Fl. China 19: 325–329. 2011.

86. SPERMACOCE Linnaeus, Sp. Pl. 1: 102. 1753.

丰花草属 feng hua cao shu

Chen Tao (陈涛); Charlotte M. Taylor

Bigelovia Sprengel (1824), not Smith (1819), nor Sprengel (1820), nor *Bigelowia* Rafinesque (1817), nor Candolle (1836, nom. cons.); *Borreria* G. Meyer (1818, nom. cons.), not *Borrera* Acharius (1810) [Fungi].

Herbs, annual or perennial, subshrubs, or low shrubs [rarely dioecious], unarmed. Raphides present. Leaves opposite, sometimes borne on very short axillary stems and these plus long-stem leaves appearing whorled or fascicled, without domatia; stipules persistent, fused to petiole bases or leaves, sheath truncate to broadly rounded or broadly triangular, usually thinly textured, with (1 or)2–11 bristles to multi-fimbriate, bristles occasionally glandular at apex. Inflorescences terminal and/or axillary, capitate or glomerulate, several to many flowered, sessile, bracteate, often partially enclosed in an expanded stipule sheath; bracts usually filiform-laciniate or stipuliform. Flowers sessile or subsessile, bisexual, monomorphic [or rarely distylous or unisexual]. Calyx limb deeply to completely 2- or 4[–8]-lobed, lobes sometimes unequal in pairs. Corolla white sometimes flushed with blue or pink [to sometimes pink, red, blue, or violet], salverform to funnelform, inside variously glabrous throughout, pubescent in throat or throughout, or usually with a ring of pubescence at stamen insertion; lobes 4, valvate in bud [and infrequently with abaxial horns or appendages]. Stamens 4, inserted in corolla throat to near base of tube, included or exserted; filaments short or developed; anthers dorsifixed. Ovary 2-celled, ovules 1 in each cell, axile near middle of septum; stigma capitate or 2-lobed with lobes short to linear, included or exserted. Fruit capsular, ellipsoid to subglobose, septicidally then loculicidally dehiscent with valves remaining joined at base [or sometimes separating completely or remaining connected at apex or partially schizocarpous with 1 valve loculicidal and 1 valve indehiscent], papery to thickly textured, with calyx limb persistent; seeds medium-sized, ellipsoid to subglobose, with ventral (i.e., adaxial) groove, with testa thin, smooth to variously ornamented including minutely pitted to rugose, ruminate, and/or reticulate; endosperm corneous or fleshy; cotyledons leaflike; hypocotyl terete, basiscopic.

About 250–300 species: widespread in tropical to warm temperate regions worldwide with several species widely naturalized; seven species (four introduced) in China.

These species were treated in the genus *Borreria* by W. C. Ko (in FRPS 71(2): 205–210. 1999); *B. shandongensis* as treated by Ko is here considered a synonym of *Diodia teres*. *Borreria* has traditionally been separated from *Spermacoce* based on fruit dehiscence, with both of the fruit valves dehiscent in *Borreria* vs. one dehiscent and one indehiscent in *Spermacoce* (vs. both indehiscent in *Diodia*), but based on pantropical surveys of this group and molecular data the majority of authors today include *Borreria* in *Spermacoce* (Verdcourt, Fl. Trop. E. Africa, Rub. (Pt. 1), 339–374. 1976; Deb & Dutta, J. Econ. Taxon. Bot. 5(5): 1037–1063. 1984; Chaw & Peng, J. Taiwan Mus. 40(1): 71–83. 1987; Dessein, Syst. Stud. Spermacoceae (Ph.D. Diss.), University of Leuven, Belgium, 1–403. 2003). The treatment here follows recent neotropical studies as to the separation of and names used for the adventive neotropical species (Burger & Taylor, Fieldiana, Bot., n.s., 33: 1–333. 1993; C. D. Adams, Flora Mesoamericana, in prep.). In particular, seed coat sculpture or texture is informative at the species level, though it must be observed at high magnification (Dessein, loc. cit.); Chaw and Sivarajan (Bot. Bull. Acad. Sin., n.s., 30: 15–24. 1989) illustrated seed coats of many Chinese species. Pollen is also informative in this group (e.g., Dessein et al., Australian J. Bot. 18: 367–382. 2005) but is incompletely studied.

1a. Corolla relatively small, with tube plus lobes 0.5–1 mm, with corolla tube shorter than, ± equal to, or slightly longer than calyx lobes; calyx lobes 2 or 4; mature fruit 0.6–1.1 × 0.3–1 mm.
  2a. Stem angles narrowly winged; leaf blade ovate or elliptic-oblong, 4–15 mm wide; seed coat apparently covered by numerous fine horizontal striations or ridges ..... 3. *S. exilis*
  2b. Stems smooth to angled, angles without wings; leaf blade narrowly elliptic-oblong to elliptic, 1–10 mm wide; seed coat with coarse rounded pits arranged in longitudinal (i.e., vertical) rows ..... 5. *S. prostrata*
1b. Corollas larger, with tube alone 0.5–10 mm and longer than calyx lobes; calyx lobes 4; mature fruit 1–5 × 1–3.5 mm.
  3a. Fruit 1–2 × 1–1.5 mm; leaves linear-oblong or narrowly elliptic, 2.5–16 mm wide; corolla tubes 0.5–1.5 mm.
    4a. Leaves linear-oblong, 2.5–6 mm wide; seeds appearing smooth ..... 6. *S. pusilla*
    4b. Leaves narrowly elliptic to lanceolate, 4–16 mm wide; seeds transversely ruminate-rugose with irregular deep grooves ..... 7. *S. remota*
  3b. Fruit 2.2–5 × 1.5–3.5 mm; leaves elliptic, ovate-oblong, oblong-ellipsoid, obovate, or spatulate, 3–40 mm wide.
    5a. Leaf blade elliptic or ovate-oblong, usually widest near middle, 12–75 × 6–40 mm; plants often drying yellowish green; corolla tube 2–3 mm ..... 1. *S. alata*
    5b. Leaf blade oblong-elliptic, obovate, or spatulate, usually widest above middle, 10–30 × 3–18 mm; plants usually drying dull green to grayish; corolla tube 2.5–10 mm.
      6a. Mature seeds 2–2.5 mm, oblong to elliptic-oblong in outline, brown; corolla tube slender, 6.5–10 mm ..... 2. *S. articularis*
      6b. Mature seeds 2.2–3 mm, elliptic to elliptic-oblong in outline, black; corolla tube funnelform, 2.5–4.5 mm ..... 4. *S. hispida*

1. Spermacoce alata Aublet, Hist. Pl. Guiane 1: 55. 1775. 阔叶丰花草 kuo ye feng hua cao

Borreria alata (Aublet) Candolle; *B. latifolia* (Aublet) K. Schumann; *Spermacoce latifolia* Aublet

Herbs, perennial, erect to weak or clambering, sometimes fleshy, usually drying yellowish green, to 1 m; stems 4-angled, hispidulous or pilosulous and sometimes also hirsute, angles rounded to acute or very narrowly winged, wings entire. Leaves sessile to shortly petiolate; petiole to 4 mm, pilosulous or hirtellous; blade drying papery, elliptic or ovate-oblong, 12–75 × 6–40 mm, both surfaces sparsely to densely hispidulous to pilosulous, base cuneate to obtuse then long decurrent, apex acute or obtuse; secondary veins 5 or 6 pairs; stipules hirtellous to hispidulous, sheath 1–1.5 mm, with 5–9 bristles or narrowly triangular lobes 1–7 mm, ciliate. Inflorescences axillary and infrequently apparently also terminal, 6–15 mm in diam., few to several flowered, notably hispidulous to pilosulous; bracts filiform, 0.5–4 mm. Calyx moderately to densely hirtellous or pilosulous; hypanthium portion ellipsoid to obovoid, ca. 0.5 mm; lobes 4, lanceolate to elliptic or triangular, 1–2 mm. Corolla white tinged with blue to pale purple, funnelform, outside pilosulous to hirtellous; tube 2–3 mm, pubescent in throat; lobes triangular, 1–1.5 mm. Capsules ellipsoid to subglobose, 3–3.5 × 2–3 mm, densely hirtellous and often also hirsute on upper portion, densely puberulent to strigillose on sides, stiffly papery to cartilaginous, septicidal from apex with valves usually remaining connected at base, then both valves loculicidal through septum; seeds pale brown or dark brown, ellipsoid, ca. 2 × 1 mm, obtuse at both ends, shiny or dull, surface with numerous tiny pits not organized into rows. Fl. and fr. May–Nov.

Naturalized in disturbed ground and wastelands; below 100–800 m. Fujian, Guangdong, Hainan, Taiwan, Zhejiang [apparently native to the Neotropics but exact origin unknown; Antilles, Central America, North America (Mexico, Florida), widespread in tropical South America; naturalized in Africa, S and SE Asia, Australia, Madagascar, and perhaps North America].

The seeds of this species were illustrated by Chaw and Sivarajan (Bot. Bull. Acad. Sin., n.s., 30: 20, f. 25–27. 1989). This species is considered an invasive weed in the area of Guangzhou in Guangdong Province. W. C. Ko (in FRPS 71(2): 207. 1999) described the fruit as septicidal to base at maturity, septum not caducous, or septum of one valve caducous, but there seems to be a confusion here and this description is not accurate for this species.

The names *Spermacoce alata* and *S. latifolia* (or *Borreria alata* and *B. latifolia*) have been treated as distinct species by many authors but synonymized by others, variously under each of these names. There now appears to be only one species here, which takes the name *S. alata*. Aublet's names were published simultaneously; although the names *B. latifolia* and *S. latifolia* have been more often used, these species were apparently first synonymized by Hara and Gould (Enum. Fl. Pl. Nepal, 199–209. 1979) under the name *B. alata*.

2. Spermacoce articularis Linnaeus f., Suppl. Pl. 119. 1782.

长管糙叶丰花草 chang guan cao ye feng hua cao

Borreria articularis (Linnaeus f.) F. N. Williams; *Spermacoce flexuosa* Loureiro.

Herbs, perennial, or subshrubs, prostrate to weakly ascending, perhaps to 50 cm tall; stems subterete to quadrate, glabrescent on sides, angles sharp to winged with wings to 0.1 mm wide, ciliolate to ciliate. Leaves sessile or subsessile; blade drying papery to leathery, oblong-elliptic, obovate, or spatulate, 8–15(–25) × 3–10 mm, both surfaces scaberulous-hispidulous and sometimes also hirtellous or hirsute, base cuneate to obtuse, margins scaberulous and often revolute, apex obtuse or rounded; secondary veins 2 or 3 pairs or not visible; stipules densely puberulent, sheath 1–2 mm, with 5–7 bristles 0.5–2(–6) mm. Inflorescences axillary, 5–8 mm in diam., with 1–6 flowers per axil; bracts linear or infrequently stipuliform, 1–5 mm. Calyx puberulent to hirtellous or scaberulous; hypanthium portion ellipsoid, 0.8–1 mm; lobes 4, linear to narrowly triangular, 1–1.5 mm, ciliolate or ciliate. Corolla perhaps pink to white, very slenderly funnelform to salverform, glabrous outside; tube (6.5–)9–10 mm, glabrous in throat; lobes triangular, 1–2 mm. Capsules ellipsoid to subglobose, sometimes slightly flattened perpendicular to septum, 2.2–2.5 × 1.5–2.5 mm, puberulent to hirtellous, pilosulous, and/or hispidulous, papery to cartilaginous, septicidal from apex with valves usually remaining connected at base, then both valves loculicidal through septum; seeds brown, oblong to elliptic-oblong in outline, 2–2.5 mm, obtuse at both ends, shiny, surface minutely granular or dimpled. Fl. and fr. May–Oct.

On open sandy lands at lower elevations. Fujian, Guangdong (Nanhai Zhudao), Taiwan (introduced and naturalized) [India, Indonesia, Japan (Ryukyu Islands), Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, Vietnam; Africa, Australia].

The seeds of this species (as circumscribed here) were illustrated by Chaw and Sivarajan (Bot. Bull. Acad. Sin., n.s., 30: 19, f. 17–18. 1989).

This name is here used differently than in many previous floras in this region; the commonly collected plants treated by Chaw and Peng (J. Taiwan Mus. 40(1): 71–83. 1987) and W. C. Ko (in FRPS 71(2): 206–207. 1999) as *Spermacoce articularis* are here treated as *S. hispida*, which is the older name. Overall, there is confusion and/or disagreement about the application of these two names as well as the number of specimens that should be separated among these plants, which have been studied only based on regional floristic work rather than a systematic review of this species group across its entire range. Deb and Dutta (J. Econ. Taxon. Bot. 5(5): 1046–1048. 1984) synonymized *S. hispida* and *S. articularis* and recognized a single species, for which they described the corolla tube as ".3–1.7 mm ... shorter than the corolla lobes" while illustrating correspondingly a corolla with the tube 4–6 mm and several times longer than the corolla lobes. Sivarajan and Nair (Taxon 35: 363–369. 1986), followed by Ridsdale (in Dassanayake, Revis. Handb. Fl. Ceylon 12: 332–341. 1998) and Mill (Fl. Bhutan 2(2): 817–820. 1999), recognized two species in this group; however, a number of individual Chinese plants have some characters of each of these so their distinctions are problematic in our region. Two distinct groups of plants are separable in our region using the characters listed in the key to species above, and the protologues of these two names each correspond to one of these groups; the treatment here generally follows the annotations of Fosberg (in herb.).

3. Spermacoce exilis (L. O. Williams) C. D. Adams, Fieldiana, Bot., n.s., 33: 316. 1993.

二蕚丰花草 er e feng hua cao

Borreria exilis L. O. Williams, Phytologia 28: 227. 1974, based on *B. gracilis* L. O. Williams, Phytologia 26: 487. 1973, not Scheele (1844), nor *Spermacoce gracilis* Ruiz & Pavon (1798); *B. repens* Candolle; *S. decandollei* Deb & R. M. Dutta,

nom. illeg. superfl.; *S. mauritiana* Gideon; *S. repens* (Candolle) Fosberg & D. A. Powell (1980), not Willdenow ex Chamisso & Schlechtendal (1828), nor Sessé & Mociño (1893), nor Larrañaga (1923).

Herbs, annual to perhaps perennial, slender, creeping to weakly ascending, to 30 cm tall; stems 4-angled, puberulent to glabrescent, angles winged, wings 0.1–0.5 mm wide, ciliate or ciliolate. Leaves subsessile to shortly petiolate; petiole to 1.5 mm, puberulent to glabrescent; blade drying membranous, ovate or elliptic-oblong, 0.7–30 × 4–15 mm, sparsely puberulent to glabrous throughout or pilose to hispid along midrib abaxially, base obtuse to cuneate, apex acute to obtuse; secondary veins 2 or 3 pairs; stipules pilosulous or hirtellous to glabrescent, sheath 0.5–1 mm, with 5–10 bristles 0.5–2 mm, often glandular. Inflorescences terminal and in uppermost leaf axils, 3–6 mm in diam., several to many flowered; bracts numerous, filiform, 0.5–1.5 mm. Calyx hirtellous to glabrescent; hypanthium portion obovoid, ca. 0.3 mm; lobes 2, linear-lanceolate to triangular, 0.4–0.9 mm. Corolla white, rotate to shortly tubular, 0.5–0.6 mm, outside glabrous, bearded in throat; lobes spatulate triangular, ± as long as tube. Capsules ellipsoid, weakly to strongly flattened at right angles to septum, 1–1.1 × 0.8–1 mm, glabrescent, membranous and sometimes somewhat hyaline, septicidal from apex then both valves loculicidal through septum or sometimes fragmenting; seeds brownish yellow, ellipsoid, ca. 0.8 × 0.4 mm, obtuse at both ends, shiny, surface apparently with numerous fine horizontal striations or ridges (at 10×; but actually with minute transverse pits, visible at 40×). Fl. and fr. almost year-round.

Naturalized in disturbed humid sites at low elevations. Hainan, Hong Kong, Taiwan [apparently native to the Neotropics but exact origin unknown; India, Indonesia, Nepal, Sri Lanka, Vietnam; Africa, Antilles, Australia, Central America, Indian Ocean islands (Mauritius), North America (Mexico), Pacific islands, N South America].

The seeds of this species were illustrated in detail by Chaw and Sivarajan (Bot. Bull. Acad. Sin., n.s., 30: 20, f. 28–30. 1989, as *Spermacoce mauritiana*). The taxonomy and circumscription of this adventive species here follows Burger and Taylor (Fieldiana, Bot., n.s., 33: 316. 1993). The illustration presented by Deb and Dutta (J. Econ. Taxon. Bot. 5(5): 1045, f. 2. 1984, as *S. decandollei*) seems to be based on a mixed collection of *S. exilis* and *S. prostrata* according to the circumscription of these species here. Both *S. exilis* and *S. prostrata* were formerly included in a broadly circumscribed, morphologically heterogeneous "*Spermacoce ocymoides* Burm. f." Several authors have concluded that this last name applies to a species found only in SE Asia and was incorrectly applied to American and adventive plants (Dessein, Syst. Stud. Spermacoceae (Ph.D. Diss.), University of Leuven, Belgium, 1–403. 2003, and references cited there); presumably the species treated by Bakhuizen f. in the Fl. Java is "true" *S. ocymoides*.

The description of *Spermacoce exilis* here includes observations from specimens from outside China; this species has probably been introduced to China more than once, thus it seems useful to include the variation found in adjacent regions that may yet be found in China.

4. Spermacoce hispida Linnaeus, Sp. Pl. 1: 102. 1753.

糙叶丰花草 cao ye feng hua cao

Borreria hispida (Linnaeus) K. Schumann.

Herbs, annual or perennial, or subshrubs, prostrate to perhaps weakly ascending, apparently often fleshy, to 50 cm tall; stems subterete to usually markedly quadrate, glabrous to puberulent or pilosulous on sides, angles cartilaginous to winged, wings to 0.1 mm wide, ciliolate, hispidulous, or ciliate. Leaves sessile to shortly petiolate; petiole to 4 mm, hirtellous throughout or ciliolate in lines; blade drying papery to leathery, oblong-elliptic, obovate, or spatulate, 10–30(–40) × 5–15(–18) mm, both surfaces hirtellous to scaberulous, hispidulous, and/or hirsute, base cuneate to obtuse and usually long decurrent, margin scaberulous or ciliolate and often revolute, apex acute, obtuse, or rounded; secondary veins 2 or 3(or 4) pairs or not visible; stipules moderately to densely puberulent, hirtellous, and/or pilosulous often in lines, sheath 1–3 mm, with 5–7 bristles 1–5 mm. Inflorescences axillary, 5–15 mm in diam., with 1–6 flowers per axil; bracts linear or infrequently stipuliform, 1–5 mm. Calyx puberulent to hirtellous or scaberulous; hypanthium portion ellipsoid, 0.8–1 mm; lobes 4, linear-lanceolate to narrowly triangular, 1–1.5 mm, ciliolate or ciliate. Corolla pink, purple, or white, funnelform, outside glabrous or hispidulous to pilosulous on upper part; tube 2.5–4.5 mm, glabrous in throat; lobes elliptic-oblong, lanceolate, or triangular, 1–1.8 mm. Capsules ellipsoid to subglobose, sometimes weakly flattened perpendicular to septum, 2.5–5 × 2.5–3.5 mm, puberulent, hirtellous, pilosulous, and/or hispidulous, papery to cartilaginous, septicidal from apex with valves usually remaining connected at base then both valves loculicidal through septum, with calyx lobes sometimes enlarging, up to 2.2 mm; seeds black, elliptic to elliptic-oblong in outline, 2.2–3 mm, obtuse at both ends, shiny to dull, surface minutely granular or dimpled. Fl. and fr. Mar–Dec.

On open sandy lands at lower elevations; sea level to 100 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan [India, Indonesia, Malaysia, Philippines, Sri Lanka, Vietnam; Australia].

This name is applied here to most of the plants treated by W. C. Ko (in FRPS 71(2): 206–207. 1999) as *"Borreria articularis"*; see the comments about these two species above, under *Spermacoce articularis*. The seeds of this species (as circumscribed here) were illustrated by Chaw and Sivarajan (Bot. Bull. Acad. Sin., n.s., 30: 19, f. 22–24. 1989). The leaf measurements included above in parentheses are taken from *Wang & Li W05246* (Taiwan, MO!), which is an exceptionally robust plant.

5. Spermacoce prostrata Aublet, Hist. Pl. Guiane 1: 58. 1775.

匍匐丰花草 pu fu feng hua cao

Borreria prostrata (Aublet) Miquel.

Herbs, annual or probably perennial, slender, weakly ascending to erect at least at ends of stems, to 65 cm tall; stems rounded to subquadrate, smooth to sharply angled and/or longitudinally sulcate, scaberulous to glabrescent. Leaves sessile; blade drying membranous, narrowly elliptic-oblong to elliptic, 10–30(–45) × 1–7(–10) mm, puberulent and/or scaberulous to glabrescent throughout or sometimes pilose along midrib abaxially, base obtuse to cuneate, apex acute to obtuse; secondary veins 2–5 pairs; stipules puberulent, hirtellous, or glabrescent, sheath 0.5–1 mm, with 5–9 bristles 0.5–2 mm, often glandular. Inflorescences terminal and in uppermost leaf axils, several to many flowered, 3–4 mm in diam.; bracts numerous, filiform, 0.5–1 mm. Calyx glabrescent; hypanthium portion obovoid, ca.

0.3 mm; lobes 2 or 4, narrowly triangular, 0.3–0.7 mm. Corolla white, rotate to shortly tubular, 0.7–1 mm, outside glabrous, pubescent in throat; lobes spatulate-triangular, ± as long as tube. Capsules ellipsoid, weakly to strongly flattened at right angles to septum, 0.6–0.9 × 0.3–0.4 mm, glabrescent, membranous and sometimes somewhat hyaline, septicidal from apex, then both valves loculicidal through septum or sometimes fragmenting; seeds brownish yellow, ellipsoid, ca. 0.5 × 0.2 mm, obtuse at both ends, with coarse rounded pits arranged in longitudinal (i.e., vertical) rows. Fl. and fr. almost year-round.

Naturalized in disturbed wet sites at low elevations. Hainan, Hong Kong, Taiwan [apparently native to the Neotropics but exact origin unknown; India, Indonesia, Sri Lanka; Antilles, Central America, Indian Ocean islands (Mauritius), North America (Mexico), Pacific islands, N South America].

This species has been widely confused with and/or combined with *Spermacoce exilis*, and has sometimes been misidentified as *S. ocymoides*; see the discussion under *S. exilis*, above.

6. Spermacoce pusilla Wallich in Roxburgh, Fl. Ind. 1: 379. 1820.

丰花草 feng hua cao

Borreria pusilla (Wallich) Candolle.

Herbs, apparently annual, slender, erect, to 60 cm tall; stems subterete to 4-angled, glabrous to densely scaberulous at least along angles or ridges. Leaves subsessile; blade drying papery to leathery, linear-oblong, 12–50 × 2.5–6 mm, adaxially densely scaberulous to hispidulous, abaxially glabrous or often pilosulous, hirtellous, or hispidulous along midrib, base generally straight (i.e., not tapering), margins often revolute at least when dry, apex acute to acuminate; secondary veins 2 or 3 pairs or not visible; stipules densely pilosulous or scaberulous often with unusual clavate trichomes, sheath 1–2.5 mm, with 5–7 bristles 2–6.5 mm. Inflorescences terminal and axillary at most stem nodes, 5–12 mm in diam., several to many flowered; bracts filiform, 1–4 mm. Calyx glabrescent to densely puberulent or hirtellous; hypanthium portion turbinate, ca. 0.5 mm; lobes 4, linear-lanceolate, 1–1.5 mm. Corolla funnelform, white tinged red on upper parts, outside glabrous; tube 1.2–1.5 mm, glabrous in throat; lobes linear-lanceolate to triangular, 0.8–1.5 mm, sometimes pubescent inside near tips. Capsules sometimes shortly stipitate, oblong or subobovate to ellipsoid, usually weakly flattened perpendicular to septum, 1–2 × 1–1.5 mm, glabrescent at base, glabrescent to densely hirtellous near apex, septicidal from apex with valves often remaining connected at base, then both valves loculicidal through septum and often partially splitting abaxially; seeds dark brown, narrowly oblong in outline, 1.3–2.2 × ca. 0.5 mm, obtuse at both ends, shiny, smooth. Fl. and fr. Aug–Dec.

Grasslands and grassy slopes at lower elevations; 100–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Taiwan, Yunnan, Zhejiang [Bhutan, India, ?Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; introduced in tropical Africa].

This species was discussed and well illustrated for Taiwan by Chaw and Peng (J. Taiwan Mus. 40(2): 57–59. 1987); its seeds were illustrated in detail by Chaw and Sivarajan (Bot. Bull. Acad. Sin., n.s., 30: 18, f. 10–11. 1989).

These plants were treated by W. C. Ko (in FRPS 71(2): 208. 1999) as *Spermacoce stricta* Linnaeus f. (*Borreria stricta* (Linnaeus f.) G. Meyer), following previous usage by various authors (see discussion in Chaw & Peng, loc. cit.), but as detailed by Sivarajan and Nair (Taxon 35: 363–369. 1986) the identity of the name *S. stricta* is not at all clear and very likely actually applies to a species of *Hedyotis*. W. C. Ko (loc. cit.) described the seeds of this species as transversely striate/grooved and with one end mucronate, another end obtuse; however, the seeds are smooth with both ends obtuse to rounded on all specimens studied, and as described by Dessein (Syst. Stud. Spermacoceae (Ph.D. Diss.), University of Leuven, Belgium, 1–403. 2003).

Sivarajan and Nair (loc. cit.) separated the Indian plants treated in *"Spermacoce stricta"* into two species, *S. pusilla* and a newly described species, *S. ramanii* Sivarajan & R. V. Nair. They gave the range of *S. ramanii* only as India, although they considered several additional names synonymous, with a consequent tacit expansion of its range to Thailand, New Guinea, and Java. Dessein (loc. cit.) discussed the separation of these and concluded that there appear to be two species in India but only one variable species in Africa; he found the contrasting character states in all possible combinations in Africa and did not adopt the name *S. ramanii* for any African plants. The Chinese plants seen appear to comprise one well-delimited species and are here all treated as *S. pusilla*; however, as with the African plants, several of the features that Sivarajan and Nair used to separate *S. ramanii*, which are largely vegetative characters, are found on some Chinese plants in various combinations with other features. The name *S. ramanii* is, therefore, not synonymized nor used here for any Chinese plants; it has been cited for China by the Kew Rubiaceae checklist (Govaerts et al., World Checkl. Rubiaceae; http://www.kew.org/wcsp/rubiaceae/; accessed on 15 Sep 2010) but without documentation of the report.

7. Spermacoce remota Lamarck, Tabl. Encycl. 1: 273. 1792.
光叶丰花草 guang ye feng hua cao

Borreria assurgens (Ruiz & Pavon) Grisebach; *B. remota* (Lamarck) Bacigalupo & E. L. Cabral; *Spermacoce assurgens* Ruiz & Pavon.

Herbs, perennial, or subshrubs, ascending to erect, to 65 cm tall; stems subterete to subquadrate, sulcate and/or ridged, glabrous or ciliolate on angles. Leaves sessile to petiolate; petiole to 3 mm, glabrescent; blade drying papery, narrowly elliptic to lanceolate, 10–45 × 4–16 mm, puberulent to glabrescent, base acute to cuneate, apex acute; secondary veins 2 or 3 pairs; stipules puberulent or hirtellous to glabrescent, sheath 1–3 mm, with 5–7 bristles 0.5–2 mm. Inflorescences terminal and in uppermost leaf axils, 5–12 mm in diam., many flowered; bracts numerous, filiform, 0.5–1 mm. Calyx puberulent or hirtellous to glabrescent; hypanthium portion obovoid, ca. 0.5 mm; lobes 4, narrowly triangular to linear, 0.8–1 mm. Corolla white, funnelform, outside glabrous or puberulent on lobes; tube 0.5–1.5 mm, pubescent in throat; lobes triangular, 1–1.5 mm. Capsules ellipsoid, weakly to strongly flattened at right angles to septum, 1.8–2 × 1–1.2 mm, hirtellous or puberulent, papery, septicidal from apex with valves usually remaining connected at base, then both valves loculicidal through septum and often splitting abaxially; seeds brownish yellow, ellipsoid, 1.5–1.8 × 0.8–1 mm, obtuse at both ends, somewhat shiny, transversely

ruminate-rugose with irregular deep grooves. Fl. and fr. Jun–Jan.

Naturalized in disturbed wet sites; below 100–300 m. Guangdong, Taiwan [apparently native to the Neotropics; India, Indonesia, Singapore, Sri Lanka, Thailand, Vietnam; Antilles, Australia, Central America, Indian Ocean islands (Mauritius), North America (Mexico), Pacific islands, N South America].

This widely naturalized species was reported from Taiwan by Chaw and Peng (J. Taiwan Mus. 40(1): 71–83. 1987), who noted that it has been widely misidentified as *"Borreria laevis,"* but that name applies to a distinct Asian species of restricted range. The seeds of this species were illustrated by Chaw and Sivarajan (Bot. Bull. Acad. Sin., n.s., 30: 20, f. 34–36. 1989, as *Spermacoce assurgens*).

Fl. China 19: 325–329. 2011.