

24. SCHIZOPHRAGMA Siebold & Zuccarini, Fl. Jap. 1: 58. 1837–1838.

钻地风属 *zuan di feng shu*

Wei Zhaofen (卫兆芬 *Wei Chao-fen*); Bruce Bartholomew

Shrubs often scandent, deciduous. Stems prostrate or climbing, with aerial roots. Winter bud scales in 2–4 pairs, dark brown, pubescent. Leaves opposite; leaf blade simple, margin entire, slightly serrulate, or roughly serrate. Inflorescence terminal, corymbose or forming a thyrse. Flowers both fertile and sterile or fertile only. Sterile flowers usually with 1 expanded sepal, petaloid, margin entire. Fertile flowers small. Calyx tube adnate to ovary; teeth persistent. Petals free, valvate in bud, falling early. Stamens 10, free; filaments filiform; anthers ovoid, apex obtuse. Ovary subinferior, obconical to turbinate, 4- or 5-loculed; placentation axile; ovules numerous. Style 1, short; stigma capitate, 4- or 5-fissured. Fruit a loculicidal capsule, obconical to turbinate, striate, apex projected or truncate. Seeds very numerous, fusiform, with long, narrow wings at both ends.

About ten species: China, Japan, Korea; nine species (endemic) in China.

- 1a. Flowers fertile only 9. *S. crassum*
- 1b. Flowers both fertile and sterile.
 - 2a. Leaf blade abaxially densely granulate glandular.
 - 3a. Secondary leaf veins usually unbranched; leaf blade elliptic, base cuneate to subobtusate .. 8. *S. elliptifolium*
 - 3b. Secondary leaf veins usually 1–4-branched; leaf blade narrowly or broadly ovate, base rounded or subcordate.
 - 4a. Leaf blade narrowly ovate, abaxially glabrous or sometimes barbate at vein axils .. 6. *S. hypoglaucum*
 - 4b. Leaf blade broadly ovate, abaxially densely brownish pubescent along veins 7. *S. fauriei*
 - 2b. Leaf blade abaxially not granulate glandular.
 - 5a. Leaf blade margin distally serrate-dentate from middle; sterile flower pedicels less than 1 cm 5. *S. corylifolium*
 - 5b. Leaf blade margin entire or sometimes shortly and acutely denticulate; sterile flower pedicels more than 1 cm.
 - 6a. Leaf blade abaxially densely pubescent, especially along veins 4. *S. molle*
 - 6b. Leaf blade abaxially glabrous, slightly pilose along veins, or densely pubescent only along both sides of midvein, sometimes barbate.
 - 7a. Capsule apex truncate 3. *S. choufenianum*
 - 7b. Capsule apex projected.
 - 8a. Capsule campanulate to turbinate, 6–8 mm, base broadly cuneate; leaf blade abaxially glabrous or slightly pubescent along midvein 1. *S. integrifolium*
 - 8b. Capsule obconical, 8–12 mm, base acute to narrowly cuneate; leaf blade abaxially usually densely pubescent along both sides of midvein 2. *S. megalocarpum*

1. *Schizophragma integrifolium* Oliver, Hooker's Icon. Pl. 20: t. 1934. 1890.

钻地风 *zuan di feng*

Shrubs scandent. Branchlets brown, glabrous. Petiole 2–9 cm, glabrous; leaf blade abaxially green or glaucous, adaxially glossy green, elliptic, narrowly so, or broadly ovate, 8–20 × 3.5–12.5 cm, thickly or thinly papery, abaxially glabrous or sometimes sparsely pubescent along veins or barbate at vein axils, adaxially glabrous, secondary veins 7–9 on both sides of midvein, base broadly cuneate, rounded, or shallowly cordate, margin entire or serrulate, apex acute to acuminate. Inflorescences corymbose, densely appressed brown pubescent, glabrescent. Sterile flowers with expanded sepal 1(–3), yellow-white, ovate-lanceolate, lanceolate, or broadly elliptic, 3–7 × 2–3 cm in fruit. Fertile flowers with calyx tube turbinate, 1.5–2 × 1–1.5 mm, base subacute; teeth triangular, ca. 0.5 mm. Petals narrowly ovate, 2–3 mm, apex obtuse. Stamens subequal, 4.5–6 mm at anthesis; anthers subglobose, ca.

0.5 mm. Style and stigma ca. 1 mm. Capsule campanulate to turbinate, 6–8 × 3.5–4.5 mm, base broadly cuneate, projected apical part shortly conical, ca. 1.5 mm. Seeds brown, compressed, 3–4 mm including wings; wings 1–1.5 mm. Fl. Jun–Jul, fr. Oct–Nov.

• Dense to sparse forests in valleys or on mountain slopes or summits; 200–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

- 1a. Leaf blade abaxially green, thick 1a. var. *integrifolium*
- 1b. Leaf blade abaxially glaucous, thin 1b. var. *glaucescens*

1a. *Schizophragma integrifolium* var. *integrifolium*
钻地风(原变种) *zuan di feng* (yuan bian zhong)
Schizophragma amplum Chun; *S. integrifolium* var. *denticutatum* Rehder; *S. macrosepalum* Hu.
Leaf blade abaxially green, thick. Fl. Jun–Jul, fr. Oct–Nov.

• Dense to sparse forests in valleys or on mountain slopes or summits; 200–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

1b. *Schizophragma integrifolium* var. *glaucescens* Rehder in Sargent, Pl. Wilson. 1: 42. 1911.

粉绿钻地风 *fen lu zuan di feng*

Leaf blade abaxially glaucous, thin. Fl. Jun, fr. Oct.

• 600–1800 m. Guangdong, Guangxi, Guizhou, Hubei, Sichuan, Zhejiang.

2. *Schizophragma megalocarpum* Chun, Acta Phytotax. Sin. 3: 164. 1954.

大果钻地风 *da guo zuan di feng*

Shrubs scandent. Branchlets gray-brown, subglabrous, striate. Petiole 2.5–9 cm, subglabrous; leaf blade abaxially yellow-brown and adaxially brown when dry, broadly ovate, 11–15 × 8–11 cm, papery, abaxially pubescent along veins, especially on both sides of midvein and at vein axils, adaxially glabrous, secondary veins 7 or 8 on both sides of midvein, usually 1- or 2-branched, curved, base truncate or subcordate, margin slightly reflexed and entire or distally sparsely serrulate from middle, apex acute to acuminate. Inflorescences corymbose, densely brown pubescent when young, glabrescent on peduncle and proximal branches. Sterile flowers with expanded sepal 1, ovate-lanceolate, 2.5–6 × 1.5–4 cm. Fertile flowers with calyx tube obconical, ca. 3 mm; teeth ovate-triangular, ca. 0.5 mm. Petals oblong, 2.5–3 × 1–1.5 mm, apex acute, hood-shaped. Stamens to 5 mm, subequal; anthers oblong, ca. 0.8 mm. Style ca. 1 mm. Capsule obconical, 8–12 × 3–5 mm, base acute to narrowly cuneate, projected apical part broadly conical, 1.5–2 mm. Seeds 5–7 mm; wings 2–3 mm. Fl. Jul, fr. Oct–Nov.

• Forests in valleys; ca. 600 m. C Sichuan (Baoping Xian, Tianquan Xian).

3. *Schizophragma choufianum* Chun, Acta Phytotax. Sin. 3: 169. 1954.

临桂钻地风 *lin gui zuan di feng*

Shrubs scandent. Branchlets brown, smooth; bark peeling off when old. Petiole 8–11 cm, adaxially canaliculate; leaf blade abaxially yellow-brown and adaxially dark brown when dry, elliptic, 14–19 × 8–12 cm, papery, abaxially pubescent along veins, glabrescent, adaxially glabrous, secondary veins 7 or 8 on both sides of midvein, sometimes 1- or 2-branched, base broadly cuneate, margin entire or apically sparsely serrulate, apex acuminate. Inflorescences corymbose, subglabrous in fruit, many flowered; branches spreading. Sterile flowers with expanded sepal 1, narrowly ovate, 3.2–4 × 1–1.9 cm. Fertile flowers unknown. Capsule obconical, 4–5 × 3–4 mm including style, apex truncate; persistent calyx teeth triangular, ca. 0.5 mm; persistent style and stigma ca. 1 mm. Seeds brown, slightly compressed, 2–2.5 mm including wings; apical wing broader than basal one, 0.5–1 mm. Fr. Nov.

• Moist forests in valleys, rock faces; ca. 600 m. NE Guangxi (Lingui Xian).

4. *Schizophragma molle* (Rehder) Chun, Acta Phytotax. Sin. 3: 167. 1954.

柔毛钻地风 *rou mao zuan di feng*

Schizophragma integrifolium Oliver var. *molle* Rehder in Sargent, Pl. Wilson. 1: 42. 1911; *S. molle* var. *grande* Chun; *S. molle* var. *rubidum* N. Chao & C. C. Yang.

Shrubs scandent. Branchlets red-brown to dark brown, glabrous or pubescent. Petiole 1.5–8 cm, pubescent, glabrescent; leaf blade gray-green, brown, or red-brown on both surfaces when dry, ovate to elliptic, 10–20 × 6–12 cm, papery to subleathery, abaxially densely brownish to gray-brown pubescent especially along veins, adaxially glabrous or slightly pubescent only along veins, secondary veins 7–9 on both sides of midvein, abaxially elevated, base shallowly cordate, truncate, or obtuse-rounded, margin slightly reflexed and entire or apically sparsely denticulate, apex acute to shortly acuminate. Inflorescences corymbose, slightly arcuate apically, 10–25 cm wide, densely ferruginous pubescent. Sterile flowers with expanded sepal 1, yellow-white, ovate to narrowly elliptic, 2.5–6 × 1–3.5 cm. Fertile flowers with calyx tube obconical, 1.5–2 mm; teeth triangular, less than 1 mm. Petals ovate, slightly concave, 2–2.5 mm, adaxially pilose. Stamens subequal; anthers broadly oblong to subglobose. Style ca. 0.5 mm. Capsule narrowly obconical, 5–6 mm, 10-striate, projected apical part conical, 1–1.5 mm. Seeds brown, ca. 4 mm including wings; wings ca. 1.5 mm, lighter than color of seed body. Fl. Jun–Jul, fr. Sep–Oct.

• Forests on roadsides, cliffs in valleys; 500–2100 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangsu, Jiangxi, Yunnan.

5. *Schizophragma corylifolium* Chun, Acta Phytotax. Sin. 3: 170. 1954.

秦榛钻地风 *qin zhen zuan di feng*

Shrubs scandent. Branchlets gray-brown, sparsely pubescent when young, glabrescent. Petiole 2–10 cm, pubescent when young, glabrescent; leaf blade abaxially gray-yellow and adaxially dark yellow-brown when dry, broadly ovate, broadly obovate, or suborbicular, 6.5–11 × 4–8 cm, papery, abaxially villous along veins, adaxially glabrous or sometimes pilose along midvein, secondary veins 6–8 on both sides of midvein, branched, obliquely ascending, base shallowly cordate to subrounded, margin distally roughly serrate from middle, apex cuspidate or shortly acuminate. Inflorescences corymbose, 8–17 cm wide, villous when young, glabrescent. Sterile flowers with expanded sepal 1, ovate, 2.5–3.1 × 1.4–2 cm. Fertile flowers with calyx tube obconical, ca. 2 mm; teeth triangular, ca. 0.5 mm. Petals oblong, 1.8–2 mm. Stamens subequal, ca. 3 mm at anthesis; anthers subglobose, ca. 0.5 mm. Style apically 5-fissured. Capsule (immature) obconical, 4–5 mm, glabrous, apex slightly projected and resembling a convex lens. Fl. May–Jun.

• Mixed forests in valleys along stream banks; 100–1200 m. Anhui, Zhejiang.

6. *Schizophragma hypoglaucom* Rehder in Sargent, Pl. Wilson. 1: 43. 1911.

白背钻地风 *bai bei zuan di feng*

Shrubs scandent. Branchlets brown-red, glabrous. Petiole 2–6 cm, glabrous; leaf blade abaxially glaucous,

slightly yellow when dry, adaxially dark green, narrowly ovate, 8–15 × 4–8 cm, papery, abaxially densely granulate glandular, glabrous or sometimes barbate at vein axils, adaxially glabrous, secondary veins 7 or 8 on both sides of midvein, often 1–4-branched, curved, base rounded to broadly cuneate, margin slightly reflexed and entire or apically sparsely denticulate, apex narrowly acuminate. Inflorescences corymbose; peduncle and branches subglabrous. Sterile flowers with expanded sepal 1, narrowly ovate to lanceolate, 2–6 × 1–3 cm, base cuneate, apex obtuse. Fertile flowers with calyx tube obconical, 1–1.5 mm; teeth triangular, ca. 0.5 mm. Petals oblong, ca. 2 × 1–1.4 mm. Stamens unequal, some slightly longer than petals, others ca. 2 × as long as petals; anthers subglobose, ca. 0.5 mm in diam. Style and stigma ca. 1 mm. Capsule narrowly obconical, 5–7 × 2.5–3 mm including style, projected apical part shortly conical, 0.5–1 mm. Seeds narrowly fusiform, slightly compressed, 2.5–3 × ca. 0.4 mm; apical wing ca. 1.5 mm. Fl. Jun–Jul, fr. Sep–Oct.

• Dense forests on mountain slopes, open rocky places; 1000–1200 m. Guangdong, Hunan, Sichuan.

7. *Schizophragma fauriei* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 22: 131. 1906.

圆叶钻地风 *yuan ye zuan di feng*

Schizophragma hydrangeoides Siebold & Zuccarini var. *fauriei* (Hayata) Hayata; *S. integrifolium* Oliver var. *fauriei* (Hayata) Hayata.

Shrubs scandent. Branchlets brown, densely appressed brown pubescent. Petiole 2.5–7 cm, pubescent; leaf blade abaxially gray-white, adaxially dark green, broadly ovate, 6.5–11 × 4.5–8 cm, papery, abaxially densely granulate glandular and brownish pubescent along veins, especially along midvein or at vein axils, adaxially glabrous or sparsely pubescent only along veins, secondary veins 7–9 on both sides of midvein, 1- or 2-branched, abaxially elevated, base rounded to subcordate, margin slightly reflexed and entire or sparsely denticulate, apex shortly acuminate. Inflorescences corymbose; peduncle, branches, and pedicels densely brown appressed pubescent. Sterile flowers with expanded sepal 1, yellow in fruit, oblong to lanceolate, 2–4 × 0.9–2.5 cm. Fertile flowers unknown. Capsule black-brown, obconical, 5–7 × 2.5–3 mm including style; persistent calyx teeth triangular, ca. 1 mm; persistent style very short, stigma ca. 0.5 mm. Seeds brown, slightly compressed, 2.5–3 × 0.5–0.7 mm; apical wing ca. 1 mm, broader than basal one. Fr. Sep–Oct.

• Dense forests on mountain slopes; 1500–2500 m. Fujian, Taiwan.

8. *Schizophragma elliptifolium* C. F. Wei, Guihaia 14: 202. 1994.

椭圆钻地风 *tuo yuan zuan di feng*

Shrubs scandent. Branchlets brown-red, terete, glabrous. Petiole 1.5–6.5 cm, glabrous; leaf blade abaxially gray-

green, adaxially dark green, elliptic, 7–12 × 3–7 cm, thickly papery, abaxially densely granulate glandular, glabrous except slightly barbate at vein axils, adaxially glabrous, secondary veins 8–10 on both sides of midvein, unbranched, curved, base cuneate to obtuse, margin entire, slightly reflexed, apex acute to shortly acuminate. Inflorescences corymbose, densely brown pubescent when young, glabrescent. Sterile flowers with expanded sepal 1, yellow-white, oblong to lanceolate, 2–4.5 × 0.9–1.9 cm, both ends obtuse to subacute. Fertile flowers with calyx sparsely pubescent; tube obconical, ca. 1 mm; teeth triangular, ca. 0.5 mm. Petals yellowish, oblong to ovate, 2–2.5 × 1–1.3 mm, apex subacute. Stamens subequal, 8–10 mm; anthers subglobose, ca. 0.5 mm in diam. Style ca. 1 mm; stigma small. Capsule obconical, 4.5–5.5 × ca. 2.5 mm including style, projected apical part shortly conical, ca. 0.5 mm. Seeds brown, slightly compressed, 2–2.8 mm including wings; wings 0.5–1 mm, basal one yellowish white, subulate, shorter than apical one. Fl. Jul, fr. Oct.

• Sparse forests or thickets on mountain slopes and ridges, rocks in valleys; 1400–2100 m. Guizhou, Sichuan, Yunnan.

The spelling of the specific epithet follows the protologue; in FRPS, it was given as “*Schizophragma ellipsophyllum*.”

9. *Schizophragma crassum* Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 59: 247. 1922.

厚叶钻地风 *hou ye zuan di feng*

Shrubs scandent. Stems to 3 cm in diam.; branchlets slightly purple, densely brown hispid when young, glabrescent. Petiole thick, 0.9–4 cm, brown tomentose; leaf blade abaxially glaucous, adaxially dark green, elliptic to narrowly ovate or broadly ovate to suborbicular, 6.5–16 cm, thickly papery, abaxially densely gray tomentose or yellow-brown pubescent, adaxially slightly long pilose only along veins, secondary veins 8–10 on both sides of midvein, abaxially prominent, base rounded to broadly cordate or broadly cuneate to obtuse, margin serrulate, apex acute to shortly acuminate. Thyrses 10–15 cm wide, many flowered; peduncle short; pedicels 1.5–2 mm, hirsute. Sterile flowers absent. Fertile flowers with calyx teeth triangular, ca. 0.5 mm, hirsute. Petals white, lanceolate, ca. 2 mm, apex acute. Stamens nearly equaling petals. Ovary turbinate, apex slightly projected and forming a short cone. Style thick. Capsule conical-turbinate, ca. 5 mm. Fl. Jun, fr. Oct.

• Forests; 2300–2900 m. NW Yunnan.

- 1a. Leaf blade broadly ovate to suborbicular, abaxially densely gray tomentose, basal 2 or 3 pairs of secondary veins spreading at almost 90° to midvein, base rounded to broadly cordate 9a. var. *crassum*
- 1b. Leaf blade elliptic to narrowly ovate, abaxially densely yellow-brown pubescent, secondary veins all obliquely ascending

from midvein, base broadly cuneate to
obtuse 9b. var. *hsitaoanum*

9a. *Schizophragma crassum* var. *crassum*

厚叶钻地风(原变种) *hou ye zuan di feng* (*yuan bian zhong*)

Leaf blade broadly ovate to suborbicular, abaxially densely gray tomentose, basal 2 or 3 pairs of secondary veins spreading at almost 90° to midvein, base rounded to broadly cordate. Fl. Jun.

- Forests; 2300–2500 m. NW Yunnan (Nu Jiang valley).

9b. *Schizophragma crassum* var. *hsitaoanum* (Chun) C. F. Wei, *Guihaia* 14: 203. 1994.

维西钻地风 *wei xi zuan di feng*

Schizophragma hsitaoanum Chun, *Acta Phytotax. Sin.* 3: 172. 1954.

Leaf blade elliptic to narrowly ovate, abaxially densely yellow-brown pubescent, secondary veins all obliquely ascending from midvein, base broadly cuneate to obtuse. Fr. Oct.

- Forests in valleys; 2600–2900 m. NW Yunnan (Weixi Xian).

