

95. FLEMINGIA Roxburgh ex W. T. Aiton, Hort. Kew., ed. 2, 4: 349. 1812,
nom. cons., not Roxburgh ex Rottler (1803).

千斤拔属 qian jin ba shu

Sa Ren (萨仁); Michael G. Gilbert

Luorea Necker ex J. Saint-Hilaire; *Maughania* J. Saint-Hilaire.

Shrubs or subshrubs, rarely herbs, erect or trailing. Leaves digitately 3-foliolate or simple; stipules persistent or caducous; stipels absent; leaflets usually with sessile glands abaxially. Inflorescence axillary or terminal, racemose or compound racemose, rarely paniculate or capitate. Bracts 2-columned; bracteoles absent. Calyx 5-lobed; lobes narrow and long, lower one longest; tube short. Corolla longer than calyx or included; standard oblong or elliptic, base clawed, with auricles; wings very narrow, auriculate. Stamens diadelphous; vexillary stamen free; anthers uniform. Ovary subsessile; ovules 2; style filiform, glabrous or slightly hairy; stigma small, capitate. Legume elliptic, dehiscent, inflated, not septate. Seeds 1 or 2, almost orbicular, without strophiole.

About 30 species: tropical Asia, Africa, Oceania; 15 species (two endemic) in China.

The generic synonym *Maughania* is very often written incorrectly as “*Moghania*.”

- 1a. Leaves simple.
- 2a. Inflorescence a raceme or panicle; bracts small, ovate to ovate-lanceolate 4. *F. paniculata*
- 2b. Inflorescence a thyrses of cymelets, each initially enclosed by large overlapping incurved bracts.
- 3a. Leaflets orbicular-cordate; standard with lobe as long as broad, contracted above auricles, and obovate or obcordate 1. *F. chappar*
- 3b. Leaflets ovate, narrowly ovate, elliptic, or oblong; standard with lobes not contracted above auricles, transversely elliptic or broadly orbicular; wings much narrower than keel.
- 4a. Leaves 3–7 cm wide, base rounded or slightly cordate, petiole usually 5–15 mm 3. *F. strobilifera*
- 4b. Leaves 1.5–2.5 cm wide, base cuneate, subsessile or petiole usually 1–5 mm 2. *F. fluminalis*
- 1b. Leaves digitately 3-foliolate.
- 5a. Prostrate herbs; stipules persistent; inflorescence compact.
- 6a. Leaflets 4–7 cm, elliptic or ovate-lanceolate; stipules linear-lanceolate; inflorescence 2–2.5 cm 13. *F. prostrata*
- 6b. Leaflets 1–5 cm, oblong or almost obovate; stipules ovate; inflorescence 2–10 cm 14. *F. procumbens*
- 5b. Erect shrubs; stipules usually deciduous (persistent in *F. stricta*).
- 7a. Inflorescence a long-pedunculate capitulum; bracts 1.5–2 cm, persistent 15. *F. involucrata*
- 7b. Inflorescence peduncle extremely short, racemes or panicles; bracts 0.4–1.2 cm, persistent or deciduous.
- 8a. Peduncle conspicuous, axis slender 5. *F. lineata*
- 8b. Peduncle inconspicuous, axis robust.
- 9a. Leaflets usually more than 20 cm; stipules persistent; standard strongly contracted, narrowed above auricles 6. *F. stricta*
- 9b. Leaflets less than 20 cm; stipules deciduous; standard not contracted.
- 10a. Leaflets usually 8–19 cm, lateral veins not grooved adaxially.
- 11a. Whole plant densely rusty tomentose; bracts elliptic to elliptic-lanceolate, apex obtuse 7. *F. latifolia*
- 11b. Whole plant densely gray or grayish brown pubescent or silky villous; bracts ovate to triangular.
- 12a. Petiole with narrow wings; leaflets usually glabrous except for veins; inflorescence lax 8. *F. macrophylla*
- 12b. Petiole without wings; leaflets densely pubescent, especially in lower part; inflorescence congested 9. *F. mengpengensis*
- 10b. Leaflets usually 2–10 cm, lateral veins ± grooved adaxially.
- 13a. Branchlets without obvious lenticels; leaflets abaxially glabrous or almost glabrous except for veins 12. *F. kweichowensis*
- 13b. Branchlets with obvious lenticels; leaflets abaxially densely tomentose.
- 14a. Branchlets and abaxial surface of leaflets gray to grayish brown tomentose 10. *F. wallichii*
- 14b. Branchlets and both sides of leaflets brown tomentose 11. *F. grahamiana*

1. Flemingia chappar Buchanan-Hamilton ex Benth in 墨江千斤拔 mo jiang qian jin ba
Miquel, Pl. Jungh. 244. 1852.

Maughania chappar (Buchanan-Hamilton ex Benth) Kuntze.

Shrubs, erect, ca. 1 m tall. Branchlets slender, densely brown villous. Leaves simple; stipules narrowly ovate, ca. 2 mm, deciduous; petiole ca. 1.5 cm, densely deciduous brown villous; leaf blade orbicular-cordate, 4–4.5 cm, papery or thinly leathery, glabrous or sparsely pubescent except veins, abaxial surface with dense, orange, sessile glands, basal veins 3, lateral veins 3 pairs, base slightly cordate, apex rounded or obtuse. Inflorescence an axillary or terminal thyrse; inflorescence axis 3–7 cm, densely brown hairy; cymules each enclosed by concave bract; bracts 1.5–2 × 1.8–3.8 cm, membranous, glabrous, with obvious reticulate veins, persistent, apex emarginate. Flowers 6–9 mm; pedicel 0.4–1.6 cm, densely hairy. Calyx 5-lobed, 4–5 mm, densely pubescent, with orange glands; lobes lanceolate, subequal to tube. Standard with lobe as long as broad, contracted above auricles, and obovate or obcordate; wings oblong; keel slightly curved. Legume elliptic, 10–15 × 6–10 mm, densely brown villous. Fl. Dec–Mar, fr. Mar–May.

Forests. Yunnan [Cambodia, India, Laos, Myanmar, Nepal, Thailand].

2. *Flemingia fluminalis* C. B. Clarke ex Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 438. 1897.

河边千斤拔 he bian qian jin ba

Flemingia strobilifera (Linnaeus) W. T. Aiton var. *fluminalis* (C. B. Clarke ex Prain) Thuan; *Maughania fluminalis* (C. B. Clarke ex Prain) H. L. Li.

Shrublets, erect, ca. 0.5 m tall. Branchlets densely pubescent and tomentose. Leaves simple; stipules lanceolate, 1–2 cm, apex with long mucro, persistent or deciduous; petiole usually 1–5 mm, hairy; leaf blade narrowly oblong to lanceolate, 5–9 × 1.5–2.5 cm, pubescent on both surfaces, lateral veins 5–8 pairs, base cuneate, apex rounded-obtuse or acute. Inflorescence a terminal or axillary thyrse, sometimes branched; inflorescence axis 5–10 cm, slightly curved, densely pubescent; cymules small, each enclosed by concave bract; bracts 1–1.5 × 1.8–2.2 cm, papery, both surfaces pubescent, base slightly cordate, apex obviously emarginate. Calyx 2–3 mm, pubescent, with scattered small dark brown sessile glands; lobes ovate, equal to or shorter than tube. Corolla yellow, ca. 6 mm; standard transversely elliptic, auriculate, base shortly mucronate; wings obovate, subequal to standard, one with auricle, long mucronate; keel elliptic, slightly curved, shorter and wider than wings, ca. 4 mm, apex shortly mucronate. Legume oblong-elliptic, ca. 7 × 5 mm, densely pubescent. Fl. Jan–May, fr. Feb–Sep.

Plains, mountain slopes. Guangxi, Sichuan, Yunnan [Bangladesh, India, Laos, Myanmar, Vietnam].

Flemingia fluminalis is used medicinally. It is included within the following species, *F. strobilifera*, by some authors.

3. *Flemingia strobilifera* (Linnaeus) R. Brown in W. T. Aiton, Hort. Kew., ed. 2, 4: 349. 1812.

球穗千斤拔 qiu sui qian jin ba

Hedysarum strobiliferum Linnaeus, Sp. Pl. 2: 1053. 1753;

Flemingia bracteata (Roxburgh) Wight; *F. fruticulosa* Wallich ex Benth; *F. strobilifera* var. *bracteata* (Roxburgh) Baker; *F. strobilifera* var. *fruticulosa* (Wallich ex Benth) Baker; *H. bracteatum* Roxburgh; *Maughania bracteata* (Roxburgh) H. L. Li; *M. fruticulosa* (Wallich ex Benth) Mukerjee; *M. strobilifera* (Linnaeus) J. Saint-Hilaire ex Kuntze; *Zornia strobilifera* (Linnaeus) Persoon.

Shrubs, erect or almost climbing, 0.3–3 m tall. Branchlets ribbed, densely gray to dull brown villous. Leaves simple; stipules linear-lanceolate, 0.8–1.8 cm, persistent or deciduous; petiole usually 0.5–1.5 cm, densely hairy; leaf blade ovate, narrowly ovate, ovate-elliptic, broadly elliptic, or oblong, 6–15 × 3–7 cm, thinly leathery, glabrous or almost glabrous except for veins, lateral veins 5–9 pairs, base rounded, slightly cordate, apex acuminate, obtuse, or acute. Inflorescence a thyrse, sometimes branched; inflorescence axis 5–11 cm, densely dull villous; cymules each enclosed by concave bract; bracts 1.2–3 × 2–4.4 cm, papery to almost leathery, both surfaces long hirsute, margin ciliate, apex truncate or rounded, slightly emarginate and with slender mucro. Flowers small; pedicel 1.5–3 mm. Calyx pubescent; lobes ovate, slightly longer than tube. Corolla longer than calyx; standard broadly orbicular; wings narrower than keels. Legume elliptic, 6–10 × 4–5 mm, sparsely pubescent, inflated. Seeds 2, usually dark brown, suborbicular. Fl. Feb–Aug, fr. Apr–Nov. $2n = 22$.

Mountain slopes; 200–1600 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam].

Flemingia strobilifera is used medicinally.

4. *Flemingia paniculata* Wallich ex Benth in Miquel, Pl. Jungh. 245. 1852.

锥序千斤拔 zhui xu qian jin ba

Maughania paniculata (Wallich ex Benth) Kuntze; *M. phursia* Kuntze.

Shrubs, erect. Branchlets slightly zigzag, pubescent and villous. Leaves simple; stipules lanceolate, hairy, deciduous; petiole 1.5–2.3 cm, sparsely villous; leaf blade ovate-cordate or broadly elliptic-cordate, 7–12 × 5–7.5 cm, papery, adaxially glabrous, abaxially glabrous except on veins, with scattered black glands, basal veins 5, lateral veins 5 or 6 pairs, margin slightly sinuate, apex mucronate. Inflorescences axillary or terminal, racemose, sometimes branched, slender, 2.5–4 cm, pubescent and villous, sparsely flowered; bracts ovate to ovate-lanceolate; peduncle short or absent. Flowers 0.6–1 cm. Calyx ca. 5 mm, densely pubescent, with yellowish glands; lobes lanceolate, longer than tube, apex long acuminate, lower one longest. Corolla purple, longer than calyx; standard circular, clawed, auriculate; wings oblong, clawed, one with toothlike auricle; keel falcate, wider than wings, clawed. Legume elliptic, ca. 10 × 6 mm, pubescent, with yellowish glands. Seeds 2, suborbicular. Fl. Jan–Apr, fr. Feb–May. $2n = ?18$.

On limestone; 1000–1400 m. Yunnan [Bangladesh, Cambodia, India, Laos, Myanmar, Nepal, Thailand, Vietnam].

5. *Flemingia lineata* (Linnaeus) Roxburgh ex W. T. Aiton, Hort. Kew., ed. 2, 4: 350. 1812.

细叶千斤拔 xi ye qian jin ba

Hedysarum lineatum Linnaeus, Sp. Pl. 2: 1054. 1753; *Flemingia glutinosa* (Prain) Y. T. Wei & S. K. Lee; *F. lineata* var. *glutinosa* Prain; *F. lineata* var. *papuana* White; *F. macrophylla* (Willdenow) Merrill var. *nana* Sasaki; *Maughania lineata* (Linnaeus) Kuntze.

Shrublets, erect, many branched. Branchlets cylindrical, adpressed pubescent when young, becoming glabrous or subglabrous. Leaves digitately 3-foliolate; stipules lanceolate, 0.6–1 cm, apex long mucronate, usually persistent; petiole 0.7–3 cm, wingless, pubescent; leaflets thinly leathery; terminal leaflet obovate to obovate-oblong, 2–5.5 × 0.8–2 cm, both surfaces densely adpressed villous when young, gradually glabrescent, with sparse sessile glands, basal veins 3, lateral veins 3 or 4 pairs, base cuneate, apex obtuse with mucro; lateral leaflets smaller, obliquely elliptic, sessile or subsessile. Panicles axillary or terminal; inflorescence axis 2.5–6.5 cm, slender, villous or clothed with glandular hairs; bracts linear, small, persistent. Flowers 5–7 mm. Calyx pubescent; lobes lanceolate, longer than tube. Corolla longer than calyx; standard almost orbicular, clawed, auriculate; wings oblong, clawed, one with auricle; keel almost semiorbicular, clawed, with inconspicuous auricle on one side, apex mucronate. Legume 8–12 × 5–8 mm, villous. Seeds 2, black, suborbicular, ca. 2 mm in diam. Fl. Dec–Feb, fr. Feb–May.

Mountain slopes, plains, roadsides. Guangxi, Taiwan, Yunnan [Cambodia, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam; Australia].

6. *Flemingia stricta* Roxburgh ex W. T. Aiton, Hort. Kew., ed. 2, 4: 349. 1812.

长叶千斤拔 chang ye qian jin ba

Flemingia stricta var. *pteropus* Baker; *Maughania stricta* (Roxburgh ex W. T. Aiton) Kuntze; *M. stricta* var. *pteropus* (Baker) Mukerjee.

Shrubs, tall. Stems robust; young branchlets trigonous prismatic, with sparse short adpressed hairs. Leaves digitately 3-foliolate; stipules lanceolate, to 7.5 cm, apex acuminate, usually persistent; petiole 8–16 cm, wings absent or extremely narrow, pubescent; petiolules 3–8 mm, densely pubescent; leaflets oblong or lanceolate to obliquely ovate-lanceolate, 21–32.5 × 6.5–10.5 cm, thinly leathery, glabrous except veins, with scattered black glands, lateral veins 15–19 pairs, base broadly cuneate to obliquely rounded, apex acuminate. Raceme terminal or axillary, columnar-cylindrical, 10–16 cm, densely pubescent; bracts ovate-lanceolate, 9–13 mm, sparsely hairy, deciduous; peduncle 1–3 mm. Flowers 1–1.5 cm, clustered. Calyx 5-lobed; lobes lanceolate, equal or subequal to tube, lower one much longer. Corolla purple, standard with darker striae, petals subequal; standard wider, oblong to almost orbicular, strongly contracted and narrowed above auricles, clawed, auriculate, glabrous, apex slightly emarginate; wings obliquely ovate, long clawed, auricle acute; keel almost semiorbicular, long clawed, apex obtuse. Ovary ovoid, pubescent, sessile; style linear, glabrous. Legume elliptic, 10–15 × 5–7 mm, pubescent, apex slightly oblique, mucronate. Seeds 2, brown or black, oblong or

orbicular, ca. 2 × 3 mm. Fl. Jan–Mar, fr. Feb–Mar. $2n = 22$.

Mountain slopes, roadsides; ca. 600 m. Yunnan [Cambodia, India, Indonesia, Laos, Philippines, Thailand, Vietnam].

7. *Flemingia latifolia* Benth in Miquel, Pl. Jungh. 246. 1852.

宽叶千斤拔 kuan ye qian jin ba

Shrubs, erect. Young branchlets trigonous-prismatic. Leaves digitately 3-foliolate; stipules lanceolate, 1–3 cm, apex acuminate, deciduous; petiole 3–10 cm, robust, narrowly winged or not, pubescent; petiolules 3–6 mm, densely reddish pubescent; leaflets papery to thickly papery, with dense dark brown glands; terminal leaflet elliptic or elliptic-lanceolate, rarely obovate, 8–14 × 4–6(–8.5) cm, pubescent, basal veins 3, base broadly cuneate or rounded, apex acuminate or acute; lateral leaflets oblique, broadly lanceolate, base rounded at one side, other narrowly cuneate. Raceme terminal or 1–3 per axil, 3–11 cm, densely rusty villous; bracts elliptic or elliptic-lanceolate, 0.7–1 cm, exterior densely rusty villous, apex usually obtuse; peduncle ca. 2 mm. Flowers 1–1.2 cm, clustered. Calyx ca. 10 mm; lobes 4–7 mm, lower one longest. Corolla purple or pink, longer than calyx; standard obovate or obovate-elliptic, auricles obtuse; wings oblong to obovate-oblong, slightly curved, with long slender claw, auricle decurrent; keel semi-orbicular, wider than wings, clawed, with acute auricle. Ovary elliptic, with very pale brown hairs; style slender. Legume elliptic, 12–15 × 7–8 mm, rusty villous, inflated, apex with acute beak. Seeds 2, black, suborbicular, ca. 2 mm in diam. Fl. and fr. almost year-round.

Fields, mountain slopes, forests; 500–2100(–2700) m. Guangxi, Hainan, ?Sichuan, Yunnan [Cambodia, India, Laos, Myanmar, Vietnam].

1a. Petiole narrowly winged 7a. var. *latifolia*

1b. Petiole wingless 7b. var. *hainanensis*

7a. *Flemingia latifolia* var. *latifolia*

宽叶千斤拔(原变种) kuan ye qian jin ba (yuan bian zhong)

Flemingia congesta Roxburgh ex W. T. Aiton var. *latifolia* (Benth) Baker; *Maughania latifolia* (Benth) Mukerjee.

Young branchlets densely rusty adpressed tomentose. Stipules 1–2 cm; petiole narrowly winged.

Fields, mountain slopes, forests; 500–2100(–2700) m. Guangxi, ?Sichuan, Yunnan [India, Laos, Myanmar].

7b. *Flemingia latifolia* var. *hainanensis* Y. T. Wei & S. K. Lee, Guihaia 5: 169. 1985.

海南千斤拔 hai nan qian jin ba

Whole plant densely dull brown long spreading villous. Stipules 1.5–3 cm; petiole wingless.

?Guangxi, Hainan, Yunnan [India, Myanmar, Vietnam].

This taxon was misidentified as *Maughania* (“*Moghania*”), *feruginea* (Wallich ex Benth) H. L. Li in Fl. Hainan. (2: 311. 1965).

8. *Flemingia macrophylla* (Willdenow) Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 440. 1897.

大叶千斤拔 da ye qian jin ba

Crotalaria macrophylla Willdenow, Sp. Pl. 3: 982. 1802; *Flemingia congesta* Roxburgh ex W. T. Aiton; *F. ferruginea* Wallich ex Benth; *Maughania ferruginea* (Wallich ex Benth) H. L. Li; *M. macrophylla* (Willdenow) Kuntze.

Shrubs, erect, 0.8–2.5 m tall. Young branches densely adpressed silky villous. Leaves digitately 3-foliolate; stipules lanceolate, up to 2 cm, villous, with glandular striations, apex long acuminate, usually deciduous; petiole 3–6 cm, narrowly winged; petiolules 2–5 mm, densely hairy; leaflets papery to thinly papery; terminal leaflet broadly lanceolate to elliptic, 8–15 × 4–7 cm, glabrous except for veins, abaxial surface with small dark brown sessile glands, basal veins 3, base broadly cuneate, apex acuminate; lateral leaflets smaller, oblique, base rounded at one side, cuneate on other. Racemes usually clustered at axil, 3–8 cm, with many clustered flowers; peduncle usually extremely short. Calyx campanulate, 6–8 mm, shortly very pale brown villous; lobes linear-lanceolate, ca. 2 × as long as tube, lower one longest. Corolla purple, slightly longer than calyx; standard oblong, shortly clawed, auriculate; wings narrowly elliptic, slenderly clawed, one with auricle; keel oblong, long clawed, apex slightly curved. Ovary elliptic, with very pale brown hairs. Legume elliptic, 10–16 × 7–9 mm, sparsely pubescent, apex with small acute beak. Seeds 1 or 2, glossy black, orbicular. Fl. Jun–Sep, fr. Oct–Dec. $2n = 22$.

Disturbed meadows, roadsides, forest margins; 200–1800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Sichuan, Taiwan, Yunnan [Bangladesh, Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam].

The glands on the fruit are separated after drying and are used as a purple or orange dye.

9. *Flemingia mengpengensis* Y. T. Wei & S. K. Lee, Guihaia 5: 167. 1985.

勐板千斤拔 meng ban qian jin ba

Shrubs, erect, ca. 1 m tall. Branchlets robust, densely adpressed villous. Leaves digitately 3-foliolate; stipules lanceolate, up to 2 cm, densely adpressed villous, apex long acuminate, deciduous; petiole 6–13 cm, wingless, adpressed villous; petiolules 5–7 mm, densely hirsute; leaflets papery; terminal leaflet broadly elliptic to lanceolate, 12–19 × 5–10 cm, both surfaces densely adpressed villous, abaxial surface with sparse black sessile glands, basal veins 3, lateral veins 7–13 pairs, base rounded to broadly cuneate, apex acuminate, with slender mucro; lateral leaflets smaller, obliquely lanceolate to obliquely elliptic. Raceme axillary, in clusters of 3–6, ca. 3 cm; peduncle absent. Flowers 1.7–2.1 cm, densely clustered; bracteoles ovate to ovate-elliptic, 4–5 mm; pedicel 2–4 mm. Calyx 15–17 mm, densely hirsute; tube ca. 3 mm; lobes linear-lanceolate, lower one longest. Corolla subequal to calyx; standard suborbicular, ca. 11 mm, clawed, auriculate; wings similar to standard, ca. 9 mm, clawed, one with auricle; keel subobovate, long clawed, apex obtuse. Ovary elliptic, sparsely pubescent; style linear, glabrous. Legume obliquely elliptic, 10–12 × ca. 7 mm, apex shortly beaked, curved. Seeds 1 or 2, black, orbicular. Fl. Jan.

• Mixed forests; 500–600 m. Yunnan.

10. *Flemingia wallichii* Wight & Arnott, Prodr. Fl. Ind. Orient. 242. 1834.

云南千斤拔 yun nan qian jin ba

Flemingia yunnanensis Franchet; *Maughania wallichii* (Wight & Arnott) Kuntze; *M. yunnanensis* (Franchet) H. L. Li.

Shrubs, erect, ca. 1 m tall. Branchlets obviously lenticellate, densely tomentose. Leaves digitately 3-foliolate; stipules deciduous; petiole 3–7 cm, wingless or narrowly winged, pubescent or tomentose; petiolules 2–4 mm, densely gray villous; leaflets almost leathery; terminal leaflet obovate or elliptic, 7–14 × 3–4 cm, basal veins 3, lateral veins 4–8 pairs, base cuneate, apex shortly acuminate or obtuse; lateral leaflets subequal to terminal leaflet, oblique lanceolate to obliquely elliptic. Raceme solitary or sometimes branched from base; inflorescence axis densely tomentose; bracts elliptic, 4–5 × 1–2 mm, pubescent, persistent or deciduous. Flowers 7–8 mm, clustered; pedicel 1–2 mm. Calyx 5–6 mm, densely clothed with silky hairs; lobes lanceolate, usually slightly longer than tube. Corolla white or yellowish, longer than calyx; standard suborbicular, ca. 6 mm, extremely short clawed, with slender auricle and callosity; wings oblong, ca. 4 mm, one with short acute auricle; keel slightly curved, wider than wings. Legume obliquely elliptic, ca. 10 × 6 mm, with dense very pale brown hairs and dark brown sessile glands, apex shortly beaked. Seeds usually 2, black, orbicular. Fl. and fr. Jan–Apr.

Mountain slopes, roadsides, forests; 1600–1900 m. Yunnan [India, Laos, Myanmar, Vietnam].

11. *Flemingia grahamiana* Wight & Arnott, Prodr. Fl. Ind. Orient. 242. 1834.

绒毛千斤拔 rong mao qian jin ba

Flemingia pycnantha Benth; *F. rhodocarpa* Baker; *F. sericans* Kurz; *Maughania grahamiana* (Wight & Arnott) Kuntze; *M. rhodocarpa* (Baker) Hauman.

Shrubs, erect, usually many branched. Branchlets obviously lenticellate, densely tomentose. Leaves digitately 3-foliolate; stipules lanceolate or elliptic-lanceolate, ca. 1 cm, deciduous; petiole 1.5–6 cm; petiolules 1–3 mm; leaflets papery; terminal leaflet elliptic, elliptic-lanceolate, or rarely obovate, 2–6 × 1.5–2.5 cm, densely hairy, lateral veins flat or sometimes slightly concave, base cuneate, apex acuminate, acute, or sometimes obtuse with slender mucro; lateral leaflets smaller, obliquely lanceolate to obliquely elliptic, base obliquely rounded, apex obtuse or acuminate. Raceme axillary or terminal, simple or branched, 1–3.5 cm; inflorescence axis densely gray villous. Flowers 0.6–1 cm, clustered; pedicel 1–2 mm. Standard oblong, ca. 8 mm, base with claw and auricles; wings narrow, long and curved, slightly shorter than standard, slenderly clawed, auriculate; keel falcate, clawed, apex obtuse. Ovary elliptic, subsessile; style long, linear. Legume elliptic, ca. 10 × 6 mm, sparsely pubescent and with dense dark red glands, apex oblique, with small acute mucro, usually with persistent corolla. Seeds 1 or 2, black, suborbicular, ca. 2 mm in diam. Fl. Feb–Apr, fr. Feb–Oct.

Forests, mountain slopes; 900–1600 m. Yunnan [India, Laos,

Myanmar, Vietnam; Africa, SW Asia (Yemen)].

The glands on the fruit are separated after drying and used as a purple or orange dye.

12. *Flemingia kweichowensis* Tang & F. T. Wang ex Y. T. Wei & S. K. Lee, *Guihaia* 5: 165. 1985.

贵州千斤拔 *gui zhou qian jin ba*

Shrubs, erect. Branchlets obviously ribbed, densely clothed with adpressed hairs. Leaves digitately 3-foliolate; stipules ovate-lanceolate, ca. 2 cm, adpressed hairy, apex long acuminate, deciduous; petiole 2.5–4.5 cm, narrowly winged, adpressed hairy; petiolules 1–2 mm, densely hairy; leaflets papery, subequal; terminal leaflet oblong to oblong-lanceolate, 6.5–10 × 1.8–3.5 cm, abaxial surface with black sessile glands, glabrous or almost glabrous except for veins, basal veins 2, lateral veins 7–9 pairs, base unequal at 2 sides, apex acuminate. Raceme axillary, 3–5.5 cm; bracts lanceolate, 6–8 mm, deciduous; peduncle ca. 1.5 mm. Flowers clustered. Calyx 5-lobed, densely adpressed hairy; lobes linear-lanceolate, much longer than tube, densely covered with black glands, lower one longest, ca. 1 cm. Corolla yellowish green, petals subequal; standard oblong, ca. 8 mm, base acuminate, auricles toothlike; wings narrowly elliptic, long clawed, one with acute auricle; keel elliptic, slightly curved, wider than wings, long clawed, apex obtuse. Legume elliptic, purple, ca. 8 × 6 mm, pubescent, inflated, with dense black glands. Seeds 1 or 2, black, suborbicular, ca. 1.5 mm in diam. Fl. and fr. Sep–Oct.

- Roadsides, disturbed slopes. Guizhou, Yunnan.

13. *Flemingia prostrata* Roxburgh, *Fl. Ind.*, ed. 1832, 3: 338. 1832.

千斤拔 *qian jin ba*

Flemingia philippinensis Merrill & Rolfe; *Maughania philippinensis* (Merrill & Rolfe) H. L. Li; *M. prostrata* (Roxburgh) Mukerjee.

Subshrubs, erect. Young branchlets trigonous-prismatic, densely pubescent. Leaves digitately 3-foliolate; stipules linear-lanceolate, 0.6–1 cm, hairy, deciduous; petiole 1.5–2.5 cm, densely pubescent; petiolules extremely short, densely pubescent; terminal leaflet oblong or ovate-lanceolate, 4–7 × 1.5–3 cm, thickly papery, sparsely pubescent, basal veins 3, base rounded, apex obtuse, sometimes with small mucro; lateral leaflets slightly smaller, oblique. Raceme axillary, usually 2–2.5 cm, densely pale villous; bracts narrowly ovate-lanceolate; peduncle short. Flowers clustered. Calyx lobes lanceolate, much longer than tube. Corolla purple, subequal to calyx; standard oblong, shortly clawed, inconspicuously auriculate; wings falcate, clawed, both auriculate; keel elliptic, slightly curved, clawed, with acute auricle on one side. Ovary hairy. Legume elliptic, 6–8 × 5–6 mm, pubescent, compressed. Seeds 2, black, suborbicular. Fl. Mar–Jun, fr. May–Oct.

Open fields, grasslands; below 100–300 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [Bangladesh, India, Japan (Ryukyu Islands), Myanmar].

Flemingia prostrata is used medicinally.

14. *Flemingia procumbens* Roxburgh, *Fl. Ind.*, ed. 1832, 3: 338. 1832.

矮千斤拔 *ai qian jin ba*

Flemingia vestita Baker; *Maughania procumbens* (Roxburgh) Mukerjee; *M. vestita* (Baker) Kuntze.

Herbs, perennial; roots tuberous. Stems prostrate, to 60 cm, densely pubescent. Leaves digitately 3-foliolate; stipules ovate, 4–8 mm, persistent; petiole 1–2 cm, wingless, pubescent;

petiolules short, densely hairy; leaflets papery; terminal leaflet oblong or nearly obovate, $1-5 \times 0.5-2.5$ cm, both surfaces sparsely pubescent or almost glabrous, abaxial surface with dense dark red glands, basal veins 3, lateral veins 3-5 pairs, apex and base rounded or almost so; lateral leaflets obliquely elliptic, slightly smaller. Raceme axillary or terminal, 2-10 cm, densely pubescent; bracts lanceolate, ca. 5 mm, striate. Flowers ca. 6 mm, clustered; pedicel ca. 1 mm. Calyx 5-lobed; lobes linear-lanceolate, lower one longest, longer than tube. Corolla slightly longer than calyx; standard elliptic, base with claw and auricles at 2 sides; wings narrowly oblong, base with claw and auricle at one side; keels falcate, clawed. Ovary elliptic, sparsely hairy; style linear, glabrous. Legume elliptic, ca. 5×4 mm, sparsely shortly villous and black glandular. Fl. Aug-Sep.

Mountain slopes. Sichuan, Yunnan [India, Laos, Nepal, Philippines, Vietnam].

Flemingia procumbens is cultivated as a minor root tuber crop in India.

15. *Flemingia involucrata* Benth in Miquel, Pl. Jungh. 246. 1852.

总苞千斤拔 zong bao qian jin ba

Flemingia capitata Zollinger; *Maughania involucrata* (Benth) Kuntze.

Shrubs, erect, 0.6-1.2 m tall. Branchlets slightly robust, almost cylindrical, sometimes zigzag, usually densely densely villous. Leaves digitately 3-foliolate; stipules 0.5-1.5 cm, dry membranous, brown, deciduous; petiole 5-15 mm, wingless, densely densely villous; petiolules 1-2 mm, hairy; leaflets oblong to lanceolate, $4-8.5 \times 1-3.5$ cm, papery or almost leathery, glabrous or sometimes sparsely villous, abaxial surface with black glands, lateral veins 8-12 pairs, almost parallel, obviously convex abaxially, base cuneate or slightly oblique, apex shortly acuminate to acute. Inflorescence axillary or terminal, congested into head, 2-3 cm in diam., enclosed by involucre of bracts; bracts many, lanceolate or ovate-lanceolate, $1.5-2 \times$ ca. 0.5 cm, leathery, whitish villous, apex acuminate. Pedicel extremely short. Calyx 12-15 mm, densely whitish villous; tube extremely short; lobes linear-lanceolate, apex long acuminate. Corolla purple to pale blue, included; standard obovate-elliptic, villous, shortly clawed, with auricles at 2 sides; wings small, obovate-oblong, clawed; keel slightly curved, long clawed. Ovary elliptic, hairy; style glabrous. Legume yellowish green, elliptic. Seed usually 1. Fl. Dec-May.

Slopes, disturbed grasslands; 500-1000 m. Yunnan [Bangladesh, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; Australia].

