much broader treatment of the genus has also been advocated by several authors. In this treatment the morphologically closest Asian species under *Arundinaria*, those from *Bashania* and *Sarocalamus*, are included. *Arundinaria* subg. *Arundinaria* differs in its persistent culm sheaths and larger florets and is restricted to the SE United States.

1a. Culms 3–8(–13) m tall; internodes grooved above branches; rough, finely striate, waxy; leaf blade 10–32 cm wide, thick, dark, glossy; inflorescence branches pulvinate, becoming reflexed; pedicels pubescent (*A.* subg. *Bashania*).
2a. Culms 2–4(–6.5) cm in diam.; culm sheath scars brown setose, later glabrous; leaf sheath ligule ciliate ..... 1. *A. fargesii*
2b. Culms 0.3–0.7(–1) cm in diam.; culm sheath scars prominent and densely setose; leaf sheath ligule glabrous ..... 2. *A. qingchengshanensis*
1b. Culms 1–3 m tall; internodes terete, smooth; leaf blade (2.2–)3–10 cm wide, thin, light, matte; inflorescence branches not pulvinate, remaining erect; pedicels glabrous (*A.* subg. *Sarocalamus*).
3a. Leaf sheath auricles prominent, narrow, erect; leaf blade abaxially sparsely long pilose ..... 3. *A. racemosa*
3b. Leaf sheath auricles minute or absent; leaf blade glabrous.

4a. Culm sheath completely glabrous; culms 0.3–0.6 cm in diam. ..... 4. *A. faberi*
4b. Culm sheath sparsely setulose; culms 0.6–1.2 cm in diam. ..... 5. *A. spanostachya*

1. Arundinaria subg. **Bashania** (P. C. Keng & T. P. Yi) D. Z. Li, Novon 15: 600. 2005.

巴山木竹亚属 ba shan mu zhu ya shu

Bashania P. C. Keng & T. P. Yi, J. Nanjing Univ., Nat. Sci. Ed. 1982(3): 722. 1982.

Subarborescent subtropical to temperate bamboos. Culms 3–8(–13) m tall; internodes grooved above branches, rough, finely striate, waxy; nodes slightly swollen, supra-nodal ridge prominent, wavy. Branch buds on promontory; prophyll keels thickened, prominent, densely pubescent and ciliate. Branches initially 3–6, erect to spreading, terete, basal internodes compressed, lateral branching close to culm. Leaves few, branchlets ramifying extensively. Leaf blade lanceolate, to 32 cm, thick, dark glossy. Inflorescence terminal or lateral. Branches erect to spreading, pubescent, branching subtended by very small remnants of sheaths or rings of hairs, pulvinate. Spikelets several, on promontory; prophyll represented by lower glume; glumes 2, lower glume close to lower lemma, without subtended buds; palea keels glabrous, appressed to rachilla.

● Two species: China.

Molecular evidence would suggest that *Arundinaria* subg. *Bashania* is possibly closer to *Indocalamus* than to *A.* subg. *Arundinaria*.

1. Arundinaria fargesii E. G. Camus, Notul. Syst. (Paris) 2: 244. 1912.

巴山木竹 ba shan mu zhu

Arundinaria dumetosa Rendle; *A. fargesii* var. *grandifolia* E. G. Camus; *Bashania fargesii* (E. G. Camus) P. C. Keng & T. P. Yi; *Indocalamus dumetosus* (Rendle) P. C. Keng; *I. fargesii* (E. G. Camus) Nakai; *I. scariosus* McClure.

Culms pluricaespitose, predominantly tillering in fertile soil, more separated in poor soil. Culms basally erect, apically slightly pendulous, 5–8(–13) m, 2–4(–6.5) cm in diam.; internodes deep green and glaucous initially, light yellow when old, 30–50(–75) cm; wall 4–8 mm thick; pith membranous; nodes weakly prominent, ridged; intranode 6–12 mm; sheath scars brown setose, later glabrous. Culm sheaths initially green and setose, with persistent papillae and imprints of setae; ligule 2–4 mm, dentate; auricles absent; oral setae present; blade lanceolate, tomentose at base, margins ciliate, undulate. Leaves (1–)4–6; sheath setose, pilose, margins ciliate; ligule (1.5–)2–4 mm, slightly hairy, dentate, initially ciliate; blade lanceolate, 10–20(–30) × 2.5–3 cm, abaxially pubescent, adaxially glabrous, secondary veins 5–8(–11)-paired; petiole short, densely pubescent. Inflorescence paniculate, 5–11(–15) × 2–4 cm; spikelets purple-black, cylindrical, 2–3 × ca. 0.4 cm; rachilla internodes compressed, 2–3.5 mm; florets 4–7. Glumes ovate-lanceolate; lemma oblong or lanceolate, pubescent; palea 2-cleft; lodicules sparsely ciliolate at margin. Anthers 4–5 mm. Ovary ovoid; stigmas 2 or 3, ca. 2.5 mm plumose. Caryopsis slightly curved, ca. 1 cm, beaked, suture slender. Fl. late Mar–Apr or May, fr. late May.

● Mountain forests, pure bamboo forests; (1100–)1700–2000(–2500) m. Gansu, Hubei, Shaanxi, Sichuan.

The culms are often used for papermaking; also for weaving.

2. Arundinaria qingchengshanensis (P. C. Keng & T. P. Yi) D. Z. Li, Novon 15: 600. 2005.

饱竹子 bao zhu zi

Bashania qingchengshanensis P. C. Keng & T. P. Yi, J. Nanjing Univ., Nat. Sci. Ed. 1982(3): 728. 1982.

Culms 2–4 m, 0.3–0.7(–1) cm in diam.; internodes deep green, 40–45(–56) cm, glabrous, distally waxy-powdery, solid or subsolid; nodes weakly prominent, glabrous; intranode 3–5 mm; sheath scar prominent, densely setose. Culm sheaths dark green or purple-green, setose, margins distally ciliolate; ligule purple, truncate or arcuate, less than 1 mm; auricles absent; oral setae 3–5, 3–4 mm; blade persistent, dark green, triangular-lanceolate, basally setose, striate, margins serrulate. Leaves 1–3 per ultimate branch; sheath green, sometimes purple, glabrous; auricles deciduous, green, elliptic, margin ciliate; ligule light green, truncate, ca. 1 mm, glabrous; petiole 3–4 mm, glabrous; blade lanceolate, 22–32 × 2.4–3.8 cm, glabrous, secondary veins 6–8-paired, base cuneate, margin serrulate, apex acuminate. Inflorescence paniculate, 6–10 cm. Spikelets 5–15; pedicel 2–12 mm, densely setose; rachilla internodes 3–5 mm, densely setose; florets 6–14. Glumes setose, long mucronate; lemma ovate, setose, margins ciliolate, long mucronate; palea 2-cleft, 2-keeled, with 2 or 3 veins between keels, 2 veins beside keels, margin ciliolate; lodicules purple-red, rhombic-ovate, membranous, transparent, margins densely ciliolate. Anthers purple, glabrous. Ovary ellipsoid, glabrous; style 1; stigmas 2, white, plumose. Caryopsis slightly curved, brown, ellipsoid, 7–8 × 2–2.5 mm, glabrous, apex acute, suture elongated. New shoots Apr, fl. Apr, fr. May.

● Hardwood forests; 800–1200 m. Sichuan (Guanxian, Qonglai).

Bashania aristata Y. Ren et al. (Novon 13: 473. 2003) and *B. baoxingensis* T. P. Yi (J. Bamboo Res. 19(1): 9. 2000) are possibly synonyms of this species.

The culms are used for pen and brush holders, abacus frames, and chopsticks. This species is also cultivated as an ornamental.

2. Arundinaria subg. **Sarocalamus** (Stapleton) D. Z. Li, Novon 15: 600. 2005.

冷箭竹亚属 leng jian zhu ya shu

Sarocalamus Stapleton, Novon 14: 346. 2004.

Small subalpine bamboos. Culms 1–3 m tall; internodes terete, smooth; nodes not swollen; supra-nodal ridge well developed. Branch buds on promontory; prophyll keels delicate, slightly ciliate. Branches initially 1–3, very erect, appressed, grooved, basal internodes progressively longer, often all long, lateral branching often distant from culm; complement proliferating to become broomlike. Leaf blade pale, linear-lanceolate, thin, matte, less than 12 cm. Inflorescence initially terminal or lateral to leafy branches, later in leafless branch complements; branches very erect, appressed, glabrous, branching subtended by long hairs, not pulvinate; glumes 1 or 2, both small, lower glume usually very small, usually distant from lower lemma, with vestigial remnants of subtended buds; palea keels ciliate.

About three species: Bhutan, China, NE India, Nepal; three species (two endemic) in China.

Molecular evidence would suggest that *Arundinaria* subg. *Sarocalamus* is possibly phylogenetically more closely related to *Phyllostachys*, even though it is morphologically closest to *A.* subg. *Arundinaria* from North America and *A.* subg. *Bashania*.

3. Arundinaria racemosa Munro, Trans. Linn. Soc. London 26: 17. 1868.

总花冷箭竹 zong hua leng jian zhu

Fargesia racemosa (Munro) T. P. Yi; *Sarocalamus racemosus* (Munro) Stapleton; *Yushania racemosa* (Munro) R. B. Majumdar.

Culms nodding, to 2 m; internodes smooth, without wax, glabrous; nodes slightly raised. Culm sheaths glabrous; auricles small; oral setae spreading; blade erect. Leaf sheath nearly glabrous, without tessellation; auricles erect, prominent, narrow; oral setae persistent, erect, stout, nearly glabrous; ligule short; blade to 10 cm, abaxially sparsely long pilose, adaxially glabrous, tessellation distinct, margins similarly thickened. Spikelets with up to 10 florets; rachilla sections scabrous, with pubescent edges, distally pubescent; fertile lemma scabrous, margins pubescent; palea scabrous, keels ciliate. Anthers shortly bifid.

Undergrowth of coniferous forests, yak pastures; 2900–3500 m. Xizang [Bhutan, NE India, Nepal].

The identity of this species was clarified by Gamble (Bull. Misc. Inform. Kew 1912: 198. 1912).

The culms are used for brooms, and the foliage is an important winter fodder for yaks and wild animals.

4. Arundinaria faberi Rendle, J. Linn. Soc., Bot. 36: 435. 1904.

冷箭竹 leng jian zhu

Arundinaria fangiana A. Camus; *Bashania faberi* (Rendle) T. P. Yi; *B. fangiana* (A. Camus) P. C. Keng & T. H. Wen; *Gelidocalamus fangianus* (A. Camus) P. C. Keng & T. H. Wen; *Sinarundinaria faberi* (Rendle) P. C. Keng; *S. fangiana* (A. Camus) Keng & P. C. Keng.

Culms (0.5–)1–2.5(–3) m, 3–6 mm in diam.; internodes green, yellow-green when old, often purple spotted, 15–20 cm, initially slightly glaucous, glabrous; wall 1.5–3 mm thick, pith initially lamellate, later powdery; sheath scars flattened or slightly prominent; intranode 2–3 mm. Culm sheaths shorter than internodes, glabrous, margins ciliate; auricles minute or absent; oral setae initially scarce, readily deciduous, purple; ligule truncate, ca. 0.5 mm; blade green or purple-red at apex, glabrous, margins revolute. Leaves 2–4 per ultimate branch; sheath glabrous, ribbed, margins initially ciliate; auricles minute or absent; oral setae scarce, initially purple, later gray-white, 5–7 mm, undulate; ligule truncate, ca. 0.5 mm; pseudopetiole 1–2 mm, glabrous; blade lanceolate, 3–9 × (0.4–)0.8–1.1(–1.4) cm, glabrous, secondary veins 3- or 4(or 5)-paired, base rounded, margin serrulate, scabrous, apex acuminate. Inflorescence racemose to paniculate, 4–6(–13) cm; spikelets 3–12; pedicel 8–22 mm; florets (4 or)5–7, purple-red; rachilla internodes 3–5 mm. Glumes 2; lemma ovate-lanceolate, long mucronate; palea ciliolate, bifid, 1-veined between keels; lodicules ovate, anterior 2 larger. Anthers purple-red. Ovary ellipsoid, glabrous; style 1; stigmas 3. Caryopsis slightly curved, purple-brown or brown, oblong, 6–7 × 1.5–2 mm, style base persistent, beaked, suture shallow, pericarp thin and easy to separate. Fl. May–Aug, fr. Jul–Oct.

● Subalpine coniferous forests, especially *Abies*; 2300–3500 m. Guizhou (Fangjing Shan), SW Sichuan, Yunnan (Dongchuan, Wumeng Shan).

The culms are used for arrows, penholders, and roofing of temporary shelters. This species is also an important food resource for the giant panda.

5. Arundinaria spanostachya (T. P. Yi) D. Z. Li, Novon 15: 600. 2005.

峨热竹 e re zhu

Bashania spanostachya T. P. Yi, Acta Bot. Yunnan. 11: 35. 1989; *Sarocalamus spanostachyus* (T. P. Yi) Stapleton.

Culms (0.5–)1–3.5 m, 0.6–1.2 cm in diam.; internodes initially green, yellow when old, purple spotted, cylindrical, 13–18(–24) cm, initially slightly glaucous, glabrous; wall 3–4 mm thick, pith initially lamellate, later coarsely powdery; nodes flat; intranode 1.5–3 mm; sheath scar slightly prominent, glabrous. Culm sheaths persistent, yellow, glabrous or adnately setose; auricles absent; oral setae rarely present, 4–6 mm; ligule purple, arcuate, ca. 1 mm, glabrous; blade initially gray-green or purplish, smooth or sometimes rugose, glabrous, margin entire. Leaves 2–4 per ultimate branch; sheath green-purple, glabrous, margins smooth; auricles absent; oral setae 1 or 2, 2–5 mm; ligule purple, truncate, ca. 0.5 mm, glabrous; pseudopetiole purple, 0.8–1.5 mm, glabrous; blade linear-lanceolate, (2.2–)3.3–6.7 × 0.4–0.8 cm, glabrous, secondary veins 2- or 3-paired, base broadly cuneate, one margin serrulate, other margin remotely serrulate or nearly entire, apex acuminate. Inflorescence racemose; rachilla internodes 3.5–5 mm, setose; pedicel

2–6(–11) mm, slender; florets 4–6, purple. Glumes 2, glabrous; lemma ovate-lanceolate, glabrous or setose, long mucronate; palea 2-cleft; lodicules rhombic-lanceolate, margins ciliolate. Anthers purple. Ovary light yellow, ellipsoid, glabrous; style 1; stigmas 3. Fruit unknown. New shoots and fl. May.

● Dominating undergrowth of *Abies georgei* and *Rhododendron* forests; 3200–3900 m. SW Sichuan.

The culms are often used as brooms. The plant also provides winter forage for cattle and is important for water and soil conservation in fragile alpine regions.

Taxa incertae sedis

Arundinaria acerba W. T. Lin (J. S. China Agric. Univ. 13(2): 84. 1992) was described from Guangdong.

Arundinaria conghuaensis W. T. Lin (J. Bamboo Res. 19(4): 2. 2000) was described from Guangdong (Conghua). In the protologue it was compared with *A. projecta* (a synonym of *Acidosasa nanunica* in this account).

Arundinaria multinervis W. T. Lin & Z. M. Wu (J. S. China Agric. Univ. 11(3): 48. 1990; *Indocalamus multinervis* (W. T. Lin & Z. M. Wu) W. T. Lin, J. Bamboo Res. 19(4): 17. 2000) was described from sterile material from Guangdong (Shixing).

Arundinaria parvifolia Hackel ex Keng (J. Wash. Acad. Sci. 26: 396. 1936; *Fargesia hackelii* Ohrnberger; *Indocalamus parvifolius* (Hackel ex Keng) P. C. Keng) was described from Yunnan. It may be a species of *Fargesia*, but there is no information on the rhizome.

Arundinaria rectirama W. T. Lin (J. S. China Agric. Univ. 13(2): 85. 1992) was described from Guangdong. The original description is incomplete, and the taxon could belong to any one of several genera of the *Arundinariinae*.

Arundinaria rigidula E. G. Camus (Not. Syst. 2: 243. 1912; *Indocalamus rigidulus* (E. G. Camus) Nakai; *Yushania rigidula* (E. G. Camus) Ohrnberger) was described from Sichuan. It may be a species of *Fargesia* or *Yushania*, but there is no information on the rhizome.

Bashania abietina T. P. Yi & L. Yang (J. Bamboo Res. 17(4): 1. 1998) was described from Sichuan. It possibly belongs in *Indocalamus* rather than *Arundinaria* subg. *Bashania*.

23. PSEUDOSASA Makino ex Nakai, J. Arnold Arbor. 6: 150. 1925.

矢竹属 shi zhu shu

Zhu Zhengde (朱政德 Chu Cheng-de), Li Dezhu (李德铢); Chris Stapleton

Plants small, shrublike, or arborescent, spreading and densely clumped; rhizomes leptomorph. Culms pluricaespitose, erect to drooping, 0.5–13 m tall, to 6 cm thick; internodes terete or moderately grooved; nodes not greatly swollen; supra-nodal ridge not evident. Branch buds tall, prophylls 2-keeled, initially closed at front, without promontory. Branches erect, initially 1–3 per node, short or long, central slightly dominant with basal nodes compressed, branches always fully sheathed, without replication of lateral branches, sheaths and prophylls ± glabrous. Culm sheaths deciduous to very persistent, tough; blade erect or reflexed, narrowly triangular to strap-shaped. Leaf sheaths persistent; blades moderately large for size of culm, without marginal necrosis in winter, arrangement random, transverse veins distinct. Inflorescence an open raceme or panicle; branching subtended by large or small bracts. Spikelets 2–20 cm; rachilla sinuous, disarticulation below florets; florets 3–30. Glumes 2, shorter than first lemma; lemma to 1 cm. Palea 2-keeled. Stamens 3. Stigmas 3.

Nineteen species: China, Japan, Korea; 18 species (17 endemic, one introduced) in China.

1a. Culm sheaths very persistent; midculm branches 1(–3) (*P.* subg. 1. *Pseudosasa*) ..... 1. *P. japonica*
1b. Culm sheaths deciduous; midculm branches usually 3 (*P.* subg. 2. *Sinicae*).
2a. Culm sheath blade ovate to broadly ovate, constricted at base.
3a. Culm to 1.6 m, less than 4 mm in diam. ..... 13. *P. gracilis*
3b. Culm 2–5 m, 5–12 mm in diam.
4a. Leaves 3–5(–7) per ultimate branch.
5a. Culm sheath sparsely setose and white tomentellate; leaf sheaths densely setose and glaucous; culm internodes 10–15 cm ..... 17. *P. viridula*
5b. Culm sheath densely brown setose; leaf sheaths glabrous; culm internodes 20–32 cm ..... 18. *P. magilaminaris*
4b. Leaves 4–10 per ultimate branch.
6a. Leaf sheath auricles absent; secondary veins of leaf blades 3–5-paired ..... 14. *P. hindsii*
6b. Leaf sheath auricles present, secondary veins of leaf blades 5–9-paired.
7a. Culm sheath smooth or sparsely setose, light brown, base glabrous, apex truncate or weakly arched ..... 15. *P. cantorii*
7b. Culm sheath densely tomentellate, sparsely white setose, base with dense retrorse hairs, apex arched ..... 16. *P. orthotropa*
2b. Culm sheath blade linear-lanceolate to narrowly lanceolate, weakly or rarely constricted at base.

8a. Culm sheath ± spotted or streaked.
9a. Culms to 8 m, to 5 cm in diam. ..... 12. *P. longiligula*
9b. Culms 1.2–4 m, 0.5–1.5 cm in diam.
10a. Culm sheath obscurely streaked, ligule 7–9 mm or slightly shorter, auricles very small and circular, oral setae present ..... 8. *P. subsolida*
10b. Culm sheath distinctly spotted, ligule short, less than 4 mm.
11a. Culm sheath glabrous, occasionally sparsely setose at base; culm internodes powdery-black below nodes ..... 11. *P. wuyiensis*
11b. Culm sheath setose, hairy at base; culm internodes ± glaucous.
12a. Culm sheath with adnate, retrorse setae, tomentose at base, slightly yellow, sheath ligule 1.5–4 mm ..... 9. *P. maculifera*
12b. Culm sheath long hispid; sheath ligule less than 1 mm ..... 10. *P. brevivaginata*
8b. Culm sheath without spots or streaks.
13a. Culm sheath auricles absent or elliptic when present, oral setae present, sheath linear-lanceolate.
14a. Culm sheath auricles present, elliptic; sheath blade lanceolate, erect, base constricted ..... 4. *P. aeria*
14b. Culm sheath auricles absent; sheath blade.
15a. Culm sheath densely brown setose, basally densely so ..... 2. *P. amabilis*
15b. Culm sheath white pubescent and sparsely light brown setose ..... 3. *P. yuelushanensis*
13b. Culm sheath auricles and oral setae absent.
16a. Culm sheaths glabrous, auricles present ..... 5. *P. jiangleensis*
16b. Culm sheaths brown setose, auricles absent.
17a. Culm sheath blade conical-lanceolate; ligule arched, ca. 1 mm, ciliate ..... 6. *P. acutivagina*
17b. Culm sheath blade linear-lanceolate; ligule extremely short, nearly absent ..... 7. *P. pubiflora*

1. **Pseudosasa** subg. **Pseudosasa**

矢竹亚属 shi zhu ya shu

Yadakeya Makino, nom. illeg. superfl.

Culm internodes moderately deeply grooved above branches. Branch initially solitary, with basal nodes compressed but without buds, laterals only arising from nodes further from culm. Culm sheaths persistent. Pedicels glabrous.

Two species: native to Japan and Korea; one species (introduced) in China.

1. Pseudosasa japonica (Siebold & Zuccarini ex Steudel) Makino ex Nakai, J. Jap. Bot. 2(4): 15. 1920.

矢竹 shi zhu

Arundinaria japonica Siebold & Zuccarini ex Steudel, Syn. Pl. Glumac. 1: 334. 1854; *A. usawae* Hayata; *Pleioblastus usawae* (Hayata) Ohki; *Pseudosasa usawae* (Hayata) Makino & Nemoto; *Yadakeya japonica* (Siebold & Zuccarini ex Steudel) Makino.

Culms erect or nodding, 1–3(–5) m tall, to 1.5 cm thick; internodes long, finely ridged, finely mottled, with light ring of wax below each node; nodes slightly raised; sheath scar large. Branches usually 1 per node, without basal buds or branches on that branch, sometimes rebranching from distal branch nodes. Culm sheaths persistent, to 25 cm, basally glabrous, distally appressed hispid; auricles and oral setae absent; blade erect, 2–5 cm, abaxially glabrous. Leaf sheaths glabrous, margins membranous, not ciliate, auricles absent or small, erect; oral setae scarce, erect, or lacking; ligule oblique, long, slightly pubescent, eroded; abaxial ligule glabrous to finely ciliate; blade abaxially light green to glaucous, adaxially dark green, 15–37 × 1.5–5 cm, glabrous; pseudopetiole glabrous. Spikelets curving, narrowly terete, 3.5–10 cm; florets 5–20(–25). Lemma 1.2–1.5 cm, glabrous, often with fine mucro ca. 2 mm; palea nearly equal to lemma, glabrous, keels finely ciliate. Inflorescence not known.

Yangtze River to Guangdong, Taiwan [Japan, Korea].

This species is cultivated as an ornamental. It is traditionally used for arrows in Japan.

2. **Pseudosasa** subg. **Sinicae** S. L. Chen & G. Y. Sheng, Bull. Bot. Res., Harbin 11(4): 44. 1991.

茶秆竹亚属 cha gan zhu ya shu

Culm internodes terete, rarely grooved. Branches initially 3 per node at mid-culm, very erect. Culm sheaths deciduous. Pedicels pubescent.

● Seventeen species: China.

There is considerable uncertainty about the synonymy of Chinese names within *Pseudosasa* and relationships to certain names within *Pleioblastus* and other genera. Characters at both generic and specific ranks require further investigation.

2. Pseudosasa amabilis (McClure) P. C. Keng ex S. L. Chen et al., Fl. Reipubl. Popularis Sin. 9(1): 641. 1996.

茶秆竹 cha gan zhu

Culms 6–13 m, 2–6 cm in diam.; internodes olive-green, terete, 30–40(–50) cm, smooth, initially gray waxy; wall thick; cavity filled with lamellate or spongy pith; nodes weakly prominent. Branches (1–)3 per node, deflexed, secondary branchlets undeveloped. Culm sheaths gradually deciduous, brown, rigid, fragile when dry, densely setose, margins with cilia ca. 1.5 cm, apex truncate or raised on both sides; auricles absent; oral setae few, erect, ca. 1.5 cm, rigid, undulate; ligule arcuate, irregular, ciliate; blade erect, dark brown, narrowly triangular, scabrid, sharply pointed. Leaves 2 or 3 per ultimate branch; sheath glabrous, margins ciliolate; auricles minute; oral setae curved, 7–15 mm; ligule 1–2 mm, densely ciliolate; pseudopetiole ca. 5 mm; blade narrowly lanceolate, 16–35 × 1.6–3.5 cm, thick, glabrous, secondary veins 7–9-paired, one margin spinescent-serrulate, other margin obscure. Inflorescence paniculate, lateral spikelets 3–15, 2.5–5.5 cm, rachilla internodes ca. 3 mm; florets 5–16. Glumes 2, unequal, densely puberulous or glabrous, margins apically densely ciliolate; lemma ovate-lanceolate, densely puberulous or glabrous; palea broadly lanceolate, keels puberulous. Lodicules unequal. Stamens 3. Ovary fusiform, glabrous. Caryopsis 5–6 mm. New shoots Mar to late May.

● Widely cultivated in plantations along streams in mountain areas, open slopes; low elevations. Fujian, Guangdong, Guangxi, Hunan, S Jiangxi.

The culms are of high mechanical quality, and large quantities are exported to other countries of SE Asia and the United States. The species was once highly prized for making fishing rods and ski poles.

1a. Culm sheath apically raised on both sides; lemma glabrous ..... 2b. var. *convexa*
1b. Culm sheath apically truncate; lemma glabrous to puberulous.
  2a. Culm sheaths thick, leathery; glumes and lemma densely puberulous ..... 2a. var. *amabilis*
  2b. Culm sheaths thin; glumes and lemma densely glaucous, sparsely puberulous or nearly glabrous ..... 2c. var. *farinosa*

2a. Pseudosasa amabilis var. **amabilis**

茶秆竹(原变种) cha gan zhu (yuan bian zhong)

Arundinaria amabilis McClure, Lingnan Sci. J. 10: 6. 1931.

Culm sheaths leathery, apex truncate. Glumes and lemma densely puberulous.

● Often cultivated along streams of mountain areas. Fujian, Guangdong, Guangxi, S Hunan, S Jiangxi.

2b. Pseudosasa amabilis var. **convexa** Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 98. 1981.

福建茶秆竹 fu jian cha gan zhu

Pseudosasa amabilis var. *tenuis* S. L. Chen & G. Y. Sheng.

Internodes initially densely glaucous; nodes sparsely retrorsely setose. Culm sheaths sparsely setose, apically prominent on both sides; ligule glaucous; auricles elliptic, with a few oral setae.

● Open slopes; low elevations. Fujian, Hunan.

2c. Pseudosasa amabilis var. **farinosa** S. L. Chen & G. Y. Sheng, Bull. Bot. Res., Harbin 11(4): 45. 1991.

厚粉茶秆竹 hou fen cha gan zhu

Culm sheaths thinner. Leaf blade narrower. Glumes and lemma densely glaucous or nearly glabrous.

● N Guangxi.

3. Pseudosasa yuelushanensis B. M. Yang, Nat. Sci. J. Hunan Norm. Univ. 9(3): 90. 1986.

岳麓山茶秆竹 yue lu shan cha gan zhu

Culms 2–3 m, 1.5–2 cm in diam.; internodes striate, glaucous, initially white pubescent above nodes; nodes weakly prominent. Culm sheaths late deciduous, white pubescent and sparsely brown setose, ciliate; auricles weak; oral setae 4–6; ligule truncate or arched; blade narrowly lanceolate, both surfaces pubescent. Leaf sheath sparsely puberulous; auricles absent; oral setae 5–7 mm; ligule arched, 2–2.5 mm; blade lanceolate or oblong-lanceolate, 15–30 × 2–4 cm, abaxially pubescent, secondary veins 5- or 6-paired, margins serrulate. Inflorescence paniculate; spikelets 3–8, pedicel 3–7 mm; florets 3–15. Glumes 2, unequally sized; lemma ovate-lanceolate; palea navicular, keels puberulous. Stamens (1–)3 or 4(–6). Ovary fusiform, glabrous; styles very short; stigmas 3. Caryopsis oblong, 5–7 mm. New shoots May, fl. Apr–Jun.

● Undergrowth of hardwood forests. Hunan (Yuelu Shan).

This species is possibly a synonym of *Pseudosasa subsolida*.

4. Pseudosasa aeria T. H. Wen, Bull. Bot. Res., Harbin 3(1): 94. 1983.

空心竹 kong xin zhu

Culms to 6 m, ca. 2 cm in diam.; internodes green, terete, 30–40 cm, not grooved, glabrous; nodes not raised. Branches 1–3 per node. Culm sheaths nearly persistent, green, setose, densely setose at base, margins brown ciliate; auricles brown, elliptic; oral setae slender; ligule truncate, 1–2 mm; blade erect, green, lanceolate, both surfaces glabrous, base constricted, margin serrulate, apex slightly rugose. Leaves 3–5 per ultimate branch; sheath glabrous, margin ciliolate; auricles obscure; oral setae erect, to 1.3 cm; ligule truncate, short; blade lanceolate, 11–20 × 1–2.2 cm, both surfaces glabrous, secondary veins 6- or 7-paired, base broadly cuneate, apex long acuminate. Inflorescence terminal to lateral branches; spikelets 1–5, pedicel 5–7 mm, terminal one to 1.4 cm, glabrous; florets ca. 11. Glumes 1 or 2; lemma margins ciliolate apically, mucronate; palea slightly shorter than lemma, densely hairy, apex rounded; lodicules ciliolate. Ovary columnar. New shoots Jun.

● Zhejiang.

This species is possibly a synonym of *Pleioblastus rugatus*.

5. Pseudosasa jiangleensis N. X. Zhao & N. H. Xia in Z. Yu Li, Pl. Longqi Mountain, Fujian, China, 600. 1994.

将乐茶秆竹 jiang le cha gan zhu

Culms 7–10(–12) m, 1–3(–5) cm in diam.; internodes terete, ca. 40 cm; wall 6–8 mm thick; nodes not prominent, farinose; intranode ca. 7 mm. Branches 3 per node, erect, base nearly appressed. Culm sheaths deciduous, green, not spotted, slightly longer than internode, thickly papery, glaucous, abaxially sparsely deciduous-setose, margins glabrous, apex truncate or subconcave; auricles subovoid, small, margins ciliate or glabrous; oral setae glabrous; ligule 4–5 mm, membranous, margins glabrous or ciliate; blade reflexed, linear-lanceolate, both surfaces densely pubescent, base slightly contracted. Leaves 4–6(or 7) per ultimate branch, glabrous; sheath glabrous; auricles and oral setae absent; ligule ca. 2 mm, membranous, margins glabrous; blade linear-lanceolate or narrowly lanceolate, 9–20 × 1–2.5 cm, cartilaginous, abaxially proximally pubescent, otherwise glabrous, secondary veins 4–6-paired, transversal veins conspicuous, margins revolute, apex caudate acuminate. Inflorescence unknown. New shoots May.

● Margins of mountains; 400–500 m. W Fujian.

6. Pseudosasa acutivagina T. H. Wen & S. C. Chen, J. Bamboo Res. 3(2): 31. 1984.

尖鞘茶秆竹 jian tuo cha gan zhu

Culms to 4 m, to 2.5 cm in diam.; internodes initially green, to 35 cm, glabrous, glaucous. Culm sheaths narrowly triangular, longer than internodes, brown setose, densely so at base, margins ciliate, auricles and oral setae absent; ligule arched, ca. 1 mm, ciliate; blade erect, conical-lanceolate, 1–3 cm, glabrous. Leaves 2 or 3 per ultimate branch; sheath pale, initially pubescent, margins glabrous; auricles and oral setae absent; ligule ca. 5 mm, fragile; pseudopetiole 7–15 mm; blade elliptic-lanceolate to ovate-lanceolate, 22–32 × 2–4.5 cm, abaxially pubescent, secondary veins 9–11-paired, base cuneate, margins serrulate, apex acuminate or acute. Inflorescence unknown.

● Slopes; below 500 m. S Zhejiang.

This species is possibly a synonym of *Acidosasa nanunica*.

7. Pseudosasa pubiflora (Keng) P. C. Keng ex D. Z. Li & L. M. Gao, **comb. nov.**

毛花茶秆竹 mao hua cha gan zhu

Basionym: *Arundinaria pubiflora* Keng, Sinensia 7: 416. 1936; *Acidosasa paucifolia* W. T. Lin; *Arundinaria lanshanensis* (T. H. Wen) T. H. Wen; *A. pallidiflora* (McClure) T. H. Wen; *A. tenuivagina* W. T. Lin; *Indocalamus pallidiflorus* McClure; *I. pubiflorus* (Keng) P. C. Keng; *Pseudosasa pallidiflora* (McClure) S. L. Chen & G. Y. Sheng; *P. parilis* T. P. Yi & D. H. Hu; *Yushania lanshanensis* T. H. Wen.

Culms ca. 1 m, 2–3 mm in diam.; internodes terete, woolly or tomentose below nodes; nodes weakly prominent. Branches 1–3 per node, elongated, slender. Culm sheaths persistent; auricles and oral setae absent; ligule extremely short, nearly absent; blade deciduous, small. Leaves 1 or 2 per ultimate branch; sheath glabrous or apically slightly hairy, margins ciliate; auricles and oral setae weakly developed or absent; ligule extremely short; blade lanceolate or elliptic-lanceolate, ca. 15 × 19 cm, abaxially setulose, adaxially glabrous, one margin roughly hairy. Inflorescence paniculate, lateral; spikelets ca. 10; rachilla glabrous or hairy at base; pedicel densely puberulous; florets 2 or 3, loosely arranged. Glumes 2; lemma ovate, adnately hairy; palea about as long as lemma, keels densely hairy; lodicules 3, subequal. Ovary glabrous; stigmas 2. Caryopsis unknown. New shoots Apr.

● Slopes; low elevations. N Guangdong, S Hunan, S Jiangxi.

The combination *Pseudosasa pubiflora* was not previously validly published by P. C. Keng (Claves Gen. Sp. Gram. Prim. Sin. 154. 1957 and Fl. Ill. Pl. Prim. Sin. Gram. 32. 1959) because a clear and direct reference to the basionym was not given.

The woolly internode apex is unusual in *Pseudosasa* and rather suggestive of *Indocalamus*.

8. Pseudosasa subsolida S. L. Chen & G. Y. Sheng, Acta Phytotax. Sin. 21: 405. 1983.

近实心茶秆竹 jin shi xin cha gan zhu

Arundinaria subsolida (S. L. Chen & G. Y. Sheng) C. S. Chao & G. Y. Yang.

Culms ca. 2.5 m, 5–12 mm in diam.; internodes terete, 18–30 cm, nearly solid, basally slightly grooved above branches; wall thick, pith spongy; nodes flattened; sheath scars weakly distinct; intranode 6–7 mm. Culm sheaths light yellow-brown, apically purplish, obscurely streaked, striate, glabrous, margins ciliate; auricle circular, small, ciliate; oral setae deciduous, erect, uneven; ligule arcuate, 7–9 mm or slightly shorter, abaxially scabrid, ciliolate; blade erect on basal sheaths, revolute on apical ones, small, involute when dry. Leaves 6 or 7 per ultimate branch; basal sheath densely pubescent, sparsely setose; auricles obscure; oral setae few, short; pseudopetiole ca. 2 mm; blade oblong-lanceolate, 15–20(–23) × 1.2–2.3(–2.7) cm, abaxially densely hairy, secondary veins 5- or 6-paired, base rounded, margins minutely serrulate, apex acuminate. Inflorescence unknown. New shoots early Apr.

● Low slopes of hills. Fujian, Hunan, Jiangxi.

Pseudosasa yuelushanensis is possibly a synonym of this species.

9. Pseudosasa maculifera J. L. Lu, J. Henan Agric. Coll. 2: 71. 1981.

鸡公山茶秆竹 ji gong shan cha gan zhu

Culms 2–4 m, 0.5–1.5 cm in diam.; internodes initially green, yellow-green when old, 21–31 cm, weakly glaucous, distinctly powdery below node, glabrous; supra-nodal ridge more prominent than persistent sheath base; intranode 5–8 mm. Branches (1 or)3 per node. Culm sheaths light green, sometimes brown spotted, glabrous or sparsely setose, setae light brown and readily deciduous, margins ciliolate; auricles absent; oral setae few, readily deciduous; ligule arcuate, truncate, or acute, 1.5–4 mm, glaucous; blade reflexed or erect, triangular-lanceolate or narrowly linear-lanceolate, entire. Leaves 2–4 per ultimate branch; sheath glabrous, margins ciliolate; auricles elliptic or falcate; oral setae radiate; blade elliptic-lanceolate, 7–14 ×

1.2–2.2 cm, abaxially proximally slightly hairy, scabrid, secondary veins 5–9-paired, one margin distally serrulate, other margin entire. Inflorescence racemose, terminal. Spikelets 1 or 2, 3–5 cm; florets 5–7, terminal one sterile; rachilla internodes ca. 6 mm, shortly hairy. Glumes 2; lemma ovate; palea navicular, apex obtuse or 2-cleft, keels ciliolate; lodicules 3, nearly equal. Stamens 3. Ovary densely hairy; style 1; stigmas 3. Caryopsis oblong, 9–13 × 3–4 mm. New shoots early Jun, fl. May.

● Slopes, roadsides. S Henan, S Zhejiang.

Pleioblastus intermedius, *P. maculosoides*, *Pseudosasa longiligula*, and *P. wuyiensis* are all possibly synonyms of this species.

1a. Culm sheaths glabrous, or apex sparsely setose on both sides; ligule arcuate ..... 9a. var. *maculifera*
1b. Culm sheaths densely setose; ligule truncate or acute ..... 9b. var. *hirsuta*

9a. Pseudosasa maculifera var. **maculifera**

鸡公山茶秆竹(原变种) ji gong shan cha gan zhu (yuan bian zhong)

Culm sheaths brown spotted, densely setose at base; ligule arcuate; blade triangular-lanceolate.

● S Henan.

9b. Pseudosasa maculifera var. **hirsuta** S. L. Chen & G. Y. Sheng, Bull. Bot. Res., Harbin 11(4): 45. 1991.

毛箨茶秆竹 mao tuo cha gan zhu

Culm sheaths densely setose; ligule truncate or acute; blade narrowly linear-lanceolate.

● Slopes, roadsides. S Zhejiang.

10. Pseudosasa brevivaginata G. H. Lai, J. Bamboo Res. 19(2): 37. 2001 [“2000”].

短箨茶秆竹 duan tuo cha gan zhu

Rhizomes amphipodial. Culms erect, 1.2–1.6 m, 5–7 mm in diam.; internodes initially green, setose, apically glaucous; supra-nodal ridge prominent, persistent sheath base corky, initially densely long, purple-brown hispid. Branches erect, basally adnate to culm. Culm sheath late deciduous to persistent, initially dark green and purple, distinctly spotted, ca. 1/2 as long as internode, brittle, subleathery, densely long, purple-brown hispid, becoming scabrous and verruculose from persistent bristle bases, basally long, dark purple hispid; auricles and oral setae absent; ligule arcuate, less than 1 mm, ciliolate; blade reflexed, subulate or linear, 1.6–2.8 cm, glabrous. Leaves (2 or)3 or 4 per branchlet; sheaths glabrous, margins initially long ciliate; auricles and oral setae deciduous; ligule truncate, less than 1 mm; blade 11–18 × 1.4–2.5 cm, glabrous, secondary veins 6- or 7-paired, transverse veins distinct. Inflorescence unknown.

● Riversides; below 500 m. Anhui (Tiantang, Yuexi).

11. Pseudosasa wuyiensis S. L. Chen & G. Y. Sheng, Bull. Bot. Res., Harbin 11(4): 46. 1991.

武夷山茶秆竹 wu yi shan cha gan zhu

Culms 2.5–3.5 m, ca. 8 mm in diam.; internodes basally grooved above branches, with light powdery traces, black powdery below nodes; nodes weakly raised; sheath base persistent; intranode ca. 4 mm. Culm sheaths purple spotted, glabrous, occasionally sparsely setose at base, margins ciliate; auricles and oral setae absent; ligule arcuate, 3–4 mm, nearly glabrous; blade reflexed, narrowly linear-lanceolate, ca. 1/2 as wide as sheath apex, both surfaces puberulous, base slightly constricted, margin serrulate, apex acute. Leaves 3 or 4 per ultimate branch; sheath densely glaucous, hairy at base, margin ciliolate; auricles and oral setae absent; ligule acute or arcuate, ca. 3 mm; pseudopetiole ca. 3 mm; blade narrowly lanceolate, 11–17 × 0.6–0.7 cm, abaxially densely puberulous, base broadly cuneate, margins spinescently serrulate, apex tapering, long acuminate. Inflorescence unknown. New shoots Jun.

● Valley slopes. N Fujian (Wuyi Shan).

This species might be better included within *Pseudosasa maculifera*.

12. Pseudosasa longiligula T. H. Wen, J. Bamboo Res. 1(1): 27. 1982.

广竹 guang zhu

Culms ca. 8 m, to 5 cm in diam.; internodes green, 40–50 cm, glaucous below nodes, glabrous; nodes not raised, remains of sheath base persistent. Culm sheaths green, brown spotted or not, base subglabrous, margins brown ciliate, apex broad and concave; auricles elliptic; oral setae present; ligule arched, sometimes truncate or slightly concave; blade erect, striate, narrowly lanceolate to linear-lanceolate, ca. 1/4 as wide as sheath apex, glabrous, base slightly constricted, apex acuminate. Leaves 4–6 per ultimate branch; sheath densely pubescent, soon caducous, margins densely ciliolate; auricle circular to elliptic, very small; oral setae soon caducous, straight or curved, rigid; ligule acute, to 8 mm; blade oblong-lanceolate or narrowly lanceolate, 12.5–22 × 3–2.4 cm, abaxially pubescent with denser hairs along midrib, secondary veins 5–7-paired, base cuneate, margins sharply serrulate, apex acute. Inflorescence unknown.

● N Guangxi.

Pseudosasa longiligula is not to be confused with *P. longiligulata* (McClure) Koidzumi, a much smaller species currently placed in *Sasa*. This species might be better included within *P. maculifera*.

The edible shoots are sweet, and the culms are used for making small items of furniture and props.

13. Pseudosasa gracilis S. L. Chen & G. Y. Sheng, Acta Phytotax. Sin. 21: 405. 1983.

纤细茶秆竹 xian xi cha gan zhu

Culms ca. 1.6 m, to 4 mm in diam.; internodes terete, to 24 cm, not powdery, apically adnately and retrorsely setulose; wall thick, cavity with woolly or irregularly lamellate pith; nodes not raised, remains of sheath base persistent. Culm sheaths gradually deciduous, or rather persistent, ca. 4/7 as long as internodes, glabrous or slightly hairy, densely white hairy toward edges, margins ciliolate; auricles obscure; oral setae present, straight or slightly curved, ca. 8 mm, rigid; ligule short, unevenly laciniate; blade erect, striate, broadly ovate-lanceolate,

about as long as sheath, both surfaces glabrous, margins ciliolate, apex acuminate. Leaves 2 or 3 per ultimate branch; sheath densely pilose, margins ciliolate; auricles obscure; oral setae present, to 1.4 cm; ligule short, 0.5–1.5 mm; pseudopetiole 2–3 mm; blade lanceolate or narrowly lanceolate, 14–19 × 1.2–1.7 cm, abaxially glabrous, adaxially hairy, base cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots late Apr.

● S Hunan.

This species is possibly a synonym of *Pseudosasa pubiflora*.

14. Pseudosasa hindsii (Munro) S. L. Chen & G. Y. Sheng ex T. G. Liang, Fujian Bamboos 142. 1987.

篦竹 hui zhu

Arundinaria hindsii Munro, Trans. Linn. Soc. London 26: 31. 1868; *Acidosasa denigrata* W. T. Lin; *Arundinaria cerata* McClure; *A. flexuosa* Hance; *A. hirtivaginata* W. T. Lin; *A. maudiae* (Dunn) Keng; *A. multifloscula* W. T. Lin; *A. orthotropoides* (W. T. Lin) W. T. Lin; *A. panda* Keng; *A. quadrangula* W. T. Lin & Z. J. Feng; *A. yangshanensis* W. T. Lin; *Oligostachyum orthotropoides* W. T. Lin; *Phyllostachys maudiae* Dunn; *Pleioblastus hindsii* (Munro) Nakai; *P. hispidulus* W. T. Lin; *P. pandus* (Keng) P. C. Keng; *Pseudosasa aureovagina* W. T. Lin; *P. baiyunensis* W. T. Lin; *P. multifloscula* (W. T. Lin) W. T. Lin; *P. nigrinodis* G. A. Fu; *Thamnocalamus hindsii* (Munro) E. G. Camus.

Culms 3–5 m, ca. 1 cm in diam.; internodes dark green, 20–36 cm, basal ones glabrous but apical internodes hairy, initially glaucous. Branches 3–5 per node, erect. Culm sheaths persistent, sparsely white or light brown setose; auricles falcate; oral setae curved; ligule arcuate, ca. 3 mm; blade erect, broadly ovate-lanceolate, nearly as wide as sheath apex, base slightly constricted. Leaves 4–9 per ultimate branch; sheath deciduous, glabrous or sparsely setulose, margins ciliolate; auricles absent; oral setae few; ligule truncate, rigid, 1–1.5 mm; pseudopetiole ca. 2 mm; blade linear-lanceolate or narrowly oblong, 7–22 × ca. 1.6 cm, glabrous or abaxially slightly hairy, secondary veins 3–5-paired, base cuneate, one margin spinescently serrulate, other margin entire, apex acuminate. Inflorescence unknown. New shoots May–Jun.

● Coastal hills, mountains. Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang.

This taxon was repeatedly published as a "new species" by some authors because of its rather broad distribution. After checking a large number of herbarium specimens, a conclusion was reached that *Pseudosasa magilaminaris*, *P. orthotropa*, and *P. viridula* are possibly synonyms of this species.

15. Pseudosasa cantorii (Munro) P. C. Keng ex S. L. Chen et al., Fl. Reipubl. Popularis Sin. 9(1): 654. 1996 [*"cantori"*].

托竹 tuo zhu

Bambusa cantorii Munro, Trans. Linn. Soc. London 26: 111. 1868 [*"cantori"*]; *Arundarbor cantorii* (Munro) Kuntze; *Arundinaria basiaurita* W. T. Lin; *A. basigibbosa* McClure; *A. cantorii* (Munro) L. C. Chia ex C. S. Chao & G. Y. Yang; *A. funghomii* McClure; *A. pubiannula* W. T. Lin & Z. J. Feng; *Oligostachyum pulchellum* (T. H. Wen) G. H. Ye & Z. P. Wang; *Pseudosasa hainanensis* G. A. Fu; *Sinobambusa pulchella* T. H. Wen.

Culms 2–4 m, 5–10 mm in diam.; internodes terete; nodes obscure. Branches 3 per node. Culm sheaths gradually deciduous, purple-brown to yellow, ca. 1/2 as long as internodes, glabrous or sparsely setose, margins densely ciliolate; ligule arcuate or truncate, slightly concave, scabrid, ciliolate; blade erect, narrowly ovate-lanceolate, glabrous, basally 1/2–3/5 as wide as sheath apex, margins serrulate, apex acuminate. Leaves 5–10 per ultimate branch; sheath purple, glabrous or slightly hairy, margins ciliate; auricles falcate or suborbicular; oral setae ca. 5 mm; ligule truncate, short, slightly hairy, entire or laciniate; pseudopetiole ca. 4 mm; blade narrowly lanceolate or oblong-lanceolate, 12–20(–32) × 1.2–2.5(–3.7) cm, both surfaces glabrous, secondary veins 5–9-paired, base broadly cuneate, margins serrulate, apex acuminate. Inflorescence paniculate or racemose, terminal; spikelets 3–4 cm, pedicel 5–15 mm; florets 4–9; rachilla internodes 4–6 mm. Glumes 2; lemma glabrous, margins densely ciliolate; palea shorter than lemma. Stamens 3. Ovary oblong, glabrous; styles very short; stigmas 3. New shoots Mar.

● S Fujian, Guangdong, Hainan, S Jiangxi.

16. Pseudosasa orthotropa S. L. Chen & T. H. Wen, J. Bamboo Res. 1(1): 46. 1982.

面秆竹 mian gan zhu

Culms to 3 m, ca. 1 cm in diam.; internodes terete, to 40 cm, basally grooved above branches; wall thick, pith spongy; nodes weakly prominent or not; intranode 7–9 mm; sheath base persistent, initially glaucous and retrorsely hairy. Branches 1–3 per node. Culm sheaths late deciduous, nearly persistent, green, ca. 1/3 as long as internodes, densely pubescent and sparsely setose or subglabrous, apically glaucous; auricles ovate or oblong, densely ciliate; oral setae curved; ligule very short, slightly prominent, margin shortly ciliolate; blade ovate-lanceolate, glabrous, margin ciliolate, apex acuminate. Leaves 6–10 per ultimate branch; sheath initially pubescent, margin ciliolate; auricles initially small and rounded, obscure when old; oral setae 3–15 mm, fringed, or deciduous; ligule truncate, very short, densely hairy and glaucous, entire or unevenly laciniate; blade 9–27(–34) × 0.8–2.5(–3.5) cm, abaxially shortly hairy, secondary veins 5- or 6-paired, base rounded, margin minutely serrulate, apex acuminate. Inflorescence unknown. New shoots early May.

● Valleys, slopes; low elevations. Fujian, Jiangxi, Zhejiang.

This species is possibly a synonym of *Pseudosasa hindsii*.

17. Pseudosasa viridula S. L. Chen & G. Y. Sheng, Bull. Bot. Res., Harbin 11(4): 46. 1991.

笔竹 bi zhu

Culms ca. 4 m, ca. 1 cm in diam.; internodes striate, terete, 10–15 cm, basally slightly flattened above branches, glaucous, pith spongy; nodes weakly prominent; intranode ca. 6 mm; sheath base persistent, glaucous at nodes, dark brown when old. Culm sheaths late deciduous, light brown, sparsely spotted, leathery, sparsely setose and pubescent, margins densely ciliate; auricles brown, circular to elliptic, small; oral setae radiate,

curved, 5–10 mm; ligule arcuate, ca. 1.5 mm, scabrid, ciliolate; blade triangular-lanceolate, base slightly constricted, 2/3–3/4 as wide as sheath apex, margin serrulate, apex acuminate. Leaves (2–)4 or 5(–7) per ultimate branch; sheath setose, glaucous, margins ciliolate; auricles absent; oral setae 7–10; ligule very short, slightly scabrous; blade oblong-lanceolate, 8–30 × 2–3.3 cm, abaxially partially densely hairy, secondary veins (5–)7–10-paired, base broadly cuneate, margins serrulate, apex acute. Inflorescence unknown. New shoots May.

● Plains. Zhejiang (Hangzhou).

This species is possibly a synonym of *Pseudosasa hindsii*.

18. Pseudosasa magilaminaris B. M. Yang, J. Hunan Sci. Technol. Univ. 1(1): 111. 1985.

江永茶秆竹 jiang yong cha gan zhu

Culms 2–5 m, 5–12 mm in diam.; internodes terete, 20–32 cm, pith spongy; nodes weakly prominent, sheath base persistent, corky, glaucous, pilose; intranode ca. 9 mm. Culm sheaths persistent or late deciduous, brown, shorter than internodes, fragile, densely setose; auricles falcate; oral setae ca. 5 mm; ligule arcuate, ca. 2 mm; blade triangularly ovate-lanceolate, abaxially slightly hairy at base. Leaves 3–7 per ultimate branch; blade elliptic-lanceolate 12–18 × 9–2.3 cm, abaxially slightly hairy, secondary veins 6- or 7-paired, base broadly cuneate, margins serrulate, apex acute. Inflorescence unknown.

● Slopes of hills; low elevations. S Hunan.

This species is possibly a synonym of *Pseudosasa hindsii*.

Taxa incertae sedis

Pseudosasa membraniligulata B. M. Yang (Bamboo Res. 1989(2): 3. 1989) was described from Hunan. It is difficult to decide the identity of this species because the type specimen (*B. M. Yang 06537*, HNNU) is abnormal. According to G. Y. Yang's Ph.D. dissertation, it does not belong to *Pseudosasa*.

Pseudosasa pubicicatrix W. T. Lin (J. Bamboo Res. 13(2): 22. 1994, *"pubioicatrix"*) was described from Hainan. According to G. Y. Yang's Ph.D. dissertation, the holotype specimen (*Huang Quan 0002*, CANT) is a mixture, which probably includes elements of three different genera: the culm sheaths look like *P. hindsii*, whereas the culms look like *Indocalamus*, and the leafy branches are *Bambusa*.

24. PLEIOBLASTUS Nakai, J. Arnold Arbor. 6: 145. 1925.

苦竹属 ku zhu shu

Zhu Zhengde (朱政德 Chu Cheng-de); Chris Stapleton

Nipponocalamus Nakai; *Polyanthus* C. H. Hu.

Small, shrubby or arborescent bamboos, spreading and loosely clumped. Rhizomes leptomorph. Culms pluricaespitose, suberect to drooping, 0.5–8 m tall, 0.1–4 cm thick; internodes slightly grooved above branches, glabrous, smooth or rough, pruinose below level nodes. Branch buds tall, prophylls 2-keeled, initially closed at front, on small promontory. Branches erect, initially 1–9 per node, long, subequal, basal nodes compressed, laterals arising from basal nodes, some lateral branches lacking subtending sheaths and replicated, sheaths and prophylls very persistent, papery, ± glabrous. Culm sheaths persistent to very persistent, nearly leathery; blade deciduous, often reflexed. Leaf sheaths persistent; blade small to medium-sized, without substantial winter necrosis of margins, arrangement random or ± distichous, transverse veins distinct. Inflorescence open, racemose to paniculate, branching subtended by very small bracts or hairs, often with pulvini; spikelets exserted on long, delicate pedicels. Spikelets 1–4 cm, disarticulating below florets, with 4–8 florets. Glumes 1 or 2(–5), much shorter than first lemma, delicate, basally loose and usually subtending vestigial buds. Lemma to 1 cm. Anthers 3. Stigmas 3. Fruit a caryopsis.

About 40 species: China, Japan, Vietnam; 17 species (15 endemic, two introduced) in China.

In addition to the species treated below, *Pleioblastus albosericeus* W. T. Lin (J. S. China Agric. Univ. 11(3): 47. 1990, *"albo-sericeus"*) was described from sterile material from Guangdong (Fogang). In the protologue it was compared with *P. intermedius*. *Pleioblastus angustatus* W. T. Lin, (J. Bamboo Res. 13(2): 18. 1994) was described from cultivated material from Guangdong (Guangzhou). In the protologue it was compared with *P. amarus*. *Pleioblastus patellaris* W. T. Lin & Z. M. Wu (J. S. China Agric. Univ. 14(3): 113. 1993) was also described from Guangdong and is possibly a species of *Indocalamus*.

1a. Culms short, 0.1–1 m; leaf blades variegated or closely distichous (natives of Japan, introduced in China for ornamental purposes).
  2a. Leaf blade 6–15 × 0.8–1.4 cm, both surfaces white pubescent, especially abaxially, with yellow or white stripes ..... 16. *P. fortunei*
  2b. Leaf blade 3–7 × 0.3–0.8 cm, both surfaces glabrous, not striped; culms 20–40 cm ..... 17. *P. distichus*
1b. Culms to more than 1 m; leaf blades not variegated, separated, not distichous (endemic to China).
  3a. Culm sheaths without conspicuous auricles, oral setae absent or scarce and inconspicuous.
    4a. Culm sheaths ± glossy, usually without setae, hairs, marginal cilia, or powder.
      5a. Culm sheaths brown-red, with darker spots, oily-glossy ..... 1. *P. maculatus*

5b. Culm sheaths green, without spots, ± glossy but not oily ..... 2. *P. oleosus*
4b. Culm sheaths not glossy, ± pruinose, often with setae or marginal cilia.
6a. Culm sheath ligules usually truncate, 1–2 mm.
7a. Culms initially glabrous but pruinose, culm sheaths glabrous or with sparse setae ..... 3. *P. amarus*
7b. Culms initially pubescent; culm sheaths setose; leaf blades asymmetrical, especially at base.
8a. Culm sheath blades deflexed or revolute; leaves 3 or 4(–8) per ultimate branch ..... 4. *P. intermedius*
8b. Culm sheath blades erect; leaves 1 or 2 per ultimate branch ..... 5. *P. truncatus*
6b. Culm sheath ligules ± arcuate, 3–8 mm.
9a. Culm sheaths thickly papery or thinly leathery, ligules ca. 3 mm ..... 6. *P. altiligulatus*
9b. Culm sheaths leathery, setose, ligules 5–8 mm.
10a. Culm sheaths without spots, thickly pruinose and with sparse, brown setae, margins distally pink, ligules ca. 5 mm; leaf sheath auricles truncate to vaulted, 1–2.5 mm ..... 7. *P. incarnatus*
10b. Culm sheaths with brown spots and verrucate setae, margins not pink, ligule ca. 8 mm; leaf sheath auricles triangular, 3–4 mm ..... 8. *P. maculosoides*
3b. Culm sheaths with well-developed auricles and oral setae.
11a. Culm sheaths mainly glabrous, basally piliferous ..... 9. *P. juxianensis*
11b. Culm sheaths with setae or marginal cilia.
12a. Internodes with small cavity or subsolid.
13a. Internodes subsolid, initially strigose and finely ridged; leaf sheath auricles absent; oral setae absent to 3, erect, to 5 mm ..... 10. *P. solidus*
13b. Internodes with small cavity, initially glabrous, inconspicuously ridged; leaf sheath auricles ovate to elliptical, oral setae radiating, to 13 mm ..... 11. *P. hsienchuensis*
12b. Internodes with large cavity.
14a. Culm sheath blades intensely crinkled; internodes ca. 35 cm ..... 12. *P. rugatus*
14b. Culm sheath blades smooth; internodes to 33 cm.
15a. Internodes to 18.5 cm, culm wall ca. 3 mm thick ..... 13. *P. yixingensis*
15b. Internodes to 33 cm, culm wall 7–8 mm thick.
16a. Culm sheath ligule truncate, ca. 1 mm, auricles subcircular or falcate, small, oral setae 3–5 mm ..... 14. *P. wuyishanensis*
16b. Culm sheath ligule arcuate, ca. 10 mm, auricles oval to elliptical, oral setae ca. 10 mm ..... 15. *P. sanmingensis*

1. Pleioblastus maculatus (McClure) C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 18: 31. 1980.

斑苦竹 ban ku zhu

Sinobambusa maculata McClure, Lingnan Univ. Sci. Bull. 9: 64. 1940; *Arundinaria chinensis* C. S. Chao & G. Y. Yang; *A. kwangsiensis* (W. Y. Hsiung & C. S. Chao) C. S. Chao & G. Y. Yang; *A. maculata* (McClure) C. D. Chu & C. S. Chao ex K. M. Lan (1981), not Hackel (1903); *Pleioblastus kwangsiensis* W. Y. Hsiung & C. S. Chao; *P. longispiculatus* B. M. Yang; *P. maculatus* var. *longitubus* Li & Wu.

Culms 3–8 m, 1.5–4 cm in diam., initially green, densely glaucous; internodes subcylindrical; nodes prominent, brown, yellow-green when old, densely hairy, with prominent setose sheath scar. Culm sheaths deciduous, brown-red, oily, glossy, slightly purple, with unevenly scattered brown spots, basally brown setose, margins without cilia; auricles absent or very reduced, brown, dotlike or ovate; oral setae few, erect or curved; ligule often truncate, dark brown-red, entire; blade pendulous, linear-lanceolate, slightly hairy, scabrous, remotely serrulate or nearly entire, revolute. Leaves 3–5 per ultimate branch, soon deciduous; sheath margin sparsely pubescent; auricles and oral setae absent; ligule truncate, 1–2 mm, hairy, margin ciliolate; pseudopetiole ca. 4 mm; blade lanceolate, 8.8–18.5 × 1.3–2.9 cm, base cuneate, apex elongate. Inflorescence paniculate; florets 8–15 per spikelet. Glumes 2; lemma lustrous; palea keels ciliolate; lodicules 3, subequal in size, ciliolate at apex. Ovary bottle-shaped, ca. 8 mm; styles ca. 1.5 mm; stigmas 3, plumose. Caryopsis ellipsoid. New shoots early May–early Jun.

● Often growing in dense forests, also planted as an ornamental. Fujian, Guangdong, Guangxi, Guizhou, Jiangsu, Jiangxi, Sichuan, Yunnan; cultivated northward to S Shaanxi.

The shoots are edible, but must be treated first. The culms are used for light duties; they are fragile and not suitable for weaving.

2. Pleioblastus oleosus T. H. Wen, J. Bamboo Res. 1(1): 24. 1982.

油苦竹 you ku zhu

Acidosasa lentiginosa W. T. Lin & Z. J. Feng; *Arundinaria oleosa* (T. H. Wen) Demoly; *A. chinensis* C. S. Chao & G. Y. Yang; *Pleioblastus longiinternodius* B. M. Yang; *P. longispiculatus* B. M. Yang; *Polyanthus longispiculatus* (B. M. Yang) C. H. Hu.

Culms diffuse, 3–5 m, 1–3 cm in diam.; internodes initially grass-green, yellow when old, cylindrical, 18–20(–26) cm, grooved above branches, glossy, glabrous; wall ca. 3 mm thick; nodes prominent, deciduously brown setose. Culm sheaths light green, slightly lustrous, base light brown setose, otherwise glabrous; ligules truncate or slightly concave, 1–2 mm, margin ciliolate; blade erect or reflexed, green, lanceolate.

Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles and oral setae often absent, rarely 2, short; ligules rounded or truncate, ca. 2 mm, slightly hairy, apex not uniform; pseudopetiole 2–5 mm; blade linear-lanceolate, 12–20 × 1.3–2.2 cm, slightly hairy, secondary veins 5–7-paired, base broadly cuneate, margin serrulate, apex caudate. Inflorescence paniculate, lateral; florets 11–13 per spikelet. Glumes 2–4, apex rounded, beaked; lemma subglabrous, apex acute; palea about as long as lemma, keels ciliolate, apex acuminate; lodicules 3, thick, ± rhomboid, margin ciliolate. Ovary cylindrical; stigmas 2 or 3.

● Mountain slopes; ca. 800 m. Fujian, Jiangxi, Yunnan, Zhejiang.

A plant cultivated in the West under the names *Brachystachyum densiflorum* as well as *P. oleosus* is not in fact this species but an *Oligostachyum*. *Pleioblastus oleosus* is possibly a synonym of *P. maculatus*.

The shoots are edible, and the culms are often used for weaving.

3. Pleioblastus amarus (Keng) P. C. Keng, Techn. Bull. Natl. Forest. Res. Bur. 8: 14. 1948.

苦竹 ku zhu

Culms 3–5 m, 1.5–2 cm in diam.; internodes green or green-purple, spotted, yellow-green when old, cylindrical, 27–29(–38) cm, basally weakly flattened above branches, glabrous or hairy; wall ca. 6 mm thick; nodes prominent; intranode ca. 6 mm. Leafy branchlets sometimes pendulous. Culm sheaths green, densely glaucous, abaxially glabrous or hairy, densely so at base, margins ciliate and apically orange or withered; auricles obscure; ligule truncate, 1–2 mm, densely glaucous, ciliolate; blade narrowly lanceolate, margins serrulate. Leaves 3 or 4 per ultimate branch; sheath straw-colored, glabrous; auricles and oral setae absent; ligule purple-red, ca. 2 mm; pseudopetiole ca. 2 mm; blade elliptic-lanceolate, 4–20 × 2–2.9 cm, secondary veins 4–8-paired, base cuneate, margin serrulate, apex acuminate. Inflorescence racemose or paniculate. Spikelets 3–6, 4–7 cm, glaucous, pedicels hairy; florets 8–13; rachilla internodes 4–5 mm. Glumes 3–5, enlarged upward; lemma ovate-lanceolate; palea longer than lemma, rarely equal in length, ciliate, glaucous and slightly hairy between keels, apex acute. Lodicules 3, ovate or obovate, posterior narrow, apical margins ciliolate. Anthers light yellow. Ovary narrow, glabrous; styles short; stigmas 3. New shoots Apr–Jun, fl. Apr–May.

● Plains to low hills, frequently cultivated. Anhui, Fujian, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

1a. Leafy branchlets pendulous ..... 3b. var. *pendulifolius*
1b. Leafy branchlets not obviously pendulous.
2a. Culm sheaths glabrous or with deciduous white hairs at base ..... 3c. var. *tubatus*
2b. Culm sheaths ± hairy, brown setose at base.
3a. Culms green-purple, purple spotted, densely hairy .... 3d. var. *hangzhouensis*
3b. Culms initially green, yellow-green when old, glaucous, powdery-spotted, glabrous ..... 3a. var. *amarus*

3a. Pleioblastus amarus var. **amarus**

苦竹(原变种) ku zhu (yuan bian zhong)

Arundinaria amara Keng, Sinensia 6(2): 148. 1935; *A. varia* Keng; *Indocalamus varius* (Keng) P. C. Keng; *Pleioblastus brevinodus* W. T. Lin & Z. J. Feng; *P. longqishanensis* N. X. Zhao & Z. Yu Li; *P. amarus* f. *huangshanensis* C. L. Huang; *P. subrectangularis* T. P. Yi & H. Long; *P. varius* (Keng) P. C. Keng; *P. yingdeensis* W. T. Lin & Z. M. Wu.

Culm sheaths ± hairy, brown setose at base. Culms initially greenish, glabrous, glaucous, yellow-green when old, powdery-spotted. Branchlets not obviously pendulous. New shoots Jun, fl. Apr–May.

● Anhui, Fujian, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

The shoots are bitter and inedible. The culms are used for woven baskets and containers, umbrella handles, and furniture.

3b. Pleioblastus amarus var. **pendulifolius** S. Y. Chen, Acta Phytotax. Sin. 21: 413. 1983.

垂枝苦竹 chui zhi ku zhu

Leafy branchlets pendulous. Culm sheaths not glaucous; ligule truncate, slightly concave. New shoots mid–May to early Jun.

● Low hills, slopes. Zhejiang.

This variety is cultivated as an ornamental for its pendulous habit.

3c. Pleioblastus amarus var. **tubatus** T. H. Wen, Bull. Bot. Res., Harbin 3(1): 93. 1983.

胖苦竹 pang ku zhu

Culm sheaths green, glossy, hard, glabrous or nearly so at base, acute at apex, amplexicaul at middle part; auricles oblong, small, transversely extended at both sides of sheath apex, margin uniformly rough ciliate, cilia erect and short; blade rounded at apex.

● Low hills, plains. Zhejiang.

3d. Pleioblastus amarus var. **hangzhouensis** S. L. Chen & S. Y. Chen, Acta Phytotax. Sin. 21: 408. 1983.

杭州苦竹 hang zhou ku zhu

Internodes 28–32(–38) cm; culms green-purple, purple spotted, roughly hairy, hairs dense and inverse. Culm sheath purple-green, glossy, not glaucous; auricles absent; blade linear-lanceolate. New shoots late Apr–May.

● Lowlands, small hills. Zhejiang.

The plants are used for fencing and supporting vegetables and are grown as ornamentals. The culms are not suitable for weaving.

4. Pleioblastus intermedius S. Y. Chen, Acta Phytotax. Sin. 21: 408. 1983.

华丝竹 hua si zhu

Culms 3–4 m, 1–2 cm in diam.; internodes cylindrical but slightly concave at base above branches, 21–22 cm, initially green and densely glaucous, becoming dark green or yellow-green with persistent dark powder, deciduously setose; wall ca. 6 mm thick, pith lamellate; nodes slightly prominent. Culm sheaths gradually deciduous, green, about as long as internodes

or slightly longer, leathery, sparsely setose, margins withered; auricles absent or small and circular; oral setae few, readily deciduous, erect; ligule truncate or arcuate, ca. 2 mm, glaucous, initially ciliolate; blade deflexed or reflexed, shortly triangular, base slightly constricted, apex acuminate. Leaves 3 or 4(–8) per ultimate branch; sheath densely deciduously setose; auricles readily deciduous, falcate; oral setae radiate, purple, ca. 3 mm; ligule prominent, ca. 5 mm; blade lanceolate, 10–23 × (1–)2.5–3.3 cm, secondary veins 7- or 8-paired, abaxially yellow-green and white tomentellate, adaxially light green and glabrous, base asymmetrically cuneate, margins serrulate. Inflorescence unknown. New shoots mid to late May.

● Near streams, roadsides in secondary hardwood forests; 400–800 m. Zhejiang.

The generic placement of this species is rather uncertain as its flowers and branching have not been described. It is similar to *Acidosasa notata* and species of *Pseudosasa* and might be better included within *P. maculifera*.

The shoots are edible, and the culms are used for handicrafts and umbrella handles.

5. Pleioblastus truncatus T. H. Wen, J. Bamboo Res. 3(2): 32. 1984.

尖子竹 jian zi zhu

Culms to 2 m, to 8 mm in diam.; internodes initially green, to 36 cm, initially densely light yellow ciliate; nodes weakly prominent; sheath scar asymmetrical, ciliate. Branches 3–7. Culm sheaths gradually deciduous, brown or green, 1/3–1/2 as long as internode, leathery, white tomentose, sparsely brown setose, margins sometimes withered, apex truncate; auricles absent or falcate; ligule truncate, ciliate; blade erect, lanceolate, base slightly constricted, ca. 1/3 as wide as ligule, apex acuminate. Leaves 1 or 2 per ultimate branch; sheath 4.5–7 cm, apex truncate; auricles absent or short; blade broadly lanceolate, 10–22 × 1.5–3.2 cm, glabrous, secondary veins 7- or 8-paired, asymmetrical especially at base. Inflorescence unknown.

● Zhejiang.

The internodes are long, even, and straight and were often used for arrow shafts.

6. Pleioblastus altiligulatus S. L. Chen & S. Y. Chen, Acta Phytotax. Sin. 21: 407. 1983.

高舌苦竹 gao she ku zhu

Culms 2–5 m, to 1.5 cm in diam.; internodes green, cylindrical, ca. 24 cm, basally slightly concave above branches, smooth, densely glaucous, glabrous, nearly solid, pith lamellate; supra-nodal ridge more elevated than sheath scar. Culm sheaths green, glabrous, margins ciliate; auricles absent; ligules prominent, ca. 3 mm, glaucous; blade pendulous, purple-red at margins and apex, lanceolate, revolute. Leaves 2–4 per ultimate branch; auricles absent; ligule ca. 3.5 mm; blade elliptic-lanceolate, 12–17 × 1.4–2.5 cm, shortly hairy, abaxially pilose proximally and along midrib, secondary veins 5–7-paired, base broadly cuneate, apex acuminate. Inflorescence unknown. New shoots late Apr.

● Slopes, summits; 700–800 m. Fujian, Hunan, Zhejiang.

This species is sometimes considered a synonym of *Pleioblastus amarus*.

The culms are used for tools and fencing.

7. Pleioblastus incarnatus S. L. Chen & G. Y. Sheng, Bull. Bot. Res., Harbin 11(4): 42. 1991.

绿苦竹 lü ku zhu

Culms ca. 3.5 m, to 1.5 cm in diam.; internodes cylindrical, to 35 cm, glabrous, initially densely pruinose, retrorsely setose; nodes densely pruinose, dark gray powdery when old; supra-nodal ridge as elevated as sheath scar, both slightly prominent. Branches 5–7, slightly spreading. Culm sheaths green, margins distally pink, densely pruinose, pale brown setose, margins densely ciliate; auricles and oral setae absent; ligule green, slightly pink, truncate or vaulted, ca. 5 mm, irregularly crazed, densely pruinose, slightly rough, margin sparsely ciliate or not; blade reflexed, green, slightly purple, base slightly constricted, margins serrate, apex acuminate. Leaves 3 or 4 per ultimate branch; sheath setose, margins densely ciliate; auricles inconspicuous or small, rounded or elliptic; oral setae radiate, slightly rough; ligule truncate or vaulted, to 1.5 mm, thin, glabrous or slightly rough; pseudopetiole ca. 4 mm; blade narrowly ovate to elliptically lanceolate, 9–17.5 × 1.4–2.5 cm, abaxially pubescent, glabrescent, adaxially glabrous, secondary veins 5–7-paired, base broadly cuneate or obtusely rounded, margins serrulate or one entire, apex acuminate. Inflorescence unknown. New shoots early May.

● Mountain slopes. Fujian.

8. Pleioblastus maculosoides T. H. Wen, J. Bamboo Res. 3(2): 33. 1984.

丽水苦竹 li shui ku zhu

Culms to 6.5 m, 2–3 cm in diam.; internodes ca. 40 cm, slightly glaucous, apically pilose; nodes slightly prominent; sheath scar initially tomentose. Culm sheaths initially green, brown spotted and setose, bases of setae forming persistent papillae, slightly glaucous, glabrous at base, margins brown ciliate, apex rounded; auricles absent or weak, abaxially brown hairy, scabrous; oral setae absent or occasionally few, erect, short; ligule ca. 8 mm, nearly triangular, thin, glabrous, ciliate; blade reflexed, linear-lanceolate, abaxially brown pubescent at base, margins glabrous. Leaves 3–5 per ultimate branch; sheath smooth, glabrous; auricles and oral setae usually absent, rarely present; ligule triangular, 3–4 mm, thin, glabrous; pseudopetiole ca. 5 mm; blade broadly lanceolate, 12–19 × 1.7–2.3 cm, abaxially pubescent, adaxially glabrous, secondary veins 7- or 8-paired, base rounded, apex acute. Inflorescence unknown.

● Zhejiang (Lishui).

The culms are used for canopies, sheds, flag poles, and mosquito net poles.

This species might be better included within *Pseudosasa maculifera*.

9. Pleioblastus juxianensis T. H. Wen et al., Acta Phytotax. Sin. 21: 409. 1983.

衢县苦竹 qu xian ku zhu

Pleioblastus hsienchuensis T. H. Wen var. *juxianensis* (T. H. Wen et al.) S. L. Chen ex T. G. Liang et al.

Culms to 1.75 m tall, to 1.3 cm in diam., internodes initially green, yellow-green when old, cylindrical, concave above branches, 20–28(–33) cm, slightly glaucous, densely so below sheath scars, glabrous, slightly powdery; wall nearly solid; nodes prominent or swollen; sheath scars slightly prominent. Culm sheaths persistent, green, glaucous, smooth, glabrous, margin brown setose at base, withered; auricles suborbicular, scabrous, roughly ciliate; ligules pale green or withered, truncate or slightly concave, glaucous, margin ciliolate; blade green, narrowly lanceolate, densely hairy, scabrous, apex acuminate. Leaves 3–5 per ultimate branch; sheath smooth, glabrous; auricles dotlike or elliptic, scabrous, ciliate, oral setae straight or curved; ligule arcuate, ca. 1.5 mm, glaucous, ciliolate at apex, leaf blade light green, ovate or elliptic-lanceolate, 12–18 × 2.3–2.6 cm, abaxially scabrous, pilose at base, secondary veins 6- or 7-paired, base rounded, margin serrulate, apex shortly acuminate. Inflorescence unknown. New shoots early May.

● Hills; low elevations. Zhejiang.

This species has also been considered a variety of *Pleioblastus hsienchuensis*, and also as the same taxon as *P. hsienchuensis* var. *subglabratus*.

10. Pleioblastus solidus S. Y. Chen, Acta Phytotax. Sin. 21: 411. 1983.

实心苦竹 shi xin ku zhu

Arundinaria solida (S. Y. Chen) C. S. Chao & G. Y. Yang.

Culms 4–5 m, 1.5–2 cm in diam.; internodes initially green-yellow, cylindrical, slightly concave at base above branches, 24–33 cm, densely ribbed, roughly hairy, black powdery when old, nearly solid; wall thick; nodes prominent, densely black powdery; sheath scars corky. Culm sheath pale green, slightly glaucous, deciduously tomentellate at base and margins; auricles falcate, margins sparsely setose and deciduously ciliate; oral setae light brown; ligules yellow-green, truncate; blade pendulous, linear-lanceolate, often revolute. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles absent; oral setae absent or rarely 1–3, erect, ca. 5 mm; ligule arcuate; blade narrowly lanceolate, 11–18 × 1.7–2.4 cm, abaxially pubescent, secondary veins 5–7-paired, base broadly cuneate, one margin serrulate, other margin nearly entire, apex acuminate or caudate. Inflorescence unknown. New shoots Jun.

● Mountain slopes; ca. 700 m. Jiangsu, Zhejiang.

The culms are heavy, nearly solid, and are often used as supporting poles.

11. Pleioblastus hsienchuensis T. H. Wen, Bull. Bot. Res., Harbin 3(1): 92. 1983.

仙居苦竹 xian ju ku zhu

Culms to 5 m, 2–3 cm in diam.; internodes ca. 30 cm, initially brown hispid, white powdery below nodes; wall thick, cavity narrow; nodes prominent. Culm sheath initially green, glaucous, glabrous or initially sparsely setose, base densely brown crinite or white hairy, margins densely ciliate, apex acute; auricles falcate, subamplexicaul; oral setae erect, 1–1.5 cm; ligules truncate or prominent; blade reflexed at culm base, linear, slightly hairy, margins serrulate. Leaves 3 or 4(or 5) per ultimate branch; sheath obviously striate, ca. 4 cm, glaucous, transverse veinlets distinct; auricles ovate or elliptic; oral setae erect, straight, ca. 1.3 cm; ligules arcuate, 1–4 mm, glaucous, ciliate; petiole 2–5 mm; blade elliptic-lanceolate, 7–16 × 1–2.5 cm, glabrous or abaxially hairy proximally, secondary veins 5- or 6-paired, base rounded, ± oblique, apex acute, extended. Inflorescence unknown. New shoots May–Jun.

● Slopes of hills, plains, roadsides. Zhejiang.

1a. Culm sheaths initially hirsute, base densely brown crinite, leaf ligules ca. 1 mm ..... 11a. var. *hsienchuensis*

1b. Culm sheaths glabrous, base white hairy; leaf ligules 3–4 mm ..... 11b. var. *subglabratus*

11a. Pleioblastus hsienchuensis var. **hsienchuensis**

仙居苦竹(原变种) xian ju ku zhu (yuan bian zhong)

Arundinaria hsienchuensis (T. H. Wen) C. S. Chao & G. Y. Yang.

Culm sheaths initially sparsely hirsute, base densely brown crinite. Leaf ligule ca. 1 mm. New shoots Jun.

● Slopes of hills, plains, roadsides. Zhejiang.

11b. Pleioblastus hsienchuensis var. **subglabratus** (S. Y. Chen) C. S. Chao & G. Y. Yang, J. Bamboo Res. 13(1): 17. 1994.

光箨苦竹 guang tuo ku zhu

Pleioblastus amarus (Keng) P. C. Keng var. *subglabratus* S. Y. Chen, Acta Phytotax. Sin. 21: 413. 1983; *Arundinaria hsienchuensis* var. *subglabrata* (S. Y. Chen) C. S. Chao & G. Y. Yang; *Sinobambusa seminuda* T. H. Wen.

Culm sheaths soon deciduous, glabrous, weakly glaucous, base initially white hairy. Leaf ligules 3–4 mm. New shoots May.

● Slopes of hills, roadsides. Zhejiang.

Pleioblastus juxianensis is possibly another synonym of this variety.

12. Pleioblastus rugatus T. H. Wen & S. Y. Chen, J. Bamboo Res. 1(1): 26. 1982.

皱苦竹 zhou ku zhu

Arundinaria rugata (T. H. Wen & S. Y. Chen) C. S. Chao & G. Y. Yang.

Culms to 5 m, to 2 cm in diam.; internodes ca. 35 cm, apically glaucous; wall thick; nodes weakly prominent; sheath scar pubescent. Culm sheaths rigid, deciduously setose, base woolly, apex acute; auricles falcate; oral setae ca. 8 mm, scabrous; ligule slightly arched or nearly truncate, margin pubescent; blade erect, narrowly triangular, strongly rugose, abaxially sericeous. Leaves 3 or 4 per ultimate branch; sheath glabrous;

auricles and oral setae absent; ligules prominent, ca. 2 mm, glabrous, glaucous; petiole 2–3 mm, glabrous; blade lanceolate or oblong, 11–18 × 1.4–3 cm, often glabrous, secondary veins 5–7-paired, base rounded, apex acute. Spikelets ca. 3 cm; florets 5–7. Glumes 2 or 3; lemma ca. 9 × 3 mm, apex acute; palea slightly longer than lemma, apically hairy, keels and margin ciliolate, 3-veined between keels, 2-veined beside keels; lodicules 3. Ovary glabrous; styles hispidulous; stigmas 3, plumose.

● S Zhejiang.

Pseudosasa aeria and *Sinobambusa urens* T. H. Wen (J. Bamboo Res. 2(1): 59. 1983) are possibly synonyms of this species.

13. Pleioblastus yixingensis S. L. Chen & S. Y. Chen, Acta Phytotax. Sin. 21: 411. 1983.

宜兴苦竹 yi xing ku zhu

Arundinaria yixingensis (S. L. Chen & S. Y. Chen) C. S. Chao & G. Y. Yang.

Culms 3–5 m, 1.2–2 cm in diam.; internodes cylindrical, concave basally above branches, 17–18 cm, initially yellow-green, slightly purple, densely glaucous, dark green and yellow with black powder when old, glabrous; wall ca. 3 mm thick; nodes weakly prominent. Culm sheaths green or yellow, densely glaucous, purple setose, margins ciliate, apex withered; auricles falcate; oral setae purple-red, 5–10 mm, rigid, scabrous; ligules prominent or truncate, 4–5 mm, densely glaucous; blade purple-green, narrow, shortly linear-lanceolate or lanceolate, revolute, densely pubescent, constricted at base, margins serrulate, apex acute. Leaves 4 or 5 per ultimate branch; sheath glabrous; auricles variable in shape; oral setae radiate, straw-colored or purple-red; ligule prominent, ca. 3 mm, densely glaucous; blade elliptic-lanceolate, 13.5–24 × 2–3 cm, abaxially tomentellate and proximally pilose by midrib, adaxially glabrous, secondary veins 6–8-paired, base cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots early May.

● Frequent on low hills. Jiangsu.

14. Pleioblastus wuyishanensis Q. F. Zheng & K. F. Huang, Wuyi Sci. J. 2: 17. 1982.

武夷山苦竹 wu yi shan ku zhu

Culms to 5 m, to 3.5 cm in diam.; internodes cylindrical, to 33 cm, initially densely pruinose, dark powdery when old; wall ca. 7 mm thick; supra-nodal ridge about as high as sheath scar or lower; intranode 5–6 mm. Branches 3–7, erect, subequal, appressed to culm. Culm sheaths yellow-green, about as long as internodes or slightly shorter, leathery, persistently pruinose, nearly glabrous or with weak deciduous purple setae, slightly gray pubescent at base, margins with or without sparse cilia; auricles subcircular or falcate, small; oral setae to ca. 3.5 mm; ligule purple, truncate, ca. 1 mm; blade deflexed or reflexed, lanceolate, 2.5–6 cm, shortly ciliate at base. Leaves 3 or 4 per ultimate branch; sheath glabrous, slightly pruinose; auricles present; oral setae absent; ligule truncate, ca. 1.5 mm; blade lanceolate, 8–14 × 1.5–2.2 cm, secondary veins 5- or 6-paired, one margin serrate, other margin nearly entire. Inflorescence unknown.

● Mountain slopes; ca. 200 m. Fujian.

15. Pleioblastus sanmingensis S. L. Chen & G. Y. Sheng, Bull. Bot. Res., Harbin 11(4): 42. 1991.

三明苦竹 san ming ku zhu

Culms to ca. 5 m, to 3 cm in diam.; internodes terete, 33–40 cm, initially densely pruinose, yellow-brown and unevenly dark gray powdery when old; wall ca. 8 mm thick; supra-nodal ridge more elevated than sheath scar. Branches 3–5. Culm sheaths yellow-brown, densely purple spotted, leathery, base setose, margins yellow-white, shortly ciliate; auricles purple, ovate or elliptic, large, densely ciliate; oral setae radiate, brown, thick; ligule vaulted, purple, ca. 1 cm, glabrous or pubescent, not ciliate, asymmetrical at apex; blade reflexed or pendulous, green, linear-lanceolate, base pubescent and slightly constricted, margins serrulate, apex acuminate. Leaves 3 or 4 per ultimate branch; sheath usually glabrous, thinly glaucous; auricles purple, ovate or elliptical; oral setae radiating, robust, 3–8 mm; ligule vaulted, 2–3.5 mm; blade rhombic-lanceolate, 9–25 × 1.5–3 cm, glabrous, secondary veins 6–8(or 9)-paired, base cuneate, one margin densely serrulate, other margin sparsely serrate, apex acuminate. Inflorescence unknown. New shoots early May.

● Often in dense pure bamboo forests on mountain slopes. Fujian (Sanming).

16. Pleioblastus fortunei (Van Houtte) Nakai, J. Jap. Bot. 9(4): 232. 1933.

菲白竹 fei bai zhu

Bambusa fortunei Van Houtte, Fl. Serr. Jard. 15: 69. 1863; *Arundinaria fortunei* (Van Houtte) Rivière & C. Rivière; *A. variabilis* Makino ex Vilmorin var. *fortunei* (Van Houtte) J. Houzeau; *Bambusa picta* Siebold & Zuccarini ex Munro; *B. pygmaea* Miquel; *B. variegata* Siebold ex Miquel; *Nipponocalamus pygmaeus* (Miquel) Nakai; *Pleioblastus pygmaeus* (Miquel) Nakai; *P. variegatus* (Siebold ex Miquel) Makino; *Sasa fortunei* (Van Houtte) Fiori; *S. pygmaea* (Miquel.) Rehder; *S. variegata* (Siebold ex Miquel) E. G. Camus.

Culms 10–30(–80) cm, 1–2 mm in diam.; internodes short, glabrous; nodal ridge flat or weakly prominent. Branches absent or 1 per node. Culm sheaths persistent, glabrous. Leaves 4–7 per culm or branch; sheath glabrous; auricles absent; oral setae white, smooth; blade longitudinally white to pale yellow striped, lanceolate, 6–15 × 0.8–1.4 cm, white pubescent, more densely so abaxially, base broadly cuneate, apex acuminate.

Cultivated for ornamental purposes. Jiangsu, Zhejiang; probably in other provinces [native to Japan].

Flowering of this species in Brazil in 1979 confirmed the presence of 3 stamens, hence its placement in *Pleioblastus* rather than *Sasa*, where it has usually been placed in Chinese literature.

17. Pleioblastus distichus (Mitford) Nakai, Rika Kyoiku [Sci. Educ. (Tokyo)] 15(6): 69. 1932.

无毛翠竹 wu mao cui zhu

Bambusa disticha Mitford, Garden (London) 46: 547. 1894; *Arundinaria pygmaea* var. *disticha* (Mitford) C. S. Chao & S. A. Renvoize; *A. variabilis* Makino ex Vilmorin var. *disticha* (Mitford) J. Houzeau; *Pleioblastus pygmaeus* var. *distichus* (Mitford) Nakai; *Sasa disticha* (Mitford) E. G. Camus; *S. pygmaea* var. *disticha* (Mitford) C. S. Chao & G. G. Tang.

Culms 20–40 cm, 1–2 mm in diam.; internodes glabrous; nodes glabrous or sometimes sheath scar pilose. Culm sheaths glabrous. Leaves 5–8 per branch, closely spaced, distichous; auricles absent; oral setae white, smooth; blade erect, lanceolate, 3–7 × 0.3–0.8 cm, rather rigid, glabrous.

Cultivated for ornamental purposes. Jiangsu, Zhejiang [native to Japan].

The miniature cultivar grown in China differs from the type in its smaller stature and glabrous culm sheath nodes. Earlier applications of the name *Bambusa pygmaea* to this species were in error. Flowering of plants cultivated in the United Kingdom around 1970 demonstrated the presence of 3 stamens, hence its placement in *Pleioblastus* rather than *Sasa*, where it has usually been placed in Chinese literature.

25. OLIGOSTACHYUM Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1982(1): 95. 1982 [*"Oligostacyum"*].

少穗竹属 shao sui zhu shu

Wang Zhengping (王正平 Wang Cheng-ping); Chris Stapleton

Clavinodum T. H. Wen.

Shrubby to arborescent bamboos. Rhizomes leptomorph, with running underground stems. Culms diffuse, sometimes clustering; internodes not terete, flattened above branches; nodes ± elevated; intranode (3–)5 mm. Culm sheaths caducous or tardily deciduous, rarely persistent, leathery or papery; auricles and oral setae absent or sometimes weakly developed; blade spreading or reflexed, sometimes erect. Branches 3(–7) at each node in midculm, spreading. Leaf auricles and oral setae absent or weakly developed; blade small, transverse veins distinct. Inflorescence a raceme with 2 or 3(–6) spikelets, rarely a panicle with many spikelets, peduncle, axis, branches, and pedicels slender, glabrous, scabrous or pubescent along longitudinal angles, branches usually subtended by a scaly bract at base. Spikelets ± compressed at maturity, several to many florets; rachilla disarticulating below fertile florets, extended beyond palea of uppermost floret, internodes flattened or concave on side facing floret. Glumes (1–)3(–5), transitional with basal, sterile lemmas; lemma 7- to many veined, abaxially commonly puberulent and with distinct tessellation, adaxially slightly scabrous with minute setulae, apex acuminate with an awnlike point; palea conspicuously smaller than lemma or equaling in length but much narrower in upper florets, abaxially minutely setulate, 2-keeled, 2–4-veined between and beside keels, apex obtuse or emarginate; lodicules 3, membranous with thickened lower portion, 5–7-veined, margins ciliate, anterior pair of lodicules usually asymmetrical. Stamens 3 or 4(or 5). Ovary glabrous; style 1; stigmas (2 or)3, plumose.

● At least 15 species: China.

Oligostachyum is similar to *Acidosasa*, from which it differs in having florets with no more than 5 stamens.

1a. Culm internodes obclavate, lower ones gradually thickened downward; midculm branches 3–7 per node, subequal in diam. ..... 1. *O. oedogonatum*
1b. Culm internodes of culm cylindrical, not thickened, midculm branches 3 per node, or if more than 3, then conspicuously unequal in diam.
2a. Culm internodes pitted (like pigskin) below nodes; fertile lemma 15- or 16-veined ..... 15. *O. puberulum*
2b. Culm internodes not pitted; fertile lemma where known 7–15-veined.
3a. Culm sheaths dark brown or straw-colored with gray-black upper margins when dry; leaf sheath ligule more than 2 mm.
4a. Culm sheath apically rounded; blade lanceolate or narrowly lanceolate, base tapered ..... 2. *O. lanceolatum*
4b. Culm sheath apically triangular; blade triangular, triangular-lanceolate, or linear-lanceolate, base not or only weakly tapered.
5a. Culm sheath blade deciduous, both surfaces pubescent toward base; culm sheath ligule glabrous or white ciliolate ..... 3. *O. hupehense*
5b. Culm sheath blade persistent, both surfaces glabrous or hirtellous; culm sheath ligule long brown ciliate ..... 4. *O. spongiosum*
3b. Culm sheaths uniformly straw-colored when dry; leaf sheath ligule less than 2 mm.
6a. Basal culm sheaths with longitudinal spots or streaks ..... 5. *O. scabriflorum*
6b. Culm sheaths without spots.
7a. Culm sheath blade narrow, narrowly linear or linear-lanceolate; culm sheath auricles absent.
8a. Leaf blade usually more than 1.2 cm wide, length less than 10 × width ..... 11. *O. gracilipes*
8b. Leaf blade less than 1.2 cm wide, or rarely broader, length ca. 14 × width or more.
9a. Leaf sheath ligule to 1.5 mm, prominently exserted; culm sheaths glabrous ..... 14. *O. paniculatum*
9b. Leaf sheath ligule short, not or slightly exserted, culm sheaths strigose.

10a. Culm sheath apically 2-lobed; culms ca. 0.8 cm in diam., internodes 8–12 cm ..... 12. *O. bilobum*
10b. Culm sheath apically truncate; culms 2–3 cm in diam., internodes ca. 25 cm ..... 13. *O. nuspiculum*
7b. Culm sheath blade broad, lanceolate, triangular-lanceolate, or linear-lanceolate; culm sheath auricles present or absent.
11a. Leaf blade linear or linear-lanceolate; culm sheaths glabrous ..... 14. *O. paniculatum*
11b. Leaf blade lanceolate or elliptic-lanceolate, rarely linear-lanceolate; culm sheaths hairy.
12a. Culm sheaths centrally glabrous.
13a. Culm sheaths pubescent at base only; culm sheath and leaf sheath auricles usually present, oral setae developed; culm sheath blade glabrous on both surfaces ..... 6. *O. glabrescens*
13b. Culm sheaths hairy basally, along both sides, and apically; auricles absent, oral setae not developed, culm sheath blade hirtellous on both surfaces ..... 7. *O. scopulum*
12b. Culm sheaths uniformly setose or strigose.
14a. Culm sheaths without auricles and oral setae, uniformly thickly white powdery ..... 8. *O. sulcatum*
14b. Culm sheaths with small auricles and developed oral setae, without powder or powdery only below nodes when young.
15a. Culm internodes setulose, white powdery below nodes and gray-green with minute, purple speckles when young ..... 9. *O. shiuyingianum*
15b. Culm internodes glabrous, not white powdery, uniformly green when young ..... 10. *O. lubricum*

1. Oligostachyum oedogonatum (Z. P. Wang & G. H. Ye) Q. F. Zheng & K. F. Huang, Wuyi Sci. J. 2: 92. 1982.

肿节少穗竹 zhong jie shao sui zhu

Pleioblastus oedogonatus Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(1): 96. 1981; *Arundinaria oedogonata* (Z. P. Wang & G. H. Ye) G. Y. Yang & C. S. Chao; *Clavinodum oedogonatum* (Z. P. Wang & G. H. Ye) T. H. Wen; *Indosasa curviaurita* B. M. Yang.

Culms ca. 4.5 m, ca. 0.8 cm in diam.; internodes initially dull green becoming gray-green, sometimes with minute dark purple dots, to 33 cm, basally swollen, white powdery, glabrous; supra-nodal ridge strongly elevated, much more prominent than slightly elevated sheath scar. Branches (3–)5(–7) per node, horizontally spreading, subequal in diam. Culm sheaths purple-green, basally, marginally, and apically dark purple, thinly white powdery, lower and middle culm sheaths rather densely strigose; auricles deciduous, deep purple, small; oral setae 3–5, purple; ligule subtruncate, ca. 3 mm, margins subglabrous; blade erect or spreading, deep purple, lanceolate to linear. Leaves 2 or 3 per ultimate branch; sheath glabrous throughout; auricles deciduous, deep purple, narrowly falcate; oral setae several; ligule arcuate, ca. 2 mm, margin subglabrous; blade linear-lanceolate, 13–25 × 0.7–3.9 cm, both surfaces glabrous, secondary veins 5–8-paired. Racemes 4–6 cm, with 2 or 3 spikelets; peduncles slender, enclosed by sheathlike bracts, bracts gradually larger; axis slender, glabrous; pedicels ca. 1.5 cm, slender, glabrous or sometimes sparsely pubescent, angles slightly scabrous. Spikelets 1.5–5 cm; florets several to many. Rachilla readily disarticulating below fertile florets, internodes 2–3.5 mm, angles and apex ciliate. Glumes 1–3, first small, second and third resembling lemma, ca. 1.1 cm, 7–9-veined; lemma 1.3–1.6 cm, 7–11-veined, hirtellous, margins ciliate, apex acuminate with an awnlike point; palea 8–10 mm, keels rigidly ciliate in upper 2/3, apex obtuse or emarginate; lodicules 3. Stamens 3(–5); anthers 4–5 mm. Style 1; stigmas 3. New shoots May, fl. Apr–May.

● Open forests on slopes; below 1500 m. S Zhejiang (N Wuyi Shan)

2. Oligostachyum lanceolatum G. H. Ye & Z. P. Wang, J. Nanjing Univ., Nat. Sci. Ed. 24(1): 163. 1988 [*"laneolatum"*].

云和少穗竹 yun he shao sui zhu

Culms ca. 4.5 m, 2–3 cm in diam.; internodes purple-green, to 26 cm, weakly grooved above branches, initially with a white powdery ring below nodes, glabrous; nodes elevated, supra-nodal ridge equaling sheath scar or slightly more prominent; intranode ca. 3 mm. Culm sheaths dull green, with yellow-green streaks and purple ciliate margins when fresh, becoming pale brown with gray-black margins in upper part, upper 2/3 with brown or pale brown strigose hairs or striae and with brown papillae left by fallen hairs; auricles and oral setae absent; ligule arcuate, glabrous, margin weakly sinuous; blade erect to reflexed, deep green with purple apex, narrowly lanceolate, both ends gradually narrowed, margins ciliate, otherwise glabrous. Leaves (1 or)2 or 3(or 4) per ultimate branch; sheath entirely glabrous; auricles and oral setae absent; ligule arcuate or truncate, 1.5–2.5 mm; blade to 16 × 1.5 cm, abaxially puberulent, adaxially glabrous. Inflorescence unknown. New shoots Apr.

● Roadsides; ca. 500 m. Zhejiang.

3. Oligostachyum hupehense (J. L. Lu) Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 24(1): 164. 1988.

凤竹 feng zhu

Pleioblastus hupehensis J. L. Lu, J. Henan Agric. Coll. 1981(2): 73. 1981; *Arundinaria hupehensis* (J. L. Lu) C. S. Chao & G. Y. Yang; *Sinobambusa acutiligulata* W. T. Lin.

Culms ca. 5.5 m, 1–2.5 cm in diam.; internodes green-purple, to 23 cm, initially retrorsely white setulose; wall ca. 3 mm thick; nodes elevated, supra-nodal ridge more prominent than sheath scar; sheath scar with persistent base of sheath and

deciduous ring of hairs. Culm sheaths deciduous, purple-green when fresh, pale brown when dry, papery, strigose, densely retrorsely puberulent at base, margins brown ciliate; auricles and oral setae absent; ligule pale brown, arcuate, abaxially hispidulous, white ciliolate; blade deciduous with articulate base, erect, narrowly triangular to linear-lanceolate, both surfaces pubescent especially toward base, margins brown ciliate. Leaves 1–3 per ultimate branch; sheath pubescent especially on upper part; ligule 1–3 mm, puberulent; blade oblong-lanceolate, 6–15 × 0.6–1.6 cm, glabrous or abaxially pilose at base of midvein. Racemes with 2 or 3(–5) spikelets; peduncle and sometimes lower branches enclosed by sheathlike bracts; pedicel slender, pubescent, subtended by a subulate bract. Spikelets 1.4–3.5 cm; florets 3–7; rachilla internodes ca. 4 mm, ciliate. Glumes 2 or 3, 1st small, 7–9-veined, 2nd and 3rd resembling lemma; lemma ca. 1.2 cm, scabrid, white pubescent, upper margins ciliate; palea ca. 4 mm, keels sparsely ciliate, apex obtuse or arcuate, sometimes emarginate; lodicules 3, several veined, margin ciliolate, posterior one smaller. Stigmas 3. New shoots late Apr, fl. early Apr.

● Hubei.

4. Oligostachyum spongiosum (C. D. Chu & C. S. Chao) G. H. Ye & Z. P. Wang, Fl. Reipubl. Popularis Sin. 9(1): 575. 1996.

斗竹 dou zhu

Arundinaria spongiosa C. D. Chu & C. S. Chao, J. Nanjing Technol. Coll. Forest Prod. 1981(3): 33. 1981; *Acidosasa bilamina* W. T. Lin & Z. M. Wu; *Pleioblastus altiligulatus* var. *spongiosus* B. M. Yang; *Sinobambusa anaurita* T. H. Wen.

Culms to 10 m, 4–6 cm in diam.; internodes green, becoming yellow-green, 20–40 cm, weakly grooved above branches, white powdery especially below nodes, glabrous, pith spongy; nodes elevated. Culm sheaths red-brown when fresh, gray-brown when dry, apex triangularly attenuated, strewn with brown strigose hairs or later with striae, base densely setose and hirtellous, margins brown setose; auricles absent; oral setae absent or rarely weakly developed; ligule arcuate, ca. 1 mm, ciliate; blade persistent, erect, narrowly triangular or triangular-lanceolate, faintly crinkled, base nearly as broad or slightly narrower than apex of culm sheath. Leaves 3–5 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule 2–2.5 mm; blade lanceolate or linear-lanceolate, 9–17 × 1–2 cm, glabrous. New shoots May.

● Broad-leaved forests, forest margins; below 800 m. Guangxi.

5. Oligostachyum scabriflorum (McClure) Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1982(1): 98. 1982.

糙花少穗竹 cao hua shao sui zhu

Culms to 7 m, ca. 4 cm in diam.; internodes dark green, with purple markings, to 40 cm or more, initially white powdery below nodes, glabrous or pubescent; nodes weakly elevated, supra-nodal ridge as prominent as sheath scar or more prominent in slender culms. Culm sheaths yellow-green or green in smaller shoots, distally laterally straw-colored, with irregular, longitudinal, brown spots and streaks at lower nodes, these diminishing in mid-culm and absent in upper culm; auricles and oral setae absent; ligule purple, arcuate or convex, to ca. 5 mm, puberulent, ciliate; blade reflexed, usually purple-tinged, lanceolate to linear-lanceolate, contracted at base. Leaves (1 or)2 or 3(–5) per ultimate branch; sheath glabrous; ligule obliquely arcuate or oblique, to ca. 2 mm, glabrous or puberulent, entire or ciliate; blade oblong-lanceolate or linear-lanceolate, to 15 × 1.9 cm, abaxially glaucous or gray-green and puberulent or glabrous, adaxially deep green and glabrous. Racemes 6–12(–16) cm, with (1 or)2 or 3(–6) spikelets; peduncle and lower branches enclosed by sheathlike bracts or slightly exserted; pedicels 5–8 mm, slender, glabrous, subtended by a minute, membranous bract. Spikelets linear or linear-lanceolate, to 8 cm; florets several to many; rachilla internodes 4–5 mm, compressed, apex puberulent. Glumes 3, 1st much smaller, 5–9-veined, 2nd and 3rd resembling lemmas but slightly smaller; lemma 1–2 cm, 11–15-veined, transverse veins abaxially distinct, scabrid, proximally pubescent, apex acuminate with a subulate or short awnlike point; palea abaxially scabrid, usually pubescent, inconspicuously 2–4-veined between keels and on each flank, apex obtuse or emarginate; keels distally distinct, glabrous or distally sparsely ciliolate, extending into subapical mucros; lodicules 3, narrowly rhomboid-ovate or lanceolate, ca. 4 mm. Stamens 3; anthers ca. 7 mm. Style slender; stigmas 3. New shoots and fl. May.

● Forests on slopes of hills; below 1100 m. Fujian, Guangdong, Guangxi, S Hunan, S Jiangxi.

1a. Culm sheath ligule 2–5 mm; leaf sheath ligule 1–2 mm, glabrous ..... 5a. var. *scabriflorum*
1b. Culm sheath ligule less than 1 mm; leaf sheath ligule less than 1 mm, hirtellous ..... 5b. var. *breviligulatum*

5a. Oligostachyum scabriflorum var. **scabriflorum**

糙花少穗竹(原变种) cao hua shao sui zhu (yuan bian zhong)

Semiarundinaria scabriflora McClure, Lingnan Univ. Sci. Bull. 9: 52. 1940; *Acidosasa heterolodicula* (W. T. Lin & Z. J. Feng) W. T. Lin; *A. macula* W. T. Lin & Z. M. Wu; *Arundinaria heterolodicula* (W. T. Lin & Z. J. Feng) W. T. Lin; *A. maculosa* C. D. Chu & C. S. Chao; *A. scabriflora* (McClure) C. D. Chu & C. S. Chao; *Indosasa angustifolia* W. T. Lin; *I. macula* W. T. Lin & Z. M. Wu; ?*I. pusilloaurita* W. T. Lin; *I. suavis* W. T. Lin & Z. J. Feng; *I. truncata* B. M. Yang; *Oligostachyum fujianense* Z. P. Wang & G. H. Ye; *O. heterolodiculum* W. T. Lin & Z. J. Feng; *Pleioblastus ruyuanensis* W. T. Lin & Z. J. Feng; *Pseudosasa flexuosa* T. P. Yi & X. M. Zhou; *Sinobambusa exaurita* W. T. Lin; *S. sulcata* W. T. Lin & Z. M. Wu.

Culm sheath ligule 2–5 mm, glabrous; leaf sheath ligule 1–2 mm.

● Forested slopes; below 1100 m. Fujian, Guangdong, Guangxi, S Hunan, S Jiangxi.

5b. Oligostachyum scabriflorum var. **breviligulatum** Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 24(1): 164. 1988.

短舌少穗竹 duan she shao sui zhu

Arundinaria maculosa var. *breviligulata* (Z. P. Wang & G. H. Ye) C. S. Chao & G. Y. Yang; *Indosasa breviligulata* W. T. Lin & Z. M. Wu.

Both culm sheath and leaf sheath with ligule less than 1 mm; leaf sheath ligule minutely hairy at base.

● Forested slopes; ca. 500 m. Guangdong.

6. Oligostachyum glabrescens (T. H. Wen) P. C. Keng & Z. P. Wang, J. Nanjing Univ., Nat. Sci. Ed. 26(3): 488. 1990 [*"glabreceus"*].

屏南少穗竹 ping nan shao sui zhu

Sinobambusa glabrescens T. H. Wen, J. Bamboo Res. 1(2): 20. 1982.

Culms ca. 2 m or more, ca. 1 cm in diam.; internodes lower 1/2 flattened above branches, green, ca. 30 cm, initially with a white powdery ring below nodes; supra-nodal ridge weakly elevated; sheath scar flat, initially pubescent. Culm sheaths light green, glabrous except at base; auricles absent or small; oral setae 2 or 3, short; ligule ca. 1 mm, initially ciliolate; blade usually reflexed, lanceolate or linear-lanceolate. Leaves 3 or 4 per ultimate branch; sheath glabrous, margins densely ciliate; auricles spreading, green, small; oral setae 2 or 3; ligule ca. 1 mm, puberulent; blade lanceolate, 9–11 × 1.1–1.5 cm, abaxially puberulent, adaxially glabrous. Racemes initially terminating leafy branches, peduncle and base of inflorescence enclosed by leaf sheaths; axis and pedicels glabrous or scabrid along angles. Spikelets linear, 4–7 × ca. 0.5 cm; florets 5–11, lower 2 or 3 sometimes sterile. Glumes 2 or 3, thinner than lemma, initially pubescent, 1st small, 5–7-veined, 2nd and 3rd larger, 9–11-veined; lemma 11–14 × ca. 3 mm, scabrid, initially pubescent, transverse veins distinct, apex acuminate or mucronate; lodicules membranous, thickened at base, 5–7-veined. Stamens 3; anthers yellow, ca. 5 mm. Style short; stigmas 3. New shoots May, fl. Jun.

● Roadsides; ca. 900 m. Fujian.

7. Oligostachyum scopulum (McClure) Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1982(1): 98. 1982.

毛秿少穗竹 mao fu shao sui zhu

Semiarundinaria scopula McClure, Lingnan Univ. Sci. Bull. 9: 53. 1940; *Arundinaria scopula* (McClure) C. D. Chu & C. S. Chao.

Culms to 5 m, ca. 1.5 cm in diam.; internodes initially with a white powdery ring below node, pubescent, becoming glabrous; nodes moderately elevated. Culm sheaths tardily deciduous, base retrorsely hirtellous, apex and both sides strigose or with striae and papillae left by fallen hairs; auricles and oral setae absent; ligule truncate or weakly concave, 1–2 mm, hirtellous, apically ciliate or entire; blade deciduous, erect or reflexed, lanceolate, both surfaces introrsely hirtellous. Leaves 5–9 per ultimate branch; sheath glabrous or subglabrous; auricles and oral setae absent; ligule truncate, less than 1.5 mm, scabrous; blade oblong-lanceolate, 5.5–17 × 0.8–2.1 cm, both surfaces subglabrous. Racemes or panicles initially terminal to leafy branches, later lateral at lower nodes, with 2–5 spikelets; peduncles slender, lower 2/3 enclosed by sheathlike bracts in lateral inflorescences; pedicels 5–14 mm, slender, glabrous or partly hirsute or hispid along angles. Spikelets 4(–7) × ca. 0.2 cm; florets 6–8; rachilla internodes ca. 1/2 as long as lemma, apex ciliate. Glumes 3 to several, 1st small, others gradually larger; sterile lemmas 1 to several, small, resembling glumes, embracing a small palea; fertile lemmas ca. 7.5(–9) mm, veins inconspicuous, apex acuminate; palea smaller than or about as long as lemma in spikelet center, longer in distal florets, but always narrower than lemma, apex obtuse, keels densely long ciliate; lodicules 2–3 mm. Stamens 3. Stigmas (2 or)3(or 4).

● Open forests in rocky valleys; ca. 1000 m. Hainan.

8. Oligostachyum sulcatum Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1982(1): 96. 1982.

少穗竹 shao sui zhu

Sinobambusa parvifolia T. H. Wen & S. Y. Chen, J. Bamboo Res. 6(3): 31. 1987; *Arundinaria sulcata* (Z. P. Wang & G. H. Ye) C. S. Chao & G. Y. Yang.

Culms to 12 m, ca. 6.2 cm in diam.; internodes initially purple-green, to 37.5 cm, initially white powdery, basally or completely grooved above branches; nodes weakly developed, supra-nodal ridge slightly more prominent than sheath scar. Culm sheaths yellow-green, glabrous, white powdery and densely brown strigose, especially densely so at base, margins ciliate in lower culm; auricles and oral setae absent; ligule ca. 3.5 mm, convex at middle, glabrous, ciliate; blade erect or spreading, purple-green, triangular-ovate to linear-lanceolate, proximally contracted. Leaves 2 or 3 per ultimate branch; sheath entirely glabrous; auricles and oral setae absent; ligule arcuate, 1–1.5 mm, ciliolate; blade linear-lanceolate, 9–16 × 0.9–1.5 cm. Racemes consisting of 2 or 3(–6) spikelets; peduncle slender, basally enclosed by sheathlike bracts, axis slender, glabrous; pedicels 1–1.5 cm, slender, glabrous. Spikelets lanceolate to linear-lanceolate, 15–37 × 1.5–3 mm; florets 3–7. Rachilla internodes 4–5 mm, flattened on side facing floret, sparsely ciliolate along margins. Glumes usually 2, first small with inconspicuous veins, second 7–10 mm, 7-veined; lemma 1.1–1.3 cm, scabrous, 9–15-veined, adaxially transverse veins distinct, apex acuminate; palea 7–10 mm, keels ciliate, apex obtuse; lodicules 3, several veined, ciliate. Stamens 3 or 4. Style 1; stigmas 3, plumose. New shoots May, fl. Apr–May.

● Forests; ca. 800 m. Fujian; cultivated in Zhejiang.

9. Oligostachyum shiuyingianum (L. C. Chia & But) G. H. Ye & Z. P. Wang, J. Nanjing Univ., Nat. Sci. Ed. 26(3): 486. 1990.

秀英竹 xiu ying zhu

Arundinaria shiuyingiana L. C. Chia & But, Kew Bull. 37: 591. 1983.

Culms 4–6 m, 1–2 cm in diam.; internodes gray-green, usually with purple speckles, initially usually white powdery below nodes and sparsely setulose; nodes elevated, supra-nodal ridge more prominent than sheath scar. Culm sheaths yellow-green with purple-green base, brown strigose, margins ciliate; auricles small; oral setae 2 to several; ligule truncate, ca. 1 mm, white ciliate; blade erect, brown-green, ovate-lanceolate or lanceolate, base ca. 1/2 as wide as apex of culm sheath. Leaves 5–

9 per flowering branch; sheath with purple speckles, glabrous; auricles not developed; oral setae 2 or 3; ligule purple, truncate, 0.5–1 mm, weakly exserted, hairy; blade 12–20 × 0.8–1.3 cm, both surfaces glabrous, abaxially transverse veins distinct, rectangular. Racemes or small panicles with 2–4 spikelets, partially exserted from leaf sheaths; axis and branches slender, glabrous or branches sparsely hirtellous along angles. Spikelets lanceolate, 3–8 × ca. 0.5 cm; florets 5–15. Glumes 2, 1st smaller, 8–9 mm; lemma purple speckled, 1.7–2 cm, deciduously pubescent, apex with mucro 2–3 mm; palea 1.2–1.4 cm, pubescent, keels sparsely ciliolate, apex obtuse, thickly hairy; lodicules 3. Stamens 3. Style 1; stigmas 3.

● Partially shaded slopes of hills; below 100 m. Hainan, Hong Kong.

10. Oligostachyum lubricum (T. H. Wen) P. C. Keng, J. Nanjing Univ., Nat. Sci. Ed. 22(3): 415. 1986.

四季竹 si ji zhu

Semiarundinaria lubrica T. H. Wen, J. Bamboo Res. 2(1): 64. 1983; *Arundinaria lubrica* (T. H. Wen) C. S. Chao & G. Y. Yang.

Culms ca. 5 m, ca. 2 cm in diam.; internodes green, ca. 30 cm, basally flattened above branches, without powder, glabrous. Culm sheaths green, sparsely white or yellow hairy or with imprints and brown papillae from fallen hairs, margins white ciliate; auricles purple or brown, ovate or rarely falcate; oral setae erect, flexuose; ligule purple, truncate, ca. 1.5 mm, margin purple ciliate; blade green, broadly lanceolate, margins ciliate, base contracted, apex acuminate. Leaves 3 or 4 per ultimate branch; sheath pubescent; auricles purple; oral setae usually developed; ligule purple, arcuate or truncate; blade linear-lanceolate, 10–15 × 1.5–2.5 cm, both surfaces glabrous or abaxially scabrous, secondary veins 6-paired, transverse veins distinct. Racemes with 1–4 spikelets; peduncle and branches partially exserted from sheathlike bracts with small blades; axes glabrous. Spikelets to 6 cm, compressed; florets 4–9, lowest one sterile with a lemma enclosing a very small palea. Glumes 1 or 2, 1st 5–8 mm, inconspicuously 5–9-veined, apex and midvein puberulent, 2nd longer, 7–11-veined; lemma purple-red, 1.6–1.8 cm, abaxially initially scabrid and pubescent, adaxially distally puberulent, 11–13-veined; palea keels long ciliate, apex obtuse or emarginate, 5-veined between keels, each flank 4-veined; lodicules 3, upper part membranous, margins ciliate. Stamens 3; anthers yellow, ca. 4 mm. Stigmas 2. New shoots May–Oct, fl. May.

● 400–500 m. Fujian, Jiangxi, Zhejiang.

11. Oligostachyum gracilipes (McClure) G. H. Ye & Z. P. Wang, J. Nanjing Univ., Nat. Sci. Ed. 26(3): 488. 1990.

细柄少穗竹 xi bing shao sui zhu

Semiarundinaria gracilipes McClure, Lingnan Univ. Sci. Bull. 9: 47. 1940; *Arundinaria gracilipes* (McClure) C. D. Chu & C. S. Chao; *Clavinodum globinodum* (C. H. Hu) P. C. Keng; *Pleioblastus globinodus* C. H. Hu.

Culms ca. 2 m, ca. 1 cm in diam.; internodes sometimes becoming purplish in age, initially with a white powdery ring below node, apically retrorsely white pubescent; nodes elevated, supra-nodal ridge more prominent than sheath scar; intranode ca. 5 mm. Culm sheaths tardily deciduous or nearly persistent, purple-green, strigose or with papillae from fallen hairs between veins, base thickened and densely setulose, margins ciliate; auricles and oral setae absent; ligule truncate or arcuate, usually ca. 2 mm, puberulent, ciliate; blade deciduous, erect to reflexed, usually linear-lanceolate to linear. Leaves 3–5 or rarely more per ultimate branch; sheath glabrous or ciliate along distal margins; auricles absent; oral setae absent or several, erect; ligule truncate or arcuate, to 1 mm, hirtellous, ± ciliolate; blade oblong-lanceolate, ca. 20 × 2 cm, both surfaces glabrous, abaxially scabrid. Racemes with 3–5 spikelets; pedicels slender, setulose along angles, subtended by a small, subulate bract. Spikelets 4–6 cm; florets many; rachilla internodes ca. 1/2 as long as lemma, abaxially densely antrorsely pubescent, apex ciliate. Glumes and sterile lemmas 3 or 4 or more, distinctly smaller than fertile lemma, 1st small, others gradually larger; lemma to 1.4 cm, many veined, abaxially scabrid, margins distally ciliate, apex mucronate; palea much smaller than lemma in lower and middle florets or nearly equaling in upper florets, keels densely ciliate, abaxially pubescent, apex obtuse or acute, exceeding keels; lodicules ca. 4 mm. Stamens 3; anthers 5–6 mm. Styles 3. New shoots Apr–May, fl. May.

● Mountain slopes; 600–700 m. Hainan.

12. Oligostachyum bilobum W. T. Lin & Z. J. Feng, J. Bamboo Res. 13(2): 23. 1994.

裂舌少穗竹 lie she shao sui zhu

Culms 1–1.5 m, to 0.8 cm in diam.; internodes 8–12 cm; nodes elevated, nodal ridge more prominent than sheath scar; intranode 2–3 mm. Branches 3 per node. Culm sheath green, sparsely strigose or with papillae left by fallen hairs, apex 2-lobed; auricles absent; oral setae absent or few, erect; ligule 0.5–1 mm; blade deciduous, narrowly linear. Leaves 3 per ultimate branch; sheath glabrous; auricles present; oral setae absent or few; ligule short, hirtellous; blade linear to linear-lanceolate, to ca. 18 × 0.5–1 cm, sometimes broader, both surfaces glabrous. Racemes with 4 or 5 spikelets; peduncle slender, glabrous; axis and pedicels slender, glabrous; pedicels 1–1.5 mm, sometimes subtended by a small, membranous bract. Spikelets initially purplish, linear-lanceolate, to 7 cm; florets many; rachilla internodes 4.5–6 mm, apex ciliate. Glumes 2–4, gradually larger, uppermost one similar to lemma but slightly smaller; lemma ca. 1.5 cm, 13–15-veined, transverse veins adaxially distinct, apex acuminate, mucronate; palea much smaller than lemma, keels distally ciliate, apex obtuse or acute, exceeding keels; lodicules 3, anterior pair obliquely lanceolate, 5–9-veined, apex ciliolate. Stamens 3; anthers ca. 4 mm. Style shortly 3-fid. New shoots and fr. Apr–May.

● Forested slopes; 500–1500 m. Guangdong.

13. Oligostachyum nuspiculum (McClure) Z. P. Wang & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1982(1): 98. 1982.

林仔竹 lin zi zhu

Semiarundinaria nuspicula McClure, Lingnan Univ., Sci.

Bull. No. 9: 50. 1940; *Arundinaria lima* (McClure) C. D. Chu & C. S. Chao; *A. nuspicula* (McClure) C. D. Chu & C. S. Chao; *Oligostachyum lima* (McClure) Demoly; *S. lima* McClure.

Culms ca. 4 m, 2–3 cm in diam.; internodes ca. 25 cm; nodes elevated, supra-nodal ridge more prominent than sheath scar; intranode ca. 5 mm. Culm sheaths green, sparsely strigose or with papillae left by fallen hairs; auricles absent; oral setae absent or few, erect; ligule arcuate, ca. 2 mm or very short, hirtellous, margin ciliate; blade deciduous, narrowly linear. Leaves (1 or)2 or 3(or 4) per ultimate branch; sheath glabrous; auricles absent; oral setae absent or few; ligule short, hirtellous; blade narrow, linear or linear-lanceolate, to 18 × 0.5–1 cm, sometimes broader, both surfaces glabrous. Racemes with 2–4 spikelets; peduncle slender, glabrous; axes and pedicels slender, glabrous; pedicels 1–1.5 mm, sometimes subtended by a small, membranous bract. Spikelets initially purplish, linear-lanceolate, to 7 cm; florets many; rachilla internodes 4.5–6 mm, apex ciliate. Glumes 2–4, gradually larger, uppermost one similar to lemma but slightly smaller; lemma ca. 1.5 cm, 13–15-veined, transverse veins adaxially distinct, apex acuminate, mucronate; palea much smaller than lemma, keels distally ciliate, apex obtuse or acute, exceeding keels; lodicules 3, anterior pair obliquely lanceolate, 5–9-veined, apex ciliolate. Stamens 3; anthers ca. 4 mm. Style shortly 3-fid. New shoots and fr. Apr–May.

● Forested slopes; 500–1500 m. Hainan.

14. Oligostachyum paniculatum G. H. Ye & Z. P. Wang, J. Nanjing Univ., Nat. Sci. Ed. 26(3): 485. 1990.

圆锥少穗竹 yuan zhui shao sui zhu

Culms 2–3 m, 0.5–1 cm in diam.; internodes 15–25 cm, initially white powdery, glabrous; supra-nodal ridge more prominent than sheath scar. Culm sheaths tardily deciduous, glabrous; auricles absent; oral setae absent or few, erect; ligule weakly arcuate, less than 1 mm, margin ciliolate; blade deciduous, not seen. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule exserted, obliquely arcuate, 1–1.5 mm, proximally densely puberulent, otherwise glabrous; blade linear or linear-lanceolate, ca. 15 × 1 cm, both surfaces glabrous, abaxially scabrid, apex acuminate, mucronate. Panicles with several to many spikelets, peduncle and lower branches enclosed by sheathlike bracts. Branches and pedicels slender, angles hirtellous. Spikelets to 11.5 cm; florets many; rachilla internodes ca. 1/2 as long as florets, external side and apex puberulent. Glumes 2 or 3, 1st smaller, 2nd and 3rd longer, resembling lemma; lemma ca. 1.3 cm, scabrid, 7–13-veined, apex acuminate, mucronate; palea much smaller than lemma, keels ciliate, apex exceeding keels; lodicules 3, 2–2.5 mm, ciliate, anterior 2 obliquely lanceolate, posterior narrowly lanceolate. Stamens 3; anthers ca. 4 mm. Style 1; stigmas 3. New shoots and fl. Apr–May.

● Guangxi.

15. Oligostachyum puberulum (T. H. Wen) G. H. Ye & Z. P. Wang, J. Nanjing Univ., Nat. Sci. Ed. 26(3): 486. 1990.

多毛少穗竹 duo mao shao sui zhu

Sinobambusa puberula T. H. Wen, J. Bamboo Res. 2(1): 58. 1983.

Culm internodes basally flattened above branches, prominently pitted (like pigskin) below nodes, pale yellow scabrid; node, supra-nodal ridge, and sheath scar elevated; intranode ca. 5 mm. Branches 3–5 per node, initially scabrid. Culm sheaths unknown. Leaves 2 or 3 per ultimate branch; sheath initially scabrid, margins densely ciliate; auricles hook-shaped or absent; oral setae radiating from auricle or erect if auricle absent; ligule subtruncate or arcuate, apex ciliolate; blade lanceolate, 9–19 × 0.1–1.8 cm, abaxially puberulent. Racemes initially terminating leafy branches. Spikelets ca. 6 × 2–3 cm; florets 11–13. Glumes 2 or 3, 9–12 × 4–5 mm, 7–9-veined, apex acuminate and scabrid; lemma ca. 12 × 4 mm, adaxially puberulent, 15- or 16-veined, transverse veins distinct abaxially, margins apically ciliolate; palea smaller than lemma, ca. 10 × 2.5 mm, 3-veined between keels, flanks 2-veined with transverse veins, abaxially ciliolate; lodicules 3(–5), ca. 2.5 × 1 mm, 3-veined, apex ciliolate. Stamens 3; anthers ca. 4 mm. Ovary oblong, glabrous or sparsely pubescent; style 1; stigmas 2 or 3. Fl. Mar.

● Guangxi.

Taxa incertae sedis

Oligostachyum exauriculatum N. X. Zhao & Z. Yu Li in Z. Yu Li, Pl. Longqi Mountain, Fujian, China, 599. 1994.

无耳少穗竹 wu er shao sui zhu

Culms 3–4 m, (0.7–)1.2 cm in diam.; internodes initially dark green, white powdery, subcylindric, mostly 20–28 cm, shorter toward base, glabrous; nodes distinctly elevated; intranodes ca. 5 cm; branches mostly 3 per node, 5 or more at upper nodes. Culm sheaths deciduous, hardly spotted, thickly papery, abaxially sparsely reddish brown setulose; auricles and oral setae absent; blade erect, yellowish brown, triangular, 0.4–1.5 cm, base not narrowed. Leaves 2 or 3 per ultimate branch; sheath sparsely caducous ciliate; auricles and oral setae absent; ligule arcuate, 2–3 mm, margin subglabrous; blade linear-lanceolate, 10–18 × 1–1.5 cm, both surfaces subglabrous, base broadly cuneate, apex acuminate; lateral veins transverse, 4- or 5-paired. Inflorescence unknown.

● Montane forest margins; 1900–2000 m. Fujian (Jiangle).

The authors compared this species to *Oligostachyum oedogonatum*.

In addition, *Oligostachyum yonganense* Y. M. Lin & Q. F. Zheng (Fl. Fujian. 6: 689. 1995) was described from Fujian (Yongan). In the protologue it was compared with *O. lanceolatum*.

26. GELIDOCALAMUS T. H. Wen, J. Bamboo Res. 1(1): 21. 1982.

短枝竹属 duan zhi zhu shu

Zhu Zhengde (朱政德 Chu Cheng-de); Chris Stapleton

Shrubby bamboos. Rhizomes leptomorph, with running underground stems. Culms pluricaespitose, erect; internodes terete; nodes weakly prominent. Branches 7–12 per node, rarely more than 20, slender, without secondary branching. Culm sheaths persistent, much shorter than internodes; auricles absent or conspicuous; ligule arched or truncate, short; blade broadly conical or narrowly lanceolate. Leaves usually solitary on each branch; sheaths narrow, closely appressed to branchlets and inconspicuous, usually solitary or rarely 2 or more; blade lanceolate or broadly lanceolate to elliptical, short transverse veins distinct. Inflorescence paniculate, large, open, terminal to leafy branches. Spikelets mostly light green, small, 3–5-flowered; pedicel slender. Rachilla compressed. Glumes 2; lemma compressed laterally, ridged abaxially; palea 2-keeled, truncate at apex; lodicules 3. Stamens 3; filaments free. Stigmas 2, or rarely 1, plumose. Caryopsis globose, beaked. New shoots autumn–winter.

● Nine species: China.

In addition to the species treated below, *Gelidocalamus dongdingensis* C. F. Huang & C. D. Dai (Wuyi Sci. J. 8: 173. 1991) was described from Fujian (Wuyi Shan), but no specimens have been seen by the authors and this taxon must be left as a doubtful species. *Gelidocalamus velutinus* W. T. Lin (Acta Phytotax. Sin. 26: 233. 1988) was described from Guangdong (Yunan). This plant has 14–16 branches per node and distinctive, oblong culm sheath auricles, and looks more like a species of *Pleioblastus* than a *Gelidocalamus*.

1a. Culms dwarf, ca. 1 m, 3–6 mm in diam., culm sheath initially pink ..... 9. *G. rutilans*
1b. Culms tall, 1–6 m, more than 10 mm in diam.
2a. Young culms glabrous; culm sheath auricles small or weak.
3a. Culm sheath auricles weak, oral setae radiate; leaf blade 1.2–2.2 cm wide, secondary veins 4- or 5-paired ..... 1. *G. stellatus*
3b. Culm sheath auricles small, oral setae not radiate; leaf blade 2–3.5 cm wide, secondary veins 7–9-paired ..... 2. *G. kunishii*
2b. Young culms hairy; culm sheath auricles present or absent.
4a. Young culms setose, especially at basal nodes.
5a. Culms ca. 5 m, to 3 cm in diam., internodes 50–70 cm; leaf blade 28–40 cm ..... 3. *G. longiinternodus*
5b. Culms 1–3 m, 0.7–1.5 cm in diam., internodes 30–40 cm; leaf blade 14–22 cm ..... 4. *G. latifolius*
4b. Young culms pubescent, not setose.
6a. Culms solid; culm sheath auricles elliptic; culm sheath oral setae radiate, ca. 5 mm ..... 8. *G. solidus*
6b. Culms hollow; culm sheath auricles and oral setae absent.
7a. Leaves 2–4 or more per ultimate branch; sheath subglabrous ..... 7. *G. multifolius*
7b. Leaves mostly 1 or 2 per ultimate branch, rarely 4-leaved; sheaths sparsely streaked with diverse colors.
8a. Culm sheaths distally finely purple-brown checkered ..... 5. *G. tessellatus*
8b. Culm sheaths generally darker, with pale elliptical blotches ..... 6. *G. annulatus*

1. Gelidocalamus stellatus T. H. Wen, J. Bamboo Res. 1(1): 22. 1982.

井冈短枝竹 jing gang duan zhi zhu

Gelidocalamus monophyllus (T. P. Yi & B. M. Yang) B. M. Yang; *Yushania monophylla* T. P. Yi & B. M. Yang.

Culms to 2 m, to 0.8 cm in diam.; internodes initially green, 25–30 cm, glaucous below nodes, glabrous; nodes prominent, sheath ring with persistent remains of sheath base. Culm sheaths retrorsely setose, margins ciliate; auricles weak or absent, oral setae radiate; ligule prominent, 2–3 mm, glabrous; blade conical, striate, margins ciliate. Leaves 1(or 2) per ultimate branch; blade abaxially light green, adaxially green, lanceolate, 12–17 × 1.2–2.2 cm, abaxially pubescent near midrib, adaxially glabrous, secondary veins 4- or 5-paired, one margin serrulate, other margin entire. Inflorescence paniculate, 12–19 × 7–9 cm. Spikelets 5–7 mm; florets 3–5. Glumes 2; lemma ca. 3 mm, 5-veined; palea longer than lemma, not veined; lodicules 3, ovate, not veined. Stamens 3; filaments short; anthers yellow. Ovary 3-angled or ovoid, glabrous; stigmas 2, usually united, compressed, slender. New shoots Oct–Nov.

● Hardwood forests, near streams. Hunan, Jiangxi.

The shoots are edible, and the plants are cultivated for ornament.

2. Gelidocalamus kunishii (Hayata) P. C. Keng & T. H. Wen, J. Bamboo Res. 2(1): 20. 1983.

台湾矢竹 tai wan shi zhu

Arundinaria kunishii Hayata, Icon. Pl. Formosan. 6: 136. 1916; *Pleioblastus kunishii* (Hayata) Ohki; *Pseudosasa kunishii* (Hayata) Makino & Nemoto; *P. taiwanensis* Masamune. & Mori; *Sinarundinaria kunishii* (Hayata) Kanehira & Hatusima; *Sinobambusa kunishii* (Hayata) Nakai.

Culms 2–6 m, 1–2.5 cm in diam.; internodes 20–35 cm, smooth, glabrous; nodes weakly prominent. Culm sheaths deciduous, light green, initially purple, gray-brown in age, densely setose, margins not ciliate; auricles brown, small, sparsely ciliate; oral setae not radiate; ligule truncate; blade conical, margins entire, sharply pointed. Leaves 1(–3) per ultimate branch; sheath glabrous; auricles obscure; ligule prominent, arcuate; blade lanceolate-oblong or oblong, 10–25 × 2–3.5 cm, margins nearly entire, secondary veins 7–9-paired. Inflorescence unknown.

● 300–1500 m. C and N Taiwan.

3. Gelidocalamus longiinternodus T. H. Wen & Shi C. Chen, J. Bamboo Res. 5(2): 24. 1986.

箭把竹 jian ba zhu

Culms to 5 m, to 3 cm in diam.; internodes green, 50–70 cm, densely dark brown setose below nodes; wall 2–4 mm thick; nodes prominent. Culm sheaths initially green-purple, much shorter than internodes, densely dark brown setose, nearly glabrous at base, margins uniformly brown ciliate; auricles erect, triangular to elliptic, roughly brown hairy; oral setae dense, 5–7 mm (to 1.3 cm on apical sheath); ligule 2–3 mm, roughly hairy, cilia pale yellow and ca. 1.5 cm; blade erect, narrowly lanceolate, glabrous. Leaves 1(–3) per ultimate branch; sheath initially brown setose; auricles extended, falcate, fragile, margins brown ciliate; oral setae erect or spreading, ca. 1.2 cm; ligule strongly arcuate, ca. 2 mm, apex ciliate; blade broadly lanceolate or elliptic, 28–40 × 4.5–5.5 cm, abaxially pubescent near midrib, secondary veins 9–11-paired. Inflorescence unknown. New shoots autumn–winter.

● Lowlands. Hunan.

4. Gelidocalamus latifolius Q. H. Dai & T. Chen, J. Bamboo Res. 4(1): 53. 1985 [*"latiflolius"*].

掌秆竹 zhang gan zhu

Culms 1–3 m, 0.7–1.5 mm in diam.; internodes initially deep green, 30–40 cm, initially densely brown deciduously setose, pubescent below nodes; supra-nodal ridge weakly swollen, sheath base more prominent, persistent. Culm sheaths initially light green or slightly purple, deciduously brown setose, margins ciliate; auricles and oral setae absent; ligule short, scabrous; blade triangular-lanceolate, weakly rugose, abaxially glabrous, adaxially scabrous. Leaves 1 per ultimate branch; blade green, ovate-lanceolate, 14–22 × 4–6 cm, glabrous except for hairy midrib, base rounded, apex acute. Inflorescence unknown.

● Hardwood forests on low hills; ca. 200 m. NW Guangxi.

The large leaves are used for roofing shelters and also to wrap traditional rice dumplings known as "zong zi" (粽子).

5. Gelidocalamus tessellatus T. H. Wen & C. C. Chang, J. Bamboo Res. 1(1): 24. 1982.

抽筒竹 chou tong zhu

Culms 2–3 m, to 1 cm in diam.; internodes initially purple-green, 20–40(–65) cm, initially densely tomentose, sparsely setose in age; nodes slightly prominent. Culm sheaths pale yellow, with purple-brown streaks, sparsely setose, tomentose near base, margins ciliate, apex tomentose; auricles absent; oral setae few, erect; ligule arcuate, short, pubescent, apex ciliolate; blade triangular, sharply pointed. Leaves 1 per ultimate branch; blade broadly lanceolate, 19–23 × 2–3.2 cm, abaxially pubescent near midrib, proximally densely so, secondary veins 7-paired, asymmetrical, margins entire or one side serrulate. Inflorescence paniculate, terminal, 13–20 cm, lower branches horizontal. Spikelets green, 6–8 mm; pedicel 5–7 mm, slender; florets 3–5; rachilla pubescent. Glumes 2; lemma ca. 4 mm, 7-veined; palea about as long as lemma, not veined; lodicules ovate, not veined. Styles 2. New shoots Jun–Oct.

● Undergrowth in hardwood forests on low hills. Guangxi, Guizhou.

Gelidocalamus subsolidus W. T. Lin & Z. J. Feng (Guihaia 10: 18. 1990), based on a specimen collected in Guangdong (Xinyi), may be a synonym of this species.

The shoots are delicious, and the culms are split for weaving.

6. Gelidocalamus annulatus T. H. Wen, J. Bamboo Res. 7(1): 27. 1988.

亮秆竹 liang gan zhu

Culms 1–2.5 m, 1–1.5 cm in diam.; internodes 20–30 cm, slightly flexuose, initially pubescent, later papillose; nodes prominent, sheath ring glabrous. Culm sheaths white spotted, sparsely setose, margins smooth, glabrous; ligule truncate, ca. 1 mm, scabrid, ciliolate; blade erect, narrowly triangular. Leaves 1 or 2 per ultimate branch; sheath sparsely golden setose, margins golden ciliolate; auricles absent or weak with a few, erect oral setae; ligule truncate, ca. 1 mm, scabrous; blade broadly lanceolate or oblong, 16–27 × 1.7–3.5 cm, glabrous or abaxially roughly hairy at base of midrib, secondary veins 5- or 6-paired, asymmetrical. Inflorescence unknown.

● N Guizhou.

7. Gelidocalamus multifolius B. M. Yang, Nat. Sci. J. Hunan Norm. Univ. 9(3): 4. 1986.

多叶短枝竹 duo ye duan zhi zhu

Culms to 1.5 m, ca. 1 cm in diam.; internodes initially green, 10–26 cm, brown tomentellate below nodes; nodes slightly prominent. Culm sheaths green, nearly glabrous, sparsely tomentellate at base; auricles absent; oral setae 2 or 3, erect; ligule purple, truncate or slightly concave, ca. 1 mm, ciliate; blade reflexed, narrowly lanceolate, glabrous. Leaves 3–5 per ultimate branch; sheath glabrous, ribbed; auricles and oral setae absent; ligule truncate, ca. 1.5 mm; blade lanceolate or broadly lanceolate, 8–14 × 1.5–2.5 cm, abaxially pubescent, adaxially glabrous, secondary veins 4–6-paired. Inflorescence terminal, paniculate, sparsely branched, 10–15 × 5–7 cm. Spikelets 8–14 mm; florets 2–4. Glumes 2, lanceolate; lemma ovate-lanceolate; palea about as long as lemma or longer, glabrous; lodicules obovate, posterior one narrowly so, margins ciliolate. Ovary ovoid-ellipsoid; styles 2, connate at base; stigmas 2. Caryopsis gray-green, obovoid, ca. 3 mm in diam.; suture long, narrow. New shoots winter, fl. Nov.

● Hunan (Ningyuan).

8. Gelidocalamus solidus C. D. Chu & C. S. Chao, J. Nanjing Inst. Forest. 1984(2): 75. 1984.

实心短枝竹 shi xin duan zhi zhu

Culms to 2 m, ca. 1 cm in diam.; internodes initially green, 30–50 cm, pubescent, brown hirsute below nodes, solid; nodes slightly prominent. Culm sheaths leathery, hirsute, margins ciliate; auricles oblong, 2–3 × ca. 1 mm; oral setae few, radiate; ligule slightly concave, apex ciliate; blade erect, narrowly lanceolate. Leaves 1 or 2 per ultimate branch; sheaths glabrous or initially pubescent; auricles and oral setae present; ligule truncate, ca. 1 mm, with cilia ca. 2 mm; blade broadly lanceolate, 8–25 × 3–4.5 cm, glabrous, secondary veins 5–8-paired. Inflorescence unknown. New shoots Nov.

● Guangxi.

Gelidocalamus albopubescens W. T. Lin & Z. J. Feng (Acta Phytotax. Sin. 30: 561. 1992), described from Guangdong (Guangning), may be a synonym of this species.

9. Gelidocalamus rutilans T. H. Wen, J. Bamboo Res. 2(1): 66. 1983.

红壳寒竹 hong ke han zhu

Culms to 1 m, 0.3–0.6 cm in diam.; internodes 10–15 cm, not waxy, initially densely white pubescent, tomentellate below nodes; nodes slightly prominent. Culm sheaths persistent, pink when fresh, initially hirsute; auricles absent; oral setae minute; ligule slightly concave, ca. 1 mm, ciliate; blade erect, linear-lanceolate or subulate, base ca. 1/3 as wide as sheath apex. Leaves 1 per ultimate branch; pseudopetiole 4–5 mm; blade narrowly lanceolate to oblong, 17–31 × 2–4 cm, abaxially hirsute, secondary veins 6–8-paired. Inflorescence unknown.

● Zhejiang.

27. FERROCALAMUS Hsueh & P. C, Keng, J. Bamboo Res. 1(2): 3. 1982.

铁竹属 tie zhu shu

Li Dezhu (李德铢); Chris Stapleton

Shrubby, self-supporting to scrambling bamboos. Rhizomes leptomorph. Culms pluricaespitose, erect; internodes terete, long, thick walled, with a ring of white hairs below nodes; nodes prominent. Branches at mid-culm solitary, erect, parallel to and nearly as thick as culm; at upper nodes 3–5. Culm sheaths persistent, leathery at base, thinner at apex; auricles small or absent; oral setae developed; blade reflexed, leaflike or small. Leaf blade large; auricles absent or present with oral setae; ligule short; transverse veins distinct. Inflorescence a large panicle on leafy flowering branches. Spikelets very many, slender, 3–10-flowered, followed by a sterile floret. Glumes 2, obtuse. Rachilla articulate; florets falling separately; lemma leathery with many veins and obscure transverse venation. Palea longer than lemma, 2-keeled, apex emarginate. Lodicules 3. Stamens 3; filaments free. Ovary glabrous; styles short; stigmas 2, plumose. Fruit berrylike, succulent with thickened, fleshy pericarp but without hardened endocarp, ovoid or subglobose. $2n = 48$*.

● Two species: China.

In the past, the culms of *Ferrocalamus* were used for making arrows. This rare endemic genus is endangered by habitat destruction, as it is known only from a very limited number of localities.

1a. Culm sheath apically papery, drying but not split on culm, blade broadly lanceolate or oblong-lanceolate, leaflike ... 1. *F. strictus*
1b. Culm sheath apically leathery, drying and splitting on culm, blade tiny, drying when young ..... 2. *F. rimosivaginus*

1. Ferrocalamus strictus Hsueh & P. C. Keng, J. Bamboo Res. 1(2): 3. 1982.

铁竹 tie zhu

Culms 5–7(–9) m, 2–3.5(–5) cm in diam.; internodes 60–80(–100) cm, glabrous, nearly solid; nodes prominent; branchlet internodes 1–2 cm at branch base, to 65 cm from 4th or 5th nodes. Culm sheaths drying entire on culms, initially yellow-green, leathery, densely brown or dark brown hairy, apex papery; auricles absent; ligule truncate, 2–3 mm; blade reflexed, initially green, turning brown in age, broadly lanceolate or oblong-lanceolate. Leaf sheath glabrous; auricles absent; oral setae deciduous, 1–2 cm; blade broadly lanceolate, 30–35 × 6–9 cm, base cuneate. Panicles 30–45 cm. Spikelets 1.4–1.8 cm; florets 3–10; rachilla internodes glabrous. Glumes 3–5 mm; lemma ca. 7 mm; lodicules ca. 3 mm. Stamens unknown. Style short; stigmas ca. 1.5 mm. Fruit dark brown, ca. 2 cm, ovoid or subglobose. New shoots Mar–May, fl. Apr.

● Montane broad-leaved forests; 900–1200 m. S Yunnan (Jinping, Luchun).

2. Ferrocalamus rimosivaginus T. H. Wen, J. Bamboo Res. 3(2): 26. 1984.

裂鞘铁竹 lie tuo tie zhu

Culms 5–7 m, 2–4 cm in diam.; internodes 50–70 cm, glabrous, nearly solid; nodes prominent; branchlet internodes 1–2 cm at branch base, to 65 cm from 4th or 5th node. Culm sheaths brown, leathery, papery and split at apex, densely brown or dark brown hairy; auricles small, oral setae present; ligule truncate, 1–2 mm; blade reflexed, tiny, narrow, drying when young. Leaf sheaths glabrous; auricles absent; oral setae deciduous, ca. 1 cm; blade broadly lanceolate, 25–30 × 5–6 cm, base cuneate. Inflorescence unknown. New shoots Mar–May.

● Montane broad-leaved forests; 900–1000 m. S Yunnan (Jinping).

28. INDOCALAMUS Nakai, J. Arnold Arbor. 6: 148. 1925.

箬竹属 ruo zhu shu

Wang Zhengping (王正平 Wang Cheng-ping); Chris Stapleton

Shrubby bamboos. Rhizomes leptomorph, with running underground stems. Culms pluricaespitose, nodding; internodes usually terete, usually with a dense, persistent, apical, yellow-brown tomentose to setaceous ring below nodes, rarely apically glabrous; wall thick; nodes usually flat, sometimes prominent. Branches usually solitary, nearly as thick as culms. Culm sheaths persistent, usually shorter than internodes, papery or nearly leathery; auricles usually developed; blade usually recurved, lanceolate. Leaf sheaths cylindrical, very thick, smooth. Leaves usually large relative to culm size, transverse veins distinct. Inflorescence largely ebracteate,

terminal, a raceme or open panicle; branches usually subtended by tiny bracts. Spikelets several to many flowered, pedicellate. Rachilla articulate. Glumes 2 or 3, ovate or lanceolate; lemma oblong or lanceolate, nearly leathery; palea 2-keeled, shorter than lemma; lodicules 3. Stamens 3, long exserted; anthers yellow. Ovary ovoid; style 1, short; stigmas usually 2 (3 in *I. wilsonii*), plumose. Caryopsis dark brown at maturity. $2n = 48$.

At least 23 species: mainly China, one species in Japan; 22 species (all endemic) in China.

The culms are used for making chopsticks and penholders, and the leaves are used for weaving bamboo hats and wrapping glutinous rice.

1a. Blade of mid-culm sheaths large, triangular or ovate-lanceolate, erect, appressed, base ± amplexicaul, rounded to cordate or if blade narrower and spreading to reflexed, culms with glossy internodes and flat nodes.
2a. Culms without any tomentose rings below nodes; nodes flat.
3a. Culm sheaths sparsely pale strigose; blade usually spreading, deciduous ..... 1. *I. sinicus*
3b. Culm sheaths not strigose; blade erect.
4a. Leaf blade abaxially glabrous ..... 2. *I. herklotsii*
4b. Leaf blade abaxially pubescent, densely so along midrib ..... 3. *I. tongchunensis*
2b. Culms with a white or brown tomentose ring at each node; nodes ± elevated.
5a. Culm sheaths without auricles; oral setae erect, usually 1.5–3 cm ..... 4. *I. pseudosinicus*
5b. Culm sheaths with well-developed auricles; oral setae usually radiate, less than 1.5(–2) cm.
6a. Culm sheath blade ovate-lanceolate, base cuneate-rounded; sheath auricles 0.6–2 cm ..... 6. *I. longiauritus*
6b. Culm sheath blade broadly triangular to ovate-oblong, base broadly or truncately rounded or cordate; sheath auricles ca. 0.5 cm.
7a. Culm sheaths dark brown strigose, base glabrous ..... 5. *I. guangdongensis*
7b. Culm sheaths glabrous or sparsely brown strigose, base setose ..... 7. *I. decorus*
1b. Blade of mid-culm sheaths small, narrow, ascendant to reflexed, rarely erect, base not amplexicaul, broad or cuneate.
8a. Culm sheath auricles well developed.
9a. Leaf blade tessellations square or transversely rectangular.
10a. Culm sheath ligule 2–2.5 mm; leaf sheath ligule fimbriate ..... 11. *I. quadratus*
10b. Culm sheath ligule ca. 1 mm; leaf sheath ligule entire ..... 12. *I. hunanensis*
9b. Leaf blade tessellations longitudinally rectangular.
11a. Culm sheaths brown, with straw-colored spots of various sizes when dry; leaf blade basally narrowly cuneate ..... 10. *I. emeiensis*
11b. Culm sheaths deep straw-colored without spots when dry; leaf blade basally rounded, rarely cuneate.
12a. Culm sheath auricles with 2 or more rows of oral setae; ligule 0.5–1 mm ..... 8. *I. barbatus*
12b. Culm sheath auricles fringed with 1 row of oral setae; ligule 2–3 mm ..... 9. *I. hirsutissimus*
8b. Culm sheath auricles absent or minute.
13a. Culm sheaths inflated, loosely enclosing culm.
14a. Culm sheaths nearly leathery; leaf blade abaxially densely hairy along midrib ..... 16. *I. tessellatus*
14b. Culm sheaths more papery; leaf blade not abaxially hairy along midrib ..... 17. *I. latifolius*
13b. Culm sheaths not inflated, closely enclosing culm.
15a. Culms less than 0.5 m.
16a. Leaf ligule ca. 0.5 mm; leaf blade not undulate; branch sheath straw-colored when dry ..... 21. *I. pedalis*
16b. Leaf ligule 2.5–9 mm; leaf blade undulate; branch sheath orange-red when dry ..... 22. *I. wilsonii*
15b. Culms more than 1 m.
17a. Culms strigose or with imprints of fallen hairs, especially below nodes.
18a. Culm sheaths with long, retrorse, white hairs ..... 13. *I. chishuiensis*
18b. Culm sheaths with shorter, brown hairs.
19a. Leaf blade abaxially puberulent; leaf ligule 1.5–3 mm ..... 14. *I. hispidus*
19b. Leaf blade abaxially glabrous; leaf ligule (2–)4–8 mm ..... 15. *I. bashanensis*
17b. Culms not strigose and without imprints of fallen hairs, sometimes pubescent.
20a. Culm sheath longer than internode ..... 18. *I. hirtivaginatus*
20b. Culm sheath much shorter than internode.
21a. Internodes 25–33 cm, densely pubescent; leaf blade 3.5–6.5 cm wide ..... 19. *I. inaequilaterus*
21b. Internodes to 26 cm, glabrous; leaf blade 2.5–4 cm wide ..... 20. *I. victorialis*

1. Indocalamus sinicus (Hance) Nakai, J. Arnold Arbor. 6: 148. 1925.

水银竹 shui yin zhu

Arundinaria sinica Hance, Ann. Sci. Nat., Bot., sér. 4, 18: 235. 1862; *A. longiramea* Munro; *A. wightii* Nees ex Bentham.

Culms 1–3.8 m, 0.5–1 cm in diam.; internodes green, straw-colored when dry, glossy, glabrous; wall 3–4 mm thick; nodes flat. Culm sheaths purple-brown, leathery-papery, striate, sparsely white or colorless hairy, margins densely bright gray

ciliate; auricles absent; oral setae several, to 1 cm; ligule red-brown, truncate, 1–1.4 mm, ciliate or not; blade erect to reflexed, narrowly triangular-subulate on mid-culm sheaths, ovate-lanceolate on upper ones, apex long acuminate. Leaves 7–14 per ultimate branch; sheath yellow-brown, leathery, glossy, glabrous; auricles absent; oral setae yellow-brown, to 1.6 cm; ligule red-brown, truncate, short, ciliolate or not; blade broadly lanceolate, 14–60 × 2.2–6.8 cm, thinly leathery, both surfaces usually glabrous, secondary veins 8 or 9 pairs, transverse veins sparse, tessellations narrowly rectangular, base cuneate, apex long acuminate. Panicles ample, 23.5–30 cm or more; branches spreading, pulvinate. Spikelets purple-green, pedicel 2–6 cm; florets 3 or 4. Rachilla internodes glabrous. Glumes 2, papery; lower glume oblong-lanceolate, 4.5–5 mm, 3-veined, apex slightly acute, upper glume 5–6.5 mm, 5-veined, apex acuminate; lemma 9–10 mm, papery, adaxially scabrid, 7-veined, apex acuminate; palea nearly as long as lemma, keels and apex ciliate; lodicules unequal in size, anterior pair larger. Stamens unknown. Style short; stigmas 2. New shoots Apr, fl. May.

● Open forests, thickets on hills and in valleys; 600–700 m. Guangdong, Hainan.

2. Indocalamus herklotsii McClure, Lingnan Univ. Sci. Bull. 9: 22. 1940.

粽巴箬竹 zong ba ruo zhu

Culms to 2 m, 3–6 mm in diam.; internodes glossy, glabrous, subsolid, with small lumen; nodes flat. Culm sheaths leathery, glossy, fragile, margins usually densely ciliate; auricles absent or minute; oral setae sometimes developed, few, dark brown, rigid, scabrid; ligule truncate or slightly arcuate, very short, hirtellous, ciliolate; blade erect, initially rosy red, ovate-lanceolate, thinly papery, glabrous, base broad and amplexicaul, apex long acuminate. Leaves ca. 3 per ultimate branch; sheath obscurely striate on upper part, margins densely brown ciliate; auricles usually absent; oral setae few or absent, dark brown or straw-colored, rigid, scabrid; ligule short, hirtellous, ciliolate; pseudopetiole 1–4 mm, hirtellous toward apex; blade lanceolate or oblong-lanceolate, 14–29 × 1–5 cm, glabrous, secondary veins 6–9 pairs, tessellations rectangular, apex caudate. Panicle spreading, purple, 7–8 cm; peduncle to 8.5 cm, glabrous, axis and branches slender, glabrous. Spikelets oblong-lanceolate, to 1.5 cm, slightly compressed; pedicels 3–15 cm, pulvinate; florets ca. 4. Rachilla internodes glabrous on side facing floret, otherwise scabrous. Glumes 2, glabrous; lower glume 5–5.5 mm, apex obtuse; upper glume 6.5–8 mm, apex acute; lemma lanceolate, 6.5(–7) mm, thinly papery, fragile, glabrous, 5-veined, apex obtuse; palea slightly longer or sometimes shorter than lemma, glabrous, keels distally ciliate; lodicules transparent, anterior ca. 1.3 mm, posterior slightly longer. Anthers ca. 5 mm. Ovary fusiform, dorsi-ventrally compressed, subglabrous; stigmas 2.

● Open forests, thickets; ca. 500 m. Hong Kong.

3. Indocalamus tongchunensis K. F. Huang & Z. L. Dai, Wuyi Sci. J. 6: 293. 1986.

同春箬竹 tong chun ruo zhu

Culms ca. 1.5 m, ca. 5 mm in diam.; internodes straw-colored, glossy, thinly white powdery; nodes flat. Culm sheaths glossy, mainly glabrous but distally sparsely white hairy and white powdery, margins long brown ciliate; auricles absent or minute; oral setae absent; ligule truncate or arcuate, rigid, margin minutely ciliate or not; blade erect, narrowly triangular, 1–2 × as long as sheath, thin, glabrous, base cordate, amplexicaul. Leaves 3–7 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule ca. 1.5 mm, rigid, ciliate; blade abaxially pale green, elliptic or elliptic-lanceolate, ca. 40 × 8 cm, densely pubescent especially along both sides of midrib, adaxially glabrous, secondary veins 12–14 pairs, tessellations rectangular to square. Inflorescence unknown. New shoots Mar–Apr.

● Broad-leaved forests; ca. 800 m. Fujian.

4. Indocalamus pseudosinicus McClure, Sunyatsenia 6: 37. 1941.

锦帐竹 jin zhang zhu

Culms 1.5–2 m, 3–6 mm in diam.; internodes 20–30 cm, with a white or brown tomentose and setulose ring below each node, otherwise glabrous or initially puberulent and white powdery; wall 1.5–2.5 mm thick; nodes weakly elevated. Culm sheaths yellow-green when fresh, straw-colored when dry, closely encircling culm, ca. 1/2 as long as internodes, brown or colorless strigose, white tomentose and with striae left by fallen hairs; auricles absent; oral setae developed; ligule brown, arcuate, 0.3–1 mm, ciliolate or not; blade purple, amplexicaul, contracted at base. Leaves 5–7 per ultimate branch; sheath striate, lower part abaxially glossy, upper part brown strigose, sometimes glabrous near margins, margins densely dark ciliate; auricles absent; oral setae erect or suberect, distally curved, to 2.5–3 cm; ligule short; blade oblong-lanceolate, 19–38 × 2.6–4.6 cm, glabrous or abaxially sparsely appressed hispidulous, secondary veins 9–11 pairs, tessellations rectangular or square, base cuneate, margins minutely denticulate, apex narrowly acuminate. Panicles terminating leafy or leafless branches, erect, ca. 26 cm, axis glabrous, strongly ribbed; branches initially appressed to axis, then ± spreading, slender, glabrous, pulvinate. Spikelets pale green, to 4.5–5 cm, fusiform or slightly compressed; florets 12–13; pedicels 8–12 mm. Rachilla internodes 3–3.2 mm, ciliate on ribs. Glumes 2 or 3; lower glume 3.2–4 mm, 3-veined; upper glume 4.5–5 mm, 5-veined; lemmas 6–7 mm, 5–7-veined, glossy, abaxially glabrous, callus white pubescent, margins ciliate toward apex; palea 5.8–6.2 mm, apex obtuse, 2-toothed. Lodicules, stamens, and pistil unknown. New shoots Apr–May, fl. Jul–Dec.

● Forests on mountain slopes, roadsides; 700–1000 m. Guangdong, Guangxi, Hainan.

1a. Leaf blade veins forming rectangular tessellations ..... 4a. var. *pseudosinicus*

1b. Leaf blade veins forming square tessellations ..... 4b. var. *densinervillus*

4a. Indocalamus pseudosinicus var. **pseudosinicus**

锦帐竹(原变种) jin zhang zhu (yuan bian zhong)

Leaf blade veins forming rectangular tessellation.

● Forests on mountain slopes, roadsides; 700–1000 m. Guangxi, Hainan.

4b. Indocalamus pseudosinicus var. **densinervillus** H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 464. 1985.

密脉箬竹 mi mai ruo zhu

Leaf blade veins forming square tessellation.

● Montane forests. Guangdong, Guangxi.

5. Indocalamus guangdongensis H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 462. 1985.

广东箬竹 guang dong ruo zhu

Culms 1.5–3.5 m, 0.9–1.5 cm in diam.; internodes initially yellow or purple, white tomentose, hairs denser and forming a brown ring below nodes; wall ca. 0.4 mm thick; nodes weakly elevated. Culm sheaths purple-green, shorter than internode, leathery, white tomentose and dark brown hairy, base corky; auricles ca. 5 mm, brown; oral setae radiate, flexuose, about as long as auricle; ligule truncate to arcuate, 0.5–2 mm, densely puberulent, margin sparsely or not ciliate; blade broad, amplexicaul, base truncately rounded to cordate, about as wide as apex of culm, apex acuminate. Leaves 2–7 per ultimate branch; sheath striate, white tomentose; auricles and oral setae absent; ligule 1–2.5 mm, pubescent, long ciliate; blade broadly lanceolate, 35–56 × 4–10.5 cm, abaxially minutely appressed white pubescent, adaxially glabrous, secondary veins 8–15 pairs, tessellations rectangular or square, base cuneate, apex acuminate. Inflorescence unknown. New shoots Apr–May.

● Forests, mountain slopes, valleys; ca. 900 m. Guangdong, Guangxi, Guizhou, Hubei, Hunan; cultivated in Zhejiang.

1a. Leaf blade tessellations abaxially visible, rectangular; midrib not waxy pubescent ..... 5a. var. *guangdongensis*
1b. Leaf blade tessellations abaxially visible, square; midrib waxy pubescent along one side ..... 5b. var. *mollis*

5a. Indocalamus guangdongensis var. **guangdongensis**

广东箬竹(原变种) guang dong ruo zhu (yuan bian zhong)

Leaf blade not abaxially waxy pubescent along midrib; veins forming rectangular tessellations.

● Forested mountain slopes, valleys. Guangdong, Guizhou; cultivated in Zhejiang.

5b. Indocalamus guangdongensis var. **mollis** H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 462. 1985.

柔毛箬竹 rou mao ruo zhu

Leaf blade abaxially pubescent along one side of midrib; veins forming square tessellations.

● Roadsides on mountain slopes; ca. 900 m. Guangxi, Hubei, Hunan.

6. Indocalamus longiauritus Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 254. 1925.

箬叶竹 ruo ye zhu

Culms 0.8–1 m, 0.35–0.8 cm in diam.; internodes dull green, (8–)10–55 cm, white pubescent, with a pale red-brown tomentose ring below nodes; wall 1.5–2 mm thick; nodes prominent. Culm sheaths purple-green, leathery, dark brown strigose and white tomentose, base with raised corky ring; auricles well developed, purple-green, becoming brown when dry; oral setae radiate, brown, ca. 1 cm; ligule truncate, 0.5–1 mm, ciliate or not; blade purple-green, narrowly triangular to ovate-lanceolate, base abruptly rounded, apex acuminate. Leaf sheath rigid, glabrous or abaxially initially finely strigose, outer margin ciliate; auricles usually developed; oral setae radiate, brown; ligule truncate, 1–1.5 mm, puberulent, fimbriate, margin setose; blade 10–35 × 1.5–6.5 cm, abaxially glabrous or puberulent, secondary veins 5–12 pairs, veins forming rectangular tessellations, base cuneate, apex long acuminate. Panicles 8–15 cm, rather narrow, axis densely white tomentose. Spikelets greenish or straw-colored at maturity, 1.5–3.7 cm; florets 4–6. Rachilla internodes compressed-clavate, 6.8–7.2 mm, angular, densely white tomentose, apex truncate. Glumes 2, acuminate with an awnlike point; first glume 3–5 mm, 3–5-veined, second glume 6–8 mm, 7–9-veined; lemma oblong-lanceolate, apex awnlike, first lemma 1–1.4 cm, 11–13-veined; palea of 1st floret 0.7–1 cm, keels ciliate. Anthers ca. 5 mm. Stigmas 2. Caryopsis oblong. New shoots Apr–May, fl. May–Jul. 2*n* = 48*.

● Mountain slopes, hillsides, roadsides; ca. 500 m. Fujian, Guangdong, Guangxi, Guizhou, Henan, Hunan, Jiangxi, Sichuan; cultivated in Zhejiang.

1a. Leaf blade abaxially without hairs along sides of midrib.
  2a. Culm sheaths auricles long, narrowly falcate ..... 6a. var. *longiauritus*
  2b. Culm sheaths auricles shorter, subfalcate ..... 6c. var. *semifalcatus*
1b. Leaf blade abaxially hairy along one or both sides of midrib.
  3a. Culm sheaths auricles long, falcate; leaf blade abaxially hairy along both sides of midrib ..... 6b. var. *yiyangensis*
  3b. Culm sheaths auricles shorter, subfalcate; leaf blade abaxially hairy along only one side of midrib ..... 6d. var. *hengshanensis*

6a. Indocalamus longiauritus var. **longiauritus**

箬叶竹(原变种) ruo ye zhu (yuan bian zhong)

Arundinaria longiaurita (Handel-Mazzetti) Handel-Mazzetti; *A. vulgata* (W. T. Lin & X. B. Ye) W. T. Lin; *Bashania auctiaurita* T. P. Yi; *Indocalamus dayongensis* W. T. Lin; *I. vulgatus* W. T. Lin & X. B. Ye; *Pseudosasa guanxianensis* T. P. Yi; *P. vittata* B. M. Yang; *P. vulgata* (W. T. Lin & X. B. Ye) W. T. Lin.

Culm sheath auricles narrowly falcate, long. Leaf blade abaxially not hairy along sides of midrib.

● Fujian, Guangdong, Guangxi, Guizhou, Henan, Hunan, Jiangxi, Sichuan.

6b. Indocalamus longiauritus var. **yiyangensis** H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 464. 1985.

益阳箬竹 yi yang ruo zhu

Culm sheath auricles falcate, long. Leaf blade abaxially minutely pubescent along one or both sides of midrib.

● Hillsides. Hunan.

6c. Indocalamus longiauritus var. **semifalcatus** H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 464. 1985.

半耳箬竹 ban er ruo zhu

Culm sheath and leaf sheath auricles subfalcate, short. Leaf blade abaxially not hairy along midrib.

● Guangxi, Sichuan; cultivated in Zhejiang.

6d. Indocalamus longiauritus var. **hengshanensis** H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 464. 1985.

衡山箬竹 heng shan ruo zhu

Culm sheath auricles subfalcate. Leaf blade abaxially hairy along one side of midrib.

● Mountain slopes. Hunan.

7. Indocalamus decorus Q. H. Dai, Acta Phytotax. Sin. 20: 494. 1982.

美丽箬竹 mei li ruo zhu

Culms 35–80 cm, 0.3–0.5 cm in diam.; internodes initially green, 7–22 cm, white tomentose, with a brown tomentose ring below nodes; nodes elevated. Culm sheaths yellow-green, becoming orange when dry, shorter than internode, initially white tomentose, glabrous or sparsely brown strigose, base edged with dark brown setae, margins brown ciliate; auricles falcate; oral setae 4–5 mm; ligule ca. 1 mm; blade broadly triangular, amplexicaul, abaxially glabrous, adaxially hirtellous between veins, base rounded or cordate, margins minutely brown ciliate. Leaves 2–4 per ultimate branch; sheath tomentose, margins ciliate; auricles present or absent; oral setae ca. 3 mm; ligule truncate, 1–2 mm, scabrid, margin brown or pale ciliate; blade oblong-lanceolate, 15–35 × 3–3.5 cm, glabrous or abaxially pubescent near midrib, secondary veins 6–11 pairs, veins forming rectangular or square tessellations. Inflorescence unknown.

● Forests of *Phyllostachys edulis* and broad-leaved trees, forest margins. Guangxi.

8. Indocalamus barbatus McClure, Sunyatsenia 6: 32. 1941.

髯毛箬竹 ran mao ruo zhu

Culms ca. 1.5 m, 0.5–1 cm in diam.; internodes 25–35(–45) cm, densely brown strigose, solid; nodes strongly elevated, nodal ridge very prominent; sheath scar relatively flat, fringed with persistent culm sheath base; intranode 9–10 mm. Culm sheaths green, 1/3–1/2 as long as internodes, densely brown strigose; auricles falcate, 1.5–2 cm, oral setae in 2 or more rows, radiate, 2–3 cm; ligule truncate or weakly concave, 0.5–1 mm, densely fimbriate with hairs 2–3 cm; blade green, elliptic-lanceolate. Leaves 5–8 per ultimate branch; sheath rigid, densely long white strigose or later with striae and papillae from fallen hairs, upper part intermixed with dense white pubescence; auricles rather thick, ca. 15 × 3 mm; oral setae in 2 or more crowded irregular rows, radiate, pale to dark straw-colored, to 3 cm; blade elliptic to elliptic-lanceolate, 15–35(–40) × 5–9(–12) cm, abaxially pubescent, adaxially glabrous, secondary veins 8–12-paired, tessellations rectangular, base broadly cuneate, apex acuminate into subulate point. New shoots spring–summer. 2*n* = 48*.

● Evergreen broad-leaved valley forests; ca. 500 m. Guangxi.

9. Indocalamus hirsutissimus Z. P. Wang & P. X. Zhang, J. Bamboo Res. 4(1): 44. 1985.

多毛箬竹 duo mao ruo zhu

Culms ca. 3 m, 1–2 cm in diam.; internode initially green or orange under culm sheath, densely brown strigose and white pubescent especially below nodes, glabrescent, with papillae and imprints of fallen hairs except below nodes, pith spongy; nodes strongly elevated, supra-nodal ridge with an elevated keel; sheath scar weakly prominent. Culm sheaths orange, ca. 1/2 as long as internodes, leathery, densely dark brown strigose, base yellow-brown pubescent, outer margin dark brown ciliate, inner margin glabrous; auricles reflexed, suborbicular, large; oral setae in 1 row, radiate, to 2 cm; ligule obliquely arcuate or truncate, 2–3 mm, dark brown pubescent, margin lacerate and fimbriate with setae more than 1 cm; blade deciduous, reflexed, lanceolate, abaxially glabrous, adaxially densely yellow hirtellous toward base. Leaves 2–11 per ultimate branch; sheaths pubescent and minutely setose; auricles and oral setae as for culm sheaths; ligule 2–12 mm; blade 15–28 × 1.5–2.5 cm, abaxially pubescent or glabrous, adaxially glabrous, secondary veins 5–9 pairs, transverse veins remote. Inflorescence unknown. New shoots May–Jun.

● Valley forests, montane forests; 500–600 m. Guizhou.

1a. Leaf blade abaxially pubescent ..... 9a. var. *hirsutissimus*
1b. Leaf blade abaxially glabrous or subglabrous ..... 9b. var. *glabrifolius*

9a. Indocalamus hirsutissimus var. **hirsutissimus**

多毛箬竹(原变种) duo mao ruo zhu (yuan bian zhong)

Leaf blade abaxially pubescent.

● Open valley forests; 500–600 m. Guizhou.

9b. Indocalamus hirsutissimus var. **glabrifolius** Z. P. Wang & N. X. Ma, J. Bamboo Res. 4(1): 45. 1985.

光叶箬竹 guang ye ruo zhu

Leaf blade abaxially glabrous or subglabrous.

● Forests on mountain slopes; ca. 500 m. Guizhou.

10. Indocalamus emeiensis C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 18: 25. 1980.

峨眉箬竹 e mei ruo zhu

Arundinaria emeiensis (C. D. Chu & C. S. Chao) Demoly.

Culms ca. 1.5 m, 0.8–1 cm in diam.; internodes ca. 30 cm,

with appressed, minute, white setae intermixed with retrorse, red-brown hairs and imprints of fallen hairs on upper portion; nodes elevated. Culm sheaths brown, with straw-colored spots of various sizes, less than 1/2 as long as internodes, with dense, retrorse, brown hairs or papillae left by fallen hairs, margins brown ciliate; auricles falcate, 6–7 mm; oral setae radiate, 1–2 cm; ligule ca. 1 mm, ca. 2 × as wide as base of blade, densely ciliate; blade triangular-lanceolate, not amplexicaul. Leaves 4–10 per ultimate branch, sheath white pubescent, with red-brown striae or papillae, margins ciliate; auricles falcate; oral setae radiate, 2–3 cm; ligule very short, fringed with hairs 2.3–3 mm; blade oblong-lanceolate, usually ± asymmetrical, 16–40 × 3.5–6.5 cm, abaxially glaucous, glabrous, secondary veins 7–18 pairs, tessellations square, distinct on both surfaces, base cuneate, apex acuminate. Inflorescence unknown.

● Mountain slopes; ca. 1200 m. Sichuan.

"Indocalamus omeiensis" (C. D. Chu & C. S. Chao, Bamboo Res. 1: 7. 1981) is an orthographic variant of this name.

11. Indocalamus quadratus H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 20: 216. 1982.

方脉箬竹 fang mai ruo zhu

Culms ca. 3 m, 0.8–1.1 cm in diam.; internodes 22–26 cm, initially apically densely brown strigose and setulose; nodes weakly prominent; intranode 5–8 mm. Culm sheaths green, tinged with purple when fresh, becoming straw-colored, unmarked, shorter than internode on lower culm, densely brown-purple strigose, margins densely brown ciliate; auricles brown, falcate, large, ca. 15 × 1.3–3 mm; oral setae radiate, flexuose, brown, to 2 cm; ligule purple-brown, truncate to slightly arcuate, 2–2.5 mm, ciliate with hairs 1.2–1.6 cm or longer; blade erect or reflexed, green, narrowly triangular. Leaves 6 or 7 per ultimate branch; sheath initially brown strigose, glabrescent, margins long brown ciliate; auricles purple-brown, falcate, ca. 12 × 2 mm; oral setae radiate, brown, ca. 1.4 cm; ligule purple-brown, fimbriate; blade ovate-lanceolate or oblong-lanceolate, 8.5–24.5 × 5.6–7.2 cm, abaxially glaucous, secondary veins 10–13 pairs, tessellations square, base rounded or rarely cuneate, apex acuminate. Inflorescence unknown. New shoots May.

● Valley forests; 600–900 m. Guizhou, Hunan; cultivated in Zhejiang.

12. Indocalamus hunanensis B. M. Yang, Acta Phytotax. Sin. 19: 259. 1981.

湖南箬竹 hu nan ruo zhu

Indocalamus auriculatus (H. R. Zhao & Y. L. Yang) Y. L. Yang; *I. hispidus* H. R. Zhao & Y. L. Yang var. *auriculatus* H. R. Zhao & Y. L. Yang; *I. wuxiensis* T. P. Yi.

Culms to 2.5 m, 0.2–0.8 cm in diam.; internodes initially yellow-green, finely striate, 15–26 cm, initially yellow-brown or brown strigose and white pubescent, especially below nodes, rough with tubercles and imprints of fallen hairs at maturity; wall 1.5–3 mm thick; nodes elevated; sheath scar usually edged with a suberous ring left by fallen sheath; intranode 3–7 mm. Culm sheaths initially usually red-brown or dull green, 1/3–1/2 as long as internodes, rigid, brittle, completely minutely white pubescent except for distal 1/4 part also yellow-brown or brown strigose and with imprints of fallen hairs, margins brown ciliate; auricles purple when fresh, dark purple or brown when dry, falcate; oral setae yellow-brown; ligule truncate or arcuate, 0.5–1 mm, densely puberulent, entire or denticulate and minutely ciliate; blade erect or reflexed, green or yellow, linear-lanceolate, tessellations distinct on both surfaces, base much narrower than sheath apex, margins scabrous. Leaves 2–5 per ultimate branch; sheath glabrous or white pubescent, sometimes sparsely strigose, margins ciliate; auricles purple; oral setae yellow-brown, both weakly developed or absent on upper sheaths; ligule dark purple, truncate or arcuate, 1–1.5 mm, densely puberulent, entire; blade oblong-lanceolate, 10–29 × 3.5–7.5 cm, both surfaces glabrous, abaxially with pale or yellow powdery granules, secondary veins 6–14 pairs, tessellations square, base rounded or cuneate. Panicle 5–11 cm, dense, axis and branches densely white pubescent. Branches ascending, not pulvinate, subtended by minute bracts. Spikelets purple or green, 1–2.5 cm; florets 3–5. Rachilla internodes densely white pubescent. Glumes 2, glabrous, apex acuminate; lower glume 2–2.5 mm, (3–)5(–7)-veined; upper glume 6–8.5 mm, 5(–7)-veined; lemma ovate-lanceolate, 7.5–10 mm, glabrous, 7–11-veined, apex acuminate, mucronate, callus puberulent; palea keels glabrous. Stamens and pistil unknown. New shoots Jun, fl. Aug–Sep.

● Forests, scrub on mountain slopes, valleys; 1400–2400 m. Chongqing, NW Hunan, NE Sichuan.

13. Indocalamus chishuiensis Y. L. Yang & Hsueh, Acta Phytotax. Sin. 31: 68. 1993.

赤水箬竹 chi shui ruo zhu

Culms ca. 1 m, 0.3–0.5 cm in diam.; internodes 5–15 cm, initially white pubescent, sometimes also retrorsely white strigose below nodes; wall 1.3–2.3 mm thick; nodes weakly prominent. Culm sheaths straw-colored when dry, closely encircling culm, 5–7 cm, shorter than internode, leathery, gradually thickened toward base, densely white pubescent and retrorsely long white strigose, margins densely ciliate; auricles absent; oral setae absent or few; ligule 0.2–0.5 mm, puberulent; blade erect or reflexed, linear-lanceolate, 2.5–20 mm. Leaves 4–8 per ultimate branch; sheaths with deciduous hairs resembling those of culm sheaths; auricles absent; oral setae absent or rarely few; ligule (1–)1.5–2 mm; blade oblong-lanceolate, 13–18 × 2–3 cm, abaxially glaucous, adaxially glabrous, secondary veins 6 or 7 pairs, tessellations nearly square, base cuneate, apex long acuminate. Inflorescence unknown.

● Mountain slopes, low-lying lands; below 1300 m. Guizhou.

14. Indocalamus hispidus H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 460. 1985.

硬毛箬竹 ying mao ruo zhu

Culms 1–2(–3.5) m, 0.3–1(–1.2) cm in diam.; internodes initially green, slightly flattened above branches, (10–)15–30(–35) cm, white powdery, red-brown strigose especially below nodes or with imprints of fallen hairs; wall 2.5–4 mm thick; nodes weakly elevated, supra-nodal ridge absent; sheath scar weakly prominent, corky. Culm sheaths yellow-green, closely

encircling culm, shorter than internode, leathery, densely red-brown strigose; auricles and oral setae absent; ligule truncate, 1–3 mm, glabrous; blade erect or later reflexed, oblong-lanceolate or lanceolate, 0.6–3 cm. Leaves 3–5 per ultimate branch; auricles and oral setae absent; ligule 1.5–3 mm, glabrous; blade abaxially gray-green, broadly oblong-lanceolate, 11–28 × 4–6.5 cm, undulate when dry, abaxially pubescent and minutely pale papillate, adaxially glabrous, secondary veins 8–15 pairs, tessellations square. Panicle 9–10 cm or more, initially terminating leafy branch, axis and branches white pubescent; branches erect. Spikelets gray-green or commonly purple-green, subterete; florets 4 or 5. Rachilla internodes densely pubescent. Glumes 2, apex subulate; lower glume ca. 2/3 as long as upper one, 3–5-veined; upper glume 5–7-veined, transverse veins distinct; lemma ca. 1.5 cm, 7–11-veined, transverse veins distinct, apex subulate; palea shorter than lemma, pubescent. Stamens 3. Styles 2. New shoots Jul–Aug, fl. Aug.

● Montane forests; 1600–1900 m. E Sichuan.

15. Indocalamus bashanensis (C. D. Chu & C. S. Chao) H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 465. 1985.

巴山箬竹 ba shan ruo zhu

Sasa bashanensis C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 18: 30. 1980.

Culms 2–3 m, 1–1.5 cm in diam.; internodes 38–42 cm at mid-culm, white powdery, densely strigose or with imprints of fallen hairs; wall 2–3 mm thick; nodes elevated, nodal ridge more prominent than sheath scar. Culm sheaths yellow-brown, tinged with red, base with a corky ring, densely strigose or with imprints left by fallen hairs; auricles and oral setae absent; ligule subtruncate, 2–4 mm, glabrous, margin dentate; blade narrowly lanceolate, short. Leaves 6–9 per ultimate branch; sheath conspicuously striate, glabrous; auricles and oral setae absent; ligule well developed, brown, arcuate, (2–)4–8 mm, nearly entire or weakly sinuous, glabrous but dark scurfy powdery; blade elliptic-lanceolate or linear-lanceolate, 25–35 × 4–8 cm, abaxially glabrous but dark scurfy powdery, adaxially glabrous, secondary veins 10–13 pairs, tessellations nearly square, base cuneate or broadly cuneate, one margin scabrid, other margin smooth. Inflorescence unknown.

● Calcareous mountain slopes, valleys. Sichuan.

16. Indocalamus tessellatus (Munro) P. C. Keng, Acta Phytotax. Sin. 6: 355. 1957.

箬竹 ruo zhu

Bambusa tessellata Munro, Trans. Linn. Soc. London 26: 110. 1868; *Pseudosasa longivaginata* H. R. Zhao & Y. L. Yang; *Sasa tessellata* (Munro) Makino & Shibata; *Sasamorpha tessellata* (Munro) Koidzumi.

Culms 0.75–2 m, 0.4–0.7 cm in diam.; internodes usually green, ca. 25(–32) cm, with a red-brown tomentose ring below each node; nodes weakly elevated, supra-nodal ridge slightly more prominent than sheath scar. Culm sheaths striate, usually longer than internodes, upper portion loosely encircling culm, lower portion closely encircling it, thinly leathery, white tomentose, purple-brown strigose; auricles and oral setae absent; ligule truncate, 1–2 mm, membranous, brown hirtellous; blade deciduous, narrowly lanceolate, variable in size. Leaf sheaths leathery, glabrous, margin basally ciliate, distally glabrous; auricles rare, to 1 mm; oral setae very scarce, erect, white, straight, to 2 mm; ligule truncate or eroded, 1–2 mm, puberulent; blade broadly lanceolate or oblong-lanceolate, 20–46 × 4–10.8 cm, abaxially gray-green, glabrous or densely appressed-puberulent and tomentose along both or one side of midrib, secondary veins 8–16 pairs, tessellations square. Panicle 10–15 cm, partially exserted; branches erect, main axis and branches densely brown-puberulent. Spikelets purple-green, nearly terete, 2.3–2.5 cm; florets 5–15; pedicels 1–4 cm. Rachilla internodes 1–4 mm, white puberulent. Glumes 1 or 2, papery; lower glume 5–7 mm, densely puberulent, 5-veined; upper glume 7–12 mm, distally puberulent, 7-veined; first lemma 1.1–1.3 cm, distally puberulent, 11–13-veined, margins sparsely ciliate, apex very long acuminate to mucronate, callus 0.5–1 mm, white barbate; first palea ca. 1/3 as long as lemma, minutely white pubescent between keels, apex very shortly 2-cleft and pubescent; lodicules 3, oblong-lanceolate, ciliate, distally sparsely pilose. Anthers red, 6–7 mm. Ovary green, ovoid; style red, ca. 2 mm; stigmas 2, red, 3–4 mm. Caryopsis ca. 7 × 2.5 mm, style base persistent. New shoots Apr–May, fl. Jun–Jul.

● Open forests on mountain slopes; 300–1400 m. Hunan, Zhejiang.

17. Indocalamus latifolius (Keng) McClure, Sunyatsenia 6(1): 37. 1941.

阔叶箬竹 kuo ye ruo zhu

Arundinaria latifolia Keng, Sinensia 6(2): 147. 1935; *Indocalamus lacunosus* T. H. Wen; *I. migoi* (Nakai) P. C. Keng; *Pseudosasa hirta* S. L. Chen & G. Y. Sheng; *P. truncatula* S. L. Chen & G. Y. Sheng; *Sasamorpha latifolia* (Keng) Nakai; *S. migoi* Nakai.

Culms to 2 m, 0.5–1.5 cm in diam.; internodes 5–22 cm, puberulent, with a dense, brown tomentose ring below each node; nodes slightly elevated, supra-nodal ridge slightly more prominent than sheath scar. Culm sheaths distally loosely enclosing culm, papery, initially brown strigose and white tomentose, margins brown ciliate; auricles absent or inconspicuous; oral setae sparse, short, scabrid; ligule truncate, 0.5–2 mm, glabrous or ciliate; blade erect, linear or narrowly lanceolate. Leaf sheath thick, rigid, glabrous except minutely pubescent at apex; auricles absent; ligule truncate, 1–3 mm, glabrous or ciliolate; blade oblong-lanceolate, 10–45 × 2–9 cm, abaxially glabrous or pale green and ± puberulent, secondary veins 6–13 pairs, tessellations nearly square, margins hispidulous, apex acuminate. Panicles 6–12 cm, enveloped at base by a leaf sheath, axis and branches densely puberulent; branches ascendant or erect. Spikelets usually pale purple, subterete, 2.5–7 cm; florets 5–9. Rachilla internodes 4–9 mm, densely white pubescent. Glumes usually thin, distally and marginally pubescent, otherwise puberulent or glabrous; lower glume 5–10 mm, inconspicuously 5–9-veined; upper glume 8–13 mm, 7–9-veined; lemma puberulent or subglabrous, 11–13-veined, transverse veins distinct, first lemma 1.3–1.5 cm, callus densely white pubescent; palea 5–10 mm, minutely appressed pubescent between

keels, minutely pubescent near margins; lodicules 2–3 mm. Anthers purple or purple-yellow, 4–6 mm. Stigmas 2. New shoots Apr–May, fl. Jan–Aug. 2*n* = 48*.

● Open forests on mountain slopes and in valleys; below 1000 m. Anhui, Henan, Hubei, Jiangsu, Shaanxi, Shanxi.

18. Indocalamus hirtivaginatus H. R. Zhao & Y. L. Yang, Acta Phytotax. Sin. 23: 463. 1985.

毛鞘箬竹 mao qiao ruo zhu

Culms ca. 2 m, 0.8–1 cm in diam.; internodes purple-green, initially white powdery and glabrous or white puberulent, densely brown tomentose below nodes; wall 1.5–2 mm thick; supra-nodal ridge elevated, more prominent than sheath scar. Branches minutely appressed white or brown pubescent and retrorsely strigose. Culm sheaths commonly longer than internode, densely white tomentose and brown strigose or with imprints of fallen hairs; auricles absent or if present, small, sparsely fringed with scabrid oral setae; ligule 0.7–1.8 mm, puberulent, sparsely scabrid ciliate; blade erect, linear-lanceolate, 1.5–6.5 cm. Leaf auricles absent; ligule 1–2 mm, margin pale ciliate; pseudopetiole 0–7 mm; blade oblong-lanceolate, 19–34 × 4.5–7 cm, glabrous, except pubescent abaxially at base, secondary veins 9–12 pairs, tessellations square. New shoots Apr.

● Roadsides. Jiangxi.

19. Indocalamus inaequilaterus W. T. Lin & Z. M. Wu, Acta Phytotax. Sin. 26: 147. 1988.

粤西箬竹 yue xi ruo zhu

Culms 1–1.2 m, 0.6–0.9 cm in diam.; internodes terete, 25–33 cm, densely pubescent, densely hispid below nodes; wall 2–3 mm thick; sheath scar slightly raised. Branches often 1 per node. Culm sheaths persistent, 14–16 cm, abaxially sparsely white tuberculate-hispid, transverse veins often distinct distally; auricles absent; oral setae absent or few, erect, hirsute; ligule ca. 1 mm; blade spreading or reflexed, lanceolate, 1.4–2.4 cm, base ca. 1/3 as wide as sheath apex. Leaves 4 or 5 per ultimate branch; sheath sparsely ± hirsute, keeled toward apex; auricles absent; oral setae few or absent; ligule ca. 1 mm; blade oblong-ovate, 14–28 × 3.5–6.5 cm, both surfaces glabrous, secondary veins 9–12 pairs, tessellations conspicuous, apex caudate. Inflorescence unknown.

● Guangdong (Fengkai).

This species is known only from the type. The authors compared it with *Indocalamus hirtivaginatus*, which differs by having the culm sheaths longer than the corresponding nodes and without distinct transverse venation.

20. Indocalamus victorialis P. C. Keng, Acta Phytotax. Sin. 1: 121. 1951.

胜利箬竹 sheng li ruo zhu

Bashania victorialis (P. C. Keng) T. P. Yi; *Pseudosasa victorialis* (P. C. Keng) T. P. Yi.

Culms 1–3 m, 0.5–0.8 cm in diam.; internodes striate, to 26 cm, glabrous, lumen 1–2 mm in diam.; supra-nodal ridge rather elevated; sheath scar flat; intranode 4–5 mm. Culm sheaths closely encircling culm, shorter than internode, leathery to papery, pale brown strigose, densely retrorsely so at base, tubercles of fallen hairs persistent, margins densely ciliate; auricles and oral setae absent; ligule truncate, 0.5–1 mm, puberulent; blade deciduous, narrow, glabrous. Leaves 1–4 per ultimate branch; sheath glabrous except for ciliate distal margins, dorsally keeled; auricles and oral setae absent; ligule truncate, ca. 0.5 mm, puberulent; pseudopetiole short; blade broadly lanceolate, 14–25 × 2.5–4 cm, papery, glabrous, secondary veins 5–9-paired, tessellations rectangular, base broadly cuneate, apex caudate-acuminate. Panicles large, 15–26 cm; branches 3 per node, pulvinate. Spikelets yellow-green, ca. 1 cm; pedicels stiff, 1–5 mm, puberulent; florets ca. 5. Rachilla compressed, puberulent; internodes ca. 2 mm, readily disarticulating. Glumes glabrous except for midrib distally; lower glume purple-green, lanceolate, 3.5–4 mm, 3-veined, apex acuminate; upper glume yellow-green, 5.5–6 mm, inconspicuously 3-veined with prominent midrib, distally scabrous with minute hairs; lemma yellow-green, narrowly lanceolate, 5–6 × ca. 2 mm, papery, glabrous except for one ciliolate margin, 7-veined, callus with hairs 0.5–1 mm; palea 4.5–5.5 mm, apically puberulent between keels, otherwise glabrous, margins membranous; lodicules membranous, ca. 1 × 0.3–0.4 mm, posterior oblong, margin sparsely ciliolate, apex obtuse; anterior pair oblong-ovate, not ciliate, apex acute. Anthers yellow, ca. 4 mm. New shoots Apr, fl. May.

● Forests with *Bambusa emeiensis*, valleys, mountain slopes. Sichuan.

21. Indocalamus pedalis (Keng) P. C. Keng, Techn. Bull. Natl. Forest. Res. Bur. 8: 12. 1948.

矮箬竹 ai ruo zhu

Arundinaria pedalis Keng, J. Wash. Acad. Sci. 36: 84. 1946.

Culms ca. 30 cm, ca. 2 mm in diam.; lower internodes 1–5 cm, initially with a pubescent ring below each node; nodes prominent. Culm sheaths striate, 2–4.5 cm, initially basally pubescent; auricles absent; ligule truncate, ca. 0.3 mm, rigid, margin glabrous. Leaves 2–4 per ultimate branch; sheath brown strigose near upper margins, margins pale brown ciliate; auricles and oral setae absent; ligule truncate, ca. 0.5 mm, brown fimbriate; pseudopetiole 1–4 mm; blade lanceolate, 6.5–15 × 0.9–1.7 cm, glabrous or abaxially initially puberulent, secondary veins 4–6-paired, tessellations rectangular, base broadly cuneate, apex acuminate. Panicle or raceme 8–11 cm; spikelets 4–8; axis and branches brown pubescent. Spikelets brown or dark brown, 2–6 × 0.3–0.5 cm; pedicel erect or ascendant, weakly compressed; florets 4–11. Rachilla internodes 4–5.3 mm, flat on side facing floret, margins brown ciliate. Glumes 3 or 4, distally pubescent; lower glume 4–5 mm, 3–5-veined; second glume 5.5–6 mm, 7-veined; third and fourth glumes 7–8 mm; lemma ovate-lanceolate, 7–11 mm, 11-veined, apex subulate; callus ca. 0.5 mm, densely pale pubescent, hairs ca. 0.8 mm; palea lanceolate, 8–9 mm, or about as long as lemma, keels puberulent, minutely setose at apex; lodicules red-brown, oblong-lanceolate, or lateral ones subovate, ca. 3 mm, basally

veined, upper margin ciliate. Anthers black or purple, 5–6 mm. Stigmas gray-white or milky-white, ca. 3 mm. Inflorescence unknown.

● Fissures of rocky hillsides. Sichuan.

22. Indocalamus wilsonii (Rendle) C. S. Chao & C. D. Chu, J. Nanjing Technol. Coll. Forest Prod. 1981(3): 43. 1981.

鄂西箬竹 e xi ruo zhu

Arundinaria wilsonii Rendle, J. Linn. Soc., Bot. 36: 437. 1904; *Indocalamus nubigenus* (P. C. Keng) H. R. Zhao & Y. L. Yang; *I. shimenensis* B. M. Yang; *Sasa nubigena* P. C. Keng; *Sinarundinaria wilsonii* (Rendle) P. C. Keng.

Culms 30–90 cm or more, 0.2–0.4 cm in diam.; internodes 4–12 cm, glabrous or white pubescent, sometimes with a densely pubescent ring below each node, lumen 0.5–1 mm in diam.; supra-nodal ridge flat or weakly prominent; sheath scar flat. Culm sheaths pale red-brown or straw-colored, closely embracing culm, ca. 1/2 as long as internode, thickly papery, densely deciduously white pubescent, densely pubescent or glabrescent near outer margin, veins conspicuous, transverse veins sometimes distinct; auricles and oral setae absent; ligule short, ca. 0.6 mm; blade ovate-lanceolate or narrowly triangular, 2–15 mm, base contracted, apex acute. Branch sheaths orange-red when dry, glabrous; ligule 1.5–4 mm; blade lanceolate or narrowly ovate-lanceolate, 2.5–4 cm. Leaves 3(–5) per ultimate branch; sheath yellow-green, tinged with red, glabrous or pubescent; auricles and oral setae absent; ligule 2.5–9 mm; blade oblong-lanceolate, 6–17 × 1.5–4.7 cm, wavy when dry, abaxially gray-green and pilose, adaxially yellow-green and glabrous, secondary veins 4–8 pairs, tessellations square, base rounded or broadly cuneate, apex acuminate with a weak point. Panicle 5–10 cm, base encircled by leaf sheath; branches ascendant, slender, glabrous, pulvinate. Spikelets usually purple-green, 1.5–2.6 cm; florets 3–7. Rachilla internodes ca. 4 mm, densely yellow-villous. Glumes usually 2, glabrous; lower glume 2–3 mm, 3-veined; upper glume 3–5 mm, 5–7-veined; lemma puberulent, 7–9-veined, apex acuminate with a short mucro, callus densely white villous; palea 6–7.2 mm, puberulent. Anthers yellow. Styles 2(or 3). Fl. May–Aug.

● Forests; 1700–3000 m. Guizhou, Hubei, Sichuan.

Taxa incertae sedis

Indocalamus amplexicaulis W. T. Lin (J. S. China Agric. Univ. 13(2): 86. 1992) was described from Guangdong.

Indocalamus chebalingensis W. T. Lin (J. Bamboo Res. 19(1): 6. 2000) was described from sterile material from Guangdong (Shixing). In the protologue it was compared with *I. longiauritus*.

Indocalamus confertus C. H. Hu (J. Bamboo Res. 15(1): 1. 1996) was described from Sichuan.

Indocalamus cordatus T. H. Wen & Y. Zou (J. Bamboo Res. 10(1): 18. 1991) was described from Jiangxi.

Indocalamus macrophyllus C. F. Huang (Wuyi Sci. J. 8: 171. 1991) was described from Fujian (Wuyi Shan).

Indocalamus pumilus Q. H. Dai & C. F. Huang (Acta Phytotax. Sin. 24: 394. 1986) was described from a cultivated plant in the Guangxi Institute of Forestry Bamboo Garden in Nanning, Guangxi.

Indocalamus suichuanensis T. P. Yi & Y. H. Guo (J. Bamboo Res. 14(1): 14. 1995) was described from Jiangxi.

Indocalamus youxiuensis T. P. Yi (J. Bamboo Res. 11(3): 53. 1992) was described from Sichuan.

29. INDOSASA McClure, Lingnan Univ. Sci. Bull. 9: 28. 1940.

大节竹属 da jie zhu shu

Zhu Zhengde (朱政德 Chu Cheng-de); Chris Stapleton

Arborescent bamboos, sometimes shrubby. Rhizomes leptomorph, with running underground stems. Culms diffuse, erect to nodding; internodes substantially grooved above branches; wall thick, cavity with granular or spongy pith; nodes prominent. Mid-culm branches 3, subequal or central dominant. Culm sheaths deciduous, leathery or thickly papery, setose; ligule truncate; blade large, triangular or lanceolate, rarely strap-shaped. Leaves usually medium to large-sized, transverse veins distinct. Inflorescence fully bracteate, partially iterauctant, lateral, racemose, sessile, prophyllate. Spikelets many flowered, gradually enlarged; basal bracts and glumes often with basal axillary buds developed into secondary spikelets; basal 1–4 florets sometimes sterile. Glumes usually 2; lemma larger and broader than glumes, many veined; palea obtuse, 2-keeled; lodicules 3, subequal. Stamens 6; filaments free. Ovary narrowly ellipsoid or fusiform; style short; stigmas 3, plumose. Fruit a caryopsis, ovoid to ellipsoid, beaked. New shoots spring–early summer.

About 15 species: S China, N Vietnam; 15 species (13 endemic) in China.

Indosasa is the only genus of bamboos in China with six stamens, bracteate inflorescences, and leptomorph rhizomes.

In addition to the species treated below, *Indosasa jinpingensis* T. P. Yi (J. Bamboo Res. 20(4): 1. 2001) was described from Yunnan (Jinping). In the protologue it was compared with *I. parvifolia*.

Indosasa hispida (species no. 13) could not be included in the following key because its culm sheaths are unknown.

1a. Culm sheaths without auricles.
  2a. Culm internodes initially glabrous.
    3a. Culm sheaths asymmetrical, central parts of sheath densely setose; culm wall thick, internodes nearly solid at culm base ..... 1. *I. crassiflora*

3b. Culm sheaths symmetrical, sparsely setose or subglabrous; culm wall thin.
4a. Culm branch nodes weakly prominent; ultimate branches usually with 1 leaf, rarely 2-leaved with apical blade inverted ..... 2. *I. shibataeoides*
4b. Culm branch nodes very prominent; ultimate branches 2–4-leaved, without apical blade inverted.
5a. Culms to 3 m; culm sheaths with oral setae absent or, if present, culms initially white hairy ..... 3. *I. glabrata*
5b. Culms to 5 m; culm sheaths with oral setae present, 5–10 mm; culms glabrous ..... 15. *I. triangulata*
2b. Culm internodes initially pubescent or scabrous.
6a. Culm nodes and branch nodes weakly prominent; leaf blade abaxially pubescent ..... 4. *I. angustata*
6b. Culm nodes and branch nodes strongly prominent; leaf blade usually glabrous.
7a. Culm internode cavity pith lamellate; internodes initially villous; culm sheath sometimes with sparse oral setae ..... 3. *I. glabrata*
7b. Culm internode cavity pith spongy or granular, never lamellate; internodes initially setose; culm sheath without oral setae.
8a. Culm internode pith spongy; leaf blade 10–17 × 2–2.5 cm ..... 5. *I. spongiosa*
8b. Culm internode pith slightly granular; leaf blade 14–27 × 2.5–4.5 cm ..... 6. *I. ingens*
1b. Culm sheaths with auricles.
9a. Ultimate branches with 1 leaf, rarely 2 leaves with apical leaf blade inverted ..... 2. *I. shibataeoides*
9b. Ultimate branches with 2–9 leaves, apical leaf blade not inverted.
10a. Culm nodes and branch nodes moderately prominent; culm sheaths sparsely setose.
11a. Culms initially setose; culm sheaths with brown setae; leaf blade glabrous ..... 11. *I. longispicata*
11b. Culms glabrous; culm sheaths with retrorse, purple-brown setae; leaf blade abaxially pubescent .... 12. *I. gigantea*
10b. Culm nodes and branch nodes very prominent (slightly prominent in *I. patens*); culm sheaths with clumped setae.
12a. Culm sheaths glaucous ..... 14. *I. singulispicula*
12b. Culm sheaths not glaucous.
13a. Culm sheaths yellow-green or yellow; blade marginally never undulate.
14a. Culm internodes glaucous, culm sheath auricles minute; leaf blade 11–22 × 1.5–3 cm ..... 7. *I. sinica*
14b. Culm internodes not glaucous; culm sheath auricles large, projecting, rounded; leaf blade 6–14 × 1–1.5 cm ..... 8. *I. parvifolia*
13b. Culm sheaths red-brown, purple-brown or brown; blade marginally undulate or not.
15a. Culm sheath blade marginally not undulate, entire, glabrous; branches horizontal; leaf blade 15–25 × 2–4 cm, abaxially sparsely pubescent ..... 9. *I. patens*
15b. Culm sheath blade marginally undulate, denticulate, setose; branches deflexed; leaf blade 8–15 × 1–2.3 cm, abaxially glabrous ..... 10. *I. lipoensis*

1. Indosasa crassiflora McClure, Lingnan Univ. Sci. Bull. 9: 29. 1940.

大节竹 da jie zhu

Sinobambusa gibbosa McClure, Lingnan Univ. Sci. Bull. 9: 58. 1940; *Indosasa gibbosa* (McClure) McClure.

Culms to 5 m, to 4 cm in diam.; internodes flexuose, initially green, 40–65 cm, glaucous, glabrous; wall thick, cavity pith thin; nodes very prominent. Culm sheath obscurely spotted, shorter than internode, densely setose at base, one or sometimes both sides subglabrous, apex asymmetrical; auricles absent; oral setae sparse; ligule truncate, dentate; blade reflexed, triangular-lanceolate, slightly wrinkled, setose. Leaves 4–6 per ultimate branch; sheath glabrous; auricles weak; oral setae few, deciduous, erect; ligule short; blade linear-lanceolate, 11–22 × 2–4.5 cm, glabrous, glaucous, secondary veins 5–8-paired, one margin serrulate, other margin entire. Pseudospikelets robust, 6–12.5 × 0.7–1 cm, glabrous; florets 7–13. Palea about as long as lemma, or slightly longer; lodicules oblong. Anthers yellow. Ovary fusiform; style glabrous; stigmas 3. New shoots May, fl. Jun.

Open lowlands. SW Guangxi [N Vietnam].

The asymmetrical culm sheath makes this species very easy to distinguish.

The culms are used in many ways as supporting poles.

2. Indosasa shibataeoides McClure, Lingnan Univ. Sci. Bull. 9: 32. 1940 [*"shibataeaoides"*].

摆竹 bai zhu

Indosasa acutiligulata Z. P. Wang & G. H. Ye; *I. levigata* Z. P. Wang & G. H. Ye; *I. tinctilimba* McClure.

Culms to 15 m, to 10 cm in diam.; internodes initially deep green, yellow in age, sometimes spotted and striate, 40–50 cm, glaucous below nodes, glabrous; nodes prominent. Culm sheath light orange, purple or yellow, unspotted or sometimes minutely spotted, striate, setose (glabrous on smaller culms), glaucous; auricles small (absent on small culms), falcate; oral setae radiate; ligule arcuate, ciliolate; blade green, triangular or lanceolate, constricted at base. Leaves usually 1 per ultimate branch, rarely 2 with apical leaf inverted; sheath purple; blade elliptic-lanceolate, 8–22 × 1.5–3.5 cm, glabrous, secondary veins 4–6-paired. Flowering branchlets usually leafless. Pseudospikelets solitary or in pairs, robust, slightly compressed, 6–8 × ca. 1 cm, bracts 4–8; florets 6–8. Rachilla internodes ca. 2 mm, glabrous. Glumes usually 4, thin, glabrous; lemma glabrous; palea shorter

and narrower than lemma, glabrous; lodicules glabrous. Anthers yellow. Ovary and style glabrous. New shoots Apr, fl. Jun–Jul.

● Evergreen forests, forming large areas of understory; 300–1200 m. N Guangdong, N Guangxi, S Hunan.

This species is used for the manufacture of bamboo furniture, for which its mottled culms are considered superior.

3. Indosasa glabrata C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 21: 64. 1983.

算盘竹 suan pan zhu

Culms to 3 m, to 2 cm in diam.; internodes initially green, yellow in age, 20–30 cm, glaucous below nodes, glabrous; wall 2–3 mm thick, cavity pith lamellate; nodes very prominent. Culm sheaths readily deciduous, green or yellow when dry, unspotted, shorter than internodes, glabrous or sparsely setose; auricles and oral setae absent; ligule slightly arcuate, short; blade green, triangular lanceolate. Leaves 2–4 per ultimate branch; sheath glabrous; auricles small or obscure; oral setae deciduous, straight; ligule short; blade oblong-lanceolate, 8–16(–23) × 2–2.8(–4.2) cm, secondary veins 5–7-paired. Inflorescence unknown. New shoots early Apr.

● Hills. S Guangxi.

1a. Culms glabrous; culm sheaths oral setae absent ..... 3a. var. *glabrata*
1b. Culms white hairy initially; culm sheath oral setae scarce ..... 3b. var. *albohispidula*

3a. Indosasa glabrata var. **glabrata**

算盘竹(原变种) suan pan zhu (yuan bian zhong)

Culms glabrous. Culm sheath without oral setae.

● Open hills, slopes or summits. S Guangxi.

3b. Indosasa glabrata var. **albohispidula** (Q. H. Dai & C. F. Huang) C. S. Chao & C. D. Chu, Fl. Reipubl. Popularis Sin. 9: 212. 1996.

毛算盘竹 mao suan pan zhu

Indosasa albohispidula Q. H. Dai & C. F. Huang, J. Bamboo Res. 3(1): 47. 1984.

Culms initially white hairy. Culm sheath with few, straight oral setae.

● Low hills. S Guangxi.

4. Indosasa angustata McClure, J. Arnold Arbor. 23: 93. 1942.

甜大节竹 tian da jie zhu

Culms to 14 m, to 10 cm in diam.; internodes initially light green, gray-green in age, 30–50 cm, initially sparsely pilose, soon glabrous; cavity pith spongy or lamellate; nodes weakly prominent. Culm sheaths initially green, light brown when dried, unspotted, striate, narrowly elongated, setose, margins ciliate; auricles absent, oral setae 2–4, erect, 7–15 mm; ligule prominent, 2–5 mm high, ciliate; blade pale purple-red, lanceolate, scabrid. Leaves 3–6 per ultimate branch; sheath glabrous, margins sometimes ciliate; auricles usually absent; oral setae scarce, readily deciduous, erect; blade linear-lanceolate to lanceolate, 11–28 × 1.5–5 cm, sparsely setose, secondary veins 3–7-paired, margins scabrid, serrulate. Inflorescence unknown. New shoots Apr.

Under evergreen trees. S Guangxi [N Vietnam].

The shoots are sweet.

5. Indosasa spongiosa C. S. Chao & B. M. Yang, Bamboo Res. 1982(1): 14. 1982.

江华大节竹 jiang hua da jie zhu

Culms 5–8 m, to 6 cm in diam.; internodes 20–35 cm, glaucous near nodes, slightly scabrid; wall ca. 3 mm thick, pith spongy; nodes strongly prominent. Culm sheaths shorter than internodes, sparsely setose, margins ciliate, purple; auricles and oral setae absent; ligule short, shortly hairy; blade lanceolate, scabrid. Leaves 3–5 per ultimate branch; sheath glabrous; auricles absent or weak, oral setae few or absent; blade lanceolate or oblong-lanceolate, 10–17 × 1.2–2.5 cm, glabrous, secondary veins 5- or 6-paired. Inflorescence unknown. New shoots Apr–May.

● About 800 m. S Hunan.

The culms are used as supports, and the plants are cultivated for ornament.

6. Indosasa ingens Hsueh & T. P. Yi, Acta Bot. Yunnan. 5: 39. 1983.

粗穗大节竹 cu sui da jie zhu

Culms to 6 m, 3–5 cm in diam.; internodes initially dark green or purple-green, yellow-brown in age, 30–40(–60) cm, glaucous, setose, scabrid. Culm sheaths yellow-brown, sparsely setose; auricles and oral setae absent; ligule arcuate or weakly prominent, shortly ciliate; blade reflexed or erect, triangular-ovate. Leaves 5–9 per ultimate branch; sheath glabrous; auricles absent; oral setae 2 or 3, deciduous; blade oblong to lanceolate, 14–27 × 2.5–4.5 cm, glabrous, secondary veins 6–8-paired. Pseudospikelets robust, slightly compressed, 4.5–13 × 0.5–0.8 cm; bracts 4–7, distal bracts larger; florets 5–15. Rachilla internodes ca. 1 cm, articulate, glaucous, glabrous. Lemma broadly ovate; palea about as long as lemma or slightly shorter, narrower, keels shortly ciliate; lodicules glabrous. Stigmas 3, purple. Fl. Oct–Dec.

● Streams; 900–1600 m. SE Yunnan.

The shoots are bitter, and the culms are used for fencing and weaving.

7. Indosasa sinica C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 21: 65. 1983.

中华大节竹 zhong hua da jie zhu

Culms 10–15 m, 6–10 cm in diam.; internodes flexuose, initially green, brown or dark green in age, 30–50 cm, densely glaucous, sparsely setose; wall thick; nodes very prominent. Culm sheath yellow-green, striate, with scattered clumps of setae, more densely setose at base; auricles small; oral setae curved, 1–1.5 cm; ligule arched, 2–3 mm, ciliate; blade reflexed, green, triangular-lanceolate, densely setose. Leaves 3–9 per ultimate branch; auricles developed or sometimes obscure; oral setae deciduous, purple, ca. 8 mm; blade lanceolate, 12–22 × 1.5–3 cm, apical blades to 6 cm wide, glabrous, secondary

veins 5- or 6-paired. Pseudospikelets 2 or 3, robust, 4.5–13 cm; florets many. Rachilla articulate, glabrous. Lemma 1.2–1.5 cm, glaucous, glabrous, many veined, apex acute; palea shorter than lemma; lodicules membranous. Stamens with filaments white; anthers purple. Style 1; stigma 3-cleft. Caryopsis brown, ovoid-ellipsoid, ca. 8 × 2 mm, base rounded; style base persistent. New shoots Apr, fl. May.

● Widespread; low elevations. Guangxi, S Guizhou, S Yunnan.

The culms are used as supports and in small buildings.

8. Indosasa parvifolia C. S. Chao & Q. H. Dai, Acta Phytotax. Sin. 21: 67. 1983.

小叶大节竹 xiao ye da jie zhu

Culms to 6 m, to 3.5 cm in diam.; internodes initially deep green, green or gray-green in age, 20–40 cm, glaucous below nodes, densely setose; wall thick; cavity pith slightly granular; nodes strongly prominent. Culm sheaths orange-yellow, glaucous, with scattered clumps of readily deciduous, brown setae; ligule very short, densely ciliolate; blade erect, green, triangular or lanceolate, constricted at base, both surfaces setose. Leaves 4–7 per ultimate branch; sheath glabrous; auricles small; oral setae deciduous, erect; blade abaxially light green, linear-lanceolate or lanceolate, 6–14 × 1–1.5 cm, glabrous, secondary veins 3- or 4-paired. Inflorescence unknown. New shoots Apr.

● Hardwood forests; ca. 800 m. S Guangxi.

9. Indosasa patens C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 21: 72. 1983.

横枝竹 heng zhi zhu

Culms to 12 m, 8–12 cm in diam.; internodes initially green, purple striate, 40–60 cm, densely setose; cavity pith spongy or lamellate; nodes weakly prominent. Culm sheaths purple-brown, green-brown on smaller culms and at culm apex, unspotted, shorter than internodes, slightly glaucous, setose in scattered clumps, margins ciliate; auricles small, rugose; oral setae 1–1.5 cm, scabrid; ligule truncate or weakly prominent, 2–3 mm, dark brown ciliate; blade green-brown, triangular or lanceolate, broad, scabrous. Leaves 2–5 per ultimate branch; sheath glabrous; auricles small; oral setae sparse, 5–10 mm; blade broadly linear-lanceolate, 13–25 × 2–4 cm, pubescent or subglabrous, secondary veins 5–7-paired. Inflorescence unknown. New shoots Apr.

● Evergreen broad-leaved forests on low hills. N Guangxi.

This species is characterized by its open, horizontally spreading branches.

10. Indosasa lipoensis C. D. Chu & K. M. Lan, Bamboo Res. 1982(1): 3. 1982.

荔波大节竹 li bo da jie zhu

Culms to 10 m, 3–4 cm in diam.; internodes flexuose, 30–40 cm, not glaucous, initially setose; cavity pith spongy; nodes prominent; sheath ring glabrous. Culm sheath red-brown, densely setose in scattered clumps; auricles developed; oral setae radiate, curved, 7–9 mm; ligule slightly arched, 2–3 mm, shortly ciliolate; blade erect or horizontal, green, triangular-lanceolate or narrowly triangular, both surfaces sparsely setose, basal margins undulate, serrulate. Leaves 2–4 per ultimate branch; sheath glabrous; auricles small; oral setae sparse, deciduous, erect; blade lanceolate or oblong-lanceolate, 8–15 × 1–2.3 cm, secondary veins 4- or 5-paired, both surfaces glabrous, margins serrulate. Inflorescence unknown. New shoots Apr.

● Usually cultivated; low elevations. S Guizhou.

11. Indosasa longispicata W. Y. Hsiung & C. S. Chao, Acta Phytotax. Sin. 21: 71. 1983.

棚竹 peng zhu

Sinobambusa striata T. H. Wen.

Culms 10–15 m, to 6 cm in diam.; internodes initially green, yellow-green in age, 40–50 cm, glaucous, densely setose; cavity pith spongy; nodes weakly prominent. Culm sheaths variable in color, densely glaucous, sparsely setose, nearly glabrous on small culms or at culm apex, margins ciliate; auricles falcate, small; oral setae radiate, 4–6 mm; ligule prominent, short, ciliolate; blade green, triangular, lanceolate, or narrowly lanceolate, setulose. Leaves 3–5 per ultimate branch; sheath margins ciliate; auricles developed; oral setae radiate; ligule short, obscure; blade abaxially light green, narrowly lanceolate, 9–12 × 1.2–2.6 cm, glabrous, secondary veins 4–6-paired, margins serrulate. Pseudospikelets clustered, 4–10(–20) cm; bracts several; florets 10–20. Rachilla internodes 6–8 mm, glabrous. Glumes absent to 2, gradually transformed into lemmas, mucronate, basally and apically usually sterile; lemma papery; palea narrower and shorter than lemma; lodicules subglabrous. Anthers ca. 5 mm. Ovary glabrous; stigmas 3. New shoots May, fl. Apr–May.

● Evergreen broad-leaved forests. N Guangxi.

The culms are used for fencing and the framework of small buildings. The plants are cultivated for ornament.

12. Indosasa gigantea (T. H. Wen) T. H. Wen, J. Bamboo Res. 19(1): 22. 1991.

橄榄竹 gan lan zhu

Sinobambusa gigantea T. H. Wen, J. Bamboo Res. 2(1): 57. 1983; *Acidosasa gigantea* (T. H. Wen) Q. Z. Xie & W. Y. Zhang.

Culms 9–12 m, 5–10 cm in diam.; internodes initially green, yellow-green in age, 50–77 cm, glaucous, glabrous, minutely papillate; nodes prominent, glaucous. Culm sheaths golden-yellow or pale red-brown, triangular, 2–4 cm wide, glaucous, purple-brown setose, basally subglabrous, apex narrow; auricles ovate to elliptic, ca. 11 × 7–8 mm, rugose, abaxially roughly hairy; oral setae erect, 5–10 mm; ligule prominent, 3–5 m, roughly hairy, with cilia 2–3 mm; blade striate, lanceolate to triangular, margins retrorsely setose, both surfaces glabrous. Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule ca. 2 mm; blade lanceolate, 8–13 × 1.4–2 cm, mainly glabrous, abaxially proximally pubescent, secondary veins 5- or 6-paired, serrulate. Flowering branchlets lateral, 8–9 cm. Pseudospikelets 2 or 3, 5–6 cm; florets 7–9. Glumes 1 or 2; lemma glabrous; palea nearly

as long as lemma, keels and apex ciliate; lodicules 3–4 mm. Ovary 0.5–1 mm; styles ca. 2.5 mm; stigmas 3.

● Low hills. N Fujian; cultivated in Zhejiang.

A different interpretation of the inflorescence can place this species in *Acidosasa*.

13. Indosasa hispida McClure, Lingnan Univ. Sci. Bull. 9: 31. 1940.

浦竹仔 pu zhu zi

Culms to 2.3 m; internodes glaucous, initially setose, mainly glabrous in age with setae persistent below nodes. Culm sheaths unknown. Leaves 2–5 per ultimate branch; sheath glabrous; auricles absent or small; oral setae absent or few, erect, scabrid; ligule truncate or prominent, 1–2 mm, slightly scabrous, cilia absent; blade narrowly lanceolate, 9–22 × 1.5–2.8 cm, abaxially pubescent, rarely glabrous, secondary veins 5- or 6-paired, margins serrulate. Flowering branchlets leafy or leafless. Pseudospikelets 3 or 4, 3.5–7 cm, yellow hairy, subtended by several, sheathlike bracts 2–4 cm, with shortened blades 5–12 mm; florets 4–7. Rachilla internodes 5–6 mm, slightly compressed, densely pubescent. Glumes 2, yellow, densely hairy, many veined; lemma 1.2–1.6 cm, abaxially densely pubescent, many veined, apex acuminate, long mucronate; palea shorter and narrower than lemma, 1–1.2 cm, keels and apex ciliolate; lodicules lanceolate, margin sometimes ciliolate. Anthers yellow, ca. 4 mm. Ovary and style glabrous; stigmas 3. Fl. Mar–Apr.

● Marginal lands. C Guangdong.

The culms are used for papermaking.

14. Indosasa singulispicula T. H. Wen, J. Bamboo Res. 7(1): 29. 1988.

单穗大节竹 dan sui da jie zhu

Culms 5–7 m, 1–1.5 cm in diam.; internodes green, terete, 10–30 cm, initially white powdery below nodes, pubescent; nodes very prominent; sheath scar slightly prominent; intranode 6–9 mm, black scurfy. Branches 3, central dominant; nodes very prominent. Culm sheaths gradually deciduous, initially pale green, striate, thickly papery, white powdery, initially dark brown setose, densely setose at base, margins pale brown ciliate; auricles obvious, falcate, roughly purple-brown hairy; oral setae brown; ligule ca. 2 mm, ciliate; blade erect, lanceolate, glabrous. Leaves 5–7 per ultimate branch; sheath ciliate; auricles well developed; oral setae many, 1–13 mm; blade lanceolate to oblong-lanceolate, 13–26 × 2.2–3.5 cm, both surfaces glabrous, secondary veins 6–8-paired, transverse veins obvious, base cuneate, apex acuminate. Inflorescence terminal or lateral. Pseudospikelets 10–13 ×0.4–0.6 cm; bracts many; florets 8–13. Glumes 2, leathery, veins reticulate; lemma 1.3–2 cm, leathery, pubescent, veins tessellate, apex acuminate; palea shorter than lemma; lodicules many veined. Ovary ovoid, glabrous; style short; stigmas 3. New shoots Mar–Apr, fl. Sep–Nov.

● Low hills, streams, 600–700 m. S Yunnan.

The shoots are bitter, and the culms are used as supports and in small buildings.

15. Indosasa triangulata Hsueh & T. P. Yi, Acta Bot. Yunnan. 5: 41. 1983.

五爪竹 wu zhua zhu

Arundinaria triangulata (Hsueh & T. P. Yi) C. S. Chao & G. Y. Yang.

Culms to 5 m, 1–2.5 cm in diam.; internodes green, longitudinally striate, terete, flattened above branches, 10–30 cm, initially white powdery, glabrous; supra-nodal ridge very prominent and glabrous; sheath scar prominent, retrorsely yellow-brown setose, with remains of sheath base; intranode 3–5 mm, sometimes black scurfy. Branches 3–5 per node, 30–45 cm, irregularly triangular at base. Culm sheath soon deciduous, pale yellow, obviously striate, oblong-triangular, 21–22 × 5–10 cm, abaxially sparsely yellow-brown setose, more densely hairy at base, margins initially densely brown hispid; auricles absent; oral setae 5–10 mm, gray-yellow hairy; ligules arched, ca. 1 mm, glabrous; blades reflexed, linear-lanceolate, 3–10 ×0.2–0.4 cm, glabrous, obviously longitudinally veined, margins involute. Leaves 3–5 per ultimate branch; sheath 5.5–7 cm; auricles absent; ligules purple, arched or truncate, 1–2 mm; blades abaxially gray, lanceolate to narrowly lanceolate, 9–19 × 1.2–2.5 cm, papyraceous, glabrous, secondary veins 5–7-paired, transverse veins distinct, margins sparsely serrulate. Inflorescence unknown.

● Low hills, sloping fields; below 1200 m. Guizhou, SE Yunnan.

Although this species was published in *Indosasa*, its flowers remain unknown, and it may be a species of *Pleioblastus* or, from the triangular branch base and deciduous culm sheaths, possibly *Oligostachyum*.

The shoots are bitter, and the culms are used as supports and in small buildings.

30. SINOBAMBUSA Makino ex Nakai, J. Arnold Arbor. 6: 152. 1925.

唐竹属 tang zhu shu

Zhu Zhengde (朱政德 Chu Cheng-de), Yang Guangyao (杨光耀); Chris Stapleton

Arborescent or shrubby bamboos. Rhizomes leptomorph, with running underground stems. Culms diffuse, sometimes also clustering, erect to nodding; internodes substantially grooved above branches, initially usually pubescent; nodes prominent, sheath rings corky. Branches 3, rarely 5–7 at higher nodes, subequal, buds initially closed at front. Culm sheaths deciduous, setose; ligule serrate or entire; blade lanceolate. Leaves 3–9 per ultimate branch; blade lanceolate. Inflorescence fully bracteate, partially iterauctant, lateral, racemose, prophyllate. Spikelets 1–3, subtended by a prophyll and 2 to more gradually enlarged bracts or glumes, apical 1 or 2 bracts usually with axillary buds, forming secondary pseudospikelets, lateral spikelets sessile, terminal spikelet variably pedicellate. Spikelets with several to many (up to 50) florets. Rachilla disarticulating between florets. Lemma leathery, apex acute;

palea about as long as lemma or slightly shorter, 2-keeled, rounded at apex, ciliolate; lodicules 3, membranous, many veined. Stamens 3, sometimes 2 or 4; filaments free. Ovary ellipsoid; style 1, sometimes absent, usually long; stigmas 2 or 3, plumose. Fruit a caryopsis.

About ten species: S and SW China, N Vietnam; introduced to Japan during the Tang Dynasty; ten species (nine endemic) in China.

Sinobambusa is very difficult to distinguish from *Indosasa* without knowledge of stamen number.

In addition to the species treated below, *Sinobambusa glabrata* W. T. Lin & Z. J. Feng (J. S. China Agric. Univ. 14(1): 47. 1993) was described from Guangdong. It is a doubtful species, and the type possibly represents a species of *Bambusa*. *Sinobambusa scabrida* T. H. Wen (J. Bamboo Res. 2(1): 61. 1983) was described from W Guangxi based on a winter-shooting specimen. It would seem that the culm sheaths were taken from newly emerged, abnormal shoots. The flowers are unknown, and the identity of this species is uncertain.

The generic placement of *Sinobambusa dushanensis* (species no. 10) is uncertain. It has not, therefore, been included in the following key.

1a. Culm sheath auricles absent, or small and obscure.
  2a. Culm sheath auricles present but obscure; culm sheath ligule yellow-green, proximally tomentose; leaf blade abaxially glabrous ..... 9. *S. incana*
  2b. Culm sheath auricles absent; leaf blade abaxially pubescent.
    3a. Culm sheath ligule convex, purple, proximally densely setose ..... *7. S. rubroligula*
    3b. Culm sheath ligule truncate, proximally tomentose ..... 8. *S. yixingensis*
1b. Culm sheath auricles well developed.
  4a. Culm internodes glabrous, sometimes papillate below nodes.
    5a. Culm internodes and culm sheath densely pruinose initially, gray-green, culm sheath blade rugose ..... 3. *S. farinosa*
    5b. Culm internodes green, culm sheath light brown or yellow, light pruinose initially, culm sheath blade not rugose.
      6a. Culm internodes dark green; culm sheath blades not purple; culm sheath auricles not developed (except in var. *laeta*) ..... 1. *S. tootsik*
      6b. Culm internodes pale green; culm sheath blade purple; culm sheath auricles moderately developed ..... 2. *S. humilis*
  4b. Culm internodes pubescent.
    7a. Culm sheath initially pruinose, coarsely black glandular hairy ..... 4. *S. henryi*
    7b. Culm sheath initially not pruinose, purple-brown to yellow-brown setose.
      8a. Culm internodes with fine hairs; culm sheath blade glabrous ..... 5. *S. intermedia*
      8b. Culm internodes with coarse hairs; culm sheath blade pubescent ..... 6. *S. nephroaurita*

1. Sinobambusa tootsik (Makino) Makino, J. Jap. Bot. 2: 8. 1918.

唐竹 tang zhu

Culms 5–12 m, 2–6 cm in diam.; internodes initially deep green, flattened above branches, 30–40(–80) cm, glaucous, glabrous, apically minutely papillate. Culm sheaths initially red-brown, basally suboblong, leathery, slightly glaucous, setose, densely so at base, margins ciliate, apex broadly rounded; auricles very variable, scabrid, tomentose; oral setae curved, ca. 2 cm; ligule arcuate, ca. 4 mm, uniform; blade reflexed, green, lanceolate. Leaves 3–6(–9) per ultimate branch; sheath glabrous; auricles obscure; oral setae deciduous, radiate, ca. 1.5 cm, undulate; ligule truncate or subrounded; blade 6–22 × 1–3.5 cm, secondary veins 4–8-paired, margins serrulate. Spikelets 1–3(–5), lateral spikelets sessile, terminal spikelet on 2–11 mm pedicel, linear, 8–20 × 0.2–0.3 cm; florets 7–12 mm, glabrous. Lemma ovate, ca. 7 mm wide, margins ciliate, apex acute; palea elliptic; lodicules nearly rhombic, elliptic or ovate, ca. 2.5 mm, ciliolate. Anthers light yellow. Ovary glabrous; style 1, extremely short; stigmas 3, 3–4 mm. New shoots Apr–May.

Fujian, Guangdong, Guangxi [N Vietnam; introduced in Japan].

1a. Leaf blade abaxially pubescent.
  2a. Culm sheath ligule arcuate, 3–4 mm; blade green; lodicule 7–9-veined ..... 1a. var. *tootsik*
  2b. Culm sheath ligule truncate, short; blade purple or purple-green; lodicule few veined ..... 1b. var. *laeta*
1b. Leaf blade abaxially glabrous.
  3a. Apex of culm sheath ligule entire ..... 1c. var. *maeshimana*
  3b. Apex of culm sheath ligule sharply toothed or 2-toothed ..... 1d. var. *dentata*

1a. Sinobambusa tootsik var. **tootsik**

唐竹(原变种) tang zhu (yuan bian zhong)

Arundinaria tootsik Makino, Bot. Mag. (Tokyo) 19: 63. 1905; *A. dolichantha* Keng; *Neobambos dolichanthus* (Keng) P. C. Keng; *Pleioblastus dolichanthus* (Keng) P. C. Keng; *Semiarundinaria okuboi* Makino; *S. tootsik* (Makino) Muroi.

Culm sheath ligule arcuate, 3–4 mm; blade green. Leaf sheath auricles obscure; oral setae radiate, ca. 1.5 cm, undulate; blade abaxially pubescent. Lodicules with 7–9 veins.

Fujian, Guangdong, Guangxi [N Vietnam; introduced in Japan].

This variety is usually planted as an ornamental. The culms, although fragile, are used for pipes and poles.

1b. Sinobambusa tootsik var. **laeta** (McClure) T. H. Wen, J. Bamboo Res. 1(2): 13. 1982.

满山爆竹 man shan bao zhu

Sinobambusa laeta McClure, Lingnan Univ. Sci. Bull. 9: 63. 1940; *Semiarundinaria tootsik* var. *laeta* (McClure) T. H. Wen.

Culm sheath ligule truncate, short; blade purple or purple-green. Leaf sheath auricles and oral setae developed; blade abaxially pubescent. Lodicules with a few vertical veins.

● Fujian, Guangdong.

1c. Sinobambusa tootsik var. **maeshimana** Muroi ex Sugimoto, New Keys Jap. Trees: 475. 1961.

光叶唐竹 guang ye tang zhu

Semiarundinaria tenuifolia Koidzumi, Acta Phytotax. Geobot. 11: 314. 1942; *Sinobambusa tootsik* var. *tenuifolia* (Koidzumi) S. Suzuki.

Culm sheath ligule entire at apex. Leaf blade abaxially glabrous.

● Guangxi [cultivated in Japan].

This variety was described from Japanese cultivated material. Wild plants with the same characteristics are known in Guangxi.

1d. Sinobambusa tootsik var. **dentata** T. H. Wen, J. Bamboo Res. 1(2): 13, 1982.

火管竹 huo guan zhu

Apex of culm sheath ligule sharply toothed or double-toothed. Leaf blade abaxially glabrous.

● Fujian.

2. Sinobambusa humilis McClure, Lingnan Univ. Sci. Bull. 9: 59. 1940 [*"humila"*].

竹仔 zhu zi

Culms to 1 m; internodes pale green, grooved above branches, glaucous, glabrous; nodes prominent, densely retrorsely hairy below sheath ring; mid-culm branches 3 per node, base appressed. Culm sheaths ± persistent, base generally reflexed, pale purple, later green, with pale purple apex, proximally densely hairy, abaxially glabrous; auricles brown, falcate, moderately developed, scabrid; oral setae radiate, slender; ligule very short; blade erect, lanceolate, abaxially glabrous, adaxially hispid. Leaves 3 per ultimate branch; sheath glabrous, margins pale ciliolate; auricles generally scabrid or nearly glabrous; oral setae developed, radiate, pale, rigid, glabrous or basally hispid; ligule very short, adaxially hispid; pseudopetiole hispid; blade oblong-lanceolate, 8.7–16.4 × 1–2.4 cm, glabrous or abaxially slightly hairy, base rounded or cuneate, apex acuminate. Flowering branches lateral. Inflorescence paniculate, simple, erect, 2–3 cm with stalk; basal bract persistent. Spikelets 3–5. Rachilla rigid, glabrous. Glumes 4, apex acute or acuminate, abaxial keel glabrous; lemma ca. 8.5 mm, glabrous, margin ciliate, apex acute; palea shorter than lemma, ciliolate, apex obtuse, internal keel nearly appressed, external keel glabrous or subglabrous; lodicules lanceolate, margins ciliolate. Ovary very slender, glabrous; styles 2. Mature fruit deciduous.

● Guangdong.

3. Sinobambusa farinosa (McClure) T. H. Wen, J. Bamboo Res. 1(2): 19. 1982.

白皮唐竹 bai pi tang zhu

Semiarundinaria farinosa McClure, Lingnan Univ. Sci. Bull. 9: 45. 1940.

Culms to 7 m, 2–4 cm in diam.; internodes 40–60 cm, initially densely glaucous, persistent below nodes, glabrous, apically minutely papillate; nodes swollen, sheath ring corky, initially yellow-brown setose. Culm sheaths deciduous, initially gray-green, basally suboblong, leathery, densely glaucous, purple-brown setose, densely so at base, sparsely so near apex, margins dark brown ciliate or glabrous, apex broad; auricles nearly erect, dark brown, elliptic or falcate, moderately sized, coarsely hairy; oral setae yellow-brown, to 1.4 cm, fragile, scabrid; ligule arched, short, coarsely hairy, entire, ciliolate; blade lanceolate, green, papery, slightly rugose, glabrous or nearly so, margins serrulate. Leaves 3–6 per ultimate branch; sheath pubescent, soon glabrous; auricles very small; oral setae erect, light yellow, rigid, scabrid at base; ligule short, coarsely hairy; blade lanceolate or oblong-lanceolate, 13–19 × 1.4–2.2 cm, glabrous or abaxially slightly hairy, secondary veins 4–6-paired, sharply pointed. Inflorescence unknown. New shoots May.

● Fujian, Guangdong, Guangxi, Jiangxi, Zhejiang.

4. Sinobambusa henryi (McClure) C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 18: 32. 1980.

扛竹 kang zhu

Semiarundinaria henryi McClure, Lingnan Univ. Sci. Bull. 9: 48. 1940; *Sinobambusa nandanensis* T. H. Wen.

Culms 7–13 m, 3–8 cm in diam.; internodes green, 30–60 cm, glaucous below nodes, initially sparsely hairy, papillate; nodes very prominent; sheath ring corky, initially setose. Culm sheaths basally subtriangular, leathery, initially glaucous, setose, coarsely black glandular hairy, margins dark brown ciliate, apex narrow; auricles variable in size, scabrid; oral setae dark brown to yellow-green, rigid; ligule arched, very short, entire, ciliolate; blade erect, lanceolate, ca. 1/2 as wide as sheath apex, both surfaces glabrous or scabrid, margins coarsely hairy. Leaves 3–5 per ultimate branch; sheath glabrous or sparsely setose, margins ciliolate; auricles fragile, falcate at branchlet base, weak or absent apex; oral setae erect, light yellow; ligule very short, thin, glabrous, sometimes ciliate; blade lanceolate or oblong-lanceolate, 8–15 × 1.5–2.3 cm, secondary veins 4-paired, margins serrulate, sharply pointed. Inflorescence unknown. New shoots Apr–May.

● Guangdong, Guangxi.

5. Sinobambusa intermedia McClure, Lingnan Univ. Sci. Bull. 9: 61. 1940.

晾衫竹 liang shan zhu

Arundinaria longifimbriata (S. Y. Chen) T. H. Wen; *A. nanningensis* Q. H. Dai, J. Bamboo Res. 6(3): 35. 1987; *Pleioblastus longifimbriatus* S. Y. Chen.

Culms ca. 5 m, to 2 cm in diam.; internodes green, striate, 50–60 cm, grooved above branches, glaucous below nodes, initially pubescent, scabrid, apically minutely papillate; cavity with granular pith; nodes prominent; sheath ring corky, densely setose. Culm sheaths green when fresh, purple at apex, basally suboblong, sparsely deciduously yellow-brown setose, more densely so proximally, margins ciliate, apex broad; auricles falcate, fragile, scabrid; oral setae erect or radiate, ca. 2 cm, undulate; ligule arched, short, hirsute, sometimes slightly dentate or ciliate; blade erect or deflexed, green with purple apex, narrowly lanceolate, glabrous, apex acuminate. Leaves 3–5 per ultimate branch; sheath glabrous, margins ciliate; auricles obscure or absent, ciliate; ligule truncate or slightly prominent, coarsely hairy; blade broadly lanceolate, 12–22 × 1.3–2.8 cm, base coarsely hairy, margins serrulate. Pseudospikelets to 13 × 0.3 cm; bracts 2–4, pubescent or sometimes glabrous, apex acute. Rachilla glabrous; lemma mucronate at apex; palea shorter than lemma; lodicules 2 or 3, oblong to rhombic, tomentellate, apex ciliolate. Anthers yellow. Ovary ovoid, glabrous; style 1, about as long as ovary; stigmas (2 or)3-cleft, sparsely pubescent. New shoots Apr–May.

● Fujian, Guangdong, Guangxi, Sichuan, Yunnan.

6. Sinobambusa nephroaurita C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 18: 32. 1980.

肾耳唐竹 shen er tang zhu

Culms 6–8 m, 2–3 cm in diam.; internodes 30–40 cm, thinly glaucous especially below nodes, initially roughly hairy, distally minutely papillate; cavity with slightly granular pith; nodes prominent; sheath ring corky, initially setose. Culm sheaths green or yellow-brown, basally suboblong, leathery, sparsely setose, apex broad; auricles kidney-shaped to elliptic, 7–8(–15) × 4–5(–9) mm, scabrid; oral setae radiate, 1–1.5 cm; blade usually reflexed or horizontal, lanceolate at culm apex, triangular at mid-culm, pubescent, margins serrulate. Leaves 4–6 per ultimate branch, sheath glabrous, margins ciliate, auricles weak or absent; oral setae erect, ca. 1 cm; ligule truncate or arcuate; very short, blade lanceolate, 11–18 × 1.1–1.6 cm, thin, glabrous, secondary veins 4–6-paired, margins serrulate. Inflorescence unknown. New shoots Apr–May.

● Guangdong, Guangxi, Sichuan.

7. Sinobambusa rubroligula McClure, Lingnan Univ. Sci. Bull. 9: 65. 1940.

红舌唐竹 hong she tang zhu

Culms 2–4 m, ca. 1 cm in diam.; internodes gray-green, to 27 cm, initially sometimes sparsely hairy, glaucous below nodes, nearly solid; nodes swollen; sheath ring corky, setose. Culm sheaths green, basally suboblong, glabrous but densely setose at base, margins ciliate, apex broad; auricles absent; oral setae absent or scarce, erect; ligule purple, arcuate, 1–2 mm, scabrid or roughly hairy, uniform, ciliate; blade deciduous, usually reflexed, green but with purple margins and apex, lanceolate, ca. 1/3 as wide as sheath apex, tomentose. Leaves 5–7 per ultimate branch; sheath smooth, glabrous or hirsute, margins ciliate; auricles initially present, developed or weak; oral setae dull brown, ca. 1 cm, undulate; ligule convex, 1–2 mm, hirsute, uniform; blade lanceolate or elliptic-lanceolate, 10–22 × 0.8–2.6 cm, abaxially pubescent, adaxially smooth and glabrous, secondary veins 5- or 6-paired, margins serrulate. Inflorescence unknown. New shoots Apr–May.

● Guangdong, Guangxi, Hainan.

8. Sinobambusa yixingensis C. S. Chao & K. S. Xiao, J. Nanjing Inst. Forest. 1985(4): 20. 1985.

宜兴唐竹 yi xing tang zhu

Culms ca. 3 m, ca. 1.7 cm in diam.; internodes 40–70 cm, conspicuously grooved above branches, initially hairy; nodes very prominent, brown hairy below corky ring. Branches 3 per node. Culm sheaths deciduous, green, conspicuously many purple veined, spots absent, not or only thinly glaucous, abaxially deciduously sparsely hispid, basally brown hairy, hairs ca. 3 mm; auricles and oral setae absent; ligule truncate, shortly ciliolate; blade deciduous, lanceolate, ca. 2.5 cm. Leaves 3–5 per ultimate branch; sheath glabrous, auricles and oral setae absent; blade oblong-lanceolate, 7–14 × 1.3–2 cm, abaxially white pubescent. Inflorescence unknown. New shoots middle May.

● Jiangsu.

9. Sinobambusa incana T. H. Wen, J. Bamboo Res. 1(2): 13. 1982.

毛环唐竹 mao huan tang zhu

Culms internodes flexuose, yellow-green, grooved above branches, glabrous; nodes very prominent, initially pubescent beneath corky ring. Culm sheaths leathery, initially coarsely yellow-brown setose, with striae later, margins pubescent near base, glossy; auricles weak, brown, scabrid, tomentose; ligule arched, basally densely pubescent, ciliolate; blade erect, triangular, ca. 1/3 as wide as sheath apex, glabrous, many veined. Leaves 2–4 per ultimate branch; sheath glabrous, margins ciliolate, apically pubescent; auricles obscure, ovate, or absent; oral setae few, curved, 7–8 mm; ligule arcuate, ca. 1 mm, coarsely yellow-brown hairy; blade lanceolate, 5–8 × 0.7–1 cm, glabrous, margins serrulate. Flowering branches lateral. Pseudospikelets 1–3, ca. 9 × 0.2–0.3 cm, bracts 2, prophyll nearly leathery, glabrous, 2-keeled; florets to 11. Rachilla slightly flexuose, glabrous. Lemma glabrous, acute; palea sparsely ciliolate, apex rounded; lodicules 3, posterior shorter and thicker, rhomboid. Stamens (2 or)3. Anthers yellow. Ovary glabrous, base constricted into a stalk, 1.5–2 mm; style very short, ca. 0.3 mm; stigmas 3, ca. 3 mm.

● Guangdong.

10. Sinobambusa dushanensis (C. D. Chu & J. Q. Zhang) T. H. Wen, J. Bamboo Res. 6(3): 33. 1987.

独山唐竹 du shan tang zhu

Arundinaria dushanensis C. D. Chu & J. Q. Zhang, Bamboo Res. 1982(1): 1. 1982.

Culms to 10 m tall, 2–5 cm in diam.; internodes initially green, striate, 25–40 cm, papillate below nodes; wall thick; nodes swollen; sheath ring corky, prominent, initially glabrous or setose. Culm sheath yellow-green or brown-yellow, basally

subtriangular, leathery, densely setose and papillose at base, margins shortly setose, purplish, apex narrowly constricted, ca. 2 cm wide; auricles elliptic or falcate, 5–9 mm, both surfaces coarsely brown hairy; oral setae 8–15 mm; ligule purple, arched or nearly truncate, 2–3 mm, nearly entire, ciliate; blade deciduous, erect or reflexed, purple-green, striate, lanceolate, 8–11 × ca. 1 cm, scabrid. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles usually absent, sometimes falcate; oral setae ca. 7 mm, curved; ligule truncate or slightly prominent, 0.5–1 mm, glabrous; blade with 5 pairs of secondary veins, one margin serrulate, other margin entire. Inflorescence unknown. New shoots Apr–May.

● Guizhou.

31. SEMIARUNDINARIA Nakai, J. Arnold Arbor. 6: 150. 1925.

业平竹属 ye ping zhu shu

Li Dezhu (李德铢); Chris Stapleton

Brachystachyum Keng.

Shrubby bamboo, sometimes subarborescent. Rhizomes leptomorph, with running underground stems. Culms densely pluricaespitose, erect; internodes flattened or grooved above branches, glabrous (pubescent in *S. densiflora*); nodes prominent. Branches (3–)5–9(–13), subequal, buds initially open at front. Culm sheaths deciduous, leathery or thickly papery; ligule conspicuous; blade recurved or reflexed. Leaves 3–7(–10) per ultimate branch; blade with distinct transverse veins. Inflorescence lateral, racemose to paniculate, fully bracteate, partially iterauctant, prophyllate; pseudospikelets subtended by a spathiform prophyll and 2 or 3 gradually enlarged bracts. Spikelets sessile, 2–7-flowered. Rachilla articulate, internodes extended (short in *S. densiflora*). Glumes absent to 3; lemma papery, acuminate; palea about as long as or longer than lemma, 2-keeled abaxially, apex rounded, ciliolate; lodicules 3(or 4). Stamens 3; filaments free; anthers exserted. Ovary ellipsoid, ovoid, or globose; style 1; stigmas 3, plumose. Fruit a caryopsis.

Ten species: E China, Japan; three species (two endemic, one introduced) in China.

In addition to the species treated below, *Semiarundinaria shapoensis* McClure (Lingnan Univ. Sci. Bull. 9: 54. 1940) is an imperfectly known species based on sterile material from Hainan.

1a. Culm sheaths partially deciduous, auricles minute ..... 2. *S. fastuosa*
1b. Culm sheaths completely deciduous; auricles well developed.
2a. Culms to 2.6 m, to ca. 1 cm in diam.; internodes 7–15 cm; culm sheath blade horizontal or recurved ..... 1. *S. densiflora*
2b. Culms 3–5 m, 1–1.5 cm in diam.; internodes 15–27 cm; culm sheath blade erect ..... 3. *S. sinica*

1. Semiarundinaria densiflora (Rendle) T. H. Wen, J. Bamboo Res. 8(1): 24. 1989.

短穗竹 duan sui zhu

Arundinaria densiflora Rendle, J. Linn. Soc., Bot. 36: 434. 1904; *Brachystachyum densiflorum* (Rendle) Keng; *Fargesia densiflora* (Rendle) Nakai.

Culms to 2.6 m, to ca. 1 cm in diam.; internodes green, 7–15 cm, initially sparsely hairy, becoming glabrous, glaucous below nodes; pith chambered. Culm sheaths deciduous, initially green, becoming yellow and striate, papery, sparsely hispid, ciliate; ligule arched, ciliolate; auricles well developed, elliptical or falcate, variable in shape and size; oral setae 3–5 mm, undulate; blade horizontal or recurved, lanceolate to narrowly lanceolate, base ca. 1/2 as wide as sheath apex. Leaves 2–5 per ultimate branch; sheath margins ciliolate; auricles small; oral setae ca. 3 mm, rough; ligule truncate, 1–1.5 mm; blade lanceolate or oblong-lanceolate, 5–18 × 1–2 cm. Pseudospikelets 2–8 on flowering branches, fascicled, 1.5–3.5 cm; florets 5–7. Glumes 1–3; rachilla internodes 1–3 mm; lemma ovate-lanceolate, 8–10 mm; palea 8–10 mm; lodicules 3.5–4.5 mm. Anthers ca. 7 mm. Style 5–6 mm; stigmas 3, 5.5–7 mm. New shoots May–Jun, fl. Mar–May.

● Sunny slopes and plateaus. Anhui, Guangdong, Hubei, Jiangsu, Jiangxi, Zhejiang.

The culms are split for weaving.

2. Semiarundinaria fastuosa (Mitford) Makino, J. Jap. Bot. 2(2): 8. 1918.

业平竹 ye ping zhu

Bambusa fastuosa Mitford, Garden (London) 46: 547. 1894; *Arundinaria fastuosa* (Mitford) J. Houzeau; *A. narihira* Makino; *Phyllostachys fastuosa* (Mitford) Pfitzer.

Culms 3–9 m, 1–4 cm in diam.; internodes initially green, later brownish, terete, 10–30 cm, glabrous, hollow. Branches 3 per node. Culm sheaths essentially glabrous but proximally hairy; auricles minute; oral setae few; ligule 1–1.5 mm, apex truncate, ciliate; blade narrowly lanceolate, apex acuminate. Leaves 3–7(–10) per ultimate twig; sheath ca. 4 cm, sparsely pubescent; auricles obscure; ligule truncate, 1–1.5 mm; blades narrowly lanceolate, 8–20 × 1.5–2.5 cm, papery, glabrous or abaxially proximally pubescent, secondary veins 6–8-paired, transverse veins present, base rounded or broadly cuneate, contracted into a short pseudopetiole, margin serrulate, apex acuminate. Inflorescence panicle-like, subtended by ovate or lanceolate, leathery, glabrous, sheathlike spathes 3.5–4 cm. Pseudospikelets 1 or 2 subtended by a spathe; spikelet narrowly terete, 5–10 cm; florets 3–6; rachilla ca. 1 cm. Glumes always absent; lemmas ovate or broadly lanceolate, 1.5–3 cm, leathery, ciliate, ca. 20-veined; palea broadly lanceolate, 1.8–2 cm, 3-veined, apex bifid; lodicules ca. 5 mm. Filaments ca. 2 cm;

anthers yellow, ca. 1.1 cm. Ovary terete, ca. 4 mm, glabrous; styles ca. 4 mm; stigmas 3, plumose. Caryopsis unknown.

Cultivated in many cities of Taiwan and mainland China [native to Japan (SW Honshu)].

3. Semiarundinaria sinica T. H. Wen, J. Bamboo Res. 8(1): 13. 1989.

中华业平竹 zhong hua ye ping zhu

Culms 3–5 m, 1–1.5 cm in diam.; internodes initially green, flattened above branches, 15–27 cm, glabrous; nodes with prominent supra-nodal ridge; sheath scar prominent; intranode 2–3 mm. Branches 3, subequal. Culm sheaths deciduous, initially green, becoming yellowish brown, hispid, margin and base glabrous; auricles brown, falcate; oral setae ca. 4 mm; ligule arched or truncate, glabrous; blade erect, dark green, narrowly lanceolate, margin recurved. Leaves 3–5 per ultimate branch; sheaths green, striate, 3.5–4.5 cm, glabrous, margins ciliate; auricles ovate to ellipsoid, oral setae gray, 3–4 mm; ligule ca. 2 mm; blade lanceolate, 9–16 × 1.4–2.2 cm, glabrous, base obtuse, contracted into pseudopetiole 9–12 mm, lateral veins 4 or 5 pairs, transverse veins distinct, margins serrate, apex acuminate. Inflorescence panicle-like, with 6–11 spikelets, spathes ca. 25 × 8 mm; spikelets 55–60 mm; florets 5 or 6. Glumes 1 or 2; lemmas ca. 17 × 6 mm, glabrous, with 9 longitudinal veins, apex mucronate; palea ca. 1.4 cm, 2-keeled, with transverse veins prominent, margins and keel ciliate, apex acuminate, bifid; lodicules 3, narrowly rhomboid, membranous, apex white ciliate. Ovary oblong, glabrous; styles to 8–12 mm; stigmas bifid, plumose. New shoots May.

● Jiangsu, Zhejiang.

This species differs from *Semiarundinaria fastuosa* by its hispid culm sheath. It is known only in cultivation and is likely a cultivar of that species.

32. CHIMONOBAMBUSA Makino, Bot. Mag. (Tokyo) 28: 153. 1914.

方竹属 fang zhu shu

Li Dezhu (李德铢); Chris Stapleton

Menstruocalamus T. P. Yi; *Oreocalamus* Keng; *Qiongzhuea* Hsueh & T. P. Yi.

Shrubby bamboos, rarely subarborescent. Rhizomes leptomorph, with running underground stems. Culms usually diffuse, sometimes tillering (pluricaespitose), erect; internodes terete or 4-angled, often basally grooved above branches; nodes prominent to very prominent, basal nodes often with a ring of sparse or dense root thorns; sheath scars usually with a ring of pubescence or persistent base of culm sheath. Branches 3(–7 on upper culm), subequal, buds ovate-triangular, open at front, prophyll reduced. Culm sheaths deciduous and leathery, or sometimes persistent and papery; auricles minute or absent; blade reduced, to 1 cm, narrow. Leaves (1 or)2–5 per ultimate branch; blade lanceolate, base cuneate. Inflorescence fully bracteate, weakly iterauctant, 1–3 single pseudospikelet racemes loosely fasciculate, subtended by gradually enlarged bracts. Spikelets several to many flowered, sessile. Rachilla disarticulating. Glumes usually 1–3, frequently one subtending a bud; lemma papery or membranous; palea membranous, 2-keeled, obtuse; lodicules 3, membranous. Stamens 3; filaments free. Ovary ellipsoid; style 1, short; stigmas 2 or 3, plumose. Fruit a nutlike caryopsis with a hardened pericarp. New shoots Apr–Nov.

About 37 species: E Asia; 34 species (31 endemic) in China.

In addition to the species treated below, *Chimonobambusa tianquanensis* T. P. Yi (J. Bamboo Res. 19(1): 11. 2000) was described from sterile material from Sichuan (Tianquan). In the protologue it was compared with *C. quadrangularis*. *Qiongzhuea gracilis* W. T. Lin, (J. Bamboo Res. 19(4): 1. 2000) was described from Guangdong (Yangshan). In the protologue it was compared with *Q. opienensis* (*C. opienensis* in this account). *Qiongzhuea multigemmia* T. P. Yi (J. Bamboo Res. 19(1): 18. 2000) was described from Sichuan (Yingjing). In the protologue it was compared with *Q. verruculosa* (*C. verruculosa* in this account).

1a. Culm sheaths persistent.
2a. Culm sheath blade longer than 1 cm.
3a. Culm base intranode without root thorns, initially glabrous ..... 1. *C. sichuanensis*
3b. Culm base intranode with root thorns, initially verrucose-setose and pubescent ..... 2. *C. leishanensis*
2b. Culm sheath blade shorter than 0.6 cm.
4a. Culm sheaths shorter than internodes ..... 3. *C. pubescens*
4b. Culm sheaths longer than internodes.
5a. Culm internodes initially glabrous; culm sheaths glabrous or sparsely setose.
6a. Culm 1–1.5(–3) m, only basal culm nodes with roots or root thorns, culms cylindrical ..... 4. *C. marmorea*
6b. Culm taller than 3 m, basal to mid-culm nodes with root thorns, culms slightly 4-angular ..... 5. *C. purpurea*
5b. Culm internodes initially white pubescent; culm sheaths densely setose.
7a. Leaf sheath ligule ca. 6 mm; leaf blade secondary veins 4- or 5-paired ..... 6. *C. damingshanensis*
7b. Leaf sheath ligule shorter than 1 mm; leaf blade secondary veins 3- or 4-paired ..... 7. *C. brevinoda*
1b. Culm sheaths deciduous or gradually deciduous (persistent in *C. luzhiensis*).
8a. Culm nodes prominently swollen; intranode without root thorns; internodes circular in cross section; culm sheaths deciduous.
9a. Culm internodes 10–15 cm, 0.4–1 cm in diam.; culm white powdery when young ..... 8. *C. hsuehiana*

9b. Culm internodes 15–33 cm, 1–3 cm in diam.; culm glabrous, not white powdery.
10a. Culm internodes (18–)29–33 cm; culm sheaths abaxially glabrous; leaf blades 1.6–5 cm wide, secondary veins 5–8-paired ..... 9. *C. macrophylla*
10b. Culm internodes 15–25 cm; culm sheaths abaxially densely brown setose; leaf blades 0.6–1.2 cm wide, secondary veins 2- or 3(or 4)-paired ..... 10. *C. tumidissinoda*
8b. Culm nodes slightly swollen, usually with root thorns at lower nodes, internodes partially 4-angular in cross section.
11a. Culm nodes with well-developed root thorns.
12a. Culm sheaths longer than the corresponding internodes.
13a. Culm nodes with a tomentose ring; culm sheaths sparsely minutely adnately brown setose ..... 11. *C. hirtinoda*
13b. Culm nodes without a tomentose ring; culm sheaths with erect, swollen-based setae.
14a. Culm sheaths with light green or white stripes, yellow-brown, later becoming fulvous, veinlets distinct, purple ..... 12. *C. lactistriata*
14b. Culm sheaths without stripes.
15a. Culm node sheath scar rings glabrous; culm sheaths leathery, glabrous or sparsely hairy near base ..... 13. *C. paucispinosa*
15b. Culm node sheath scar rings brown tomentose; culm sheaths thickly papery, setose.
16a. Culm sheaths persistently brown verrucose; leaf blade lateral veins 4- or 5-paired; oral setae well developed ..... 14. *C. armata*
16b. Culm sheaths persistently black verrucose; leaf blade lateral veins 6–9-paired; oral setae sparse, deciduous ..... 15. *C. tuberculata*
12b. Culm sheaths shorter than corresponding internodes.
17a. Leaf blades 1 per ultimate branchlet, with closed sheaths ..... 16. *C. hejiangensis*
17b. Leaf blades 2–5 per ultimate branchlet, with open sheaths.
18a. Culm sheath blade conspicuous, linear-lanceolate, 11–20 mm ..... 17. *C. convoluta*
18b. Culm sheath blade minute, subulate, less than 8 mm.
19a. Young culm internodes and culm sheaths glabrous ..... 18. *C. szechuanensis*
19b. Young culm internodes tuberculate and hispid, particularly on upper part of culm; culm sheaths glabrous or setose.
20a. Culm sheaths pale yellow spotted.
21a. Leaf blades narrowly lanceolate to linear, 0.5–1.2 cm wide; culm sheaths with purplish transverse veins ..... 19. *C. angustifolia*
21b. Leaf blades lanceolate, 1.1–2.1 cm wide.
22a. Culm internodes persistently densely white pubescent; sheath scar persistently hairy; leaf blade abaxially glaucous ..... 20. *C. utilis*
22b. Culm internodes initially brown hispid, becoming glabrous; sheath scar brown tomentose, becoming glabrous; leaf blade abaxially dark green ..... 21. *C. pachystachys*
20b. Culm sheaths not spotted.
23a. Culm nodes with sheath scars prominent, densely retrorsely brown setose, bristles ca. 1 mm, supra-nodal ridge strongly prominent ..... 22. *C. metuoensis*
23b. Culm nodes with glabrous sheath scars.
24a. Culm sheaths glabrous or sparsely hispid.
25a. Culm sheaths with conspicuous purplish transverse veins; basal culm internodes 4-angled ..... 23. *C. quadrangularis*
25b. Culm sheaths with obscure transverse veins; basal culm internodes cylindrical ..... 24. *C. microfloscula*
24b. Culm sheaths densely bristly.
26a. Culms to 14 m; basal culm internodes slightly 4-angled; culm sheath blade not articulate; leaves 20–23 × 1.5–2 cm ..... 25. *C. ningnanica*
26b. Culms to 4 m; basal culm internodes cylindrical; culm sheath blade articulate, deciduous; leaves 30–35 × ca. 2.5 cm ..... 26. *C. grandifolia*
11b. Culm nodes without root thorns.
27a. Leaf sheath oral setae absent.
28a. Culm sheaths gradually deciduous; brown verrucose-setose; culm internodes nearly solid ..... 27. *C. verruculosa*
28b. Culm sheaths soon deciduous; glabrous or sparsely setose; culm internodes hollow.
29a. Culms 1–1.6 m, to 0.5 cm in diam.; nodal sheath scars initially densely yellow-brown setose; intranode initially gray or slightly yellow waxy ..... 28. *C. unifolia*
29b. Culms 2–7 m, 1–5.5 cm in diam.; nodal sheath scars nearly glabrous; intranode not waxy.
30a. Branches 3 per node; leaves 1–3 per ultimate branch; leaf blade abaxially glabrous, secondary veins 3- or 4-paired; new shoots Sep ..... 29. *C. rigidula*

30b. Branches 2 or 3 per node; leaves 1 per ultimate branch; leaf blade abaxially slightly pubescent; secondary veins 4- or 5-paired; new shoots Apr–May ..... 30. *C. opienensis*
27b. Leaf sheath oral setae numerous, erect.
31a. Culm sheath marginally brown hirsute.
32a. Culm internodes glabrous; culm sheaths persistent ..... 31. *C. luzhiensis*
32b. Culm internodes puberulous when young, especially below nodes; culm sheaths gradually deciduous 32. *C. puberula*
31b. Culm sheath marginally glabrous or gray ciliate.
33a. Culms 3–7 m; supra-nodal ridge nearly flat at nodes without branches; culm sheaths glabrous ..... 33. *C. communis*
33b. Culms 1.5–2.8 m; supra-nodal ridge distinctly raised on all nodes; culm sheaths yellow-brown setose at base, margins gray ciliate ..... 34. *C. montigena*
34a. Culm sheaths persistent; culm internodes glabrous ..... 31. *C. luzhiensis*
34b. Culm sheaths deciduous; culm internodes puberulous or glabrous.
35a. Culm internodes puberulous when young, especially below node; culm sheaths brown setose ..... 32. *C. puberula*
35b. Culm internodes glabrous; culm sheaths glabrous or subglabrous.
36a. Culms 3–7 m; 1–3 cm in diam.; supra-nodal ridge only raised on nodes with branches; culm sheaths glabrous ..... 33. *C. communis*
36b. Culms 1.5–2.8 m; 0.7–1.4 cm in diam.; supra-nodal ridge distinctly raised on every node; culm sheaths yellow-brown setose at base ..... 34. *C. montigena*

1. Chimonobambusa sichuanensis (T. P. Yi) T. H. Wen, J. Bamboo Res. 6(3): 33. 1987.

月月竹 yue yue zhu

Sinobambusa sichuanensis T. P. Yi, Bull. Bot. Res., Harbin 2(4): 105. 1982; *Menstruocalamus sichuanensis* (T. P. Yi) T. P. Yi.

Culms shrubby; internodes terete, to 38 cm, hollow, glabrous; nodes with prominent initially setose sheath scar; supra-nodal ridge slightly swollen. Branches initially 3 per node, later 5–11. Culm sheaths persistent, narrowly triangular-oblong, shorter than internode, leathery; auricles absent; oral setae absent or scarce, erect; blades erect or reflexed on upper culm, subulate or triangularly subulate, 1.2–3.5 × 0.15–2.5 cm. Leaf sheath auricles absent; blade lanceolate, 10–26 × 1.5–3 cm, secondary veins 5–7-paired. Inflorescence with 1–8 pseudospikelets, branching racemose or simply paniculate; pseudospikelets with many florets, reduced at inflorescence base. Glumes 1 or 2; lemma papery, 7–11-veined, apex aristiform-apiculate; palea bifid; lodicules 3. Anthers 5–6 mm. Styles 2. Caryopsis oblong, pericarp thick.

● 400–1200 m. Sichuan.

This species is not to be confused with *Chimonobambusa szechuanensis* (species no. 18).

2. Chimonobambusa leishanensis T. P. Yi, Acta Bot. Yunnan. 13: 144. 1991.

雷山方竹 lei shan fang zhu

Culms 1.5–3 m, 0.6–1 cm in diam.; internodes cylindrical, (4–)14–17 cm, grooved above branches, initially tuberculate-hispid and pubescent; wall 3–4 mm; nodes with sheath scars initially with a pubescent ring; intranode 1–2 mm; nodes below mid-culm each with (2–)4–10 root thorns. Culm sheaths persistent, usually longer than internodes, papery, tuberculate-setose, margins ciliate, longitudinal veins distinct; auricles absent; oral setae usually absent; ligule ca. 1 mm, ciliate; blade erect, 2–3 × 6–28 mm. Leaves 1 or 2(or 3) per ultimate branch; sheath glabrous or initially gray pubescent; margins initially ciliate; oral setae initially (3–)6–13, erect; ligule ca. 0.5 mm; blade lanceolate, (6–)11–20 × (0.9–)1.4–2.5 cm, secondary veins 5- or 6-paired, transverse veins conspicuous, base cuneate, margins serrulate. Inflorescence unknown. New shoots Aug.

● About 1600 m. Guizhou (Leishan).

3. Chimonobambusa pubescens T. H. Wen, J. Bamboo Res. 5(2): 20. 1988.

十月寒竹 shi yue han zhu

Chimonobambusa solida B. M. Yang & C. Y. Zhang.

Culms to 2 m, to 8 mm in diam.; internodes green, sometimes spotted purple-brown, 8–14 cm, flattened or grooved above branches, initially white pubescent, solid or nearly so; nodes prominent, lower nodes with some aerial roots; sheath scar with tawny hairs. Culm sheaths persistent, green-yellow or green-purple when young, triangular, shorter than internodes, thickly papery, mainly glabrous but thickly tawny hairy at base, tessellation visible, margins ciliolate; auricles and oral setae absent; ligule convex, ca. 2 mm, toothed; blade erect, aristate, small, glabrous. Leaves 3 or 4 per ultimate branch; sheaths 2.5–2.8 cm, glabrous, margins ciliate; auricles absent; oral setae few, erect, white, 4–8 mm; ligule short, scabrid; blade linear-lanceolate, 9–12 × 0.7–0.9 cm, 5-veined, transverse veins conspicuous, base cuneate, apex acuminate. Inflorescence unknown. New shoots Oct–Nov.

● Broad-leaved forests. Hunan (Jingxian).

4. Chimonobambusa marmorea (Mitford) Makino, Bot. Mag. (Tokyo) 28: 154. 1914.

寒竹 han zhu

Bambusa marmorea Mitford, Garden 46: 547. 1894; *Arundinaria marmorea* (Mitford) Makino; *A. matsumurae* Hackel; *A. nana* Makino; *Chimonobambusa setiformis* T. H. Wen; *Phyllostachys marmorea* (Mitford) Ascherson & Graebner.

Culms 1–1.5(–3) m, 0.5–1 cm in diam.; internodes initially green, later purple, 10–14 cm, mainly glabrous with a dark brown tomentose ring below nodes; nodes slightly prominent. Culm sheaths persistent, brown, with gray spots, longer than

internodes, papery, initially sparsely hispid, margins ciliate; ligule minute; blade 2–3 mm, articulate. Leaves 2 or 3 per ultimate branch; sheath margins ciliolate; oral setae pale, 3–4 mm; ligule truncate; blade linear-lanceolate, 10–14 × 0.7–0.9 cm. Inflorescence paniculate or racemose, terminal branches subtended by several, persistent, gradually enlarged bracts. Pseudospikelets linear, 2–4 cm; florets 4–7. Glumes 1 or 2; rachilla segments 3–4 mm; lemma ovate-lanceolate, 6–7 mm, papery; palea 6–7 mm; lodicules ca. 3 mm. Anthers 3.5–4 mm. Style minute; stigmas 2. Caryopsis nutlike, ca. 5 mm. New shoots Aug–Sep.

● Hills to low mountains; 200–1500 m. Fujian, Hubei, Shaanxi, Sichuan, Zhejiang.

5. Chimonobambusa purpurea Hsueh & T. P. Yi, J. Yunnan Forest. Coll. 1982(1): 36. 1982.

刺黑竹 ci hei zhu

Chimonobambusa neopurpurea T. P. Yi.

Culms 4–8 m, 1.5–5 cm in diam.; internodes green, ca. 18(–25) cm, glabrous; supra-nodal ridges slightly prominent; sheath scar raised, initially yellowish brown setose, becoming glabrous. Culm sheaths persistent, brown or gray spotted, longer than internodes, papery, initially sparsely brown or yellow setose, margins ciliate; ligule minute; blade 1–3 mm, articulate. Leaves 2 or 3 per ultimate branch; sheath margins ciliolate; oral setae pale, 3–4 mm; ligule truncate; blade narrowly lanceolate, 5–19 × 0.5–2 cm. Inflorescence paniculate or racemose, terminal branches subtended by 4 or 5, persistent, gradually enlarged bracts. Pseudospikelets linear, 1–14.5 cm; florets 4–12. Glumes 1 or 2; rachilla segments 3–12 mm; lemma ovate-lanceolate, 7–12 mm, papery; lodicules ca. 2 mm. Anthers 4–6 mm. Style minute; stigmas 2. Caryopsis nutlike, ca. 4–7 mm. New shoots Aug–Sep.

● Hills to low mountains; 800–1500 m. Hubei, Shanxi, Sichuan.

6. Chimonobambusa damingshanensis Hsueh & W. P. Zhang, Bamboo Res. 7(3): 5. 1988.

大明山方竹 da ming shan fang zhu

Culms 1.5–2 m, 0.6–0.8 cm in diam.; internodes green to purple-green, 10–13 cm, initially pilose, with a dark brown tomentose ring below each node; nodes prominent, basal 1 or 2 with aerial roots. Culm sheaths persistent, brown, with gray spots, longer than internodes, papery, densely hirsute, ciliate; ligule minute, ciliate; blade deciduous, 3–4 mm. Leaves 4–6 per ultimate branch; sheaths glabrous; oral setae purple-tinged, ca. 1.1 cm; ligule ca. 6 mm, entire; blade lanceolate, 15–18 × 1.1–1.3 cm. Inflorescence paniculate or racemose; terminal branches subtended by 4 or 5, persistent, gradually enlarged bracts. Pseudospikelets imperfectly known; lemma ovate-lanceolate, ca. 1 cm, papery, apex long mucronate; palea 6–7 mm. Style minute; stigmas 2. Caryopsis unknown. New shoots Aug–Sep.

● Low mountain slopes; ca. 1300 m. Guangxi.

7. Chimonobambusa brevinoda Hsueh & W. P. Zhang, J. Bamboo Res. 7(1): 14. 1988.

短节方竹 duan jie fang zhu

Culms 2–3 m, to 1 cm in diam.; internodes dark green, 7–8 cm, initially white pilose, with a brown or dark purple, tomentose ring below each node, nearly solid; nodes prominent, 2-ridged. Culm sheaths persistent, longer than internodes, papery, hispid, margins ciliate; ligule minute, ciliate; blade subulate, ca. 1 mm, articulate. Leaves 3–5 per ultimate branch; sheaths glabrous; oral setae purple-tinged, ca. 1.3 cm; ligule ca. 1 mm, entire; blade lanceolate, 13–16 × ca. 1 cm. Inflorescence unknown. New shoots Oct.

● Broad-leaved forests; 1600–1800 m. SE Yunnan.

8. Chimonobambusa hsuehiana D. Z. Li & H. Q. Yang, **nom. nov.**

细秆筇竹 xi gan qiong zhu

Replaced synonym: *Qiongzhuea intermedia* Hsueh & D. Z. Li, Acta Bot. Yunnan. 10: 53. 1988, not *Chimonobambusa intermedia* (Munro) Nakai, J. Arnold Arbor. 6: 151. 1925; *C. macrophylla* (Hsueh & T. P. Yi) T. H. Wen & Ohrnberger f. *intermedia* T. H. Wen & Ohrnberger.

Culms 1.5–3.5 m, 0.4–1 cm in diam.; internodes slightly 4-angled or terete, 10–15 cm, initially slightly white powdery, glabrous, basal internodes nearly solid; supra-nodal ridge distinctly raised. Branches 3 or more per node. Culm sheaths deciduous, thickly papery, nearly glabrous or sparsely yellow-brown setose; ligule ca. 1 mm, ciliate; blade 5–8 mm. Leaves (1–)3–5 per ultimate branch; blades lanceolate, 10–20 × 2–3 cm, secondary veins 5–7-paired. Inflorescence unknown. New shoots Apr.

● Broad-leaved forests; 1200–1500 m. Sichuan (Leibo).

9. Chimonobambusa macrophylla (Hsueh & T. P. Yi) T. H. Wen & Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 21. 1990.

大叶筇竹 da ye qiong zhu

Culms 2–6 m, 1.5–2.1 cm in diam.; internodes 18–36 cm, flat above branches, initially white powdery or not, glabrous; wall 2.5–3.5 mm; nodes conspicuously raised into ring, readily disarticulating. Culm sheaths deciduous, triangular-ovate, thickly papery, glabrous or sparsely yellow-brown setose, margins ciliate; auricles absent; ligule truncate, 0.5–1 mm, ciliate; blade subulate or triangular-subulate, 3–9 mm, glabrous. Leaves (1 or)2 or 3(or 4) per ultimate branch; sheaths green, 4.5–7.2 cm, glabrous; auricles and oral setae absent; ligule purple-red, arched or truncate, 0.5–1 mm, glabrous; blade ovate-lanceolate, 11–26 × 1.6–5 cm, secondary veins 5–8 pairs, transverse veins distinct. Inflorescence and fruit unknown.

● Broad-leaved forests; 1400–2200 m. Sichuan.

1a. Culm internodes 18–29 cm, without white powder; leaf blade 11–18 cm ..... 9a. var. *macrophylla*
1b. Culm internodes 31–36 cm, initially with white powder; leaf blade 21–26 cm ..... 9b. var. *leiboensis*

9a. Chimonobambusa macrophylla var. **macrophylla**

大叶筇竹(原变种) da ye qiong zhu (yuan bian zhong)

Qiongzhuea macrophylla Hsueh & T. P. Yi, Acta Phytotax. Sin. 23: 398. 1985.

Culm internodes 18–29 cm, not white powdery; leaf blade 11–18 × 1.6–3.2 cm, secondary veins 5- or 6-paired.

● Broad-leaved forests; 1500–2200 m. Sichuan (Leibo, Mabian).

9b. Chimonobambusa macrophylla var. **leiboensis** (Hsueh & D. Z. Li) D. Z. Li, **comb. in stat. nov.**

雷波大叶筇竹 lei bo da ye qiong zhu

Basionym: *Qiongzhuea macrophylla* f. *leiboensis* Hsueh & D. Z. Li, Acta Bot. Yunnan. 10: 51. 1988; *Chimonobambusa macrophylla* f. *leiboensis* (Hsueh & D. Z. Li) T. H. Wen & Ohrnberger; *Q. macrophylla* var. *leiboensis* (Hsueh & D. Z. Li) Hsueh & D. Z. Li.

Culm internodes 31–36 cm, initially white powdery; leaf blade 21–26 × (3.2–)4–5 cm, secondary veins 7 or 8 pairs.

● Broad-leaved forests; ca. 1400 m. Sichuan (Leibo).

10. Chimonobambusa tumidissinoda Hsueh & T. P. Yi ex Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 45. 1990.

筇竹 qiong zhu

Qiongzhuea tumidissinoda (Hsueh & T. P. Yi ex Ohrnberger) Hsueh & T. P. Yi.

Culms 2.5–6 m, 1–3 cm in diam.; internodes green, terete, 15–25 cm, grooved above branches, glabrous; wall thick, basal internodes nearly solid; nodes conspicuously enlarged into very prominent, raised discs. Branches (3–)5(–7) per node, subequal. Culm sheaths deciduous, oblong-elliptic, thickly papery, brown setose; auricles absent; oral setae 2–3 mm; ligule arched, 1–1.3 mm, densely gray ciliate; blade readily deciduous, erect, subulate or subulate-lanceolate, 5–17 mm, glabrous. Leaves 2–4 per ultimate branch; sheath terete, 2–2.5 cm; auricles absent; oral setae several; ligule truncate or arched, short; blade narrowly lanceolate, 5–14 × 0.6–1.2 cm, glabrous, secondary veins 2- or 4-paired, transverse veins distinct. Flowering branches leafless or partly with terminal leaves; ultimate flowering branches slender, subtended by 3–5, gradually larger bracts. Pseudospikelet purple-green, 3–4.5 cm, bracts 4 or 5; florets 3–8. Glumes 2(or 3); rachilla internodes 4–6 mm, glabrous; lemma oblong-ovate, 1–1.4 cm, papery, apex acute; palea thinner than lemma, apex obtuse or slightly bifid. Ovary obovoid, ca. 2.5 mm, glabrous; style 1, ca. 1 mm; stigmas 2. Caryopsis nutlike, oblong-ellipsoid or broadly ellipsoid, 1–1.2 cm. New shoots Apr, purplish red, fl. Apr, fr. May.

● Hilltops; 1500–2200 m. SW Sichuan, NE Yunnan.

The name *"Qiongzhuea tumidinoda"* (Hsueh & T. P. Yi, Acta Bot. Yunnan. 2: 93. 1980) was not validly published because two types were indicated (see Hsueh et al., Taxon 45: 217–221. 1996 and Stapleton and Xia, Taxon 53: 526–528. 2004).

The culms of this famous species have been used for walking sticks since the Han Dynasty; they are also used for umbrella handles, and the shoots are eaten as a vegetable.

11. Chimonobambusa hirtinoda C. S. Chao & K. M. Lan, Bamboo Res. 1982(1): 2. 1982.

毛环方竹 mao huan fang zhu

Culms ca. 5 m tall, 1.5–2.5 cm in diam.; internodes slightly 4-angled, 13–14 cm, initially minutely setose, with a fulvous tomentose ring below each node, later verrucose; supra-nodal ridges prominent, basal nodes with rings of root thorns; sheath scar with a fulvous tomentose ring and persistent culm sheath base. Branches 3 per node. Culm sheaths deciduous, longer than internodes, thickly papery, sparsely minutely adnately brown setose, with distinct veins and purple-brown veinlets; ligule minute; blade subulate, 1–2 mm, apex acuminate. Leaves 2 or 3 per ultimate branch, sheaths glabrous; auricles absent; oral setae erect, pale; ligule minute; leaf blade oblong-lanceolate, 8–16 × 1.2–1.5 cm, secondary veins 4- or 5-paired, base broadly cuneate, apex acuminate. Inflorescence unknown.

● About 1100 m. Guizhou.

12. Chimonobambusa lactistriata W. D. Li & Q. X. Wu, J. Bamboo Res. 4(1): 46. 1985.

乳纹方竹 ru wen fang zhu

Chimonobambusa rivularis T. P. Yi, J. Bamboo Res. 8(3): 18. 1989.

Culms 4–5 m tall, 2–4 cm in diam.; internodes slightly 4-angled, 11–13 cm; supra-nodal ridges strongly elevated, lower nodes each with a ring of 4–19 root thorns; sheath scars purple pubescent, with persistent culm sheath base. Culm sheaths deciduous, initially dark purple, later becoming fulvous with pale green or white stripes, longer than internodes, papery, distally corrugated, veinlets distinct and purple; ligule arched, minute; blade subulate. Leaves 4–6(–9) per ultimate branch; oral setae deciduous, erect, pale, 3–5 mm; ligule arched, ciliate; petiole short, densely pubescent; blade elliptic-lanceolate, 8–17 × 0.8–2 cm, adaxially sparsely pubescent, densely so at base, secondary veins 4–6-paired, veinlets obvious. Inflorescence unknown. New shoots Oct.

● Evergreen broad-leaved forests; ca. 500 m. Guizhou.

13. Chimonobambusa paucispinosa T. P. Yi, J. Bamboo Res. 9(3): 24. 1990.

少刺方竹 shao ci fang zhu

Culms 3–5 m, 1–2 cm in diam.; internodes cylindrical or several basal internodes 4-angled, (6–)10–14 cm, initially grayish yellow setose, becoming smooth; wall 3.5–6 mm; supra-nodal ridge slightly or distinctly raised at nodes with branches; sheath scar glabrous; intranode 1–2 mm; nodes below branches each with (1 or)2–8(–10) root thorns. Branches 3 per node. Culm sheaths deciduous, narrowly triangular, leathery, abaxially glabrous or sparsely yellowish brown setose at base, longitudinal veins distinct, margins not ciliate; auricles and oral setae absent; ligule truncate, ca. 0.5 mm; blade erect, triangular, 3–6 mm. Leaves 1 or 2(–4) per ultimate branch; ligule arcuate, ca. 0.3 mm; blade lanceolate, (4.5–)9–13 × (0.6–)1–1.5 cm, secondary veins 3 or 4 pairs, transverse veins distinct. Inflorescence unknown. New shoots late Sep.

● About 1500 m. NE Yunnan (Suijiang).

14. Chimonobambusa armata (Gamble) Hsueh & T. P. Yi, J. Bamboo Res. 2(1): 38. 1983.

缅甸方竹 mian dian fang zhu

Arundinaria armata Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 130. 1896; *Oreocalamus armatus* (Gamble) T. H. Wen.

Culms 3–5(–10) m tall, 1–3 cm in diam.; internodes terete, 12–14 cm, glabrous, sometimes verrucose; nodes with prominent ridge, nodes at and below mid-culm each with a ring of root thorns; sheath scar with a densely fulvous tomentose ring and persistent culm sheath base. Branches 3 per node. Culm sheaths late deciduous, longer than internodes, papery, densely fulvous setose, margins ciliate; oral setae fulvous; ligule 2–3 mm; blade subulate-triangular, 1–3 cm; leaves 3–5 per ultimate branch; sheath ca. 7 cm, glabrous, veins distinct; auricles weak; oral setae developed; blade narrowly lanceolate, ca. 20 × 1.5 cm, papery to thinly papery, secondary veins 4- or 5-paired. Inflorescence 7–9 cm. Pseudospikelets fasciculate, 5–8 cm, with 3 or 4, gradually larger basal bracts; florets 7–10. Palea subequal to lemma, thinly papery, apex obtuse or slightly bifid. Lodicules transparent, margins white ciliate. Ovary ovoid-ellipsoid; style short, divided close to base; stigmas 2. Fruit unknown.

1300–2000 m. Xizang, Yunnan [India, Myanmar].

15. Chimonobambusa tuberculata Hsueh & L. Z. Gao, J. Bamboo Res. 6(2): 11. 1987.

永善方竹 yong shan fang zhu

Chimonobambusa armata (Gamble) Hsueh & T. P. Yi f. *tuberculata* (Hsueh & L. Z. Gao) T. H. Wen ex Ohrnberger.

Culms 3–4 m, ca. 1.2 cm in diam.; internodes cylindrical, 14–18 cm, grooves obscure, initially densely brown setose, developing verrucose spots; wall 2–3 mm; supra-nodal ridge level or raised at nodes with branches; nodes below mid-culm each with 4–12 air roots; sheath scars with a brown tomentose ring; intranode ca. 2 mm. Culm sheaths gradually deciduous, triangular, longer than internodes, papery or thickly so, abaxially initially with irregular brown stains and densely yellowish brown adnate setose, becoming black verrucose; ligule minute; blade 1–2 mm, not articulate. Leaves 3 or 4 per ultimate branch; sheath glabrous, adaxial margins initially ciliate; oral setae sparsely and readily deciduous; ligule ca. 1 mm; blade oblong-lanceolate, 20–25× 2–3 cm, secondary veins 6–9-paired, transverse veins distinct. Inflorescence unknown. New shoots Aug–Sep.

● 1300–1400 m. SW Sichuan, NE Yunnan.

16. Chimonobambusa hejiangensis C. D. Chu & C. S. Chao, J. Nanjing Technol. Coll. Forest Prod. 1981(3): 36. 1981.

合江方竹 he jiang fang zhu

Culms 5–7 m tall, 2–3 cm in diam.; internodes terete, 16–20 cm, grooved above branches; nodes with weakly prominent ridges, basal nodes each with a ring of root thorns. Culm sheaths deciduous, shorter than internodes, thickly papery or thinly leathery, adnately brown setose, densely so at base, margins with dense cilia 2–2.5 mm; ligule minute, ca. 1 mm; blade subulate-lanceolate or triangular-lanceolate, 7–13 mm. Leaves 1 per ultimate branch; blade oblong-lanceolate, ca. 16 × 1.5–2 cm, papery, secondary veins 4- or 5-paired, transverse veins distinct, base narrowly cuneate, apex acuminate. Inflorescence paniculate. Pseudospikelets 1(–3) per node, 10–12 cm, prophyll followed by 1 or 2 empty bracts, then 4 or 5, gradually enlarged bracts subtending secondary pseudospikelets or buds; florets 8 or 9. Glumes absent or 1; rachilla internodes 1–1.4 cm, slender; lemma ovate-triangular, papery, 7–9-veined, apex mucronate; palea subequal with lemma, thinly papery, veins indistinct, apex retuse. Ovary ovoid-ellipsoid; style short; stigmas 2. Caryopsis reniform or ellipsoid, 10–12 × 3–5 mm in diam., with persistent, beaklike style base, pericarp ca. 0.5 mm thick.

● 700–1200 m. Guizhou, Jiangsu, Sichuan.

17. Chimonobambusa convoluta Q. H. Dai & X. L. Tao, Acta Phytotax. Sin. 20: 212. 1982.

小方竹 xiao fang zhu

Culms 2–3 m tall, 1–2 cm in diam.; internodes terete or slightly 4-angled, 12–20 cm, initially densely striate, fulvous tomentose, becoming verrucose; nodes with prominent ridge, more level at basal culm nodes without branches, basal nodes each with a ring of 5–7 root thorns; sheath scar with a densely retrorsely fulvous tomentose ring and persistent sheath base. Branches 3 per node. Culm sheaths purple-brown spotted, shorter than internode, papery, sparsely brown setose, more densely setose at sheath base, margins brown ciliate; oral setae absent to 2; ligule arcuate, ca. 1 mm, apex serrulate; blade linear-lanceolate, 1–2 × 0.2–0.3 cm, glabrous, articulate. Leaves 2–4 per ultimate branch; sheath densely brown tomentose, one margin brown ciliate; oral setae erect, pale, 8–10 mm; ligule ca. 1 mm; blade oblong-lanceolate, 16–22 × 1–1.5 cm, abaxially densely white pubescent, adaxially glabrous, but rough close to midvein, secondary veins 4- or 5-paired. Inflorescence unknown.

● 800–1400 m. Guangxi.

18. Chimonobambusa szechuanensis (Rendle) P. C. Keng, Techn. Bull. Natl. Forest. Res. Bur. 8: 15. 1948.

八月竹 ba yue zhu

Arundinaria szechuanensis Rendle in Sargent, Pl. Wilson. 2: 64. 1914; *Oreocalamus szechuanensis* (Rendle) Keng.

Culms 2.5–4(–6) m tall, 1.5–2 cm in diam.; internodes terete or obscurely 4-anged, 18–22 cm, grooved and ridged above branches, glabrate; basal nodes with rings of root thorns. Branches 3 per node. Culm sheaths deciduous, shorter than internodes, thickly papery, glabrous, main veins purple, transverse veins distally prominent, margins ciliate; ligule 0.5–1 mm; blade subulate-triangular, 3–5 mm, articulate. Leaves 1–3 per ultimate branch; sheaths leathery, glabrous, margins ciliate; oral setae pale, 3–5 mm; ligule 1–1.5 mm; leaf blade oblong-lanceolate, 18–20 × 1.2–1.5 cm, secondary veins 4–6-paired. Pseudospikelets without bracts or with 1–4 bracts, upper 1 or 2 with buds or secondary spikelets; florets 3 or 4. Glumes 2 or 3; lemma ovate-lanceolate, 7–9-veined, apex gradually acuminate. Palea narrowly ovate, subequal to lemma. Anthers yellow. Ovary ovoid; style short, divided nearly from base. Caryopsis nutlike, ovoid-ellipsoid, ca. 16 × 6 mm.

● Mountain areas; 1000–2400 m. Sichuan.

This species is not to be confused with *Chimonobambusa sichuanensis* (species no. 1).

19. Chimonobambusa angustifolia C. D. Chu & C. S. Chao, J. Nanjing Technol. Coll. Forest Prod. 1981(3): 36. 1981.

狭叶方竹 xia ye fang zhu

Chimonobambusa linearifolia W. D. Li & Q. X. Wu.

Culms 2–5 m tall, 1–2.5 cm in diam.; internodes green, slightly 4-angled or terete, 10–15 cm, initially densely white pubescent and sparsely setose, remaining verrucose; nodes very prominent; sheath scar usually with a ring of hazel cilia or persistent culm sheath base, basal node with a ring of 9–14 root thorns. Culm sheaths fulvous, shorter than internodes, prominently ridged with purple veinlets; ligule truncate or arched, minutely ciliate; blade subulate-triangular, 3–5 mm. Leaves 1–3(or 4) per ultimate branch; sheaths glabrous or initially ciliate; oral setae 3–5, erect, pale, 3–5 mm; ligules arched, minute; leaf blade linear-lanceolate to linear, 6–15 × 0.5–1.2 cm, papery, glabrous, secondary veins 3- or 4-paired. Inflorescence unknown. New shoots Aug–Sep.

● 700–1400 m. Guangxi, Guizhou, Hubei, Shanxi.

20. Chimonobambusa utilis (Keng) P. C. Keng, Techn. Bull. Natl. Forest. Res. Bur. 8: 15. 1948.

金佛山方竹 jin fo shan fang zhu

Oreocalamus utilis Keng, Sunyatsenia 4: 148. 1940.

Culms 5–7(–10) m tall, 2–3.5(–5) cm in diam.; internodes terete or slightly 4-angled, 20–30 cm, initially white pubescent; wall ca. 7 mm; nodes weakly raised, nodal ridges flat or slightly prominent, persistent culm sheath base tomentose. Culm sheaths deciduous, fulvous, with sparse, off-white spots, shorter than internodes, margins ciliate; ligule slightly arched, 0.5–1.2 mm; blade triangular-subulate, 4–7 mm, articulate. Leaves (1 or)2(–5) per ultimate branch; sheaths 3–6 cm, glabrous; ligule arcuate or truncate, 1–2 mm; pseudopetiole 2–5 mm; leaf blade lanceolate, abaxially gray-green, adaxially deep green, (5–)14–16 × (1–)2–2.5 cm, glabrous, 5–7-veined. Inflorescence branches subtended by 4 or 5, persistent, gradually enlarged bracts. Spikelets 2.5–4.5 cm; florets 4–7. Glumes 1–3, 6–9 mm, 7–9-veined; rachilla internodes 4–6 mm, glabrous; lemma ovate-triangular, 1–1.2 cm, glabrous; palea 8–10 mm, 2–4-veined between keels, 1- or 2-veined on each flank, apex obtuse or retuse; lodicules 2–3 mm, posterior oblong-lanceolate, anterior pair subovate. Anthers 5–6 mm. Ovary ovoid, glabrous; style minute, divided close to base; stigmas 2, ca. 2.5 mm. Caryopsis nutlike, ellipsoidal, 10–15 × 6–8 mm in diam., pericarp 1.5–2.5 mm thick. Fl. Apr.

● 1000–2100 m. Guizhou, Sichuan, Yunnan.

21. Chimonobambusa pachystachys Hsueh & T. P. Yi, J. Yunnan Forest. Coll. 1982(1): 33. 1982.

刺竹子 ci zhu zi

Culms 3–7 m tall, 1–3 cm in diam.; internodes terete or basal ones slightly 4-angled, 15–22 cm, densely gradually deciduous brownish tomentose; nodes below mid-culm with rings of root thorns. Culm sheaths gradually deciduous, papery; ligule truncate, ca. 1 mm; blade subulate, 3–4 mm, articulate. Leaves 1–3 per ultimate branch; sheaths glabrous; oral setae several, deciduous; ligule truncate; blade 6–18 × 1.1–2.1 cm, papery, secondary veins 4–6-paired. Inflorescence lateral to shoots with apical leaves, subtended by 3 or 4, gradually enlarged bracts. Pseudospikelets 1(–3); florets 4–6. Glumes 1 or 2; lemma papery, glabrous or shortly villous, apex acuminate; palea slightly shorter than lemma, thinly papery, glabrous, apex blunt. Anthers purple. Ovary obovoid; style minute, divided close to base; stigmas 2. Caryopsis obovate-elliptic, pericarp thick.

● Evergreen broad-leaved forests; 1000–2000 m. Guizhou, Sichuan.

22. Chimonobambusa metuoensis Hsueh & T. P. Yi, J. Bamboo Res. 2(1): 34. 1983.

墨脱方竹 mo tuo fang zhu

Culms 5–7 m, 1–2.5 cm in diam.; internodes green, terete, grooved above branches, initially densely fulvous tomentose; wall 3–4 mm thick, cavity with membranous pith; nodes with strongly prominent ridges; lower branchless nodes usually each with a ring of 12–25 root thorns 2–3 mm; sheath scars prominent, densely retrorsely brown setose, hairs ca. 1 mm; buds triangular-subulate, glabrous. Branches initially 3 per node. Culm sheaths late deciduous, red-purple, narrowly triangular, shorter than internodes, 8–13 cm, 5.5–9 cm wide at base, thinly leathery, minutely off-white setulose, veins distinct, veinlets indistinct, margins densely gray-brown ciliate, apex 3–4 mm; auricles absent; ligule truncate, ca. 1 mm, densely gray-brown ciliate; blade erect, triangular or subulate, 1.5–2 × 1–1.5 mm, glabrous, articulate. Leaves 2 or 3 per ultimate branch; sheath distally dark purple, glabrous, 4–8 cm; ligule slightly prominent, dark purple, truncate, ca. 1 mm, glabrous; blade lanceolate, 12–33 × 1.5–4 cm, papery, glabrous, secondary veins 5–8-paired. Inflorescence unknown. New shoots Jul–Aug.

● Broad-leaved forests; 1900–2200 m. Xizang.

23. Chimonobambusa quadrangularis (Franceschi) Makino, Bot. Mag. (Tokyo) 28: 153. 1914.

方竹 fang zhu

Bambusa quadrangularis Franceschi, Bull. Soc. Tosc. Ortic. 5: 401. 1880; *Arundinaria quadrangularis* (Franceschi) Makino; *Phyllostachys quadrangularis* (Franceschi) Rendle.

Culms erect, 3–8 m tall, to 2.5 cm in diam.; internodes obtusely 4-angled, 8–22 cm, sparsely coarsely scabrid, apically more densely so; nodes prominent, supra-nodal ridge raised at branching nodes, level at branchless nodes, lower nodes each with a ring of short, declined root thorns; sheath scar corky, initially with a fulvous, tomentose, minutely setose ring. Culm sheaths deciduous, shorter than internodes, papery, veins prominent, transverse veinlets purple-brown, margins ciliate; auricles, oral setae, and ligule absent; blade deciduous, subulate, 3–5 mm, articulate. Leaves 2–5 per ultimate branch;

sheaths leathery, glabrous, margins apically ciliate; oral setae deciduous, erect, glabrate; ligule truncate, short, ciliate, with minute setae; pseudopetiole ca. 1.8 mm; blade elliptical to lanceolate, 8–29 × 1–2.7 cm, papery, abaxially initially pubescent, adaxially glabrous, secondary veins 4–7-paired, tertiary veins 5–7, apex acuminate. Inflorescence racemose or paniculate, terminal ones slender, glabrous, subtended by persistent, gradually enlarged bracts. Spikelets (1 or)2–4, 2–3 cm, slender; florets 2–5, basal absent to 2 rudimentary. Glumes 1–3, lanceolate, 4–5 mm; lemma green, lanceolate or oblong-lanceolate, subequal to palea, papery, 5–7-veined; lodicules narrowly ovate. Anthers 3.5–4 mm. Stigmas 2.

Anhui, Fujian, Guangxi, Hunan, Jiangsu, Jiangxi, Taiwan, Zhejiang [Japan; cultivated in Europe and North America].

Although *Tetragonocalamus angulatus* and *Chimonobambusa angulata* are widely assumed to be synonyms of *C. quadrangularis*, it has been known for some time that they are actually synonyms of *Bambusa breviflora*, itself now considered to be a synonym of *B. tuldoides*.

The inclusion of *Chimonobambusa quadrangularis* in the IUCN Red List is surprising, considering its wide distribution and the rather minor differences from several other species described later in China.

24. Chimonobambusa microfloscula McClure, Lingnan Univ. Sci. Bull. 9: 17. 1940.

小花方竹 xiao hua fang zhu

Culms 4–6 m tall, 1.5–2 cm in diam.; internodes initially setose distally, persistently verrucose; wall thin; branching nodes with very prominent ridge, basal nodes each with a ring of root thorns; sheath scar level, glabrous, sometimes with slight base of persistent culm sheath. Branches 3 per node. Culm sheaths deciduous, shorter than internodes, thickly papery, veins distinct, veinlets indistinct, margins fulvous ciliate; ligule ca. 1 mm, sparsely ciliate; blade readily deciduous, subulate. Leaves 3–5 per ultimate branch; sheath thinly leathery, glabrous, margin ciliate; oral setae white, ca. 1.2 cm; leaf blade narrowly lanceolate, 9–22 × 0.7–0.9 cm, papery, abaxially sparsely white setulose, secondary veins 4- or 5-paired. Inflorescences 8–24 cm with up to 5 brown spikelets; pedicels short or absent. Glumes 2, membranous, apex blunt; lower glume 4–5 mm, abaxially sparsely hirtellous, 5-veined; upper glume 5–6 mm, glabrous, 7-veined; lemma 7–9 mm, membranous, glabrous, secondary veins purplish, apex long acuminate; palea subequal to lemma, 2-veined between keels, apex obtuse, subentire.

Yunnan [N Vietnam].

25. Chimonobambusa ningnanica Hsueh & L. Z. Gao, J. Bamboo Res. 6(2): 13. 1987.

宁南方竹 ning nan fang zhu

Chimonobambusa yunnanensis Hsueh & W. P. Zhang.

Culms erect, (6–)10–14 m, 2–3 cm in diam.; internodes terete or 4-angled, ca. 20 cm, initially adnate-setose, becoming verrucose and rough; wall 3–4 mm; supra-nodal ridges level or slightly raised at branching nodes; sheath scar purple-brown pubescent; intranode with reflexed root thorns. Branches 3 per node. Culm sheaths deciduous, shorter than internodes; thickly papery, yellow-brown setose, longitudinal veins distinct, margins yellow-brown ciliate; ligule arcuate, ca. 0.5 mm, ciliate; blade subulate, 3–6 × ca. 3 mm. Leaves 3 per ultimate branch; sheath smooth; oral setae several, white, 4–5 mm; ligule ca. 1 mm; blade narrowly lanceolate, 20–23 × 1.5–2 cm, secondary veins 4- or 5-paired, transverse veins distinct. Inflorescence unknown.

● Broad-leaved forests; 1600–2200 m. SW Sichuan, Yunnan.

26. Chimonobambusa grandifolia Hsueh & W. P. Zhang, J. Bamboo Res. 7(1): 17. 1988.

大叶方竹 da ye fang zhu

Culms erect, to 4 m tall, 1–1.5 cm in diam.; internodes terete, 20–25(–30) cm, initially distally adnately brown setose, later verrucose; wall quite thin; supra-nodal ridges prominent, basal nodes with rings of root thorns; sheath scars with a densely brown tomentose ring; buds densely brown hairy. Branches 3 per node. Culm sheaths late deciduous, 1/2–2/3 as long as internode, papery, adnately brown setose, densely so at base, veins distinct, veinlets indistinct, margins fulvous ciliate; ligule ca. 1 mm; blade deciduous, triangular-subulate, 5–7 mm, articulate. Leaves 6–8 per ultimate branch; sheath 5–8 cm, margins white ciliate; oral setae erect, ca. 1.5 cm, stiff; ligule ca. 2 mm; leaf blade oblong-lanceolate, 30–35 × ca. 2.5 cm, secondary veins 7- or 8-paired. Inflorescence unknown. New shoots Jul–Aug.

● Yunnan.

27. Chimonobambusa verruculosa (T. P. Yi) T. H. Wen & Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 47. 1990.

瘤箨筇竹 liu tuo qiong zhu

Qiongzhuea verruculosa T. P. Yi, Bull. Bot. Res., Harbin 8(4): 65. 1988.

Culms 1.5–3 m, (0.7–)1–1.5 cm in diam.; internodes terete, 10–15(–18) cm, grooved above branches, glabrous or initially with short, stiff, gray-white hairs below nodes, solid or nearly so; nodes with slightly projecting sheath scar. Branches initially 3 per node, later 5–7. Culm sheaths gradually deciduous, narrowly triangular, usually shorter than internodes, papery, gray tubercular-setose, margins densely brown ciliate; auricles absent; oral setae 1 or 2 on each shoulder, gray; ligule truncate, ca. 0.5 mm; blade erect at basal culm nodes, reflexed on upper culm, triangular, 0.5–1(–5) mm, glabrous. Leaves (1 or)2 or 3 per ultimate branch; auricles and oral setae absent; ligule arcuate; blade lanceolate, (5–)10–18 × (0.9–)1.2–1.6 cm, glabrous, secondary veins 4–6-paired, transverse veins distinct, base cuneate, margins serrulate, apex acuminate. Inflorescence unknown. New shoots Oct.

● Banks of streams; ca. 1100 m. Sichuan (Gulin).

28. Chimonobambusa unifolia (T. P. Yi) T. H. Wen & Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 46. 1990.

半边罗汉竹 ban bian luo han zhu

Qiongzhuea unifolia T. P. Yi, J. Bamboo Res. 9(1): 27. 1990.

Culms 1–1.6 m, 0.3–0.5 cm in diam.; internodes terete,

(2–)12–15(–24) cm, grooved above branches, with rings of yellow-brown hairs below nodes; wall 1.5–2 mm; nodes raised into ring; sheath scar prominent, brown, initially densely yellow-brown setose; intranode 1.5–2.5(–3) mm, initially gray or yellow-gray waxy. Branch bud oblong-ovoid, apex spinescent. Culm sheaths deciduous, triangular-oblong, shortly triangular at apex, papery, basally setose, longitudinal veins distinct, margins densely ciliate; auricles and oral setae absent; ligule arcuate, ca. 0.5 mm; blade triangular to linear-lanceolate, 1.5–12 mm, usually involute. Leaves 1 per ultimate branch; auricles and oral setae absent; ligule undeveloped; blade linear-lanceolate, (7–)9–15(–20) × 1.1–1.8(–2.5) cm, glabrous, secondary veins 4–6-paired, transverse veins sparse, base cuneate, apex acuminate. Inflorescence unknown. New shoots Nov–Dec.

● Broad-leaved forests; 1500–2200 m. Sichuan (Changning).

29. Chimonobambusa rigidula (Hsueh & T. P. Yi) T. H. Wen & Ohrnberger in Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 42. 1990.

实竹子 shi zhu zi

Qiongzhuea rigidula Hsueh & T. P. Yi, Acta Phytotax. Sin. 21: 96. 1983; *Oreocalamus rigidulus* (Hsueh & T. P. Yi) P. C. Keng.

Culms 2–4(–6) m, 1.5–2.5 cm in diam.; internodes slightly 4-angled or terete, (10–)15–18(–24) cm, glabrous; wall 4–10 mm; nodes with slightly projecting sheath scar. Branches 3 per node, subequal. Culm sheaths deciduous, thickly papery or leathery, margins densely yellow ciliate; auricles absent; ligule truncate; blade readily deciduous, triangular, glabrous. Leaves (1 or)2–5 per branchlet; auricles and oral setae absent; ligule truncate; blade lanceolate, 7–13 × 0.8–1.7 cm, with distinct, transverse veins. Flowering branches leafless or with terminal leaves on branchlets; inflorescence paniculate, 1–4 single pseudospikelet racemes grouped in loose fascicles, subtended by 3 or 4, gradually enlarged bracts. Spikelets 3–6-flowered. Glumes 2(or 3); rachilla disarticulating, internodes 2–5 mm, glabrous; lemma 8–14 mm, papery; palea thinner than lemma, 2-keeled, obtuse; lodicules purple, lanceolate, 1.5–3 mm, upper margin ciliate. Ovary ovoid; style 1; stigmas 2, plumose. Caryopsis nutlike. New shoots Sep; shoots purple.

● Hilltops; 1300–1700 m. S Sichuan.

30. Chimonobambusa opienensis (Hsueh & T. P. Yi) T. H. Wen & Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 30. 1990.

三月竹 san yue zhu

Oreocalamus opienensis Hsueh & T. P. Yi, J. Nanjing Univ. Nat. Sci. Ed. 22(3): 416. 1986; *Chimonobambusa maculata* (T. H. Wen) T. H. Wen; *Qiongzhuea maculata* T. H. Wen; *Q. opienensis* (Hsueh & T. P. Yi) D. Z. Li & Hsueh.

Culms 2–7 m, 1–5.5 cm in diam.; internodes slightly 4-angled or terete, 18–20(–25) cm, glabrous; wall 5–8 mm; distal nodes 2- or 3-branched, with conspicuously raised ridge. Culm sheaths deciduous, oblong-triangular, thickly papery or leathery, sparsely setose, upper margins densely yellow ciliate, apex arched; auricles absent; ligules rounded, ca. 1 mm, glabrous; blade triangular, 4–6 mm. Leaves (1 or)2 per ultimate branch; sheaths 2.5–4 cm; auricles absent; oral setae 2–4, 4–7 mm; ligule short when leaf solitary, ca. 0.5 mm when 2-leaved; blade lanceolate, 7.5–17 × 1–1.6 cm, glabrous. Inflorescence unknown. New shoots Apr–May; shoots purplish black.

● Broad-leaved forests; 1600–1900 m. Sichuan (Ebian).

This species was first described as *"Qiongzhuea opienensis"* by Hsueh and Yi (Acta Bot. Yunnan. 2: 98. 1980), but that name was not validly published.

31. Chimonobambusa luzhiensis (Hsueh & T. P. Yi) T. H. Wen & Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 20. 1990.

光竹 guang zhu

Qiongzhuea luzhiensis Hsueh & T. P. Yi, Acta Bot. Yunnan. 5: 45. 1983; *Oreocalamus luzhiensis* (Hsueh & T. P. Yi) P. C. Keng.

Culms 2.5–5 m, 1–2 cm in diam.; internodes terete or slightly 4-angled, (10–)14–18(–20) cm, (1 or)2-grooved, white powdery, glabrous; wall 3–5 mm; nodes with conspicuous ridge, glabrous, glossy; sheath scar conspicuous, yellow-brown hispid, with persistent base of culm sheath. Branches 3(–5) per node. Culm sheaths persistent, red-brown or yellow-brown, triangular, leathery, sparsely brown setose, margins densely brown hirsute, apex truncate; auricles absent; ligule truncate, ca. 1 mm, initially yellow-brown ciliate; blade erect, triangular, linear, or lanceolate, 2–9 mm, longitudinal veins distinct. Leaves 2 or 3(or 4) on ultimate branches; ligules truncate, ca. 1 mm, glabrous; blades lanceolate, (7–)15–23(–30) × (1.1–)1.6–2(–2.4) cm, thickly papery, secondary veins 5–7-paired. Inflorescence unknown. New shoots Sep–Oct.

● Broad-leaved forests; 1700–1900 m. Guizhou (Luzhi).

32. Chimonobambusa puberula (Hsueh & T. P. Yi) T. H. Wen & Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 32. 1990.

柔毛筇竹 rou mao qiong zhu

Qiongzhuea puberula Hsueh & T. P. Yi, Acta Bot. Yunnan. 5: 42. 1983; *Oreocalamus puberulus* (Hsueh & T. P. Yi) P. C. Keng.

Culms erect, 4–5 m, 1.5–2.5 cm in diam.; internodes terete or slightly 4-angled, (8–)15–17(–20) cm, initially puberulous; wall 2–5 mm; nodes with slightly conspicuous ridge, glabrous, glossy; sheath scar conspicuous, brown ciliate. Branches 3(–7) per node. Culm sheaths gradually deciduous, oblong-ovoid or triangular, truncate or arched, leathery, brown hirsute, margins brown hirsute; auricles absent; ligule truncate or arched, ca. 1 mm, glabrous; blade erect, triangular, 2–13 × 1–2 mm. Leaves (2 or)3(or 4) per ultimate branch; sheaths 3–4 cm, margins densely gray ciliate; auricles absent; oral setae 3–5, 3–5 mm; ligule truncate or arched, ca. 1 mm, rounded; blade lanceolate, (4.5–)10–15(–19) × (0.6–)1–1.6 cm, secondary veins (3 or)4- or 5(or 6)-paired. Inflorescence unknown. New shoots Oct.

● Hills; 1200–1500 m. Guizhou (Luzhi).

33. Chimonobambusa communis (Hsueh & T. P. Yi) T. H. Wen & Ohrnberger, Bamboos World Gen. *Chimonobambusa*, 16. 1990.

平竹 ping zhu

Oreocalamus communis Hsueh & T. P. Yi, J. Nanjing Univ. Nat. Sci. Ed. 22(3): 416. 1986; *Qiongzhuea communis* (Hsueh & T. P. Yi) D. Z. Li & Hsueh.

Culms 3–7 m, 1–3 cm in diam.; internodes slightly 4-angled or terete at culm base, (8–)15–18(–25) cm, smooth, glabrous; wall 3–5 mm; nodes level or with slightly raised sheath scar at nodes without branches. Culm sheaths deciduous, initially green, becoming yellow-brown, papery or thickly papery; auricles absent; ligule ca. 1 mm; blade triangular or subulate, 5–11 mm, glabrous, articulate, readily deciduous. Leaves (1 or)2(–5) per ultimate branch; sheaths leathery; auricles absent; oral setae several, 3–7 mm; ligule truncate, ca. 1 mm; blade lanceolate, (5–)8–12 × (0.8–)1.3–2 cm, transverse veins distinct. Flowering branches leafless or terminally leafy on branchlet; 2–4 single pseudospikelet racemes grouped in loose fascicles, subtended by several, gradually enlarged bracts. Spikelets 2–3 × 0.4–0.5 cm; florets (3–)5–7. Glumes 1 or 2(or 3), 7–13 mm; rachilla articulate, internodes 3–5 mm, slightly white powdery; lemma 8–13 mm; palea 7–11 mm, apex obtuse or bifid. Anthers yellow, 5–6 mm. Ovary ovoid; style 1; stigmas 2. Fruit a nutlike caryopsis. New shoots May, fl. Mar, fr. May.

● Hills; 1600–2000 m. Guizhou, Hubei, Sichuan.

This species was first described as *"Qiongzhuea communis"* by Hsueh and Yi (Acta Bot. Yunnan. 2: 96. 1980), but that name was not validly published.

34. Chimonobambusa montigena (T. P. Yi) Ohrnberger, Bambusbrief 1990(4): 11. 1990.

荆竹 jing zhu

Qiongzhuea montigena T. P. Yi, J. Bamboo Res. 9(3): 28. 1990.

Culms 1.5–2.8 m, 0.7–1.4 cm in diam.; internodes terete, (5–)13–14(–19) cm, grooved above branches, initially sparsely white powdery; wall 3–4 mm; nodes raised into ring; sheath scar initially densely yellow-brown setose. Branches 3–5 per node. Culm sheaths deciduous, triangular-elliptic, shorter than internodes; leathery, yellow setose at base, margins initially gray ciliate, longitudinal veins distinct; auricles absent; ligule truncate, 0.5–0.8 mm; blade erect, triangular or subulate, 2.5–7 mm, margins ciliate. Leaves 2–5 per ultimate branch; auricles small; oral setae initially several; ligule arcuate, ca. 1 mm; blade lanceolate, (4.5–)8–14.5 × (0.8–)1.3–2.6 cm, transverse veins distinct. Inflorescence on leafless branches or terminal to leafy branchlets, 1–4 single pseudospikelet racemes grouped in loose fascicles, subtended by several, gradually enlarged bracts. Spikelets 5–7-flowered, 2–3.2 × 0.3–0.5 cm. Glume 1, 1–2.2 cm; rachilla articulate, internodes 2–4 mm; lemma (7–)9–13 mm; palea 6–9 mm, apex acute. Anthers yellow, 5–6 mm. Ovary ovoid; style 1; stigmas 2 or 3. Fruit a nutlike caryopsis. New shoots late Apr to early May, fl. and fr. Jul–Sep.

● Broad-leaved forests; 2300–2500 m. NE Yunnan.

33. SHIBATAEA Makino ex Nakai, J. Jap. Bot. 9(2): 83. 1933.

鹅毛竹属 e mao zhu shu

Wang Zhengping (王正平 Wang Cheng-ping); Chris Stapleton

Shrubby bamboos. Rhizomes leptomorph, with running underground stems. Culms pluricaespitose, less than 1 m, distally flexuose; internodes flattened on branching sides; nodes 2-ridged. Branches 3–5, slender, often without secondary branchlets, usually with persistent membranous prophylls and branch sheaths. Culm sheaths deciduous, papery, transverse veins distinct; auricles absent; ligule well developed; blade lanceolate to subulate, small. Leaves usually solitary on each branchlet; sheaths contiguous with branchlets, thickened, petiole-like, rarely 2 or more with median sheaths exceeding proximal and distal ones; auricles absent; ligule usually long, conical and highly involute in solitary or upper leaves; blade very broadly lanceolate to narrowly lanceolate, transverse veins distinct. Inflorescence bracteate, partially iterauctant, composed of 1-spikeleted racemes gathered in fascicles with a spathate prophyll, 0 or 1 empty bract, and 0–3 gemmiferous bracts. Spikelets 2–7-flowered, lower 1 or 2 fertile, upper ones sterile. Glumes usually absent; lemma membranous, broadly lanceolate, apex acuminate; palea 2-keeled; lodicules 3, narrowly obovate, membranous. Stamens 3. Style 1; stigmas 3, plumose. Fruit a caryopsis.

● Seven species: China.

In addition to the species treated below, *Shibataea pygmaea* F. Maekawa (J. Jap. Bot. 19: 150. 1943) was described from Jiangxi. This species was based on abnormal material, and it is difficult to confirm its identity, since no *Shibataea* has been found at the type locality. *Shibataea tumidinoda* T. H. Wen (J. Bamboo Res. 7(1): 23. 1988) was described from Fujian. This species was based on a poor gathering, and its identity is uncertain.

These bamboos are usually cultivated as ornamentals. One species was introduced to Japan at an early date and has been widely planted there.

1a. Leaf blade narrowly lanceolate with a long caudate tip, length 6–10 × width.
2a. Culm sheaths glabrous ..... 5. *S. lancifolia*
2b. Culm sheaths initially white pubescent ..... 6. *S. nanpingensis*
1b. Leaf blade ovate, ovate-lanceolate, or elliptic, length less than ca. 4 × width.
3a. Culm sheaths glabrous.
4a. Leaf blade abaxially pubescent, margins acutely and rigidly serrulate ..... 4. *S. hispida*
4b. Leaf blade abaxially glabrous, margins minutely serrulate ..... 7. *S. chinensis*

3b. Culm sheaths hairy.
5a. Leaf blade abaxially pubescent ..... 1. *S. kumasaca*
5b. Leaf blade abaxially glabrous.
6a. Culm sheaths sparsely brown strigose ..... 2. *S. strigosa*
6b. Culm sheaths densely white pubescent ..... 3. *S. chiangshanensis*

1. Shibataea kumasaca (Zollinger ex Steudel) Makino ex Nakai, J. Jap. Bot. 9(2): 78. 1933.

倭竹 wo zhu

Bambusa kumasaca Zollinger ex Steudel, Syn. Pl. Glumac. 1: 331. 1854; *B. ruscifolia* Siebold ex Munro; *Phyllostachys kumasaca* (Zollinger ex Steudel) Munro; *Shibataea ruscifolia* (Siebold ex Munro) Makino.

Culms ca. 1 m, 3–4 mm in diam.; internodes glossy, glabrous; wall thick with small lumen; nodes with ridge strongly raised; intranode to 3–5 mm. Culm sheaths papery, appressed pubescent, outer margin ciliate; auricles absent; oral setae few or absent; ligule truncate or arcuate, to 3–4 mm, pubescent, apex ciliolate; blade lanceolate, small. Branches 3–5(or 6) per node, 0.5–1.5 cm, equal in diam., 2–4(–6)-noded, axillary prophyll usually persistent; branch sheaths gradually deciduous or persistent and disintegrating in situ, membranous. Leaves 1(or 2) per ultimate branch; blade adaxially deep green, ovate or narrowly ovate, 2.5–18 × 0.6–3.5 cm, abaxially glaucous and pubescent, adaxially glabrous, secondary veins 6–9-paired, tessellations rectangular, base broadly cuneate to rounded, apex acuminate. Flowering branches at lower nodes of leafy branches or rarely at nodes of culms, usually rebranched, secondary branches comprising a prophyll, few bracts, and (1 or)2–5 pseudospikelets; pseudospikelets consisting of a prophyll, 0 or 1 empty bract, 2 or 3 gemmiferous bracts, and a terminal spikelet. Spikelets with 3–7 florets, lower 1–3 bisexual, others male or sterile. Lemma thin; palea membranous; lodicules thinly membranous, ovate. Anthers yellow. Ovary narrowly ovoid; style 1; stigmas 2 or 3. Caryopsis narrowly ovoid. New shoots May–Jun. $2n = 48$*.

● Mountain slopes. Fujian, Zhejiang; cultivated in Anhui, Guangdong, Jiangsu, and Taiwan [widely cultivated in Japan].

The specific epithet has been erroneously spelled *"kumasa"* by some authors.

A cultivar with yellow-striped leaves, *Shibataea kumasaca* 'Aureostriata', is grown. The species is introduced in many countries as an ornamental.

2. Shibataea strigosa T. H. Wen, Bull. Bot. Res., Harbin 3(1): 96. 1983.

矮雷竹 ai lei zhu

Culms ca. 50 cm, ca. 3 mm in diam.; internodes green, glabrous, flattened throughout on one side; nodal ridge strongly elevated. Culm sheaths pale green, sparsely deciduously brown strigose, base and margins glabrous, apex truncate; ligule weakly arcuate or truncate, margin ciliolate; blade erect, subulate, small. Branches 3 per node. Leaves 1 per ultimate branch, petiole 3–4 mm; blade ovate-lanceolate to elliptic, 5–7 × 1.5–2 cm, both surfaces glabrous, base rounded, asymmetric, secondary veins 6- or 7-paired, tessellation distinct, apex abruptly acuminate. Inflorescence unknown.

● Jiangxi, Zhejiang.

3. Shibataea chiangshanensis T. H. Wen, Bull. Bot. Res., Harbin 3(1): 95. 1983.

江山鹅毛竹 jiang shan e mao zhu

Culms ca. 50 cm, ca. 2 mm in diam.; internodes initially green, later red-brown, subterete, 7–12 cm, white powdery below nodes, subterete; nodal ridge elevated. Culm sheaths pale red, densely white pubescent, especially at base, margins ciliate; auricles and oral setae absent; ligule truncate, short; blade erect, purple-red, subulate. Branches 3 per node, central one thicker, 2–2.5 cm, lateral two ca. 1/2 as long as central one. Leaves 1 per ultimate branch; pseudopetiole ca. 8 mm; blade ovate to triangular, 6–8 × 1–2.3 cm, broadest near base, both surfaces glabrous, secondary veins 7- or 8-paired, tessellations square, base rounded or subtruncate, apex abruptly acuminate, shortly caudate.

● Zhejiang.

4. Shibataea hispida McClure, Lingnan Univ. Sci. Bull. 9: 57. 1940.

芦花竹 lu hua zhu

Culms ca. 1 m, 1.5–4 mm in diam.; internodes pale yellow, triangular, glossy, glabrous, grooved above branches; cavity small; nodal ridge rather elevated; intranode 2–4 mm. Culm sheaths brown, apex acuminate; auricles and oral setae absent; blade subulate, small. Branches 3 or 4 per node, 2–4-noded; internodes 0.5–1 cm, sparsely hispid. Leaves 1 per ultimate branch; sheath 1–2 cm; ligule short; pseudopetiole 4–8 mm, glabrous or scarcely pubescent; blade abaxially gray-green, adaxially green, lanceolate, 7–10 × 2–3(–4) cm, broadest near base, abaxially pilulose, adaxially glabrous, secondary veins 6–8-paired, tessellation distinct, base suborbicular, margins minutely serrulate, apex abruptly acuminate. Inflorescence unknown.

● Forest margins, open forests, slopes; below 300 m. Anhui, Zhejiang.

5. Shibataea lancifolia C. H. Hu, J. Nanjing Univ., Nat. Sci. Ed. 1981(2): 257. 1981.

狭叶鹅毛竹 xia ye e mao zhu

Culms 45–100 cm, 2–3 mm in diam.; internodes subterete, 3–4 cm, glabrous, grooved above branches; nodal ridge raised. Culm sheaths deciduous, papery, glabrous; auricles and oral setae absent; blade subulate, 3–6 mm. Branches 3–5 per node, 0.8–1.5 cm, 3–5-noded, with persistent prophyll at base; branch sheaths gradually deciduous, membranous; blade small, mucronate. Leaves 1 or 2 per ultimate branch; sheath ca. 2 cm, lower sheath longer than upper in 2-leaved branches; ligule conical, tightly involute, ca. 5 mm and weakly curved in solitary or upper leaves, shorter in lower ones; blade lanceolate, 8–12 × 0.8–1.5 cm, abaxially pubescent, adaxially glabrous, base cune-

ate, margins minutely serrulate, apex acuminate, caudate. Flowering branches at lower nodes of leafy branches, sometimes with 2–5 secondary branches, each branch subtended by a large spathelike bract and with an axillary prophyll and 1–4 pseudospikelets; pseudospikelets linear, 1.5–2 cm, comprising a prophyll, 1–3 gemmiferous bracts or lowest bract empty, and a terminal spikelet. Spikelets with 3–5 florets, lower 1 or 2 fertile, others male or sterile. Lemma pale green, lanceolate, ca. 1.2 cm, thin, 11-veined; palea thinner, about as long as lemma; lodicules membranous, transparent. Anthers yellow. Ovary narrowly ellipsoid; style 1; stigmas 3. Caryopsis narrowly ovoid. New shoots May–Jun, fl. Mar–Apr. 2*n* = 48*.

● Montane forests; ca. 500 m. Fujian, Zhejiang.

6. Shibataea nanpingensis Q. F. Zheng & K. F. Huang, Wuyi Sci. J. 2: 17. 1982 [*"nanpinensis"*].

南平鹅毛竹 nan ping e mao zhu

Culms 1–1.7 m, 4–5 mm in diam.; internodes green, terete, or triangular and grooved above branches, 25–30(–40) cm; nodal ridge conspicuously raised; intranode ca. 5 mm. Culm sheaths pale green, densely deciduously white pubescent especially toward base, scabrous between veins; auricles and oral setae absent; ligule convex, 1.5–4 mm, ciliate; blade linear, 3–6 mm, green. Branches 3 per node, 1.5–1.7 cm, 2- to several-noded. Leaves 1 per ultimate branch; blade elliptic-lanceolate, 17–18 × 2.5–3 cm, both surfaces glabrous or abaxially hairy, secondary veins 7–9-paired, base cuneate, margins minutely serrulate, apex caudate-acuminate. Inflorescence unknown. New shoots Jun–Jul. 2*n* = 48*.

● Fujian.

1a. Leaf blade abaxially glabrous ..... 6a. var. *nanpingensis*
1b. Leaf blade abaxially hairy ..... 6b. var. *fujianica*

6a. Shibataea nanpingensis var. **nanpingensis**

南平鹅毛竹(原变种) nan ping e mao zhu (yuan bian zhong)

Leaf blade glabrous on both surfaces.

● Fujian.

6b. Shibataea nanpingensis var. **fujianica** (Z. D. Zhu & H. Y. Zhou) C. H. Hu, Fl. Reipubl. Popularis Sin. 9(1): 321. 1996.

福建鹅毛竹 fu jian e mao zhu

Shibataea fujianica Z. D. Zhu & H. Y. Zhao, Acta Phytotax. Sin. 26: 134. 1988.

Leaf blade abaxially hairy.

● Fujian.

7. Shibataea chinensis Nakai, J. Jap. Bot. 9: 81. 1933.

鹅毛竹 e mao zhu

Culms ca. 1 m, 2–3 mm in diam.; internodes pale green or tinged with purple, triangular, 7–15 cm, glabrous, grooved above branches; nodal ridge rather raised. Culm sheaths deciduous, unmarked, papery, glabrous or basally setulose, margins ciliate; auricles and oral setae absent; ligule to 4 mm, blade small, subulate or acicular in lower sheaths. Branches 3–5 per node, 3–5-noded, with a lateral bud, each branch with a gradually deciduous prophyll and some branch sheaths, prophyll 3–5 cm, membranous, margins ciliate. Leaves 1(or 2) per ultimate branch; sheath glabrous; auricles and oral setae absent; ligule lanceolate or triangular, 4–6 mm or more, conically tightly involute, or loose in lower leaf of 2-leaved branch, membranous, puberulent; blade ovate-lanceolate, 6–10 × 1–2.5 cm, both surfaces glabrous, secondary veins 5–8(or 9)-paired, tessellations distinct, base asymmetric, margins minutely serrulate, apex acuminate. New shoots May–Jun.

● Mountain slopes, forests, forest margins, in cultivation; ca. 1100 m. Anhui, Jiangsu, Jiangxi, Zhejiang.

1a. Culm sheaths basally glabrous; blade subulate ..... 7a. var. *chinensis*
1b. Culm sheaths basally setulose; blade minute, awnlike ..... 7b. var. *gracilis*

7a. Shibataea chinensis var. **chinensis**

鹅毛竹(原变种) e mao zhu (yuan bian zhong)

Culms taller. Culm sheaths basally glabrous. Leaf blade completely green.

● Mountain slopes, forest margins, forests, commonly cultivated as an ornamental; ca. 1100 m. Anhui, Jiangsu, Jiangxi.

7b. Shibataea chinensis var. **gracilis** C. H. Hu, J. Nanjing Univ., Nat. Sci. Ed. 1982(3): 733. 1982.

细鹅毛竹 xi e mao zhu

Culms smaller. Culm sheaths basally setulose; blade slender, awnlike.

● Jiangsu, Zhejiang.

34. PHYLLOSTACHYS Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 3: 745. 1843, nom. cons., not Torrey (1836), nom. rej.

刚竹属 gang zhu shu

Wang Zhengping (王正平 Wang Cheng-ping); Chris Stapleton

Arborescent or shrubby bamboos. Rhizomes leptomorph, with running underground stems. Culms diffuse; internodes profoundly flattened or grooved on one side above branches; nodes 2-ridged. Branches 2, subequal, rarely with a much smaller, central or lateral 3rd branch. Culm sheaths deciduous, papery to subleathery; ligule usually conspicuous; usually auricled with long bristles; blade usually recurved or reflexed. Leaf blade with distinct transverse veins, usually abaxially pilose proximally. Inflorescence bracteate, partially iteractant, composed of 1–7-spikeleted racemes gathered into fascicles or globose mass subtended by a tiny, membranous, 2-keeled prophyll, 0 or 1 gemmiferous bract, 2–6, gradually enlarged scaly bracts, and 2–7 spathiform bracts.

Spikelets with 2–7 florets, terminal sterile. Glumes absent to 1(–3). Rachilla extending beyond uppermost floret, disarticulating just below fertile florets. Lemma variable in size and texture; palea 2-keeled, apex bifid; lodicules 3, ciliate. Stamens 3. Style long; stigmas (1–)3, plumose. Caryopsis elliptical to linear-lanceolate, dorsally grooved.

At least 51 species: China, India, Japan, Myanmar; introduced to many other countries; 51 species (49 endemic) in China.

Phyllostachys is indigenous in China but is also widely and extensively cultivated. Originally it may have been largely endemic to China, but many species were introduced to neighboring countries, especially Japan, at a very early date. *Phyllostachys* species are now extensively cultivated in neighboring Asian countries, and several have become naturalized there, while some are possibly native. Many species have more recently been introduced to other parts of the world, including Europe and North and South America, but they remain principally ornamental plants outside eastern Asia. *Phyllostachys* species are probably of greater economic importance than any other bamboos in China and are used for building, paper, flooring, furniture, edible shoots, and as ornamentals.

1a. Culm sheaths from lower and mid-culm without blotches; blades erect and imbricate at apex of shoots; culm intranode ca. 5 mm; rhizome internodes with ring of air canals; flowering branchlets capitate.
2a. Culm sheath auricles large, triangular or falcate.
3a. Culm sheath ligule broad, short, width more than 8 × length, shortly ciliate.
4a. Culm sheath auricles narrowly falcate, ascendant; leaves 2 per ultimate branch ..... 43. *P. lofushanensis*
4b. Culm sheath auricles very broad, contiguous with and extending from swollen cupped base of blade, absent on mid- and lower culm; leaves 1(or 2) per ultimate branch ..... 44. *P. nidularia*
3b. Culm sheath ligule narrow, tall, width less than 8 × length (or broader in *P. aurita* and then both culm and branch sheath scar fringed with rust-colored setulae), laciniate with stouter, longer cilia at margin (minutely ciliate in *P. bissetii* and *P. aureosulcata*).
5a. Culm sheaths with milky-white or gray-white stripes at least distally or marginally, or in *P. bissetii* not striped and then sheath ligule ciliolate.
6a. Culm sheaths glabrous with milky-white stripes throughout; culm internodes with green or yellow stripes or entirely green; some culms with a few geniculate nodes near base; sheath auricles conspicuously joined to base of blade ..... 26. *P. aureosulcata*
6b. Culm sheaths hairy, with gray-white stripes on upper and lateral parts; culm internodes green, not striped; culms without geniculate nodes near base; sheath auricles sometimes slightly connected with sheath blade.
7a. Lower culm with hairy sheaths; sheath ligule ciliolate ..... 27. *P. bissetii*
7b. Lower and mid-culm sheaths hairy; sheath ligule long ciliate ..... 28. *P. varioauriculata*
5b. Culm sheaths without milky-white or gray-white stripes.
8a. Culm sheaths red-brown; sheath ligule strongly convex, peaked or arcuate ..... 30. *P. nigra*
8b. Culm sheaths green or yellow, tinged with purple; sheath ligule truncate or gently arcuate.
9a. Internodes of young culms glabrous; sheath scar of culms and branches densely fringed with rusty hairs in first two years ..... 41. *P. rubromarginata*
9b. Internodes of young culms sparsely pubescent; sheath scar of culms and branches without hairs.
10a. Leaves 2 per ultimate branch; lower and mid-culm sheath strigose with longer hairs at base; rhizomes without air canals ..... 29. *P. guizhouensis*
10b. Leaves 1 or 2 per ultimate branchlet; lower culm sheath pubescent; rhizomes with a ring of air canals ..... 42. *P. veitchiana*
2b. Culm sheath auricles small and ovate or absent.
11a. Culm sheaths with dark purple or dark brown margins when fresh; sheath ligule dark purple with long cilia.
12a. Culm sheath blade distally crinkled; culm sheaths glabrous at base ..... 10. *P. virella*
12b. Culm sheath blade not distally crinkled; culm sheaths pubescent at base, at least at lower nodes ..... 11. *P. shuchengensis*
11b. Culm sheaths without dark purple or dark brown margins when fresh; sheath ligule green or brown with short or long cilia.
13a. Culm sheath ligule narrow, with cilia to 5 mm, oral setae erect ..... 24. *P. robustiramea*
13b. Culm sheath ligule broader, with cilia less than 3 mm.
14a. Culm sheath blade usually flat, narrower than ligule; internodes of young culms pubescent.
15a. Leaf sheath initially pubescent; blade abaxially puberulent; sheath ligule truncate or weakly concave .... 45. *P. rivalis*
15b. Leaf sheath initially glabrous; blade abaxially glabrous; sheath ligule ± convex ..... 46. *P. carnea*
14b. Culm sheath blade usually undulate, broad; triangular to triangular-lanceolate, base equaling width of ligule; internodes of young culm glabrous or sparsely pubescent.
16a. Culm sheath light brown or red-purple; sheath ligule arcuate or acutely convex; leaf blade small, to 6 cm ..... 51. *P. parvifolia*
16b. Culm sheaths green or dark green, usually tinged with purple; sheath ligule concave to convex; leaf blade ca. 8 cm or more.
17a. Culm sheath ligule strongly concave, green when fresh ..... 50. *P. rubicunda*

17b. Culm sheath ligule weakly concave to convex, brown or purple when fresh.
18a. Culm sheath dark green with dark purple stripes; ligule inconspicuously ciliolate; auricles absent ..... 49. *P. atrovaginata*
18b. Culm sheath green, with or without purple stripes; ligule conspicuously ciliate; auricles usually present but small or absent in slender shoots.
19a. Culm sheath glabrous or subglabrous, not striped but tinted with purple along margins and apex when fresh ..... 47. *P. heteroclada*
19b. Culm sheath strigose, striped with purple when fresh ..... 48. *P. stimulosa*

1b. Culm sheaths from lower and mid-culm ± blotched with brown spots and markings; blade usually horizontal or reflexed, rarely erect; culm intranode ca. 3 mm; rhizome internodes without air canals; flowering branchlets spicate, rarely subcapitate.
20a. Culm sheath auricles and oral setae absent; culm sheaths glabrous, occasionally scabrous or sparsely strigose on upper or marginal portions.
21a. Culm internodes with minute holes or crystalline spots (visible under 10 × lens).
22a. Nodal ridge obsolete or less prominent than sheath scar in unbranched nodes; culm sheath ligule fringed with pale green or white cilia ..... 1. *P. sulphurea*
22b. Nodal ridge prominent in unbranched nodes; culm sheath ligule with purple-red cilia ..... 2. *P. makinoi*
21b. Culm internodes without holes or spots, or if with holes, culms initially puberulent.
23a. Sheath scar on young culms and base of culm sheaths densely pubescent or sparsely setose.
24a. Culm internodes strongly shortened and ventricose at culm base, inflated below nodes in mid-culm; culm sheath ligule short, 1–2 mm ..... 4. *P. aurea*
24b. Culm internodes normal; culm sheath ligule long.
25a. Culm sheaths with dark purple margins when fresh; ligule minutely ciliate, also with scabrous dark purple bristles ..... 11. *P. shuchengensis*
25b. Culm sheaths without dark purple margins; ligule white ciliate only.
26a. Culm sheath scar on young culms and base of culm sheaths fringed with pubescence ..... 3. *P. meyeri*
26b. Culm sheath scar on young culms and base of culm sheaths fringed with both pubescence and setae ..... 5. *P. verrucosa*
23b. Culm sheath scar on young culms and base of culm sheaths glabrous.
27a. Culm sheath ligule narrow, tall, width less than 5 × length, truncate or convex at base, not decurrent or if decurrent, upper portion of culm sheaths scabrous between veins; blade usually flat, sometimes weakly crinkled.
28a. Culm sheaths distally scabrous between veins; culms tinged with dark purple blotches on lower internodes initially.
29a. Leaf blade abaxially proximally pilose; sheath ligule truncate or convex, not decurrent on both flanks .... 6. *P. nuda*
29b. Leaf blade abaxially glabrous; sheath ligule strongly convex, decurrent on both flanks ..... 7. *P. arcana*
28b. Culm sheaths glabrous, rarely scabrous near apex, sometimes sparsely setose; culms without initial blotches.
30a. Culm sheath ligule with short white cilia, occasionally intermixed with some longer ones.
31a. Culm sheath blade lanceolate or linear-lanceolate; sheath ligule brown, apex arcuate, convex at middle ..... 9. *P. propinqua*
31b. Culm sheath blade hand-shaped or lanceolate; sheath ligule dark purple-brown or pale brown, apex truncate or weakly convex.
32a. Culm sheath ligule dark purple-brown; culm sheaths purple-brown when fresh; culm internodes initially thickly white powdery throughout ..... 8. *P. glauca*
32b. Culm sheath ligule lighter in color, purple-brown to pale brown; culm sheaths brown-green when fresh; culm internodes initially thinly white powdery on upper half ..... 13. *P. flexuosa*
30b. Culm sheath ligule with long, dark brown or dark purple cilia, or if with white cilia, culm sheaths milky-white.
33a. Culm sheaths with dark purple margins when fresh; blade erect, distally crinkled ..... 10. *P. virella*
33b. Culm sheaths without dark purple margins when fresh; blade horizontal or recurved, not crinkled.
34a. Culm sheaths milky-white to pale yellow; ligule fringed with thin white cilia ..... 12. *P. angusta*
34b. Culm sheaths green-brown; sheath ligule fringed with stout, dark brown cilia ..... 13. *P. flexuosa*
27b. Culm sheath ligule usually broad and short; convex at base, usually ± decurrent, rarely not so; blade crinkled or occasionally flat.
35a. Culm sheath ligule convex, weakly or not decurrent; culm sheaths tinged purple or purple-red.
36a. Culm sheath ligule marginally finely sinuate, fringed with white cilia ..... 14. *P. glabrata*
36b. Culm sheath ligule marginally not sinuate, ciliate or with long, purple-red hairs.

37a. Culm internodes initially white powdery; culm nodes not purple-tinged; sheath ligule ciliate .... 15. *P. iridescens*
37b. Culm internodes not white powdery; culm nodes initially purple-tinged; sheath ligule shortly ciliate, long hairy ..... 16. *P. tianmuensis*
35b. Culm sheath ligule conspicuously convex, strongly decurrent or if not decurrent then fringed with bristles ca. 5 mm; culm sheath green-brown or brown-red.
38a. Culm sheath ligule with fimbriae ca. 5 mm ..... 17. *P. fimbriligula*
38b. Culm sheath ligule with cilia less than 5 mm.
39a. Culm sheath sparsely strigose; blade flat or weakly undulate ..... 18. *P. acuta*
39b. Culm sheath glabrous; blade strongly crinkled, at least in mid-culm region.
40a. Mid-culm internodes more than 25 cm, initially slightly white powdery; culm nodes not initially purple ..... 19. *P. vivax*
40b. Mid-culm internodes less than 25 cm, initially thickly white powdery; culm nodes initially purple ..... 20. *P. violascens*
20b. Culm sheath oral setae present, or auricles and oral setae present (in *P. mannii* auricles and oral setae sometimes absent, but then culm sheath rigid and fragile when fresh, margins distally purple-red); culm sheaths ± strigose, rarely glabrous.
41a. Culm sheath auricles small or nearly absent and oral setae long, or auricles large and falcate with sheath ligule densely fringed with long cilia ca. 8 cm.
42a. Culm internodes initially densely pubescent; nodal ridge inconspicuously raised in unbranched nodes or less prominent than sheath scar.
43a. Culm internodes progressively shortened toward culm base and sometimes ventricose, nodes of lower culm dense; leaf blade 4–11 cm ..... 21. *P. edulis*
43b. Culm internodes not greatly shortened, never ventricose, nodes of lower culm more remote; leaf blade 10–15 cm ..... 22. *P. kwangsiensis*
42b. Culm internodes initially glabrous or subglabrous; nodal ridge raised in unbranched nodes, equal to or more prominent than leaf scar.
44a. Culm sheaths without spots or with smaller sparser spots and milky-white or green-brown stripes; oral setae erect ..... 24. *P. robustiramea*
44b. Culm sheaths with spots but without conspicuous stripes; oral setae radiate or erect.
45a. Internodes of young culms thickly white powdery; culm sheath ligule with cilia to 1 cm ..... 31. *P. incarnata*
45b. Internodes of young culms not white powdery or very thinly white powdery; culm sheath ligule shortly ciliate.
46a. Culm sheaths densely strigose; blade crinkled; sheath scar densely pubescent initially ..... 23. *P. circumpilis*
46b. Culm sheaths glabrous or scarcely strigose; blade flat or occasionally crinkled at apex; sheath scar glabrous ..... 35. *P. reticulata*
41b. Culm sheath auricles large, usually falcate, or if absent or minute then culm sheaths rigid and fragile when fresh, with small, sparse spots; sheath ligule shortly ciliate.
47a. Internodes of young culms hairy, sheath blade flat or wavy to crinkled, erect and usually ± imbricate at apex of shoots or sometimes diffuse in *P. aureosulcata*.
48a. Culm sheath ligule short, broad, width ca. 10 × length, not lacerate; culm sheaths rigid and fragile when fresh, purple along upper margins ..... 25. *P. mannii*
48b. Culm sheath ligule longer, usually lacerate at apex; culm sheaths neither rigid nor fragile when fresh, without purple margins.
49a. Culm sheaths red-brown or purple-yellow, without milky-white or gray-white stripes.
50a. Culm sheaths sparsely strigose; sheath ligule truncate to convex ..... 29. *P. guizhouensis*
50b. Culm sheaths densely strigose; sheath ligule strongly convex, usually peaked at apex ..... 30. *P. nigra*
49b. Culm sheaths green with milky-white or gray-white stripes, rarely not striped.
51a. Culm sheaths glabrous with milky-white stripes throughout; some basal culm nodes geniculate ..... 26. *P. aureosulcata*
51b. Culm sheaths ± strigose, with gray-white distal and marginal stripes; culms without geniculate nodes.
52a. Sheaths of lower culm strigose; sheath ligule ciliolate ..... 27. *P. bissetii*
52b. Sheaths of lower and mid-culm strigose; sheath ligule long ciliate ..... 28. *P. varioauriculata*
47b. Internodes of young culms glabrous; sheath blade usually strongly crinkled, horizontal or rarely erect, usually not imbricate at apex of shoots.
53a. Culm sheath ligule ca. 2 mm or more, with cilia equal to or longer than ligule height ..... 31. *P. incarnata*
53b. Culm sheath ligule less than 2 mm, with shorter cilia.
54a. Culm sheaths pale yellow when fresh, sometimes tinged with red or green, with small, sparse spots; sheath auricles green when fresh ..... 32. *P. dulcis*

54b. Culm sheaths colored with other hues, sheath auricles not green when fresh, or if green, culm sheaths with both long and small spots.
55a. Culm sheaths brown-red when fresh, with sparse or rather dense small spots, distal margins dark purple.
56a. Culm sheath ligule broad, width ca. 10 × height, apex arcuate or truncate; culm internodes initially white powdery ..... 33. *P. platyglossa*
56b. Culm sheath ligule narrower, apex arcuate or centrally prominent; culm internodes glossy or slightly white powdery initially ..... 34. *P. rutila*
55b. Culm sheaths not brown-red when fresh, with spots of various sizes, sometimes with only small spots but then sheath ligule narrower and taller, without dark purple margins.
57a. Culm sheath blade flat or weakly crinkled, linear; sheath auricles deciduous or sometimes absent ..... 35. *P. reticulata*
57b. Culm sheath blade strongly crinkled.
58a. Culm sheath ligule narrow, taller, width less than 6 × height, peaked or arcuate at apex; culm sheaths with small spots.
59a. Culm sheath ligule strongly convex, ± peaked, decurrent; culm internodes not ribbed-striate ..... 36. *P. viridiglaucescens*
59b. Culm sheath ligule arcuate, sometimes weakly decurrent; culm internodes ribbed-striate ..... 37. *P. elegans*
58b. Culm sheath ligule broader, truncate or arcuate; culm sheaths with dense small to large spots.
60a. Culm nodes strongly elevated, nodal ridge much more prominent than sheath scar ..... 38. *P. prominens*
60b. Culm nodes moderately elevated, nodal ridge slightly more prominent than or equaling sheath scar.
61a. Culm sheaths glabrous or subglabrous, sheath ligule green when fresh; culm internodes initially white powdery ..... 39. *P. yunhoensis*
61b. Culm sheaths strigose; sheath auricles purple-red when fresh; culm internodes initially scarcely white powdery ..... 40. *P. nigella*

1. **Phyllostachys** sect. **Phyllostachys**

刚竹组 gang zhu zu

Rhizome internodes without air canals in transverse section. Culm nodes with intranode ca. 3 mm. Culm sheaths of lower and mid-culm ± covered with brown or dark brown spots; blade horizontal or reflexed, rarely erect, usually spreading at shoot apex, narrowly lanceolate to linear, base usually narrower than ligule. Flowering branchlets spicate. Spikelets 2.5–3 cm. Lemma 1.6–2.8 cm. Anthers 7–15 mm.

About 40 species: China, India, Japan, Myanmar; introduced to many other countries; 40 species (38 endemic) in China.

1. Phyllostachys sulphurea (Carrière) Rivière & C. Rivière, Bull. Soc. Natl. Acclim. France, sér. 3, 5: 773. 1878.

金竹 jin zhu

Culms 6–15 m, 4–10 cm in diam.; internodes green or sulfur-yellow, usually with yellow or green stripes, 20–45 cm, initially thinly white powdery, glabrous, with small holes or crystalline spots (visible under 10 × lens); wall ca. 5 mm thick; nodal ridge not prominent or nearly so at unbranched nodes in larger culms; sheath scar slightly prominent, thin. Culm sheaths yellow or yellow-brown with green veins and brown rounded or more irregular spots of various sizes, thinly white powdery, glabrous; auricles and oral setae absent; ligule green-yellow, arcuate or truncate, margin pale green or white ciliate; blade reflexed, green with orange margins, narrowly triangular to linear, weakly crinkled. Leaves 2–5 per ultimate branch; sheath subglabrous or distally puberulent; auricles and oral setae usually well developed; blade oblong-lanceolate to lanceolate, 5.6–13 × 1.1–2.2 cm. Inflorescence not known. New shoots May. $2n = 48$*.

● Anhui, Fujian, Henan, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Zhejiang [cultivated in Japan, N Africa, Europe, and North America].

The hard but rather brittle culms are used in house construction and for handles of farm tools. The species is commonly planted for ornament.

1a. Culms golden yellow at sheath fall ..... 1a. var. *sulphurea*
1b. Culms green-yellow at sheath fall ..... 1b. var. *viridis*

1a. Phyllostachys sulphurea var. **sulphurea**

金竹(原变种) jin zhu (yuan bian zhong)

Bambusa sulphurea Carrière, Rev. Hort. 45: 379. 1873 [*"sulfurea"*]; *Phyllostachys reticulata* (Ruprecht) K. Koch var. *sulphurea* (Carrière) Makino; *P. mitis* Poiret var. *sulphurea* (Carrière) Carrière.

Culms golden yellow at sheath fall.

● Anhui, Henan, Jiangsu, Jiangxi, Zhejiang [cultivated in Japan, N Africa, Europe, and North America].

This variety occurs spontaneously in stands of var. *viridis* and is widely cultivated for ornament.

1b. Phyllostachys sulphurea var. **viridis** R. A. Young, J. Wash. Acad. Sci. 27: 345. 1937.

刚竹 gang zhu

Phyllostachys chlorina T. H. Wen; *P. faberi* Rendle; *P. villosa* T. H. Wen; *P. viridis* (R. A. Young) McClure.

Culms green-yellow at sheath fall.

● Anhui, Fujian, Henan, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Zhejiang.

2. Phyllostachys makinoi Hayata, Icon. Pl. Formosan. 5: 250. 1915.

台湾桂竹 tai wan gui zhu

Culms 10–20 m, 3–8 cm in diam.; internodes to 40 cm, initially thinly white powdery, glabrous, with minute holes or crystalline spots (visible under 10 × lens); wall to 1 cm thick; nodal ridge as prominent as sheath scar or slightly more so. Culm sheaths cream-colored, sometimes brown or green-brown, with dense variably sized spots, thinly white powdery or glossy, glabrous; auricles and oral setae not developed; ligule dark purple, truncate or weakly arched, fringed with long purple cilia; blade reflexed, green, with orange or green-yellow margins, narrowly triangular or linear, flat or weakly crinkled. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles and oral setae usually present; ligule arcuate, commonly eroded, purple-red ciliate; blade 8–14 × 1.5–2 cm, abaxially initially pubescent especially near petiole. Inflorescence not known. New shoots May–Jun. $2n = 48$*.

● Open forests; below 1500 m. Fujian, Taiwan [introduced in Japan].

The flowering branchlets of this species are indicated as capitate in Fl. Taiwan (5: 729, pl. 1492–10. 1978), but as spicate in Fl. Ill. Pl. Prim. Sin. Gram. (103, f. 72. 1959). From the combination of characters of culms and culm sheaths it is suspected that the flowering branchlets of this bamboo are most likely to be spicate.

The tough, compact culms are used for building and for making paper, furniture, umbrellas, containers, and agricultural implements.

3. Phyllostachys meyeri McClure, J. Wash. Acad. Sci. 35: 286. 1945.

毛环竹 mao huan zhu

Phyllostachys viridis (Young) McClure f. *laqueata* T. H. Wen.

Culms 5–10 m, 3–7 cm in diam.; internodes to 35 cm, initially white powdery below nodes, glabrous; wall ca. 3 mm thick; nodal ridge elevated, as prominent as sheath scar or slightly more so; sheath scar purple-tinted, initially white pubescent. Culm sheaths brown-purple, dark green, or yellow-brown, sometimes striped with purple, distally with dense variably sized dark brown spots, proximally with sparser, smaller ones, white powdery, fringed with white pubescence at base; auricles and oral setae absent; ligule yellow-green to yellow-brown, arcuate with a central hump, moderately long, margin ciliolate; blade reflexed, purple-green, with yellow margins, narrowly linear, ± undulate to weakly crinkled. Leaves 2 or 3 per ultimate branch; sheaths glabrous; auricles and oral setae usually absent; ligule evidently exserted; blade lanceolate to linear-lanceolate 7–13 × 1–2 cm. Flowering branchlets spicate, 5.5–7 cm, basal bracts 2–4, gradually larger; spathes 5–8, glabrous or hairy on one side, without auricles and oral setae; blade ovate-lanceolate to subulate, small. Pseudospikelets 1–3 per spathe. Spikelets lanceolate, 3–3.5 cm; florets 1 or 2; rachilla pubescent, terminally extended beyond uppermost floret. Glumes 1, lanceolate; lemma 2–2.5 cm, glabrous, apex acuminate with a subulate point; palea ca. 2 cm, subglabrous or apically puberulent; lodicules oblong-lanceolate, ca. 2.5 mm. Anthers 1–1.2 cm. Stigmas 3. New shoots Apr, fl. Apr–May.

● Open forests; ca. 600 m. S Hunan; cultivated in Anhui, Guangxi, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Yunnan, and Zhejiang.

The culms are used as supports and for making furniture, umbrellas, and containers.

4. Phyllostachys aurea Carrière ex Rivière & C. Rivière, Bull. Soc. Natl. Acclim. France, sér. 3, 5: 716. 1878.

人面竹 ren mian zhu

Phyllostachys bambusoides Siebold & Zuccarini var. *aurea* (Carrière ex Rivière & C. Rivière) Makino; *P. breviligula* W. T. Lin & Z. M. Wu; *P. formosana* Hayata; *P. reticulata* (Ruprecht) K. Koch var. *aurea* (Carrière ex Rivière & C. Rivière) Makino.

Culms 5–12 m, 2–5 cm in diam.; internodes 15–30 cm, usually strongly shortened and commonly ventricose at basal nodes, distally inflated for several mm below node at mid-culm and basal nodes, initially white powdery, glabrous; wall 4–8 mm thick; nodal ridge as prominent as sheath scar or slightly more prominent; sheath scar initially fringed with white pubescence. Culm sheaths yellow-green or pale red-brown, becoming straw-colored, with variably sized brown spots, base edged with white pubescence; auricles and oral setae absent; ligule yellow-green, truncate or weakly convex at apex, very short, 1–2 mm, margin longer pale green ciliate; blade reflexed, green, with yellow margins, linear, flat or crinkled in upper sheaths. Leaves 2 or 3 per ultimate branch; sheath glabrous; auricles and oral setae absent or deciduous; ligule short; blade 6–12 × 1–1.8 cm, abaxially pilose especially near petiole.

● Forests, widely cultivated as an ornamental. Fujian, Zhejiang [introduced into many other countries as an ornamental].

Culms with irregular basal internodes are used for walking sticks, umbrella handles, and fishing rods.

5. Phyllostachys verrucosa G. H. Ye & Z. P. Wang, J. Nanjing Univ., Nat. Sci. Ed. 1983(3): 482. 1983.

长沙刚竹 chang sha gang zhu

Culms ca. 3 m, ca. 1.2 cm in diam.; internodes purple-green with dense minute purple specks especially at both ends, to 16 cm, initially white powdery below nodes; nodal ridge elevated, more prominent than sheath scar; sheath scar initially white setose. Culm sheaths papery, ± speckled, scabrous between veins, sometimes strigose especially toward apex, base fringed with white setae, auricles and oral setae absent; ligule dark purple, arcuate, narrow, strongly prominent at middle, to 5 mm, apex usually erose, ciliate; blade reflexed, pale purple-yellow, narrowly lanceolate to linear. Branches 2 per node, usually with a 3rd much smaller branch. Leaves 2 or 3 per ultimate branch; auricles and oral setae absent; ligule arcuate, 1–3 mm,

minutely ciliate; blade linear-lanceolate, 7.5–9.5 × 0.8–1 cm, abaxially proximally pubescent along midrib. Inflorescence not known. New shoots Apr.

● Cultivated. Hunan.

6. Phyllostachys nuda McClure, J. Wash. Acad. Sci. 35: 288. 1945.

灰竹 hui zhu

Culms 6–9 m, 2–4 cm in diam., sometimes with 1 or 2 geniculate nodes near base; internodes initially dark green, basal nodes blotched dark purple, becoming gray-green or gray-white in age, striate, to 30 cm, distally white powdery, glabrous; wall ca. 1/3 diam. of internodes; nodes initially dark purple, nodal ridge elevated, more prominent than sheath scar. Culm sheaths green-purple or faintly red-brown with purple veins, basal and mid-culm nodes distally blotched dark brown, white powdery, slightly scabrous between veins; auricles and oral setae absent; ligule yellow-green, truncate, ca. 4 mm, narrow, ciliate; blade reflexed, narrowly triangular to linear, initially weakly crinkled, later flat. Leaves 2–4 per ultimate branch; auricles and oral setae absent; blade lanceolate to linear-lanceolate, 8–16 cm. Flowering branches spicate, 5–9 cm; bracts 3–5, gradually larger; spathes 5–7, lowest 1 or 2 sterile and deciduous, margins pubescent, auricles and oral setae absent; blade ovate-lanceolate to subulate, small. Pseudospikelets 2 or 3 per spathe. Spikelets lanceolate, 2.5–3.4 cm; florets 1 or 2. Glumes absent or 1; rachilla internodes densely puberulent; lemma 2.5–3 cm, margins glabrous or sparsely puberulent; palea 2–2.5 cm, usually glabrous; lodicules ca. 4 mm. Anthers ca. 1 cm. Stigmas 2 or 3. Inflorescence not known. New shoots Apr–May, fl. May.

● Cultivated. Anhui, Fujian, Hunan, Jiangsu, Jiangxi, Shaanxi, Taiwan, Zhejiang.

This is a very hardy species with delicious shoots. The tough culms are used for handles of farm implements.

7. Phyllostachys arcana McClure, J. Wash. Acad. Sci. 35: 280. 1945.

石绿竹 shi lü zhu

Culms ca. 8 m, ca. 3 cm in diam.; internodes initially green, lower nodes distally blotched purple, becoming yellow-green in age, to 20 cm, white powdery, glabrous; wall 2–3 mm thick; nodes initially purple, nodal ridge elevated, more prominent than sheath scar. Culm sheaths pale green-purple or yellow-green, at lower and or basal nodes with purple blotches and small spots, initially white powdery, scabrous between veins and minutely strigose, at upper nodes unmarked, usually glabrous; auricles and oral setae absent; ligule purple or yellow-green, peaked, fragile, 4–8 mm, usually decurrent on one or both sides, erose or lacerate, ciliolate; blade reflexed, green, linear, flat or ± wavy on lower sheaths. Leaves 2 or 3 per ultimate branch; auricles and oral setae absent; ligule arcuate, long, brittle; blade linear-lanceolate, 7–11 × 1.2–1.5 cm, both surfaces glabrous, rarely abaxially pilose proximally. New shoots Apr.

● Cultivated; 700–1800 m. Anhui, Gansu, Jiangsu, Shaanxi, Sichuan, Yunnan, Zhejiang.

The shoots are edible, and the small, hard culms are used as props and for handles of farm implements.

8. Phyllostachys glauca McClure, J. Arnold Arbor. 37: 185. 1956.

淡竹 dan zhu

Culms 5–12 m, 2–5 cm in diam.; internodes usually blue-green, to 40 cm, initially white powdery; wall ca. 3 mm thick; nodal ridge nearly equaling or slightly more prominent than sheath scar. Culm sheaths purple-brown or green-brown, usually alternating with pale and darker stripes, with sparse small brown spots or cloudy brown blotches, margins usually dark brown; auricles and oral setae absent; ligule dark purple brown, truncate, 2–3 mm, margin ciliolate; blade spreading to reflexed, purple-green with yellow margins, linear-lanceolate to linear, flat or sometimes weakly crinkled. Leaves 2 or 3 per ultimate branch; auricles and oral setae deciduous; ligule purple-brown; blade 7–16 × 1.2–2.5 cm, abaxially proximally pilose. Flowering branchlet spicate, to 11 cm, subtended by 3–5 scaly bracts gradually larger; spathes 5–7, glabrous or pilose on one flank, oral setae sometimes weakly developed; blade narrowly lanceolate to subulate. Pseudospikelets 2–4 per spathe, usually 1 or 2 fertile; bracts subtending lateral pseudospikelets, lanceolate, apex puberulent. Spikelets narrowly lanceolate, ca. 2.5 cm; florets 1 or 2, upper one sterile. Glumes 1 or 2; rachilla densely puberulent, extending awnlike beyond uppermost floret; lemma ca. 2 cm, keels usually puberulent; lodicules ca. 4 mm. Anthers ca. 1.2 cm. Stigmas 2. New shoots Apr–May, fl. Jun. $2n = 48$*.

● Anhui, Henan, Hunan, Jiangsu, Shaanxi, Shandong, Shanxi, Yunnan, Zhejiang.

The culms are used for weaving and making furniture, containers, handicraft items, tool handles, and shelters.

1a. Culms thickly pruinose; culm sheaths sparsely strewn with smaller spots ..... 8a. var. *glauca*
1b. Culms glossy or thinly pruinose; culm sheaths with cloudy brown blotches ..... 8b. var. *variabilis*

8a. Phyllostachys glauca var. **glauca**

淡竹(原变种) dan zhu (yuan bian zhong)

Young culms thickly white powdery, without spots at maturity. Culm sheaths with sparse small spots.

● Anhui, Henan, Hunan, Jiangsu, Shaanxi, Shandong, Shanxi, Yunnan, Zhejiang.

8b. Phyllostachys glauca var. **variabilis** J. L. Lu, J. Henan Agric. Coll. 1981(2): 71. 1981.

变竹 bian zhu

Young culms glossy or thinly white powdery. Culm sheaths with longitudinal, cloudy brown blotches.

● Cultivated. Henan.

9. Phyllostachys propinqua McClure, J. Wash. Acad. Sci. 35: 289. 1945.

早园竹 zao yuan zhu

Phyllostachys sapida T. P. Yi.

Culms ca. 6 m, 3–4 cm in diam.; internodes ca. 20 cm, initially white powdery, glabrous; wall ca. 4 mm thick; nodal ridge slightly elevated, as prominent as sheath scar. Culm sheaths faintly red-brown or yellow-brown, usually alternating with pale and deep colored stripes, with denser purple-brown spots especially distally, glabrous, distal margins usually straw-colored; auricles and oral setae absent; ligule brown, arcuate, sometimes slightly convex at middle, ciliolate; blade reflexed, abaxially pale purple-brown, adaxially green, lanceolate to linear-lanceolate, flat. Leaves 2 or 3 per ultimate branch; auricles and oral setae commonly absent; ligule strongly exserted, arcuate, ciliolate; blade lanceolate to linear-lanceolate, 7–16 × 1–2 cm. New shoots Apr. $2n = 48$*.

● Cultivated. Anhui, Fujian, Guangxi, Guizhou, Henan, Hubei, Jiangsu, Jiangxi, Yunnan, Zhejiang.

The culms of this hardy species are used for weaving and for tool handles.

10. Phyllostachys virella T. H. Wen, Bull. Bot. Res., Harbin 2(1): 72. 1982.

东阳青皮竹 dong yang qing pi zhu

Culms ca. 9 m, ca. 5 cm in diam.; internodes initially green, not white powdery, puberulent, becoming light green, white powdery on upper portion at maturity, sometimes minutely pitted (visible under 10 × lens); nodal ridge more prominent than sheath scar. Culm sheaths gray-green, larger ones evenly and sparsely strewn with small spots, distal margins tinged with purple, glabrous throughout even on margins; auricles and oral setae absent; ligule dark purple, truncate, 1–2 mm, margin with purple cilia ca. 0.5 mm; blade erect, green, with purple margins, triangular to linear, distally crinkled. Leaves 2 or 3 per ultimate branch; sheath glabrous except for ciliolate margins; auricles absent; oral setae 3–5, erect, ca. 8 mm; ligule truncate, ca. 1 mm, margin with cilia 1–2 mm; blade broadly lanceolate to narrowly oblong, 11–16 × 2–2.5 cm, both surfaces glabrous, margins smooth or rarely scabrous. Inflorescence not known. New shoots Apr–May.

● Sandy sites; below 100 m. Zhejiang.

This species was treated as a synonym of *Phyllostachys meyeri* by Chao and Tang (J. Nanjing Forest. Univ. 17(4): 6. 1993) and of *P. rubromarginata* by Lai and Hong (J. Bamboo Res. 14(2): 11. 1995).

11. Phyllostachys shuchengensis S. C. Li & S. H. Wu, J. Anhui Agric. Coll. 1981(2): 50. 1981.

舒城刚竹 shu cheng gang zhu

Phyllostachys rubromarginata McClure f. *castigata* T. H. Wen.

Culms to 10 m, ca. 3.5 cm in diam.; internodes to 35 cm or more, thinly white powdery; wall 4.5–5 mm thick; nodal ridges weakly elevated, as prominent as sheath scar; sheath scar initially densely retrorsely yellow pubescent on margin. Culm sheaths green or pale green, unmarked or large sheaths with distal sparse small spots, basal sheaths often with purple or golden stripes, distal margins red-purple, base densely fringed with yellow pubescence; auricles and oral setae absent; ligule dark purple, truncate or more commonly weakly concave, less than 1 mm, with red-purple bristles much longer than 1 mm, ciliolate; blade horizontal or reflexed, green-purple, linear, flat, much narrower than ligule at base. Leaves 1 or 2 per ultimate branch; auricles absent or small in young culms; oral setae erect or radiate in young culms; ligule slightly exserted, purple, ciliate; blade lanceolate, oblong to linear, 6–17 × 1.2–2.2 cm, abaxially scabrid along midrib. Flowering branchlets spicate, ca. 5 cm, subtended by 4 or 5 scaly bracts gradually larger; spathes 5 or 6, auricles and oral setae absent or oral setae weakly developed; blade lanceolate to subulate, small. Pseudospikelets (1 or)2–4 per spathe, if 3 or 4 then 1 or 2 smaller and sterile. Spikelets with 1–4 florets. Rachilla glabrous or pubescent; palea shorter than lemma, pubescent; lodicules narrowly rhomboid, ca. 4 mm. Anthers 0.8–4 cm. Stigmas 3. New shoots early May, fl. May.

● Roadsides, river banks, cultivated, Anhui, Guangdong, Guangxi, Henan, Jiangxi, Yunnan, Zhejiang.

This species was misidentified as *Phyllostachys rubromarginata* by Geng and Wang in FRPS (9(1): 263. 1996).

The culms are used for weaving.

12. Phyllostachys angusta McClure, J. Wash. Acad. Sci. 35: 278. 1945.

黄古竹 huang gu zhu

Culms to 8 m, 3–4 cm in diam., straight; internodes gray-green at maturity, to 26 cm, initially thinly white powdery, glabrous; wall ca. 3 mm thick; nodal ridge weakly elevated, as prominent as sheath scar. Culm sheaths milky-white, tinged with yellow-green, unequally striped with purple, with sparse, small, brown spots, not white powdery, glabrous, margins ciliate; auricles and oral setae absent; ligule pale yellow-green, truncate or slightly convex, tall, narrow, notched or laciniate, with pale cilia to 5 mm; blade spreading or reflexed, greenish cream or sometimes purple, linear, flat. Leaves 2 or 3 per ultimate branch; auricles absent; oral setae sometimes present; ligule exserted, yellow-green; blade linear-lanceolate or lanceolate, 5–17 × 1.2–2 cm, abaxially proximally pilose. Inflorescence not known. New shoots late Apr. $2n = 48$*.

● Cultivated. Anhui, Fujian, Henan, Jiangsu, Zhejiang.

This species is similar to *Phyllostachys flexuosa*, but differs in its inconspicuously pruinose culm internodes, its paler (nearly white), sparsely speckled culm sheaths, and its paler, ciliate, yellow-green ligules.

The culms are used for weaving fine bamboo articles.

13. Phyllostachys flexuosa Rivière & C. Rivière, Bull. Soc. Natl. Acclim. France, sér. 3, 5: 758. 1878.

曲竿竹 qu gan zhu

Bambusa flexuosa Carrière, Rev. Hort. 1870: 320. 1870, not Munro (1868).

Culms 5–6(–10) m, 2–4(–7) cm in diam., basally usually ± flexuose; internodes initially green, later gray, to 30 cm or more, initially perceptibly white powdery, especially below

nodes, becoming glabrous at maturity; wall 3–5 mm thick; nodal ridge moderately elevated, as prominent as sheath scar. Culm sheaths green-brown with purple veins, sometimes with pale yellow or yellow-green streaks, usually with sparse to rather dense small brown spots, not white powdery, glabrous; auricles and oral setae absent; ligule arcuate, tall, narrow, margin with long and deciduous or short cilia, apex sometimes notched; blade reflexed, green-purple with pale yellow margins, narrowly lanceolate to linear, flat. Leaves 2 or 3 per ultimate branch; auricles and oral setae usually absent; ligule moderately exserted; blade 8–12 × 1–2 cm, abaxially proximally pilose. Flowering branchlets spicate, 4–6 cm; scaly bracts 3–6, gradually larger; spathes 4–6, both sides puberulent, auricles and oral setae absent, blade small, lanceolate to subulate. Pseudospikelets 2 or 3 per spathe. Spikelets narrowly lanceolate, 2.5–3.5 cm; florets 1–3, uppermost floret usually fertile. Glumes 1; rachilla terminally extended, awnlike; internodes hairy; lemma ca. 2.5 cm, glabrous, apex extending into an awnlike point; palea ca. 2.2 cm, subglabrous or sparsely pubescent at apex; lodicules narrowly ovate-lanceolate, ca. 2 mm. Anthers ca. 1 cm. Stigmas 3. New shoots Apr–May, fl. Apr–May. 2*n* = 48*.

● Cultivated. Anhui, Hebei, Henan, Jiangsu, Shaanxi, Shanxi, Yunnan, Zhejiang.

The shoots are delicious, and the culms are used as tool handles and are split for weaving.

14. Phyllostachys glabrata S. Y. Chen & C. Y. Yao, Acta Phytotax. Sin. 18: 174. 1980.

花哺鸡竹 hua bu ji zhu

Culms to 6–7 m, 3–4 cm in diam.; internodes initially deep green, becoming gray-green in age, ca. 19 cm, not white powdery, slightly scabrous; wall ca. 5 mm thick; nodal ridge weakly elevated, as prominent as sheath scar. Culm sheaths pale purple-yellow, with dense, brown spots merging into cloudy blotches at apex; auricles and oral setae absent; ligule pale brown, truncate or weakly convex, short, broad, sinuolate, ciliolate; blade reflexed, purple-green with purple-red or orange margins, narrowly triangular to linear, crinkled. Leaves 2 or 3 per ultimate branch; auricles green, densely fimbriate; oral setae green or purple-red; ligule ca. 2 mm, blade 8–11 × 1.2–2 cm. Flowering branchlets spicate, 4–7 cm; scaly bracts 2–6; spathes 4–7, glabrous, auricles minute, densely fringed with radiate setae; blade orbicular-ovate to narrowly lanceolate. Pseudospikelets solitary in each spathe. Spikelets narrowly lanceolate, 2–2.8 cm; florets 2. Glumes usually absent; rachilla internodes puberulent; lemma 1.9–2.4 cm, glabrous or slightly scabrous; palea 1.7–2.2 cm, subglabrous; lodicules 2.5–3 mm. Anthers 0.8–1.2 cm. Stigmas 3. New shoots Apr, fl. May. 2*n* = 48*.

● Cultivated. Fujian, Zhejiang.

The shoots are delicious, and the culms are used unsplit.

15. Phyllostachys iridescens C. Y. Yao & S. Y. Chen, Acta Phytotax. Sin. 18: 170. 1980 [*"iridenscens"*].

红哺鸡竹 hong bu ji zhu

Culms 6–12 m, 4–7 cm in diam.; internodes green, becoming gray-green, 17–24 cm, initially white powdery, gradually showing yellow-green stripes in first two years; wall 6–7 mm thick; nodal ridge weakly elevated, as prominent as sheath scar. Culm sheaths purple-red or pale purple-red, with purple-brown margins, densely purple-brown spotted, thinly white powdery, glabrous; auricles and oral setae absent; ligule purple-brown, arcuate, broad, with long, purple-red cilia, blade reflexed, green with red-yellow margins, linear, flat or weakly crinkled. Leaves 3 or 4 per ultimate branch; auricles absent; oral setae deciduous, purple; ligule moderately exserted, purple-red; blade 8–17 × 1.2–2.1 cm. Flowering branchlets spicate, (2.5–)5–6(–8.5) cm, scaly bracts 3–5; spathes 5–7, pubescent; oral setae 1–3, short; blade small. Pseudospikelets 2 or 3(or 4) per spathe. Spikelets lanceolate, purple, 3–3.5 cm; florets 1–3, uppermost usually sterile. Glumes absent or 1, lanceolate; rachilla ending in a short, awnlike point, internodes pubescent; lemma 1.8–2.1 cm, glabrous, apex acuminate with an awnlike point; palea 1.5–1.8 cm, subglabrous or pilosulose at apex; keels conspicuous or inconspicuous; lodicules ovate-lanceolate, 2.5–3 mm. Anthers ca. 1 cm. Stigmas 3. New shoots Apr, fl. Apr–May.

● Cultivated. Anhui, Jiangsu, Zhejiang.

This species is grown for its delicious shoots and strong culms; the latter are used for props and tool handles.

16. Phyllostachys tianmuensis Z. P. Wang & N. X. Ma, J. Nanjing Univ., Nat. Sci. Ed. 1983(3): 491. 1983.

天目早竹 tian mu zao zhu

Culms to 7–8 m or more, 3–4 cm in diam.; internodes initially green, with inconspicuous yellow stripes, white powdery, glabrous; nodes initially purple-green, moderately raised, nodal ridge as prominent as sheath scar. Culm sheaths pale red-brown, with dense, small, brown spots basally and apically, thinly white powdery, glabrous throughout even on margins, margins distally red-brown; auricles and oral setae absent; ligule dark purple-brown, arcuate or subtruncate, ciliolate, with fragile bristles; blade reflexed, green, with yellow margins, narrowly lanceolate to linear, distally crinkled. Leaves 2 or 3 per ultimate branch; auricles absent; oral setae absent or 2 or 3; ligule usually exserted, arcuate or truncate; blade to 15 × 2 cm, abaxially deciduously pubescent. Inflorescence not known. New shoots late Mar–Apr. 2*n* = 48*.

● Cultivated. Anhui, Zhejiang.

17. Phyllostachys fimbriligula T. H. Wen, J. Bamboo Res. 2(1): 71. 1983.

角竹 jiao zhu

Culms ca. 9 m, ca. 5 cm in diam.; internodes green, 20–25 cm, initially white powdery below nodes, glabrous; nodal ridge as prominent as sheath scar. Culm sheaths green, tinged red-brown, with scattered, dark red-brown spots, sparsely deciduously hairy, attenuate toward apex, margins glabrous; auricles and oral setae absent; ligule to 1 cm, peaked, fimbriate, both sides decurrent; blade erect or reflexed, narrowly linear, sometimes distally undulate. Leaves 3 or 4 per ultimate branch; sheath glabrous; auricles ovate; oral setae to 1.3 cm; ligule to 1

mm, ciliate; blade 8–15 × 1–1.8 cm, abaxially green and glabrous, adaxially gray-green and puberulent. Inflorescence not known. New shoots May–Jun.

● Cultivated. Hunan, Jiangsu, Jiangxi, Zhejiang.

This species is planted primarily for its edible shoots; it is famous for its high rates of shoot production.

18. Phyllostachys acuta C. D. Chu & C. S. Chao, Acta Phytotax. Sin. 18: 172. 1980.

尖头青竹 jian tou qing zhu

Culms ca. 8 m, 4–6 cm in diam.; internodes deep green, becoming green or yellow-green, to 25 cm, initially thinly white powdery, gently concentrated toward middle; nodes initially purple, conspicuously elevated, nodal ridge more prominent than sheath scar. Culm sheaths green or green-brown, with purple-brown spots, denser centrally, sparsely deciduously hairy or subglabrous; auricles and oral setae absent; ligule convex, ± decurrent on both flanks, ciliate; blade reflexed, green, with yellow margins, linear, flat or wavy. Leaves 3–5 per ultimate branch; sheath initially puberulent; auricles suborbicular; oral setae fimbriate, 5–10 mm; ligule strongly exserted; blade 9–17 × 1–1.2 cm, abaxially pubescent especially along midrib. Flowering branchlets spicate, 8–10 cm; scaly bracts 4 or 5, gradually larger; spathes 5–10, puberulent between veins; auricles small or absent; oral setae few, blade small. Pseudospikelets 1 per spathe. Spikelets lanceolate, 2.5–3(–3.5) cm; florets 1 or 2. Glumes (absent or)1 or 2(or 3); rachilla pubescent; lemma 2.2–2.4 cm, pubescent; palea shorter than lemma, glabrous or sparsely puberulent, keels ciliolate; lodicules linear or elliptic, ca. 5 mm. Anthers ca. 1 cm. Stigmas 3. New shoots Apr, fl. Apr–May. 2*n* = 48*.

● Cultivated. Fujian, Jiangsu, Zhejiang.

The shoots are delicious, and the culms are used for various purposes.

19. Phyllostachys vivax McClure, J. Wash. Acad. Sci. 35: 292. 1945.

乌哺鸡竹 wu bu ji zhu

Culms 5–15 m, 4–8 cm in diam., with weakly pendulous apex; internodes gray or yellow-green at maturity, conspicuously striate, 25–35 cm, initially thinly white powdery, glabrous; wall ca. 5 mm thick; nodes usually asymmetrical, nodal ridge usually more prominent than sheath scar on one side. Culm sheaths yellow-green tinged with purple, or pale brown-yellow, densely spotted and blotched with brown especially toward center; auricles and oral setae absent; ligule pale brown to brown, arcuate, strongly decurrent on both flanks, ciliolate; blade reflexed, abaxially brown-purple, adaxially green, marginally paler or faintly orange-colored, linear-lanceolate, strongly crinkled. Leaves 2 or 3 per ultimate branch, auricles and oral setae developed; ligule to 3 mm; blade slightly pendulous, 9–18 × 1.2–2 cm. Flowering branchlets spicate; scaly bracts 4–6, gradually larger; spathes 5–7, glabrous or sparsely puberulent, auricles small; oral setae radiate; blade ovate-lanceolate to narrowly lanceolate, to 2.5 cm. Pseudospikelets 1 or 2 per spathe; spikelets 3.5–4 cm; florets 2 or 3, sparsely pubescent. Glume 1; lemma 2.7–3.2 cm, sparsely pubescent; palea 2.2–2.6 cm, subglabrous; lodicules narrowly lanceolate, ca. 5 mm. Anthers ca. 1.2 cm. Ovary glabrous; stigmas 3. New shoots Apr, fl. Apr–May.

● Widely cultivated. Fujian, Henan, Jiangsu, Shandong, Yunnan, Zhejiang.

This species is usually planted for shoot production and for the beautiful culms and elegant, drooping foliage of some cultivars. The culms are used for weaving articles and as handles of farm tools.

20. Phyllostachys violascens (Carrière) Rivière & C. Rivière, Bull. Soc. Acclim. France, sér. 3, 5: 770. 1878 [*"violescens"*].

早竹 zao zhu

Bambusa violascens Carrière, Rev. Hort. 1869: 292. 1869; *Phyllostachys praecox* C. D. Chu & C. S. Chao.

Culms 8–10 m, 4–6 cm in diam.; internodes 15–25 cm, initially white powdery, glabrous; nodes initially dark purple, nodal ridge and sheath scar moderately elevated. Culm sheaths brown-green or dark brown, with scattered, variably sized spots and purple stripes, white powdery, glabrous; auricles and oral setae absent; ligule brown-green or purple-brown, arcuate, broader than base of blade, both sides decurrent, ciliolate; blade reflexed, green or purple-brown, narrowly linear-lanceolate, strongly crinkled or flat in upper culm. Leaves 2 or 3(–6) per ultimate branch; auricles and oral setae absent; blade 6–18 × 0.8–2.2 cm. Flowering branchlets spicate, 4–5(–7) cm; scaly bracts 4–6, gradually larger; spathes 5–7, glabrous or sparsely puberulent; auricles and oral setae absent; blade lanceolate to subulate, small. Pseudospikelets 2 per spathe, lateral one usually sterile, terminal one with 2 florets, upper floret usually aborted. Glumes 1, puberulent; lemma 2.5–2.8 cm, sparsely puberulent; palea 2–2.5 cm, distally sparsely puberulent; lodicules ca. 3 mm. Anthers 1.2–1.3 cm. Stigmas 2. New shoots Mar–Apr, fl. Apr–May.

● Cultivated. Anhui, Fujian, Hunan, Jiangsu, Jiangxi, Yunnan, Zhejiang.

This species is planted mainly for the production of early spring shoots.

21. Phyllostachys edulis (Carrière) J. Houzeau, Bambou (Mons) 39. 1906.

毛竹 mao zhu

Bambusa edulis Carrière, Rev. Hort. 380. 1866; *B. heterocycla* Carrière; *Phyllostachys heterocycla* (Carrière) Mitford; *P. heterocycla* var. *pubescens* (Mazel ex J. Houzeau) Ohwi.; *P. pubescens* Mazel ex J. Houzeau.

Culms to 20 m or more, to 20 cm in diam.; internodes to 40 cm or more, basal ones gradually shortened and thickened toward base, initially white powdery, densely puberulent; wall ca. 1 cm thick, nodal ridge inconspicuous at nodes without branches, more prominent at branching nodes and in slender culms; sheath scar setose on margin. Culm sheaths yellow-brown or purple-brown with dark brown spots, densely brown hairy; auricles relatively small; oral setae strongly developed; ligule arcuate to acutely so, long ciliate; blade initially erect, becoming reflexed, green, narrowly triangular or lanceolate to

linear. Leaves 2–4 per ultimate branch; auricles inconspicuous; oral setae present; ligule prominent; blade small, thin, 4–11 × 0.5–1.2 cm, abaxially proximally pubescent along midrib, secondary veins 3–6-paired, tertiary veins ca. 9. Flowering branchlets spicate, 5–6 cm; scaly bracts 4–6, gradually larger, sometimes with 1–3 additional bracts resembling foliage leaves at base; spathes more than 10, laterally imbricate, lower ones sterile and deciduous giving naked stalklike axis, upper part puberulent, margins ciliate; auricles absent; oral setae deciduous; blade lanceolate to subulate, small. Pseudospikelets 1–3 per spathe. Spikelets with 1 floret. Glume 1, 1.5–2.8 cm, apex with a small subulate blade, pubescent; rachilla extension short, awnlike, internodes puberulent; lemma 2.2–2.4 cm, distally and marginally pubescent; palea slightly shorter than lemma, distally pubescent; lodicules lanceolate, ca. 5 × 1 mm. Anthers ca. 1.2 cm; filaments ca. 4 cm. Stigmas 3. Caryopsis narrowly elliptic, 5–10 × 1.5–1.8 cm, apex with persistent style base. New shoots Apr, fl. May–Aug. 2*n* = 48*.

● Mountain slopes; below 1600 m or more. Anhui, Fujian Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [introduced in Korea, Japan, Philippines, Vietnam, and North America].

The apparent earlier homonym *"Phyllostachys edulis"* (Rivière & C. Rivière, Bull. Soc. Natl. Acclim. France, sér. 3, 5: 623. 1878) was not validly published because it was merely cited as a synonym of *P. mitis* Poiret.

This is the most economically important bamboo in China, widely cultivated for its versatile culms and delicious shoots. Many cultivars have been named, including *Phyllostachys edulis* 'Heterocycla', the Tortoise-shell Bamboo, which has asymmetrically shortened and swollen culm internodes.

22. Phyllostachys kwangsiensis W. Y. Hsiung, Q. H. Dai & J. K. Liu, Acta Phytotax. Sin. 18: 34. 1980.

假毛竹 jia mao zhu

Culms 8–16 m, 4–10 cm in diam., straight; internodes initially green, becoming yellow-green or yellow, ca. 35 cm, white powdery above and below nodes, densely puberulent; wall ca. 4 mm thick; nodal ridge less prominent than sheath scar, absent at unbranched nodes. Culm sheaths brown-purple, with small sparse dark brown spots and few stripes, strigose; auricles inconspicuous; oral setae purple, long; ligule red-purple, truncate to arcuate, with dense cilia 1–2 mm; blade reflexed, green-purple, with yellow margins, narrowly lanceolate to linear, crinkled. Leaves 1–4 per ultimate branch; oral setae well developed; ligule strongly exserted, long ciliate; blade 10–15 × 0.8–1.5 cm, both surfaces sparsely puberulent. Flowering branchlets spicate, to 10 cm; scaly bracts 4–6, gradually larger; spathes 4–7, glabrous, usually with 1 or 2 oral setae; blade ovate-lanceolate to subulate. Pseudospikelets 2 or 3 per spathe. Spikelets with 2 or 3 florets. Glumes 1, sparsely puberulent; rachilla internodes pubescent; lemma 2–2.5 cm, setulose; palea shorter than lemma, centrally and distally setulose; lodicules oblong-rhomboid, ca. 4 mm, puberulent. Anthers 7–8 mm. Stigmas 2. New shoots Apr, fl. Apr–May.

● Broad-leaved forests. Guangxi; also cultivated in Guangdong, Guangxi, Hunan, Jiangsu, and Zhejiang.

The tough, compact culms have internodes long and even in length. They are used unsplit for furniture and building materials and split for weaving various articles.

23. Phyllostachys circumpilis C. Y. Yao & S. Y. Chen, Acta Phytotax. Sin. 18: 178. 1980.

毛壳花哺鸡竹 mao ke hua bu ji zhu

Culms 5–7 m, 3–4.5 cm in diam.; internodes initially deep green, becoming gray-green or pale orange with irregular blotches and stripes at maturity, 17–20 cm, not white powdery; wall ca. 5 mm thick; nodes initially purple, nodal ridge more prominent than or equaling sheath scar; sheath scar brown hairy on margin. Culm sheaths pale yellow-green, with purple veins and variably sized brown spots, not white powdery, densely retrorsely strigose, margins ciliolate; auricles absent on lower culm sheaths, small and green on middle and upper culm sheaths; oral setae sometimes weakly developed on lower culm sheaths, long on middle and upper sheaths; ligule truncate to arcuate, short, with green to purple cilia to 5 mm; blade reflexed, green-purple with purple-cream margins, linear-lanceolate, crinkled. Leaves 2 or 3 per ultimate branch; sheath pubescent; auricles suborbicular; oral setae erect, long; ligule convex, white ciliate; petiole densely pubescent; blade 7.8–12 × 1.8–2 cm, abaxially densely pubescent, especially proximally. Inflorescence not known. New shoots Apr.

● Cultivated. Zhejiang.

This species is planted for its delicious shoots. The culms are commonly used for tool handles.

24. Phyllostachys robustiramea S. Y. Chen & C. Y. Yao, Acta Phytotax. Sin. 18: 188. 1980.

芽竹 ya zhu

Phyllostachys erecta T. H. Wen.

Culms to 10 m, ca. 6 cm in diam.; internodes initially purple-green, becoming gray-green, to 26 cm, white powdery, glabrous; wall 3.5–4 mm thick; nodal ridge elevated, more prominent than sheath scar. Culm sheaths green-purple, unmarked or occasionally with small, sparse spots, sparsely strigose; auricles not developed on lower sheaths, minute on upper ones; oral setae erect, green; ligule pale green, truncate or slightly arcuate, 2–3 mm, densely white-green ciliate; blade erect to reflexed, pale green to dark green or dark brown, with pale yellow margins, lanceolate to linear, crinkled in lower and middle culm sheaths. Leaves 2 or 3 per ultimate branch; auricles small; oral setae pale green-brown to pale yellow, 4–6 mm; blade 6.5–12 × 1.1–2 cm. Inflorescence not known. New shoots Apr.

● Cultivated. Anhui, Zhejiang.

The shoots are delicious, and the culms are used for tool handles and are split for weaving.

25. Phyllostachys mannii Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 28. 1896.

美竹 mei zhu

Phyllostachys assamica Gamble ex Brandis; *P. bawa* E. G. Camus; *P. decora* McClure; *P. helva* T. H. Wen.

Culms 8–10 m, 4–6 cm in diam.; internodes bright green, not white powdery, becoming yellow-green or green, 30–42 cm in mid-culm, initially sparsely retrorsely white hairy, becoming glabrous; wall 3–7 mm thick; nodal ridge weakly elevated, as prominent as or slightly more prominent than sheath scar. Culm sheaths green or green-purple to purple, with pale yellow or yellow-green stripes, usually with sparse, small, dark spots, distal margins purple, apex broadly truncate or slightly convex; auricles absent to 2, purple, falcate, small to large; oral setae purple; ligule purple, usually slightly arcuate or truncate, relatively short, broad, with longer purple setae, white ciliolate; blade erect or sometimes spreading in upper sheaths, yellow-green or purple-green, triangular to linear-triangular, margins proximally purple, nearly flat to weakly crinkled. Leaves 1 or 2 per ultimate branch; auricles small or obsolete; oral setae erect; blade 7.5–16 × 1.3–2.2 cm. Inflorescence not known. New shoots early May. $2n = 48$*.

Cultivated. Guizhou, Henan, Jiangsu, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [India, Myanmar].

The inclusion of this species in the IUCN Red List seems difficult to justify given the broad distribution.

The culms are split for weaving mats and various articles.

26. Phyllostachys aureosulcata McClure, J. Wash. Acad. Sci. 35: 282. 1945.

黄槽竹 huang cao zhu

Culms to 9 m, to 4 cm in diam., usually geniculate at basal 2 or 3 nodes of slender culms; internodes to 40 cm, initially white powdery, pubescent or scabridulous with tubercles left by fallen hairs; nodal ridge slightly more prominent than sheath scar. Culm sheaths purple-green, usually yellow striped, often with sparse, small, brown spots, thinly white powdery, glabrous; auricles purple-cream or purple-brown, conspicuously connected with base of blade; oral setae developed; ligule purple, arcuate or truncate, broad, ciliate; blade erect, horizontal or reflexed in lower culm, purple or tinged with same colors as those of sheath, triangular or triangular-lanceolate, flat or wavy. Leaves 2 or 3 per ultimate branch; auricles minute or absent; oral setae short; ligule exserted; blade ca. 12 × 1.4 cm. Flowering branchlets spicate, ca. 8.5 cm, scaly bracts ca. 4, gradually larger; spathes 4 or 5, glabrous or sparsely puberulous; auricles and oral setae absent, blade subulate, small. Pseudospikelets 5–7 per spathe, usually absent from lowest one. Spikelets with 1 or 2 florets. Glumes 1 or 2, keeled; rachilla puberulous; lemma 1.5–1.9 cm, distally pubescent; palea slightly shorter than lemma, distally pubescent; lodicules ca. 3.5 mm. Stigmas 3. New shoots Apr–May.

● Cultivated. Beijing, Henan, Jiangsu, Zhejiang.

This very hardy species is mainly planted as an ornamental.

27. Phyllostachys bissetii McClure, J. Arnold Arbor. 37: 180. 1956.

蓉城竹 rong cheng zhu

Culms 5–6 m, ca. 2 cm in diam.; internodes initially purple-green, becoming green or gray-green, to 25 cm, white powdery, glabrous or basal internodes slightly scabrous with minute, erect hairs on distal parts; wall ca. 4 mm thick; nodal ridge slightly more prominent than sheath scar. Culm sheaths deep to pale green, weakly tinged with purple, unmarked or more usually with distal milky-white stripes and extremely minute brown spots, white powdery, those from basal nodes sometimes pubescent; auricles usually present, green or purple-green, small or large and falcate; oral setae sometimes absent; ligule purple, arcuate or truncate, 1–2 mm, ciliate; blade erect, deep green or tinged with purple, narrowly triangular to triangular-lanceolate, flat or wavy. Leaves usually 2 per ultimate branch; auricles and oral setae usually present initially, deciduous; ligule moderately exserted; blade 7–11 × 1.2–1.6 cm. Inflorescence not known. New shoots Apr.

● Cultivated. Sichuan, Zhejiang.

The culms of this very hardy species are used as tool handles and are split for weaving.

28. Phyllostachys varioauriculata S. C. Li & S. H. Wu, J. Anhui Agric. Coll. 1981(2): 49. 1981.

乌竹 wu zhu

Phyllostachys hispida S. C. Li, S. H. Wu & S. Y. Chen.

Culms 3–4 m, 1–3 cm in diam.; internodes initially purple-green, becoming green or gray-green in age, ca. 30 cm, thinly white powdery, pilosulose, scabrous; nodal ridge raised, more prominent than sheath scar; intranode ca. 3 mm. Culm sheaths dark green-purple, with milky-white or purplish stripes, at lower nodes distally scattered with small, brown spots, white powdery, distally densely strigose; auricles purple, falcate or small, often only one developed; oral setae flexuose; ligule dark purple, truncate or arcuate, erose, purple or white ciliate; blade purple-green, narrowly triangular to lanceolate, base slightly narrower than apex of sheath. Leaves usually 2 per ultimate branch; auricles minute; oral setae deciduous; blade adaxially dark green, 5–11 × 0.9–1.5 cm, abaxially glaucous. Infloresence not known. New shoots Apr.

● Forests; below 300 m. Anhui, Jiangsu; cultivated in Zhejiang.

29. Phyllostachys guizhouensis C. S. Chao & J. Q. Zhang, Bamboo Res. 1982(1): 3. 1982.

贵州刚竹 gui zhou gang zhu

Culms to 10 m, ca. 8 cm in diam.; internodes initially green, becoming gray-green, 30–40 cm, white powdery below nodes at maturity, sparsely setulose and slightly scabrous; nodal ridge rather flat at lower nodes, prominent at upper ones. Culm sheaths purple-green, with purple streaks, unmarked, sparsely brown strigose; auricles purple, small in basal sheaths, falcate and ca. 1 cm in upper ones; oral setae sparse, purple; ligule purple, gently arcuate or truncate, ca. 2 mm, white ciliate; blade erect to horizontal, purple-brown with green streaks, narrowly triangular to linear. Leaves 2 per ultimate branch; sheath glabrous; oral setae deciduous, erect; blade 8–11 × 1–1.6 cm. Inflorescence not known. New shoots May.

● Cultivated on stream banks; 1400–1500 m. Guizhou.

The culms are used as building materials and in making bamboo articles.

30. Phyllostachys nigra (Loddiges ex Lindley) Munro, Trans. Linn. Soc. London 26: 38. 1868.

紫竹 zi zhu

Culms 4–8(–10) m, to 5 cm or more in diam.; internodes green or gradually developing purple-brown to black spots or turning uniform purple-brown or black, 25–30 cm, initially white powdery, densely puberulent; wall ca. 3 mm thick; nodal ridge slightly more prominent than or equaling sheath scar; sheath scar initially brown hairy on margin. Culm sheaths red-brown, sometimes tinged with green, unmarked or densely extremely minutely and imperceptibly dark brown spotted, spots aggregating into a distal dark brown patch, thinly white powdery, brown strigose; auricles and oral setae well developed, purple-black; ligule purple, arcuate to acutely so, long ciliate; blade erect or gradually deflexed, green or tinged with purple on both sides, triangular to triangular-lanceolate, navicular, ± wavy. Leaves 2 or 3 per ultimate branch; auricles weak or absent; oral setae deciduous; ligule slightly exserted; blade thin, 7–10 × ca. 1.2 cm. Flowering branchlets shortly spicate, 3.5–5 cm, scaly bracts 4–8. Spathes 4–6, glabrous or puberulous; auricles absent; oral setae few or absent; blade usually subulate or ovate-lanceolate, small. Pseudospikelets 1–3 per spathe. Spikelets lanceolate, 1.5–2 cm; florets 2 or 3. Glumes (absent or)1–3, abaxially ± distally pubescent; rachilla pubescent; lemma 1.2–1.5 cm, densely pubescent; palea shorter than lemma. Anthers ca. 8 mm. Stigmas 3. New shoots late Apr, fl. May.

● Open forests on slopes and in valleys; 1100–1200 m. S Hunan, widely cultivated elsewhere in China [introduced in many other countries].

This species has a very extensive synonymy, as is often the case with such popular garden plants. At the time of writing, W. D. Clayton lists a total of 79 synonyms in his grass synonymy database.

1a. Culms initially green, becoming purple-brown or brown-black in age ..... 30a. var. *nigra*
1b. Culms remaining consistently green ..... 30b. var. *henonis*

30a. Phyllostachys nigra var. **nigra**

紫竹(原变种) zi zhu (yuan bian zhong)

Bambusa nigra Loddiges ex Lindley, Penny Cyclop. 3: 357. 1835; *Phyllostachys filifera* McClure; *P. nana* Rendle; *P. nigripes* Hayata; *P. puberula* (Miquel) Munro var. *nigra* (Loddiges ex Lindley) Makino.

Culm internodes initially green, gradually developing purple-brown or brown-black spots and patches, or finally becoming uniformly purple-brown or brown-black. $2n = 48$*.

● Open forests of valleys; ca. 1100 m. S Hunan, widely cultivated in N and S China [introduced in many other countries as an ornamental for its culms].

This variety and the many named cultivars within it are widely planted throughout the world for their unique culms, which have varying degrees of coloration. *Phyllostachys nigra* ‘Boryana’ is striking with its persistently mottled, purple-brown culms.

30b. Phyllostachys nigra var. **henonis** (Mitford) Stapf ex Rendle, J. Linn. Soc., Bot. 36: 443. 1904.

毛金竹 mao jin zhu

Phyllostachys henonis Mitford, Garden (London) 47: 3. 1894; *Bambusa puberula* Miquel; *P. fauriei* Hackel; *P. henryi* Rendle; *P. montana* Rendle; *P. nevinii* Hance; *P. nevinii* var. *hupehensis* Rendle; *P. nigra* f. *henonis* (Mitford) Muroi; *P. nigra* var. *puberula* (Miquel) Fiori; *P. puberula* (Miquel) Munro; *P. stauntonii* Munro.

Culms remaining consistently green.

● Open forests on slopes; ca. 1200 m. S Hunan; cultivated in Anhui, Fujian, Gansu, Guangdong, Guangxi, Henan, Hubei, Jiangsu, Jiangxi, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [introduced in India, Japan, Korea, Philippines, Vietnam; Europe, North America].

31. Phyllostachys incarnata T. H. Wen, Bull. Bot. Res., Harbin 2(1): 65. 1982.

红壳雷竹 hong ke lei zhu

Phyllostachys primotina T. H. Wen.

Culms to 8 m, ca. 4.5 cm in diam.; internodes ca. 20 cm, initially thickly white powdery especially below nodes, glabrous; wall ca. 5 mm thick; nodal ridge flat, as prominent as sheath scar, or raised and more prominent than sheath scar in slender culms. Culm sheaths brown-red or distally green on slender culms, sparsely small spotted, denser proximally, sometimes obscurely blotched, sparsely strigose on large culms, glabrous on small culms; auricles purple-brown, falcate; oral setae flexuose, purple; ligule arcuate or subtruncate, relatively tall, margin with long or shorter, dark purple or gray-white cilia; blade erect or reflexed, green to purple-brown, triangular to linear-triangular, wavy. Leaves 3 or 4 per ultimate branch; auricles purple-green, ovate or suborbicular; oral setae radiate; ligule faintly purple, ca. 2 mm or more, narrowed upward, margin with long, slender cilia, apex obtuse; blade to 13 × 1.5 cm, abaxially puberulent or glabrous except at base, adaxially glabrous. Flowering branchlets spicate; spikelets with 2 or 3 florets. Glumes 1 or 2; lemma ca. 2.2 cm, densely pubescent especially toward apex; palea ca. 1.8 cm, pilose; lodicules ca. 4 mm. Anthers ca. 7 mm. Stigmas 3. New shoots Apr–May, fl. Apr–May. $2n = 48$*.

● Cultivated. Fujian, Zhejiang.

This species is grown principally for its long season of prolific edible shoot production.

32. Phyllostachys dulcis McClure, J. Wash. Acad. Sci. 35: 285. 1945.

白哺鸡竹 bai bu ji zhu

Culms to 10 m, 4–6 cm in diam.; internodes to 25 cm, initially thinly white powdery, becoming glaucous, usually obscurely streaked and spotted with yellow or orange in age; wall ca. 5 mm thick; nodal ridge moderately elevated, more prominent than sheath scar. Culm sheaths yellow or milky-white, faintly tinged with green or distally pale purple-red, sometimes with purple veins, sparsely small spotted, margins dark brown, sparsely retrorsely strigose; auricles green or purple-green, ovate to falcate; oral setae well developed; ligule pale purple-brown, arcuate, ciliolate; blade reflexed, purple-green, with yellow-green margins, linear, crinkled. Leaves 2 or 3 per ultimate branch; auricles and oral setae deciduous; ligule obviously

exserted; blade 9–14 × 1.5–2.5 cm, abaxially puberulent especially proximally. New shoots late Apr. 2*n* = 48*.

● Cultivated. Fujian, Jiangsu, Zhejiang.

This species is commonly planted in Zhejiang for its very delicious shoots, which are reputed to be the best of all *Phyllostachys* species. The culms are used for handles of farm tools.

33. Phyllostachys platyglossa Z. P. Wang & Z. H. Yu, Acta Phytotax. Sin. 18: 184. 1980.

灰水竹 hui shui zhu

Culms ca. 8 m, ca. 2.5 cm in diam.; internodes dull purple-green, becoming green with lower internodes tinged purple, to 35 cm, initially white powdery; wall ca. 5 mm thick; nodal ridge slightly elevated, as prominent as sheath scar; intranode ca. 5 mm. Culm sheaths pale red-brown, sometimes tinged green, sparsely to densely speckled, dark brown and glabrous along margins, sparsely strigose; auricles and oral setae well developed, purple; ligule purple, truncate to arcuate, short but broad, margin fringed with purple-tinged cilia; blade reflexed, purple to green, crinkled. Leaves usually 2 per ultimate branch; auricles inconspicuous; oral setae few; ligule scarcely exserted, truncate; blade 7–14 × 1.2–2.2 cm. New shoots mid Apr.

● Cultivated. Jiangsu, Zhejiang.

This species is grown mainly for the delicious shoots. The culms are weak but find some uses.

34. Phyllostachys rutila T. H. Wen, Bull. Bot. Res., Harbin 2(1): 70. 1982.

衢县红壳竹 qu xian hong ke zhu

Culms to 11 m, 3–5 cm in diam.; internodes to 24 cm, initially thinly white powdery or not, glabrous; nodes initially red-purple, nodal ridge more prominent than or equaling sheath scar. Culm sheaths red-brown, with brown veins and sparse spots, spots sometimes aggregated into large patch toward apex on larger sheaths, sparsely strigose, margins glabrous; auricles dark brown, oblong to ovate; oral setae to 2 cm; ligule arcuate or truncate, convex at middle, ± decurrent on both sides on large sheaths, ciliate; blade reflexed, purple, narrowly lanceolate, crinkled or sometimes nearly flat. Leaves 1 or 2 per ultimate branch; auricles absent; oral setae absent or few; ligule conspicuously exserted, 1–1.5 mm; blade 10–13 × 1.5–2 cm. Inflorescence not known. New shoots May.

● Cultivated. Jiangsu, Zhejiang.

35. Phyllostachys reticulata (Ruprecht) K. Koch, Dendrologie 2(2): 356. 1873.

桂竹 gui zhu

Bambusa reticulata Ruprecht, Bambuseae, 58. 1839; *Phyllostachys bambusoides* Siebold & Zuccarini; *P. lithophila* Hayata; *P. megastachya* Steudel; *P. pinyanensis* T. H. Wen; *P. quilioi* Rivière & C. Rivière.

Culms to 20 m, to ca. 15 cm in diam.; internodes to 40 cm, not white powdery or initially faintly so below nodes, glabrous; wall ca. 5 mm thick; nodal ridge slightly more prominent than sheath scar. Culm sheaths yellow-brown, sometimes tinged with green or purple, with dense, variably sized, purple-brown spots, glabrous or sparsely deciduously erectly brown hairy; auricles deciduous, sometimes absent, purple-brown, small to large and falcate; oral setae radiate; ligule brown or green, arcuate, ciliate; blade reflexed, green in center, purple or brown on both sides, pale yellow along margins, linear, flat or sometimes slightly wavy at apex. Leaves 2–4 per ultimate branch; auricles suborbicular; oral setae well developed, radiate; ligule obviously exserted, arcuate or sometimes truncate; blade 5.5–15 × 1.5–2.5 cm. Flowering branchlets spicate, 5–8(–10) cm, scaly bracts 3–5; spathes 6–8; auricles small or inconspicuous, oral setae usually developed, blade orbicular-ovate to linear-lanceolate, base rounded, apex subulate-acuminate. Pseudospikelets 1 or 2(or 3) per spathe, absent from basal 1–3 deciduous spathes. Spikelets lanceolate, 2.5–3 cm; florets 1 or 2(or 3). Glumes absent or 1; rachilla pubescent, extension glabrous, terminated with a rudimentary floret; lemma 2–2.5 cm, sparsely puberulent, apex aristulate-acuminate; palea slightly shorter than lemma, glabrous except for keels or pubescent at apex; lodicules rhomboid-oblong, 3.5–4 cm. Anthers 1.1–1.4 cm. Stigmas 3. New shoots late May. 2*n* = 48*.

Open or degraded forests from Yangtze to Wuling Mountains, widely planted; below 1800 m. Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [Japan].

This species is planted on a commercial scale for the large culms, which are widely used for building materials, flooring, and furniture and are also split for weaving various bamboo articles. The shoots are bitter.

36. Phyllostachys viridiglaucescens (Carrière) Rivière & C. Rivière, Bull. Soc. Natl. Acclim. France, sér. 3, 5: 700. 1878 [*"viridi-glaucescens"*].

粉绿竹 fen lü zhu

Bambusa viridiglaucescens Carrière, Rev. Hort. 146. 1861 [*"viridi-glaucescens"*]: 146. 1861; *Phyllostachys altiligulata* G. G. Tang & Y. L. Xu; *P. nigrivagina* T. H. Wen.

Culms ca. 8 m, 4–5 cm in diam.; internodes 21–25 cm, initially white powdery; wall 4.5–7 mm thick; nodes initially purple; nodes with ridge slightly more prominent than sheath scar. Culm sheaths pale purple-brown, sometimes tinged with yellow-green, speckled brown, strigose, apex usually asymmetrical; auricles purple-brown to pale green, narrowly falcate; oral setae to 2 cm; ligule tall but narrow, ± asymmetrical with one side more decurrent than other, apex strongly convex, margin ciliate; blade reflexed, yellow-green with orange margins, linear, distally crinkled. Leaves 1–3 per ultimate branch; auricles inconspicuous; oral setae deciduous; ligule strongly exserted, margin laciniate; blade 9.5–13.5 × 1.2–1.8 cm. Flowering branchlets spicate, 2.5–8.5 cm, scaly bracts 3–5, gradually larger; spathes 4–7, pubescent; auricles small or absent; oral setae few or absent; blade orbicular-ovate to subulate. Pseudospikelets 1 or 2 per spathe, but absent in lower 3–5 spathes. Spikelets with 1 or 2 florets. Rachilla pubescent, with an awnlike extension. Glumes absent or 1; lemma ca. 2.5 cm, distally pubescent, apex acuminate, awnlike; palea slightly shorter than lemma, distally pubescent; lodicules narrowly elliptical, ca. 4 mm, margins ciliate. Anthers ca. 1.2 cm. Stigmas 3. New shoots late Apr, fl. May. 2*n* = 48*.

● Planted. Fujian, Jiangsu, Jiangxi, Zhejiang.

The shoots are delicious, and the culms are used for tool handles.

37. Phyllostachys elegans McClure, J. Arnold Arbor. 37: 183. 1956.

甜笋竹 tian sun zhu

Culms 4–8 m, ca. 3 cm in diam.; internodes 12–15 cm, finely ribbed, initially white powdery; wall ca. 4 mm thick; nodal ridge slightly elevated, nearly as prominent as sheath scar. Culm sheaths purple-green, densely speckled, deciduously strigose, margins glabrous; auricles green-purple, narrowly falcate; oral setae long, wavy; ligule pale purple-green, arcuate, narrow, ciliate; blade reflexed, purple-green, linear, crinkled. Leaves 2 or 3 per ultimate branch; auricles small or absent, purple; oral setae present; ligule exserted, purple; blade thin, 4.5–12 × 1–1.7 cm, abaxially pilosulose. New shoots mid Apr.

● Forests on slopes; ca. 600 m. Guangdong, Hainan, Hunan; cultivated in Fujian and Zhejiang.

The shoots are delicious, and the culms are used for tool handles. This species is sometimes considered a synonym of *Phyllostachys viridiglaucescens*.

38. Phyllostachys prominens W. Y. Xiong ex C. P. Wang et al., Acta Phytotax. Sin. 18: 182. 1980.

高节竹 gao jie zhu

Culms ca. 10 m, ca. 7 cm in diam.; internodes initially dark green, becoming yellow-green to gray, equal in length, to 22 cm, not or initially thinly white powdery; wall 5–6 mm thick; nodal ridge strongly raised, more prominent than sheath scar. Culm sheaths pale yellow-brown or tinged with red or green, with variably sized spots, denser near apex, sparsely strigose, margins brown; auricles purple or green, falcate; oral setae long; ligule purple-brown, densely ciliolate, sometimes also with longer cilia; blade reflexed, purple-green or pale green with orange or light yellow margins, linear-lanceolate, strongly crinkled. Leaves 2–4 per ultimate branch; auricles deciduous, green; oral setae well developed, yellow-green; ligule exserted, yellow-green; blade 8.5–18 × 1.3–2.2 cm, abaxially proximally pubescent. Flowering branchlets spicate, 5–6 cm, subtended by 3–5 scaly bracts gradually larger; spathes 4–6, pubescent between veins; auricles small or absent; oral setae several; blade subulate or mucronate. Pseudospikelets 1 or 2 per spathe. Spikelets lanceolate, ca. 2.5 cm; florets usually 2. Glumes absent or 1; rachilla pubescent, terminated by a sterile floret; lemma 1.6–2 cm, distally puberulent; palea subequal to lemma, puberulent on distal portion and keels; lodicules lanceolate or elliptic, 3.5–4 mm. Anthers ca. 1 cm. Stigmas 3. New shoots May, fl. May. $2n = 48$*.

● Cultivated. Jiangsu, Zhejiang.

The shoots are delicious, and the culms are used as handles.

39. Phyllostachys yunhoensis S. Y. Chen & C. Y. Yao, Acta Phytotax. Sin. 18: 183. 1980.

云和哺鸡竹 yun he bu ji zhu

Culms 5–6 m, 3–4 cm in diam.; internodes green, 13–14 cm, white powdery; nodal ridge slightly elevated, as prominent as sheath scar; intranode ca. 2 mm. Culm sheaths dark green to yellow-brown, with variably sized, scattered, brown spots, denser toward apex, thinly white powdery, glabrous; auricles deciduous, green, falcate to ovate; oral setae dense, purple, ca. 5 mm; ligule purple, arcuate, long purple ciliate; blade reflexed, purple-green or green, with orange-yellow margins, linear, crinkled. Leaves 2(or 3) per ultimate branch; auricles and oral setae developed; ligule ca. 1.5 mm; blade 9.5–14 × 1.6–1.9 cm. Inflorescence not known. New shoots mid Apr.

● Planted. Zhejiang.

The shoots are delicious, and the culms are used unsplit.

40. Phyllostachys nigella T. H. Wen, Bull. Bot. Res., Harbin 2(1): 66. 1982.

富阳乌哺鸡竹 fu yang wu bu ji zhu

Culms to 7 m, ca. 4 cm in diam.; internodes 18–22 cm, initially very thinly white powdery, glabrous, becoming yellow-green; nodal ridge equaling or slightly more prominent than sheath scar. Culm sheaths brown to gray-green, with dense, variably sized spots forming a cloud on distal portion, thinly white powdery, brown strigose; auricles and oral setae well developed, dark purple; ligule dark purple, arcuate or truncate, ca. 2 mm, apex long ciliate; blade reflexed, abaxially dark purple, adaxially dark green, margins yellow, crinkled. Leaves 2 or 3(–6) per ultimate branch; auricles falcate; oral setae radiate, ca. 1.2 cm; ligule strongly exserted, ciliate; blade 10–15 × 1.3–2 cm. Inflorescence not known. New shoots May.

● Cultivated. Zhejiang.

The shoots are delicious, and the culms are used for tool handles, weaving baskets, and constructing sheds.

2. Phyllostachys sect. **Heterocladae** Z. P. Wang & G. H. Ye, Acta Phytotax. Sin. 18: 185. 1980.

水竹组 shui zhu zu

Rhizome internodes with a ring of air canals in transverse section. Culm nodes with intranode ca. 5 mm. Lower and mid-culm sheaths usually without spots; blade erect, appressed, imbricate at shoot apex, sometimes deflexed, rarely lower ones reflexed, triangular to triangular-lanceolate, rarely linear, base usually as wide as ligule or nearly so. Flowering branchlets capitate. Spikelets 1.5–2 cm. Lemma 0.7–1.5 cm. Anthers 4–8 mm. Style 4–5 mm.

● Eleven species: China.

41. Phyllostachys rubromarginata McClure, Lingnan Univ. Sci. Bull. 9: 44. 1940.

红边竹 hong bian zhu

Phyllostachys aristata W. T. Lin; *P. aurita* J. L. Lu; *Sinobambusa fimbriata* T. H. Wen.

Culms ca. 3.5 m, ca. 2.5 cm in diam.; internodes dark

green, 22–31 cm, initially thinly white powdery, glabrous; wall ca. 2 mm; nodal ridge raised, more prominent than sheath scar; sheath scar flared, margin with a dense ring of tardily deciduous, orange-red hairs. Culm sheaths light green, about as long as or slightly longer than internodes, middle to distal margins densely dark purple ciliate, base edged with orange-red hairs; auricles falcate, ± connected with sheath blade; ligule brown, truncate or slightly arcuate, long ciliate; blade erect, purple-green, broadly to narrowly triangular, flat or weakly sinuous, sometimes slightly navicular, base about as wide as ligule. Leaves 2 or 3 per ultimate branch; auricles small or inconspicuous; oral setae purple, blade linear-lanceolate, abaxially pilose especially proximally. Flowering branchlets capitate, 1–1.5 cm, with 4 or 5 scaly bracts. Spathes 2–4, 0.6–1 cm, pubescent; auricles and oral setae absent; blade minute, subulate or inconspicuous, rarely narrowly ovate-lanceolate. Pseudospikelets (1 or)2(or 3) per spathe. Spikelets ca. 1.1 cm; florets 1–3, terminal one sterile and reduced. Glumes (absent or)1–3, distally hairy; rachilla pubescent; lemma ca. 1 cm, abaxially centrally and distally densely villous; lodicules oblanceolate or elliptic, ca. 2.5 mm. Anthers ca. 4 mm. Stigmas 3. New shoots mid to late Apr, fl. Sep.

● Scrub, banks of gullies. Guangxi, Guizhou; cultivated in Henan.

42. Phyllostachys veitchiana Rendle, J. Linn. Soc., Bot. 36: 443–444. 1904.

硬头青竹 ying tou qing zhu

Phyllostachys rigida X. Jiang & Q. Li.

Culms 3–5 m, 1–2.5 cm in diam.; internodes dark green, commonly 20–22 cm, initially thickly white powdery, sparsely puberulent; wall 3–5 mm thick; nodes elevated, nodal ridge more prominent than sheath scar; intranode ca. 4 mm. Culm sheaths green, with purple or yellow stripes, white powdery, basal ones white or brown pubescent and strigose, others subglabrous or glabrous, margins irregularly ciliate; auricles ascendant, purple, triangular to broadly falcate, connected with base of blade; oral setae flexuose; ligule purple, arcuate, 2–3 mm, erose, densely fringed with stout, purple cilia 2–3 mm; blade erect or deflexed, purple to green-purple, triangular to narrowly triangular, slightly wavy. Leaves 1 or 2 per ultimate branch; auricles absent; oral setae several, erect; ligule with thick cilia; blade 8–14 × 1.2–1.8 cm. Flowering branchlets capitate or subcapitate; scaly bracts 5 or 6, thinly leathery, margins densely ciliate; basal spathes broadly ovate, distal spathes narrowed; auricles and oral setae absent; ligule conspicuous; blade subulate or triangular. Pseudospikelets 1 or 2 per spathe. Spikelets usually with 4 or 5 florets. Glumes 1 or 2, variably sized, usually narrower than lemma, ± membranous, pubescent, apex acuminate with an awnlike point; rachilla disarticulating below each fertile floret; lemma narrowly lanceolate, pubescent except at base, inconspicuously many veined, dorsally keeled, apex acuminate, awnlike. Lemmas 1.2–1.4 cm, basal one sterile and subtending a very small palea and depauperate flower; palea shorter than lemma, pubescent, apex 2-cleft; lodicules oblanceolate, apex ciliolate. Anthers ca. 6 mm. Ovary 3-ribbed. New shoots May, fl. Apr–May.

● Mountain slopes; below 1300 m. Hubei, Sichuan, introduced in Zhejiang.

This species is similar to *Phyllostachys guizhouensis* at first sight, but differs in having rhizomes with a ring of air canals in transverse section, mid-culm sheaths without strigose hairs, and 1 or 2 leaves per ultimate branch.

The straight, solid culms are used in making furniture or are split for weaving bamboo articles.

43. Phyllostachys lofushanensis Z. P. Wang, C. H. Hu & G. H. Ye, J. Nanjing Univ., Nat. Sci. Ed. 1981(2): 258. 1981.

大节刚竹 da jie gang zhu

Culms to 3 m or more, ca. 2 cm in diam.; internodes initially white powdery, becoming gray-yellow or gray-green with thicker powder below nodes at maturity; nodal ridge strongly elevated, much more prominent than sheath scar; sheath scar flared, margin densely shortly brown setose for first 2–3 years. Culm sheaths unmarked, hairy at base, otherwise glabrous, distally slightly contracted with a nearly truncate apex; auricles ascendant, narrowly falcate; oral setae present; ligule truncate or slightly concave, relatively short, broad, ciliate; blade erect, sword-shaped, flat or wavy. Leaves (1 or)2 per ultimate branch; sheath glabrous; auricles not developed; oral setae few, erect; ligule truncate, short, subglabrous; blade 7–10 × 1–1.6 cm, both surfaces glabrous. Inflorescence not known. New shoots May.

● Montane forests; ca. 800 m. Guangdong.

44. Phyllostachys nidularia Munro, Gard. Chron., n.s., 6: 773. 1876.

篌竹 hou zhu

Phyllostachys cantoniensis W. T. Lin; *P. subulata* W. T. Lin & Z. M. Wu.

Culms to 10 m, to 4 cm in diam., straight; internodes to 30 cm, white powdery, glabrous or initially setulose below nodes; wall ca. 3 mm or more thick; nodal ridge conspicuously elevated, equaling or more prominent than sheath scar; sheath scar flared, glabrous or initially with margin brown setose. Culm sheaths green, unmarked, distally milky-white striped, otherwise usually purple striped, white powdery, densely brown strigose toward base or glabrous, margins purple-red or brown ciliate; auricles at culm apex green-purple, very broad, contiguous with and extending from swollen cupped base of blade; auricles absent on mid- and lower culm; oral setae absent or few, radiate, short; ligule purple-brown, slightly arcuate, broad, margin densely white ciliate; blade erect, broadly triangular to triangular, cupped. Leaves usually 1 per ultimate branch, pendulous; auricles and oral setae weakly developed or absent; ligule short, weakly or not exserted; blade 4–13 × 1–2 cm. Flowering branchlets densely capitate, 1.5–2 cm, scaly bracts 2–4; spathes 1–6, basal ones ovate, distal ones narrower and papery, to 1.6 cm, both sides and apex ± hairy, margins ciliate, blade inconspicuous to narrowly ovate. Pseudospikelets 2–8 per spathe; bracts narrow, variable in size or sometimes absent, membranous, keeled, 5–7-veined, pubescent on keels and near apex. Spikelets with 2–5 florets, distal 1 or 2 sterile. Glumes 1(–3), resembling uppermost bract, to 1.5 cm; rachilla internodes elevated, compressed and sparsely pubescent on side facing floret, apex truncate; lemma leafy, densely hirsute, many

veined, apex acuminate with an awnlike tip, first lemma 1–1.2(–1.6) cm; palea shorter than lemma, 0.6–1.1 cm, densely hirsute. Anthers 4.5–5.5 mm. Stigmas (1–)3. New shoots Apr–May, fl. Apr–May. $2n = 48$*.

● Forests, scrub, cultivated; below 1300 m. Guangdong, Guangxi, Henan, Hubei, Jiangxi, Shaanxi, Yunnan, Zhejiang [introduced in Europe and North America].

The shoots are edible, but the culms are brittle and not suitable for weaving. The straight culms, interesting culm sheath auricles, and pendulous foliage make this species suitable as an ornamental.

45. Phyllostachys rivalis H. R. Zhao & A. T. Liu, Acta Phytotax. Sin. 18: 189. 1980.

河竹 he zhu

Culms ca. 4 m or more, 1.5–2 cm in diam.; internodes initially purple-brown or yellow-green with inconspicuous purple stripes, becoming yellow-brown, tinged with purple, to 24 cm, white powdery, retrorsely setose especially below nodes, becoming glabrous or scabrous; wall 2.5–3 mm thick; nodal ridge elevated, more prominent than sheath scar; sheath scar initially hairy. Culm sheaths green to purple-brown, or distally milky-white with green veins and inconspicuous purple stripes, papery, glabrous or sparsely deciduous-strigose, sometimes densely pubescent at base, upper margins brown ciliate; auricles absent; oral setae absent or weakly developed; ligule green, truncate or slightly concave, 0.8–1 mm, with pale brown cilia to 2 mm; blade erect, green with purple margins, narrowly triangular to linear-triangular, flat. Leaves (2 or)3–5(–7) per ultimate branch; sheath initially purple, apically pubescent; auricles absent; oral setae erect; ligule purple-red, truncate, ca. 0.5 mm; pseudopetiole ca. 1 mm; blade 4.6–8 × 0.6–1.1 cm, slightly thickened, abaxially initially pubescent. Inflorescence not known. New shoots early May.

● Valleys, stream banks. Fujian, Guangdong, Zhejiang.

This species is sometimes planted along river banks to prevent erosion. The culms are used for fencing.

46. Phyllostachys carnea G. H. Ye & Z. P. Wang, Acta Phytotax. Sin. 27: 228. 1989.

湖南刚竹 hu nan gang zhu

Culms ca. 2.5 m, ca. 1.5 cm in diam.; internodes ca. 20 cm, initially thickly white powdery especially below nodes, scabrid; wall ca. 1.5 mm thick; nodes strongly elevated, nodal ridge more prominent than sheath scar. Culm sheaths green and pink, unmarked, white powdery, glabrous; auricles and oral setae absent; ligule pale pink, arcuate, sometimes convex at middle, 1–1.5 mm, margin ciliolate; blade erect, pink, linear-lanceolate, small. Leaves 2 or 3 per ultimate branch; auricles usually absent; oral setae deciduous; ligule arcuate to truncate, ciliolate; blade 6–9 × 0.6–1.2 cm, glabrous. New shoots May.

● Forests on mountain slopes; ca. 800 m. Hunan.

47. Phyllostachys heteroclada Oliver, Hooker's Icon. Pl. 23: t. 2288. 1894.

水竹 shui zhu

Phyllostachys congesta Rendle; *P. purpurata* McClure; *P. purpureomaculata* W. T. Lin & Z. J. Feng.

Culms ca. 6 m or more, to 3 cm in diam.; internodes to 30 cm, initially white powdery, sparsely puberulent; wall 3–5 mm thick; nodal ridge flat and as prominent as sheath scar in large culms, or strongly elevated and more prominent than sheath scar in slender culms; intranode ca. 5 mm. Branches deflexed or subhorizontal. Culm sheaths deep green, tinged with purple, white powdery, glabrous or sparsely strigose, margins ciliate; auricles purple, ovate to elliptic, sometimes shortly falcate, small, absent on small shoots; oral setae well developed or few, erect, and fine on small shoots; ligule slightly concave or weakly arcuate, short, white ciliolate; blade erect, green, usually tinged with purple, rarely entirely purple triangular to narrowly triangular, cupped, flat or slightly wavy. Leaves (1 or)2(or 3) per ultimate branch; sheath glabrous, margins ciliate; auricles absent; oral setae deciduous, erect; ligule short; blade 5.5–12.5 × 1–1.7 cm, abaxially proximally pilose. Flowering branchlets densely capitate, (1.6–)1.8–2(–2.2) cm, usually lateral on mature leafy branches; scaly bracts 4–6, gradually larger, or terminating young leafy branches then subtended by 1 or 2 spathes with an ovate or narrow blade; spathes 2–6, broadly ovate or broader, 0.9–1.2 cm, papery or thinly leathery, gradually narrowed and thinned in distal ones, puberulent at apex, margins ciliate, otherwise glabrous or subglabrous, blade absent or very small, mucronate. Pseudospikelets (1–)4–7 per spathe, subtended by bracts, bracts variable in form and size, to 1.2 cm, membranous, keeled, tenuously 5–7-veined, apex pubescent, acuminate. Spikelets to 1.5 cm; florets 3–7, distal ones sterile. Glumes absent to 3, resembling bracts in size, form, and texture, sometimes uppermost one similar to lemma; rachilla internodes 1.5–2 mm, clavate, glabrous, apex subtruncate; lemma lanceolate, 0.8–1.2 cm, distal 1/2–2/3 pubescent, 9–13-veined, distally keeled, apex subulate-acuminate; palea shorter than lemma, puberulent except for base; lodicules rhomboid-ovate, ca. 3 mm, tenuously 7-veined, margins ciliate. Anthers 5–6 mm. Style ca. 5 mm; stigmas (2 or)3. Caryopsis narrowly ovoid, ca. 3.5 × 1.5 mm. New shoots Apr–May, fl. Apr–Aug.

● Forests or scrub on slopes, river banks, valleys. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

Phyllostachys cerata McClure (Lingnan Univ. Sci. Bull. 9: 41. 1940) and *P. dubia* Keng (Sinensia 11: 407. 1940, *"dubius"*) may be further synonyms of this species.

Phyllostachys heteroclada is widely cultivated for its high-quality culms, which are split for weaving articles such as the famous bamboo mats produced in Yiyang, Hunan.

48. Phyllostachys stimulosa H. R. Zhao & A. T. Liu, Acta Phytotax. Sin. 18: 186. 1980.

漫竹 man zhu

Culms to 8 m, ca. 3.5 cm in diam.; internodes to 32 cm, initially white powdery, glabrous or slightly scabrid when old; wall ca. 4 mm thick; nodes elevated, nodal ridge equal to or more prominent than sheath scar. Culm sheaths green, purple striped, margins yellow-brown, deciduously strigose; auricles extending from base of blade, purple, broadly ovate, small; oral setae short; ligule purple, arcuate, ca. 1.5 mm, ciliolate; blade erect, purple-green, triangular to narrowly triangular. Leaves 1–3 per ultimate branch; oral setae well developed; blade deep

green, 6–11.5 × 1–2 cm, thick, abaxially white powdery. Inflorescence not known. New shoots early May.

● Anhui, Zhejiang.

49. Phyllostachys atrovaginata C. S. Chao & H. Y. Zhou, Acta Phytotax. Sin. 18: 191. 1980.

乌芽竹 wu ya zhu

Culms 7–8 m, 3–5 cm in diam.; internodes green, 29–31 cm, initially inconspicuously white powdery, glabrous; wall 3–5 mm thick; nodes with both ridge and sheath scar moderately prominent. Culm sheaths dark green, with purple-black stripes and pale yellow-brown margins, base sometimes purple-red, or deep green with purple veins in shade, unmarked, glabrous or rarely sparsely strigose; auricles absent; oral setae absent or occasionally sparse; ligule green-brown, truncate, short, broad, completely covered by base of blade, subglabrous or minutely ciliolate; blade erect, dark green, with purple-red margins, triangular to triangular-lanceolate, wavy to weakly crinkled. Leaves 2 or 3 per ultimate branch; auricles and oral setae inconspicuous; ligule short, scarcely exserted, densely puberulent, sometimes hirsute at base; blade 5.5–13 × 0.9–1.6 cm. Inflorescence not known. New shoots late Apr to early May.

● Cultivated. Jiangsu, Zhejiang.

The shoots are edible, and the culms are used split or unsplit for weaving bamboo articles.

50. Phyllostachys rubicunda T. H. Wen, Acta Phytotax. Sin. 16(4): 98. 1978.

红后竹 hong hou zhu

Phyllostachys concava Z. H. Yu & Z. P. Wang; *P. retusa* T. H. Wen.

Culms ca. 6 m, 3–4.5 cm in diam.; internodes initially deep purple-green, 26–30 cm, often thinly white powdery especially below nodes, glabrous; nodal ridge equal to or slightly more prominent than sheath scar. Culm sheaths pale green, with purple stripes, glabrous or sparsely strigose, margins with alternating white and red-tinged cilia; auricles absent or small on distal sheaths; oral setae absent or several, short on distal sheaths; ligule strongly concave in upper and mid-culm sheaths, green, 1–1.5 mm, margin with intermixed, irregular, white and faintly red cilia; blade pale green, apex pale purple, triangular to lanceolate. Leaves 3 or 4 per ultimate branch; auricles absent; oral setae developed; ligule not exserted; blade 6–12.5 × 1–2.2 cm. Inflorescence not known. New shoots mid to late May.

● Valley woods, cultivated. Fujian, Jiangsu, Zhejiang.

51. Phyllostachys parvifolia C. D. Chu & H. Y. Chou, Acta Phytotax. Sin. 18: 190. 1980.

安吉金竹 an ji jin zhu

Culms ca. 8 m, ca. 5 cm in diam.; internodes green, with purple streaks, becoming gray-green in age, to 24 cm, initially thickly white powdery; wall ca. 4 mm thick; nodal ridge slightly elevated, equaling or more prominent than sheath scar. Culm sheaths pale brown or pale purple-red, with pale yellow-brown or yellow-white streaks on upper portion, unmarked, thinly white powdery, glabrous, margins white ciliate; auricles absent or small, extending from base of blade in distal sheaths; oral setae absent or few; ligule dark green to purple-red, arcuate or acutely so, 2–2.5 mm, ciliolate; blade erect, triangular to triangular-lanceolate, wavy. Leaves (1 or)2 per ultimate branch; auricles inconspicuous; oral setae several; ligule exserted; blade 3.5–6.2 × 0.7–1.2 cm. Inflorescence not known. New shoots early May.

● Anhui; cultivated in Zhejiang.

This species is grown mainly for shoots. The culms have general uses.

2. Tribe PHAREAE

囊稃竹族 nang fu zhu zu

Liu Liang (刘亮); Sylvia M. Phillips

Perennials. Leaf blades broad, narrowly oblong to oblanceolate, veins slanting obliquely from midrib with transverse connecting veinlets, narrowed into a false petiole, this twisted to bring the abaxial surface uppermost; ligule scarious, margin usually ciliolate. Inflorescence monoecious, an open panicle, ultimate branchlets bearing 1 or 2 female spikelets and a terminal male spikelet. Spikelets unisexual, floret 1, rachilla extension absent. Female spikelet sessile or shortly pedicelled, terete to inflated, disarticulating below floret; glumes scarious, persistent or not, shorter than floret; lemma papery becoming leathery, involute or utriculate, 5- or more-veined, entire, covered in hooked adhesive hairs; palea long, narrow; lodicules absent; stigmas 3. Male spikelet pedicelled, smaller than the female, lanceolate, soon deciduous; lodicules minute or absent; stamens 6. Caryopsis oblong to linear, embryo very small, hilum as long as the caryopsis. Leaf anatomy: non-Kranz; microhairs absent; fusoid cells present. $x = 12$.

Two or three genera and 13 species: tropics of both hemispheres; one species in China.

This is a small tribe of grasses found in the understory of tropical forests. The broad, twisted leaf blades with slanting veins and transverse veinlets provide an easy means of identification.

35. LEPTASPIS R. Brown, Prodr. 211. 1810.

囊稃竹属 nang fu zhu shu

Culms erect or decumbent, solid. Leaf blades strikingly distichous. Panicle branches single or whorled, persistent on axis,