

**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 iterarctant, 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  $8 \times$  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  $8 \times$  length (or broader in *P. aurita* and then both culm and branch sheath scar fringed with rust-colored setulae), lacinate 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 ciliate.
      - 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 ciliate ..... 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  $\pm$  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 ciliate; 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  $\pm$  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  $10 \times$  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  $5 \times$  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  $\pm$  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. fimbriiligula*
- 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  $\pm$  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  $\pm$  imbricate at apex of shoots or sometimes diffuse in *P. aureosulcata*.
- 48a. Culm sheath ligule short, broad, width ca.  $10 \times$  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 ciliate ..... 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* Poir. 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. fabri* 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 exerted; 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. Pseudo-spikelets (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 lacinate, 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 exerted, 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 exerted; 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.  $2n = 48^*$ .

- 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.

花嘴鸡竹 *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, sinuate, ciliate; 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.  $2n = 48^*$ .

- 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 [“*iridescens*”].

红嘴鸡竹 *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 exerted, 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.  $2n = 48^*$ .

• Cultivated. Anhui, Zhejiang.

**17. *Phyllostachys fimbrioligula*** 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.  $2n = 48^*$ .

• 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 [“*violascens*”].

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.  $2n = 48^*$ .

• 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 exerted, 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 ciliate; 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 exerted; 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 bisetii*** 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 exerted; 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. Inflorescence 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 exerted; 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  $13 \times 1.5$  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  $9\text{--}14 \times 1.5\text{--}2.5$  cm, abaxially puberulent especially proximally. New shoots late Apr.  $2n = 48^*$ .

- 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  $7\text{--}14 \times 1.2\text{--}2.2$  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,  $\pm$  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  $10\text{--}13 \times 1.5\text{--}2$  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  $5.5\text{--}15 \times 1.5\text{--}2.5$  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.  $2n = 48^*$ .

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. 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,  $\pm$  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 exerted, margin lacinate; blade 9.5–13.5  $\times$  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 awn-like 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.  $2n = 48^*$ .

- 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 exerted, purple; blade thin, 4.5–12  $\times$  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 ciliate, 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 exerted, yellow-green; blade 8.5–18  $\times$  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.

**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, dis-

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 exerted, 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.

tally 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 oblancoolate, apex ciliate. 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.

篾竹 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, con-

tiguous 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 exerted; 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 exerted, 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 es-

pecially 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 exerted; 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 exerted; 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.

