

1. BUXUS Linnaeus, Sp. Pl. 2: 983. 1753.

黄杨属 *huang yang shu*

Shrubs or small trees, 0.15–6 m tall, evergreen, monoecious. Young branches tetragonous. Leaves opposite, shortly petiolate, leathery or thinly leathery, often shining, margin entire, venation pinnate. Inflorescences axillary or terminal, racemose, spicate, or converted into capitate cluster, bracteate; female flower solitary, apical, male flowers several, basal. Flowers small, unisexual. Male flowers: tepals 4; stamens 4; central pistillode present. Female flowers: tepals 5 or 6; carpels 3; ovary 3-locular; styles 3, free; stigma often decurrent; interstylar nectaries or nectariferous tissue present; ovules 2 per locule, pendent, anatropous, bitegmic, crassinucellar; micropyle formed by inner integument, rudimentary aril. Fruit a dry capsule, globose or ovoid, usually glabrous, loculicidal, splitting into 3 valves; styles persistent. Seeds 2 per locule, oblong; testa black, shining; endosperm fleshy; cotyledons oblong.

About 100 species: Africa, America, Asia, Europe; 17 species (15 endemic) in China.

The following taxa have been described or recorded from Taiwan but are not treated here because we were unable to examine any material:

Buxus liukiuensis (Makino) Makino (Bot. Mag. (Tokyo) 16: 179. 1902; *B. sempervirens* Linnaeus var. *liukiuensis* Makino, Bot. Mag. (Tokyo) 9: 279. 1895; *B. microphylla* Siebold & Zuccarini var. *liukiuensis* (Makino) S. S. Ying). This taxon was recorded from Taiwan by Yang and Lu (Fl. Taiwan, ed. 2, 3: 666–668. 1993), who erroneously treated it as endemic (the type is from Ishigaki-jima, Ryukyu Islands, Japan) and included in its synonymy *B. liukiuensis* var. *longipedicellata* Hatusima (J. Dept. Agric. Kyushu Imp. Univ. 6: 293. 1942), which was described from “Syusyu Nanto” (Shuishe, Nantou), Taiwan.

Buxus microphylla Siebold & Zuccarini var. *tarokoensis* S. Y. Lu & Yuen P. Yang (Fl. Taiwan, ed. 2, 3: 668. 1993). This taxon was described from an elevation of 1800 m in the Taroko gorge, Hualian, Taiwan.

- 1a. Female flowers: style 2–3 × longer than ovary.
 - 2a. Inflorescences 1–1.5 cm; bracts many, densely imbricate 1. *B. henryi*
- 2b. Inflorescences shorter than 1 cm; bracts sparsely arranged.
 - 3a. Lateral veins parallel, obscure 2. *B. pubiramea*
 - 3b. Lateral veins parallel, visible on both surfaces in dried state.
 - 4a. Leaves broadly ovate or elliptic, base usually rounded 3. *B. latistyla*
 - 4b. Leaves elliptic-lanceolate, narrowly lanceolate, or oblanceolate.
 - 5a. Some leaves elliptic-lanceolate, 8.5–12 × 3–3.8 cm 4. *B. hainanensis*
 - 5b. Most leaves lanceolate or oblanceolate, less than 7 cm, ca. 2 cm in diam.
 - 6a. Leaves oblong-lanceolate or narrowly lanceolate, 3–7 × ca. 1.2 cm; style narrow and elongate at apex, recurved; branchlets sparsely pubescent or glabrescent 5. *B. myrica*
 - 6b. Leaves oblanceolate or narrowly obovate, 2–3.5 × 0.7–1 cm; style shorter and wider at apex, erect; branchlets pubescent 6. *B. austroyunnanensis*
- 1b. Female flowers: style shorter than, equaling, or slightly longer than ovary.
 - 7a. Sterile pistil not exceeding 1/2 of tepal in length (*B. linearifolia* sterile pistil up to 2/3 of tepal in length).
 - 8a. Leaves larger, oblong-lanceolate or elliptic-lanceolate, rarely lanceolate, (4–)6–8 cm 7. *B. megistophylla*
 - 8b. Leaves small and narrow.
 - 9a. Leaves ovate, elliptic, or oblong, 3–6 × 1.5–2.5 cm; branchlets pubescent.
 - 10a. Leaves velutinous on both surfaces or glabrescent, lateral veins obscure; style and ovary equal in length; capsule glabrous 8. *B. mollicula*
 - 10b. Leaves glabrous, lateral veins visible adaxially; style ± shorter than ovary; capsule velutinous 9. *B. hebecarpa*
 - 9b. Leaves spatulate, lanceolate, spatulate to linear, or obovate, elliptic, or oblong, less than 3(–4) cm and ca. 1 cm in diam.; branchlets pubescent or glabrous.
 - 11a. Leaves elliptic or oblong, lateral veins obscure adaxially, rugulose in dried state 10. *B. rugulosa*
 - 11b. Leaves more varied in shape, lateral veins visible adaxially, not rugulose in dried state.
 - 12a. Branchlets densely pubescent; leaves narrowly obovate, oblong, or elliptic-oblong, 1–2 × 0.4–0.8 cm 11. *B. stenophylla*
 - 12b. Branchlets glabrous or pubescent; leaves narrowly oblong, narrowly oblanceolate, spatulate, or linear.
 - 13a. Ovary hirtellous; male flowers sessile; leaf blade lateral veins and midrib in 45° angles 12. *B. cephalantha*
 - 13b. Ovary glabrous; male flowers pedicellate; leaf blade lateral veins and midrib in 30°–35° angles.
 - 14a. Leaves spatulate or narrowly oblong, 2–3.5(–4) × 0.5–0.8(–0.9) cm; sterile

- pistil ca. 1/2 of sepal in length 13. *B. harlandii*
 14b. Leaves linear, rarely linear-lanceolate, 1.5–2.5 × 0.3–0.5 cm; sterile
 pistil ca. 2/3 of sepal in length 14. *B. linearifolia*
 7b. Sterile pistil equaling or exceeding sepals in length (rarely pistil ca. 2/3 of sepals in length, but then leaf
 not linear).
 15a. Leaves spatulate or obovate, 2–4 × 0.8–1.8 cm, midrib and lateral veins distinctly prominent 15. *B. bodinieri*
 15b. Leaves many and varied in shape, lateral veins obscure or visible adaxially.
 16a. Leaves oblanceolate or narrowly obovate, 1–1.6 × 0.4–0.6 cm, lateral veins obscure and not
 rugulose on either surface; male flowers shortly pedicellate 16. *B. ichangensis*
 16b. Leaves broadly elliptic or oblong-elliptic, 1.5–3.5 × 0.8–2 cm, lateral veins visible or not and
 rugulose adaxially; male flowers sessile 17. *B. sinica*

1. *Buxus henryi* Mayr, Fremdländ. Wald-Parkbäume, 451. 1906.

大花黄杨 da hua huang yang

Shrubs, ca. 3 m tall; branchlets terete; young branches tetragonous, glabrous; internodes 1.5–3 cm. Petiole 1–2 mm; leaf blade lanceolate, oblong-lanceolate, or ovate-oblong, 4–7 × 1.5–2.5(–3.5) cm, thinly coriaceous, base cuneate or acute, margin slightly reflexed, apex obtuse or slightly acute; midrib prominent on both surfaces, lateral veins obscure on both surfaces or visible on upper surface. Inflorescences axillary, 1–1.5 cm, 0.7–1 cm in diam., flowers dense, basal bracts ovate, 3–4 mm, grayish brown, apical bracts obovate-oblong, ca. 6 mm. Male flowers ca. 8; pedicels 2–4 mm, glabrous; tepals oblong or obovate-oblong, 4.5–5 mm, scarious, glabrous; stamens ca. 11 mm; sterile pistil with slender terete gynophore, apex slightly inflated, 1–1.5 mm. Female flowers: outer tepals oblong, ca. 6 mm; inner tepals ca. 3 mm, scarious, glabrous, persistent; ovary 2–2.5 mm; style narrow and long, complanate, 6–8 mm, recurved at apex, persistent. Capsule subglobose, ca. 6 mm; carpopodium ca. 3 mm. Fl. Apr, fr. Jul.

- Forests; 1300–2000 m. Guizhou, W Hubei, Sichuan.

2. *Buxus pubiramea* Merrill & Chun, Sunyatsenia 5: 104. 1940.

毛枝黄杨 mao zhi huang yang

Shrubs, ca. 3 m tall; branchlets terete; young branches tetragonous, 1–2 mm in diam., densely pubescent. Petiole flat, 1–5 mm; leaf blade oblong-lanceolate, rarely oblong-obovate, 5–7 × 1.5–2(–2.5) cm, thickly coriaceous, base cuneate, margin cartilaginous, slightly revolute, apex attenuate, rounded, or obtuse, or with retuse tip; adaxial midrib elevated, lateral veins sparse, at intervals of 1.5–2.5 mm, obscure on both surfaces. Inflorescences axillary or terminal. Flowers not seen. Capsule oblong, ca. 9 mm; persistent style ca. 7 mm; stigma decurrent to ca. 1/4 of style; persistent tepals ca. 1.5 mm; carpopodium 5–8 mm, pubescent; persistent bracts many, ovate, acuminate, ca. 1 mm. Fr. Jun–Jul.

- Forests on slopes; ca. 700 m. Hainan (Baoting).

3. *Buxus latistyla* Gagnepain, Bull. Soc. Bot. France 68: 482. 1921.

阔柱黄杨 kuo zhu huang yang

Shrubs, 1–4 m tall; branchlets terete, ribbed and grooved;

young branches tetragonous or subterete, glabrous or sparsely pubescent. Leaves inserted in different plants or sometimes in same plant, dimorphic in size; large leaves: petiole flat, 1–3 mm; leaf blade ovate or oblong-ovate, rarely rhomboid-ovate or lanceolate, 5–7 × 2–3.5 cm, coriaceous or chartaceous, adaxially puberulent along midrib, base rounded or obtuse, rarely acute, margin revolute, apex acuminate or acute, obtuse or with mucronulate tip; midrib elevated on both surfaces, lateral veins many, between them dense veinlets visible or obscure; small leaves: broadly ovate or elliptic, 2–4 × 1–1.5(–2) cm, base rounded, apex acute; lateral veins and veinlets more obscure on both surfaces. Inflorescences axillary and terminal, 8–10 mm, 5–6 mm in diam.; bracts ovate, apiculate, 2–2.5 mm, abaxially puberulent. Male flowers: pedicels ca. 1 mm; outer tepals ovate, ca. 2.5 mm, acute, abaxially puberulent; inner tepals longer and wider, glabrous; stamens 4–5 mm; anthers and superior half of filaments puberulent; sterile pistil discoid-tetragonous, ca. 1 mm in diam. Female flowers: pistil 4–5 mm; ovary 1.2–1.5 mm; style compressed and broad, 2.8–3.5 mm, apex attenuate, base ca. 1.6 mm in diam.; stigma oblong, decurrent to middle part of style. Capsule globose, up to 8.5 mm when mature, smooth; persistent style ca. 4 mm; persistent tepals triangular-ovate, ca. 2 mm; carpopodium 5–7 mm; bracts persistent. Fl. Mar–Apr, fr. May–Jul.

Forests on slopes, beside mountain streams. NW Guangxi, SE Yunnan (Funing) [Laos, N Vietnam].

4. *Buxus hainanensis* Merrill, Lingnan Sci. J. 14(1): 25. 1935.

海南黄杨 hai nan huang yang

Shrubs, 1–2 m tall; branchlets terete, ribbed; young branches subterete, ca. 1 mm in diam., longitudinally channeled laterally, sparsely puberulent in channels; internode 2–6 cm. Petiole ca. 1 mm; leaf blade elliptic-oblong or oblong-lanceolate, leaves on old lower branches small, 5.5–7 × 1.8–2.3 cm, on young upper branches large, 8.5–12 × 3–3.8 cm, thinly coriaceous or chartaceous, both surfaces glabrous, shining, base cuneate, margin revolute, apex acuminate, obtuse, or with mucronulate tip; midrib elevated on both surfaces, lateral veins 18–20 pairs, 2–4 mm between veins, veinlets dense. Flowers not seen. Capsule axillary or terminal, young fruit globose; persistent style ca. 5 mm; persistent tepals 2–2.5 mm; carpopodium ca. 4 mm; persistent bracts lanceolate, subglabrous. Fr. Sep–Dec.

- Streamsides in forests, damp areas. S Hainan (Sanya).

5. *Buxus myrica* H. Léveillé, Repert. Spec. Nov. Regni Veg. 11: 549. 1913.

杨梅黄杨 yang mei huang yang

Shrubs, 1–3 m tall; branchlets terete; young branches slender, tetragonus, inner sides puberulent. Petiole 1–3 mm, puberulent; leaf blade oblong-lanceolate or narrowly lanceolate, 3–7 × (0.8–)1–2 cm or 2–3.5(–4) × 0.5–0.7 cm, thinly leathery or leathery, adaxially puberulent along midrib, base cuneate, margin revolute, apex acute, acuminate, or obtuse, with retuse or mucronulate tip; midrib elevated on both surfaces, lateral veins and veinlets visible on both surfaces or adaxially more distinct. Inflorescences axillary, ca. 5 mm initially, peduncle very short or elongate, after male flower deciduous, rachis becoming clavate, pubescent; bracts ovate, ca. 2 mm, acute, pubescent. Male flowers ca. 10; pedicels 1–1.5 mm, pubescent; tepals ovate, 2–2.5 mm, glabrous; sterile pistil tetragonus, less than 1 mm high. Female flowers: tepals ovate or ovate-elliptic, ca. 3 mm, margin scarious; ovary ca. 1.5 mm; style 2.5–3 mm or 3.5–4 mm, recurved or circinate; stigma narrowly oblanceolate, decurrent to middle-lower part of style. Capsule subglobose, 8–10 mm or 5–5.5 mm; persistent style ca. 3 mm or 4–5 mm; carpodium 5–10 mm; bracts many, persistent.

Forests, forests on slopes, along mountain streams, riverbanks; 200–2000 m. NW Guangxi, S and SW Guizhou, Hainan, Hunan, Sichuan, E Yunnan [Vietnam].

- 1a. Leaf blade oblong-lanceolate or narrowly lanceolate, 3–7 × 1–2 cm; style 3.5–4 mm; capsule 8–10 mm 5a. var. *myrica*
1b. Leaf blade narrowly lanceolate, 2–3.5(–4) × 0.5–0.7 cm; style 2.5–3 mm; capsule 5–5.5 mm 5b. var. *angustifolia*

5a. *Buxus myrica* var. *myrica*

杨梅黄杨(原变种) yang mei huang yang (yuan bian zhong)

Leaf blade oblong-lanceolate or narrowly lanceolate, 3–7 × 1–2 cm. Female flowers: style 3.5–4 mm. Capsule 8–10 mm. Fl. Jan–Feb or Mar–May, fr. May–Jun or Jul–Sep.

Forests on slopes, along mountain streams; 200–2000 m. NW Guangxi, S Guizhou, Hainan, Hunan, Sichuan, E Yunnan [Vietnam].

5b. *Buxus myrica* var. *angustifolia* Gagnepain, Fl. Gén. Indo-Chine 5: 662. 1927.

狭叶杨梅黄杨 xia ye yang mei huang yang

Leaf blade narrowly lanceolate, 2–3.5(–4) × 0.5–0.7 cm. Female flowers: style 2.5–3 mm. Capsule globose, small, 5–5.5 mm. Fl. Apr.

Forests, riverbanks. NW Guangxi, SW Guizhou [N Vietnam].

6. *Buxus austroyunnanensis* Hatusima, J. Dept. Agric. Kyushu Imp. Univ. 6: 286. 1942 [*“austro-yunnanensis”*].

滇南黄杨 dian nan huang yang

Shrubs small, prostrate or erect, 0.5–2.5 m tall; branchlets terete; young branches tetragonus, ca. 1 mm in diam., pu-

bescent. Petiole very short; leaf blade oblanceolate or narrowly oblanceolate, 2–3.5 × 0.7–1 cm, thinly leathery, adaxially puberulent or subglabrous along midrib, base cuneate, margin revolute, apex obtuse, with mucronulate or retuse tip; midrib elevated on both surfaces, lateral veins and veinlets dense and visible on both surfaces. Inflorescences axillary; rachis clavate and elongate post male flower anthesis, pilose; bracts ovate, persistent, 1.5–2 mm, acute, margin scarious, abaxially pilose. Male flowers ca. 8; pedicels ca. 1 mm; tepals broadly ovate, 2–2.5 mm, glabrous, persistent; sterile pistil ca. 1 mm, inflated at apex. Female flowers: tepals ovate, 2–2.5 mm, glabrous, persistent; ovary ca. 1.5 mm; style compressed and wide, 2.5–3 mm, attenuate upward, slightly recurved or erect; stigma narrowly obcordate, decurrent to middle part of style. Capsule globose, 6–8 mm in diam.; persistent style ca. 3 mm; carpodium 6–8 mm. Fl. Mar–Apr, fr. Sep–Nov.

• In crevices or thickets along riverbanks or streamsides; 400–900 m. S Yunnan (Jinghong, Lancang, Shuangjiang).

7. *Buxus megistophylla* H. Léveillé, Fl. Kouy-Tchéou, 160. 1914–1915.

大叶黄杨 da ye huang yang

Shrubs or small trees, 0.6–2 m tall; young branches tetragonus or subterete, ribbed and grooved, glabrous. Petiole 2–3 mm, puberulent; leaf blade ovate, elliptic, or oblong-lanceolate, 4–8 × 1.5–3 cm, rarely lanceolate, up to 9 cm, or rhomboid-ovate, up to 4 cm wide, leathery or thinly leathery, shining above, puberulent along midrib, base cuneate, margin revolute, apex acuminate, obtuse, or with apiculate tip; midrib elevated on both surfaces, lateral veins many, visible on both surfaces. Inflorescences axillary; rachis 5–7 mm, pubescent or glabrescent; bracts broadly ovate, acute, margins scarious, abaxially puberulent near base. Male flowers 8–10; pedicels ca. 0.8 mm; outer tepals broadly ovate, ca. 2 mm; inner tepals orbicular, 2–2.5 mm, glabrous; stamens ca. 6 mm; sterile pistil ca. 1 mm. Female flowers: tepals ovate-elliptic, ca. 3 mm, glabrous; ovary 2–2.5 mm; style ca. 2.5 mm, erect, slightly recurved at apex; stigma obcordate, decurrent to 1/3 of style. Capsule subglobose, 6–7 mm; persistent style ca. 5 mm. Fl. Mar–Apr, fr. Jun–Jul.

• Forests on mountain slopes, valleys, riverbanks; 500–1400 m. NW Guangdong (Lianxian), NE Guangxi, SW Guizhou, S Hunan (Yizhang), S Jiangxi (Anyuan, Huichang).

8. *Buxus mollicula* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 16. 1917.

软毛黄杨 ruan mao huang yang

Shrubs, ca. 3 m tall; young branches subtetragonus, ca. 2 mm in diam., pubescent or glabrous. Petiole 1–2 mm, pubescent; leaf blade ovate, oblong, or elliptic, rarely oblong-lanceolate, 3–5 × 1.2–1.8(–2) cm, leathery, densely velutinous on both surfaces, base broadly cuneate or cuneate, margin slightly revolute, apex rounded or obtuse, with retuse or mucronate tip; midrib elevated on both surfaces, lateral veins obscure. Inflorescences axillary, shortly terete, ca. 1 cm; rachis ± elongate, 3–4 mm, densely velutinous; bracts ovate-

triangular, ca. 1.5 mm, acute, abaxially pilose. Male flowers 6–8, sessile; tepals orbicular, ca. 2 mm, abaxially convex, pilose, adaxially concave, glabrous; sterile pistil very short. Female flowers: tepals ovate-triangular, 3.5–4 mm; ovary and style equal in length; stigma linear-cordate, decurrent to base of style. Capsule ovoid-globose, ca. 1 cm, shining; persistent style ca. 3 mm, erect, apex recurved.

• Thickets, river valleys; 1700–2100 m. SW Sichuan, NW Yunnan.

- 1a. Young branches pubescent; leaf blade velutinous on both surfaces 8a. var. *mollicula*
1b. Young branches and leaf blade glabrous or leaf blade only puberulent along basal part of midrib adaxially 8b. var. *glabra*

8a. *Buxus mollicula* var. *mollicula*

软毛黄杨(原变种) ruan mao huang yang (yuan bian zhong)

Buxus wallichiana Baillon var. *velutina* Franchet.

Young branches pubescent. Leaf blade velutinous on both surfaces. Fl. Feb–Mar, fr. Aug–Oct.

• Thickets in river valleys; 1700–2100 m. NW Yunnan (Binchuan, Lijiang, Ninglang, Yongsheng).

8b. *Buxus mollicula* var. *glabra* Handel-Mazzetti, Symb. Sin. 7: 236. 1931.

变光软毛黄杨 bian guang ruan mao huang yang

Young branches glabrous. Leaf blade glabrous or only puberulent along basal part of midrib adaxially.

• River valleys; 1700–2100 m. SW Sichuan (Muli), NW Yunnan (Lijiang).

9. *Buxus hebecarpa* Hatusima, J. Dept. Agric. Kyushu Imp. Univ. 6: 302. 1942.

毛果黄杨 mao guo huang yang

Shrubs, ca. 3 m tall; branchlets terete; young branches tetragonous, densely pubescent; internode 1.5–2.5 cm. Petiole 2–3 mm, puberulent; leaf blade ovate, elliptic, or oblong-ovate, rarely lanceolate, 3–6(–7) × 1.5–2(–2.5) cm, thickly leathery, puberulent along midrib above, base cuneate, margin revolute, apex acute or acuminate; midrib very elevated above, level below, lateral veins adaxially visible, abaxially obscure. Inflorescences axillary, capitate; rachis ca. 4 mm, sparsely pilose; bracts sparsely pilose, basal bracts small, ovate, dense, bracts below male flowers broadly ovate, ca. 2 mm. Male flowers 1–6; pedicels 0.5–0.8 mm, sparsely pilose; outer tepals broadly ovate; inner tepals orbicular, 2–2.5 mm; stamens ca. 4.2 mm; sterile pistil with terete short gynophore, apex inflated, 1–1.2 mm. Female flowers: outer tepals slightly narrow, inner tepals broadly ovate, 2–2.5 mm; ovary ca. 2.2 mm, densely agglutinated tomentulose; style thick, ca. 1.2 mm; stigma obcordate, decurrent to base of style. Capsule globose, 7–9 mm, agglutinated tomentulose; persistent style ca. 2 mm. Fl. Mar, fr. Jun.

• Forests, stony areas; 1500–2000 m. Sichuan (Emei Shan, Tianquan).

10. *Buxus rugulosa* Hatusima, J. Dept. Agric. Kyushu Imp. Univ. 6: 303. 1942.

皱叶黄杨 zhou ye huang yang

Shrubs, 1–2 m tall; branchlets subterete; young branches tetragonous, 1–2 mm in diam., pubescent on 4 sides, or 2 opposite sides glabrous. Petiole 2–3 mm, densely puberulent; leaf blade leathery, elliptic, obovate-elliptic, rhomboid-oblong, oblong, or narrowly oblong, 0.8–2.5 × 0.5–1.2 cm, adaxially shining, puberulent along midrib, slightly pinnate-rugulose in dried state, base broadly cuneate or cuneate, margin revolute, apex obtuse, rounded, or retuse; abaxial midrib and lateral veins obscure. Inflorescences axillary and terminal, capitate; rachis 3–4 mm, puberulent; bracts ovate, 2.5–3 mm, puberulent. Male flowers 8–10; pedicels 0.5–1 mm; outer tepals ovate; inner tepals suborbicular, 2–3 mm, glabrous, reddish brown or light yellow in dried state; sterile pistil ca. 1 mm, apex inflated. Female flowers: tepals broadly ovate, 2.5–3 mm, abaxially pubescent; ovary ca. 3 mm; style thick, ca. 1.5 mm; stigma obcordate, decurrent to middle part of style. Capsule ovoid-globose, 8–10 mm, glabrous; persistent style 2–3 mm.

• Mixed forests and forest margins on limestone, thickets on mountain slopes and on limestone; 1900–4000 m. SW and W Sichuan, E and SE Xizang, NW Yunnan.

- 1a. Leaf blade villous on both surfaces; petiole villous 10c. var. *rupicola*
1b. Leaf blade adaxially puberulent only along midrib; petiole pubescent.
2a. Shrubs, 1–2 m tall; young branches pubescent; leaf blade rhomboid-oblong, oblong, or narrowly oblong, 1.5–2.5(–3.5) × 0.6–1.2 cm 10a. var. *rugulosa*
2b. Shrubs prostrate, multibranched, 0.3–1.2 m tall; young branches densely pannose-tomentulose; leaf blade elliptic, obovate-elliptic, or oblong, 8–11(–14) × 5–8 mm 10b. var. *prostrata*

10a. *Buxus rugulosa* var. *rugulosa*

皱叶黄杨(原变种) zhou ye huang yang (yuan bian zhong)

Buxus microphylla Siebold & Zuccarini var. *platyphylla* (Schneider) Handel-Mazzetti.

Shrubs, 1–2 m tall; young branches pubescent. Petiole pubescent; leaf blade rhomboid-oblong, oblong, or narrowly oblong, 1.5–2.5(–3.5) × 0.6–1.2 cm, adaxially puberulent along midrib. Fl. Mar–May, fr. Jun–Sep.

• Thickets on mountain slopes; 1900–3500 m. W Sichuan (Barkam, Jinchuan), NW Yunnan (Dali, Dêqên, Lijiang, Weishan).

10b. *Buxus rugulosa* var. *prostrata* (W. W. Smith) M. Cheng, Fl. Reipubl. Popularis Sin. 45(1): 27. 1980.

平卧皱叶黄杨 ping wo zhou ye huang yang

Buxus microphylla var. *prostrata* W. W. Smith, Notes

Roy. Bot. Gard. Edinburgh 10: 16. 1917; *B. rugulosa* var. *intermedia* Hatusima; *B. rugulosa* subsp. *prostrata* (W. W. Smith) Hatusima.

Shrubs prostrate, multibranched, 0.3–1.2 m tall; young branches densely pinnose-tomentulose. Petiole pubescent; leaf blade elliptic, obovate-elliptic, or oblong, 8–11(–14) × 5–8 mm, adaxially puberulent along midrib. Fl. Mar–Apr, fr. Jun–Jul.

• Mixed forests on limestone; 2400–4000 m. SW Sichuan, SE Xizang, NW Yunnan.

10c. *Buxus rugulosa* var. *rupicola* (W. W. Smith) P. Brückner & T. L. Ming, **comb. in stat. nov.**

岩生黄杨 *yan sheng huang yang*

Basionym: *Buxus microphylla* Siebold & Zuccarini var. *rupicola* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 88. 1916; *B. rugulosa* subsp. *rupicola* (W. W. Smith) Hatusima.

Petiole densely villous; leaf blade villous on both surfaces initially, later only villous along margins and abaxially or glabrescent in dried state. Fl. Apr–May, fr. Aug–Sep.

• Forest margins or thickets on limestone; 2300–3400 m. SW Sichuan, E Xizang, NW Yunnan.

11. *Buxus stenophylla* Hance, J. Bot. 6: 331. 1868.

狭叶黄杨 *xia ye huang yang*

Buxus ichangensis var. *fukienensis* Hatusima.

Shrubs, ca. 1.5 m tall; branchlets terete; young branches tetragonous, 0.7–1 mm in diam., densely pubescent. Petiole ca. 1 mm; leaf blade narrowly obovate, oblong, or elliptic-oblong, 1–2 × 0.4–0.8 cm, puberulent along midrib in basal part, abaxially light green, adaxially deep green, base cuneate, apex obtuse or truncate, with retuse tip; midrib elevated on both surfaces, lateral veins dense and visible on both surfaces. Inflorescences axillary and terminal, capitate, ca. 7 mm, densely pubescent; basal bracts lanceolate, villous abaxially, apical bracts ovate-triangular. Male flowers ca. 8; pedicels ca. 0.5 mm; tepals ovate-elliptic, ca. 2 mm; stamens 3.5–4 mm; sterile pistil ca. 1 mm, apex inflated. Female flowers: tepals ovate-triangular, ca. 2.5 mm; pistil ca. 4 mm; ovary and style equal in length; style slightly recurved; stigma obcordate and decurrent to basal part of style. Capsule globose, ca. 6 mm in diam., gray and puberulent initially, later glabrous and shining; persistent style ca. 2 mm. Fl. Feb–Mar, fr. Jun–Jul.

• Forests, riversides. SE Fujian (Anxi), C and NW Guangdong, Guizhou.

12. *Buxus cephalantha* H. Léveillé & Vaniot, Repert. Spec. Nov. Regni Veg. 3: 21. 1906.

头花黄杨 *tou hua huang yang*

Shrubs small, 30–60 cm tall, densely ramified; young branches tetragonous, 0.5–1 mm in diam., puberulent or glabrous; internode 3–5 mm. Petiole ca. 1 mm; leaf blade obovate-spatulate or spatulate, 8–12 × 3–4 mm, rarely spatulate-linear, 1.5–2 × 2.5–4 mm, or narrowly oblong or narrowly ob-

lanceolate, 15–25 × 5–7 mm, thinly leathery, adaxially puberulent along midrib, base narrowly cuneate, apex obtuse, with mucronulate or retuse tip; midrib elevated on both surfaces, lateral veins dense and visible on surface. Inflorescences axillary and terminal, capitate; rachis 3–5 mm, densely pubescent; bracts 6–8 pairs, ovate-triangular, ca. 1.5 mm, acute, pubescent toward base abaxially. Male flowers sessile; tepals ovate, ca. 1.3 mm, glabrous; sterile pistil ca. 0.8 mm. Female flowers: tepals ovate-elliptic, ca. 1.5 mm; ovary longer than style. Capsule ovoid, to 6 mm, hirtellous initially, later subglabrous or glabrous; persistent style ca. 1.5 mm; stigma obovate, decurrent to middle part of style. Fl. Mar, fr. Jul.

• Rock crevices in valleys, rocky areas; 300–700 m. NE Guangdong, N Guangxi, S Guizhou.

- 1a. Young branches pubescent; leaf blade obovate-spatulate or spatulate, 8–12 × 3–4 mm, rarely spatulate-linear, 15–20 × 2.5–4 mm; fruit hirtellous 12a. var. *cephalantha*
1b. Young branches glabrous; leaf blade narrowly oblong or oblanceolate, 12–25 × 5–7 mm; fruit glabrous, shining, with reticulate veins 12b. var. *shantouensis*

12a. *Buxus cephalantha* var. *cephalantha*

头花黄杨(原变种) *tou hua huang yang* (*yuan bian zhong*)

Buxus harlandii Hance var. *cephalantha* (H. Léveillé & Vaniot) Rehder; *B. harlandii* var. *linearis* Handel-Mazzetti; *B. sempervirens* Linnaeus var. *microphylla* H. Léveillé.

Young branches pubescent. Leaf blade obovate-spatulate or spatulate, 8–12 × 3–4 mm, rarely spatulate-linear, 15–20 × 2.5–4 mm. Fruit hirtellous or subglabrous. Fl. Mar, fr. Jul.

• N Guangxi, S Guizhou (Duyun, Longli, Pingba).

12b. *Buxus cephalantha* var. *shantouensis* M. Cheng, Acta Phytotax. Sin. 17(3): 97. 1979.

汕头黄杨 *shan tou huang yang*

Buxus chaoanensis H. G. Ye.

Young branches glabrous. Leaf blade narrowly oblong or narrowly oblanceolate, 12–25 × 5–7 mm. Fruit glabrous and shining, with reticulate veins.

• Rock crevices in valleys, other rocky areas; 300–700 m. E Guangdong (Chao'an, Shantou).

13. *Buxus harlandii* Hance, J. Linn. Soc., Bot. 13: 123. 1873 [*"harlandi"*].

匙叶黄杨 *chi ye huang yang*

Shrubs small, 0.5–1 m tall; branchlets subtetragonous; young branches subtetragonous, slender, ca. 1 mm in diam., sparsely pubescent; internode 1–2 cm. Petiole not obvious; leaf blade spatulate, rarely narrowly oblong, 20–35(–40) × 5–8(–9) mm, thinly leathery, adaxially shiny, puberulent along basal part of midrib, base cuneate, apex acute, rounded to obtuse, or

with retuse tip; midrib elevated on both surfaces, lateral veins and veinlets dense and visible adaxially, obscure abaxially. Inflorescences axillary and terminal, capitate, dense; rachis 3–4 mm; bracts ovate, mucronate. Male flowers 8–10; pedicels ca. 1 mm; tepals broadly ovate or broadly elliptic, ca. 2 mm. Female flowers: tepals broadly ovate, ca. 2 mm, margins scarious; ovary glabrous; style longer than ovary, erect, compressed and broad at lower part; stigma obcordate, decurrent to ca. 1/4 length of style. Capsule subglobose, ca. 7 mm, smooth; persistent style ca. 3 mm, apex slightly recurved. Fl. May, fr. Oct.

- Forests, streamsides. Offshore islands of Guangdong, Hainan.

14. *Buxus linearifolia* M. Cheng, Acta Phytotax. Sin. 17(3): 97. 1979.

线叶黄杨 xian ye huang yang

Shrubs small, ca. 1 m tall; branchlets terete, grayish white; young branches tetragonous, ca. 1 mm in diam., sparsely pubescent; internodes 4–6 mm. Petiole not obvious; leaf blade densely linear or rarely linear-lanceolate, 15–25 × 3–5 mm, thinly leathery, puberulent abaxially, base cuneate, apex obtuse, tip retuse; adaxial midrib elevated, abaxially slightly plane, lateral veins visible adaxially, obscure abaxially. Inflorescence axillary and terminal, capitate; rachis ca. 4 mm; bracts numerous, densely imbricate, ovate, mucronate. Male flowers 4; pedicels ca. 0.8 mm; tepals broadly ovate, ca. 2 mm; outer tepals recurved; sterile pistil with slender gynophore, apex inflated, ca. 1.4 mm. Female flowers: ovary and style equal in length, glabrous; style compressed and wide, slightly curved; stigma decurrent to middle part of style. Mature capsule not seen. Fl. Mar.

- S Guangxi (Shangsi).

15. *Buxus bodinieri* H. Léveillé, Repert. Spec. Nov. Regni Veg. 11: 549. 1913.

雀舌黄杨 que she huang yang

Buxus harlandii Hance var. *platyphylla* C. K. Schneider; *B. microphylla* Siebold & Zuccarini var. *platyphylla* (C. K. Schneider) Handel-Mazzetti.

Shrubs, 3–4 m tall; branchlets terete; young branches tetragonous, pubescent or glabrescent. Petiole 1–2 mm; leaf blade usually spatulate, also narrowly ovate or obovate, widest in apical part, 20–40 × 8–18 mm, thinly leathery, adaxially green and shining, puberulent on basal half of midrib, abaxially glaucescent, base narrowly cuneate, apex rounded or obtuse, usually with retuse tip; midrib elevated, lateral veins visible on both surfaces or only adaxially. Inflorescence axillary, capitate, 5–6 mm, flowers dense; rachis ca. 2.5 mm; bracts ovate, glabrous abaxially or pubescent. Male flowers ca. 10; pedicels only ca. 0.4 mm; tepals ovate-orbicular, ca. 2.5 mm; stamens ca. 6 mm; sterile pistil with terete gynophore, apex inflated, ca. 2.5 mm, equal to tepals in length or slightly longer. Female flowers: outer tepals ca. 2 mm; inner tepals ca. 2.5 mm; ovary ca. 2 mm, glabrous; style ca. 1.5 mm, slightly compressed; stigma obcordate, decurrent to 1/3–1/2 of style. Capsule ovoid, ca. 5 mm; persistent style erect, 3–4 mm. Fl. Feb, fr. May–Aug.

- Forests in hilly areas, mountain slopes; 400–2700 m. Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang.

16. *Buxus ichangensis* Hatusima, J. Dept. Agric. Kyushu Imp. Univ. 6: 309. 1942.

宜昌黄杨 yi chang huang yang

Shrubs, 15–30(–100) cm tall; branchlets terete; young branches dense, tetragonous, very slender, ca. 0.5 mm in diam., densely or sparsely pubescent. Petiole ca. 1 mm; leaf blade oblanceolate or narrowly obovate, 10–16 × 4–6 mm, thinly leathery, glabrous on both surfaces, adaxially shining, base cuneate, apex rounded, with mucronate tip; midrib elevated on both surfaces or only adaxially. Inflorescences axillary or terminal, capitate; rachis pubescent; bracts ovate, 1–2 mm, acute. Male flowers 8–12; pedicels ca. 0.4 mm; tepals ovate, 1.8–2 mm, bracts and tepals reddish brown interrupted striate; stamens 4–5 mm; sterile pistil slender, with terete gynophore, apex inflated, 1.4–1.8 mm, subequal to tepals in length. Female flowers: tepals ovate-oblong, ca. 2.5 mm; ovary longer than style, glabrous. Capsule ellipsoid or oblong, ca. 5 mm, shining, longitudinally grooved; persistent style ca. 2 mm, slender; stigma decurrent to middle part of style. Fl. Mar, fr. Jul.

- Stony areas on riverbanks; below 100–300 m. W Hubei (Badong, Yichang, Zigui).

17. *Buxus sinica* (Rehder & E. H. Wilson) M. Cheng, Fl. Reipubl. Popularis Sin. 45(1): 37. 1980.

黄杨 huang yang

Shrubs or small trees; branchlets terete, longitudinally ribbed, grayish white; young branches tetragonous, pubescent; internode (3–)5–20 mm. Petiole 1–2 mm; leaf blade varied in shape and size, broadly elliptic, broadly obovate, orbicular, obovate, obovate-oblong, or elliptic-lanceolate to lanceolate, (5–)7–35 × (3.5–)5–20 mm, leathery, thickly leathery, or thinly leathery, shining adaxially, glabrous on both surfaces or puberulent along basal half of midrib, base rounded to cuneate, apex rounded, obtuse with retuse tip or acuminate with acute tip; midrib elevated adaxially, lateral veins obscure and rugulose adaxially. Inflorescences axillary, capitate; rachis 3–4 mm, pubescent; bracts broadly ovate, 2–2.5 mm, ± pubescent abaxially. Male flowers ca. 10, sessile; outer tepals ovate-elliptic; inner tepals suborbicular, 2.5–3 mm, glabrous; stamens ca. 4 mm; sterile pistil with clavate gynophore, apex slightly inflated, ca. 2 mm, sterile pistil and tepals length ca. 2:3 or equal to 3:2. Female flowers: tepals ca. 3 mm; ovary slightly longer than style, glabrous; style thick and compressed; stigma obcordate, decurrent to middle part of style. Capsule subglobose, 6–8(–10) mm; persistent style 2–3 mm.

- Forests in mountain valleys and on slopes, thickets, streamsides, stony areas; 600–2600 m. Anhui, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Zhejiang.

1a. Leaf blade elliptic-lanceolate or lanceolate, 2–3.5 × 1–1.3 cm, apex acuminate, with acute tip, midrib elevated on both surfaces,

lateral veins visible adaxially; style ca.

3 mm 17b. var. *aemulans*

1b. Leaf blade broadly elliptic, broadly obovate, orbicular, obovate-elliptic, or obovate-oblong, apex rounded or obtuse, with retuse tip, midrib elevated adaxially; style 6–8(–10) mm.

2a. Leaf blade larger, 1.5–3.5 × 0.8–2 cm, puberulent along basal part of midrib adaxially, densely white papillate along midrib abaxially, lateral veins prominent adaxially.

3a. Sterile pistil and tepals length 2:3 17a. var. *sinica*

3b. Sterile pistil and tepals length 3:2 or equal 17c. var. *intermedia*

2b. Leaf blade smaller, glabrous and not papillate along midrib adaxially, lateral veins prominent or obscure adaxially.

4a. Leaf blade thinly leathery, lateral veins prominent adaxially; capsule glabrous 17d. var. *parvifolia*

4b. Leaf blade thickly leathery, lateral veins obscure adaxially and rugulose; capsule pubescent or glabrous.

5a. Leaf blade 9–11(–12) × 8–10 mm; capsule pubescent initially ... 17e. var. *vacciniifolia*

5b. Leaf blade very small, 5–7(–9) × 3.5(–6) mm; capsule glabrous 17f. var. *pumila*

17a. *Buxus sinica* var. *sinica*

黄杨(原变种) huang yang (yuan bian zhong)

Buxus microphylla Siebold & Zuccarini var. *sinica* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 626. 1914; *B. microphylla* subsp. *sinica* (Rehder & E. H. Wilson) Hatusima.

Shrubs or small trees, 1–6 m tall; internode 5–20 mm. Leaf blade broadly elliptic, broadly obovate, obovate-elliptic, or obovate-oblong, 1.5–3.5 × 0.8–2 cm, lucid and puberulent along basal half of midrib adaxially, densely white papillate along midrib abaxially, apex rounded or obtuse, with retuse tip; midrib elevated and lateral veins visible adaxially. Sterile pistil and tepals length 2:3. Capsule globose, 6–8(–10) mm. Fl. Mar, fr. May–Jun.

• Forests in mountain valleys, streamsides; 1200–2600 m. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Zhejiang.

17b. *Buxus sinica* var. *aemulans* (Rehder & E. H. Wilson) P. Brückner & T. L. Ming, **comb. in stat. nov.**

尖叶黄杨 jian ye huang yang

Basionym: *Buxus microphylla* Siebold & Zuccarini var. *aemulans* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 169. 1914; *B. microphylla* var. *kiangsiensis* Hu & F. H. Chen;

B. sinica subsp. *aemulans* (Rehder & E. H. Wilson) M. Cheng.

Leaf blade rather variable from rhomboid-ovate to narrowly lanceolate, usually elliptic-lanceolate or lanceolate, 2–3.5 × 1–1.3 cm, apex acuminate, acute or slightly obtuse at tip; midrib elevated on both surfaces, lateral veins visible adaxially. Sterile pistil length and capsule indumentum also variable. Capsule ca. 7 mm; persistent style ca. 3 mm.

• Thickets, stony areas along streamsides; 600–2000 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Zhejiang.

17c. *Buxus sinica* var. *intermedia* (Kanehira) M. Cheng, Fl. Reipubl. Popularis Sin. 45(1): 40. 1980.

中间黄杨 zhong jian huang yang

Buxus intermedia Kanehira, Formosan Trees, rev. ed., 359. 1936; *B. microphylla* var. *intermedia* (Kanehira) H. L. Li.

Leaf blade 1.5–3.5 × 0.8–2 cm, puberulent along basal part of midrib adaxially, densely white papillate along midrib abaxially; lateral veins prominent adaxially. Sterile pistil and tepals length equal or 3:2.

• Taiwan.

17d. *Buxus sinica* var. *parvifolia* M. Cheng, Acta Phytotax. Sin. 17(3): 98. 1979.

小叶黄杨 xiao ye huang yang

Leaf blade small, broadly elliptic or broadly ovate, 7–10 × 5–7 mm, thinly leathery; lateral veins prominent adaxially. Capsule 6–7 mm, glabrous.

• Stony areas; ca. 1000 m. S Anhui (Huang Shan), Chongqing, Hubei, Jiangxi (Lushan), Zhejiang (Longtang Shan).

17e. *Buxus sinica* var. *vacciniifolia* M. Cheng, Acta Phytotax. Sin. 17(3): 98. 1979.

越桔叶黄杨 yue ju ye huang yang

Small shrubs, densely ramified; internode 3–6 mm. Leaf blade small, orbicular or broadly elliptic, rarely obovate, 9–11(–12) × 8–10 mm, thickly leathery, lucid, margins strangely reflexed, apex rounded, with retuse tip, rarely acute; lateral veins

obscure adaxially, rugulose. Capsule ovate-globose, 7–8 mm, pubescent initially or glabrescent.

• Stony areas, thickets; 1000–1800 m. Chongqing, N Guangdong (Ruyuan), S Hunan (Yizhang), Jiangxi (Lushan).

17f. *Buxus sinica* var. *pumila* M. Cheng, Acta Phytotax. Sin. 17(3): 98. 1979.

矮生黄杨 ai sheng huang yang

Leaf blade very small, 5–7(–9) × 3.5(–6) mm, thickly leathery; lateral veins obscure adaxially, rugulose. Capsule globose, ca. 4 mm; persistent style very short, glabrous.

• Forests on slopes; ca. 2100 m. W Hubei (Badong).

