

20. Tribe DESMODIEAE

山蚂蝗族 shan ma huang zu

Huang Puhua (黃普華 Huang Pu-hwa); Hiroyoshi Ohashi, Yu Iokawa, Tomoyuki Nemoto

Herbs or shrubs, rarely trees or twining. Leaves pinnately 3(–9)-foliolate or 1-foliolate; stipules mostly striate; stipels present or sometimes absent. Flowers in terminal or axillary racemes or arranged into a panicle, rarely an umbel or fascicle. Calyx 4- or 5-toothed or 2-lipped. Wings equal to or exceeding keel and often adherent to it near base. Vexillary filament free or connate with others, sometimes forming a closed tube; anthers uniform. Legumes transversely jointed, sometimes of only 1 article, or rarely 2-valved. Seeds without a strophiole, rarely arillate.

About 30 genera and 520–530 species: distributed in tropical, subtropical, and warm-temperate regions, but extending into the cool-temperate and sub-boreal regions of E Asia and North America; 18 genera and 139 species (42 endemic, four introduced) in China.

- 1a. Stipels absent, rarely present; legumes 1-jointed, 1-seeded, not glochidiate.
 - 2a. Lateral veins of leaflets strict, extending to margin; stipules large, ovate, strongly ribbed 133. *Kummerowia*
 - 2b. Lateral veins of leaflets arcuate, not reaching to margin; stipules small, subulate.
 - 3a. Bracts 1-flowered, usually caducous; pedicels articulate below calyx; keel falcate, acute 131. *Campylotropis*
 - 3b. Bracts 2-flowered, persistent; pedicels not articulate; keel strict, obtuse 132. *Lespedeza*
- 1b. Stipels present; legumes usually glochidiate, 2- to several jointed, rarely 1-jointed, 1-seeded.
 - 4a. Branch nodes with 3-fid, hard spines; leaves 1-foliolate 116. *Trifidacanthus*
 - 4b. Branch nodes without 3-fid, hard spines; leaves 3(–9)-foliolate, rarely 1-foliolate.
 - 5a. Calyx glumelike, lobes dry and hard, striate 130. *Alysicarpus*
 - 5b. Calyx not glumelike, lobes herbaceous, not striate.
 - 6a. Umbels or short racemes axillary; flowers white or yellow; leaves 3-foliolate.
 - 7a. Umbels not enclosed in 2 opposite leafy bracts 117. *Dendrolobium*
 - 7b. Umbels enclosed in 2 opposite leafy bracts 118. *Phyllodium*
 - 6b. Racemes or panicles terminal or axillary, rarely flowers fasciculate; leaves (1 or)3–9-foliolate.
 - 8a. Leaves digitately 3-foliolate; stipules united, apex 3-lobed; legumes 2-jointed 119. *Aphyllodium*
 - 8b. Leaves pinnately (1 or)3–9-foliolate; stipules free, apex entire; legumes 2- to several jointed, rarely 1-jointed.
 - 9a. Legumes distinctly stipitate, ventral suture deeply incised, isthmus less than 1/5 as broad as legume; stamens monadelphous 122. *Hylocosmus*
 - 9b. Legumes not stipitate or rarely shortly stipitate, constricted on both sutures or ventral suture straight; stamens diadelphous, rarely monadelphous.
 - 10a. Joints of legume plicate-retrofracted.
 - 11a. Calyx lobes short and broad, enlarged after flowering 129. *Christia*
 - 11b. Calyx lobes subulate or setaceous, not enlarged after flowering.
 - 12a. Joints of legume connected along ventral suture 127. *Uraria*
 - 12b. Joints of legume connected at center of joint 128. *Urariopsis*
 - 10b. Joints of legume not plicate-retrofracted.
 - 13a. Pedicels hooked-inflexed at apex and inverting flowers; leaves 1-foliolate 126. *Mecopus*
 - 13b. Pedicel not hooked-inflexed at apex; leaves 3-foliolate, sometimes only 1-foliolate.
 - 14a. Petioles winged.
 - 15a. Leaves 1-foliolate; flowers reddish purple 125. *Tadehagi*
 - 15b. Leaves 3-foliolate; flowers white to cream 120. *Ohwia*
 - 14b. Petioles not winged.
 - 16a. Legumes turgid, continuous within, not jointed, valves transversely lined-venose 124. *Pycnospora*
 - 16b. Legumes not turgid, jointed, valves not transversely lined-venose.
 - 17a. Joints of legume indehiscent 121. *Desmodium*
 - 17b. Joints of legume dehiscing along lower suture, remaining attached to other suture 123. *Codoriocalyx*

116. TRIFIDACANTHUS Merrill, Philipp. J. Sci., C, 12: 269. 1917.

三叉刺属 san cha ci shu

Huang Puhua (黃普華 Huang Pu-hwa); Hiroyoshi Ohashi

Shrubs, erect, spinose. Spines rigid, straight, sharp, 3-fid. Leaves 1-foliolate, entire; stipules scarious, striate; stipels minute. Racemes axillary, short; bracts broadly ovate, minute; bracteoles absent. Calyx membranous; tube short, 5-lobed; lobes ovate-lanceo-

late, lower lobes 3, upper 2 lobes connate. Corolla purple; standard broadly obovate, base cuneate, not or very shortly clawed; wings narrowly elliptic; keel slightly falcate, apex obtuse. Stamens diadelphous. Ovary linear, ca. 6-ovuled. Legume (3-)5-7-jointed; upper suture straight or slightly undulate, lower suture deeply undulate between articles.

One species: China, Indonesia, Philippines, Vietnam.

1. Trifidacanthus unifoliolatus Merrill, Philipp. J. Sci., C, 12: 269. 1917.

三叉刺 san cha ci

Desmodium horridum Steenis; *D. unifoliolatum* (Merrill) Steenis.

Shrubs, 1-2 m tall. Spines 3-5 cm. Leaves alternate; petiole 2-4 mm, pubescent; blade elliptic or oblong-elliptic to linear-oblong, 1.5-6 × 0.7-1.5 cm, nearly leathery, distinctly reticulate veined, both surfaces glabrous, apex rounded, mucronate, sometimes emarginate. Racemes ca. 3 cm, sparsely pilose;

bracts numerous around base of rachis, striate. Pedicels ca. 5 mm, often fascicled at node of rachis. Flowers ca. 1 cm. Calyx ca. 3 mm, sparsely pubescent; upper lobe triangular-ovate. Ovary slightly pubescent; style glabrous. Legume stalked, straight, flat and thin, (2-)3-4 cm, pubescent, reticulate veined; lower suture indented, upper suture straight or slightly undulate; articles 6-7 × ca. 4 mm, lateral surfaces reticulate veined. Fl. Apr-Jul, fr. Sep-Oct.

Dry thickets of savannas, sparse forests of riverbanks; ca. 200 m. Hainan [Indonesia (Lesser Sunda Islands), Philippines, Vietnam].

117. DENDROLOBIUM (Wight & Arnott) Bentham in Miquel, Pl. Jungh. 215, 216. 1852.

假木豆属 jia mu dou shu

Huang Puhua (黃普華 Huang Pu-hwa); Hiroyoshi Ohashi

Desmodium subg. *Dendrolobium* Wight & Arnott, Prodr. Fl. Ind. Orient. 223. 1834.

Shrubs or small trees. Leaves 3-foliate or rarely 1-foliate, stipulate and stipellate; leaflets entire or shallowly undulate, terminal leaflet larger than lateral ones, lateral leaflets often oblique at base. Inflorescences axillary, subumbellate or umbellate to shortly racemose, densely flowered; bracts scarious, striate. Calyx campanulate or tubular, 5-lobed; upper 2 lobes connate, appearing 4-lobed or minutely 2-toothed at apex; lower lobe longer than others. Corolla white or pale yellow; standard obovate, elliptic, or nearly orbicular, clawed, not auriculate; wings narrowly oblong, clawed, auriculate or not. Stamens monadelphous. Ovary sessile, (1 or)2-8-ovuled. Legume ± moniliform, 1-8-jointed, indehiscent when mature. Seed distinctly rim-arillate; cotyledons epigeous.

Eighteen species: tropical and subtropical Asia and Australia; five species (one endemic) in China.

- 1a. Legume 1-jointed; terminal leaflet narrowly oblong to narrowly oblong-lanceolate, 2-5 × 0.9-1.9 cm 1. *D. lanceolatum*
- 1b. Legume 2-8-jointed; terminal leaflet usually elliptic-ovate to broadly elliptic-ovate, length:width ratio < 2:1.
 - 2a. Legume usually 2-jointed; terminal leaflet shorter than 3 cm; lateral veins 5-9 on each side of midvein and not reaching margin 2. *D. dispermum*
 - 2b. Legume 3-8-jointed; terminal leaflet longer than 3 cm; lateral veins 7-17 on each side of midvein and reaching margin.
 - 3a. Lower calyx lobes ca. as long as other lobes; terminal leaflet acute or obtuse at apex 4. *D. umbellatum*
 - 3b. Lower calyx lobes longer than other lobes; terminal leaflet acuminate, rounded, or sometimes acute at apex.
 - 4a. Young shoots sharply triangular; terminal leaflet narrowly obovate-elliptic, apex acuminate to long acuminate; umbels 20-30-flowered 3. *D. triangulare*
 - 4b. Young shoots terete; terminal leaflet not as above; umbels 10-20-flowered.
 - 5a. Terminal leaflet elliptic to orbicular or ovate to broadly ovate, lateral leaflets ± oblique at base; keel distinctly broader than wings 4. *D. umbellatum*
 - 5b. Terminal leaflet rhombic or obovate, lateral leaflets usually distinctly oblique at base; keel slightly broader than wings 5. *D. rugosum*

1. Dendrolobium lanceolatum (Dunn) Schindler, Repert. Spec. Nov. Regni Veg. 20: 278. 1924.

单节假木豆 dan jie jia mu dou

Shrubs, usually 1-3 m tall. Branches glabrescent. Leaves 3-foliate; petiole 0.5-2 cm; terminal leaflet blade oblong or oblong-lanceolate, 2-5 × 0.9-1.9 cm, lateral leaflets smaller, abaxially appressed pubescent, adaxially glabrous, lateral veins 4-7 on each side of midvein, not reaching margin, both ends

obtuse or acute. Inflorescences subumbellate, 1-1.5 cm, ca. 10-flowered. Pedicel ca. 2 mm, densely appressed pubescent. Calyx ca. 4 mm; upper lobe broader, other lobes narrower. Corolla white or pale yellow; standard elliptic, 6-9 × 5-6 mm, clawed; wings narrowly oblong, 5-6 × 1.5-2 mm; keel nearly falcate, 7-9 × ca. 2.5 mm. Stamens 7-8 mm. Pistil 7-8 mm; ovary pilose; style ca. 7 mm. Legume broadly elliptic or nearly orbicular, 4-10 × 3-7 mm, sessile, 1-jointed, glabrous, distinctly reticulate veined. Seed broadly elliptic, ca. 3 × 2 mm. Fl. May-Aug, fr. Sep-Nov.

Grassy riverbanks, thickets or sparse forests on mountain slopes; 100–800 m. Fujian, Hainan [Cambodia, Laos, Thailand, Vietnam].

- 1a. Legume broadly elliptic or nearly orbicular, 8–10 × 6–7 mm 1a. var. *lanceolatum*
- 1b. Legume nearly orbicular, 4–5.5 × 3–4 mm 1b. var. *microcarpum*

1a. *Dendrolobium lanceolatum* var. *lanceolatum*

单节假木豆(原变种) dan jie jia mu dou (yuan bian zhong)

Lespedeza lanceolata Dunn, J. Linn. Soc., Bot. 35: 488. 1903; *Desmodium dunnii* Merrill.

Legume broadly elliptic or nearly orbicular, 8–10 × 6–7 mm.

Grassy riverbanks, thickets or sparse forests on mountain slopes; 100–800 m. Hainan [Cambodia, Laos, Thailand, Vietnam].

1b. *Dendrolobium lanceolatum* var. *microcarpum* H. Ohashi, Ginkgoana 1: 65. 1973.

小果单节假木豆 xiao guo dan jie jia mu dou

Legume nearly orbicular, 4–5.5 × 3–4 mm.

Fujian [Thailand].

2. *Dendrolobium dispermum* (Hayata) Schindler, Report. Spec. Nov. Regni Veg. 22: 271. 1926.

两节假木豆 liang jie jia mu dou

Desmodium dispermum Hayata, Icon. Pl. Formosan. 3: 69. 1913.

Shrubs or small trees, 2–3 m tall. Branches glabrescent. Leaves 3-foliolate; petiole 5–12 mm; terminal leaflet blade obovate or elliptic, 1.3–2.5 × 1–1.5 cm, lateral leaflets nearly equal or slightly smaller, abaxially densely appressed sericeous especially on midvein, adaxially sparsely pubescent, lateral veins 5–9 on each side of midvein, not reaching margin. Inflorescences shortly racemose, 1–2 cm, 5–7-flowered. Pedicel 2.5–5 mm. Calyx campanulate; lower lobes narrowly triangular; upper lobe broadly ovate, entire or minutely 2-toothed at apex. Corolla white; standard broadly elliptic or nearly orbicular, 8–11 × 7–9 mm; wings 7–10 × 2.5–3 mm, clawed at base; keel 8–11 × ca. 3 mm, base shortly clawed. Stamens ca. 8 mm. Pistil ca. 1 cm; ovary densely sericeous; style ca. 7 mm, glabrous. Legume narrowly oblong, 1–2 × 0.5–0.6 cm, usually 2-jointed, extremely rarely 1-jointed, densely appressed sericeous, reticulate veined. Seed elliptic, ca. 4 × 3 mm. Fl. Oct, fr. Oct–Nov.

• Thicket margins near the sea, open places; sea level to 200 m. S Taiwan.

3. *Dendrolobium triangulare* (Retzius) Schindler, Report. Spec. Nov. Regni Veg. 20: 279. 1924.

假木豆 jia mu dou

Hedysarum triangulare Retzius, Observ. Bot. 3: 40. 1783; *Desmodium cephalotes* (Roxburgh) Wight & Arnott; *D. triangulare* (Retzius) Merrill; *H. cephalotes* Roxburgh.

Shrubs, 1–2 m tall. Young shoots sharply triangular,

densely gray sericeous. Leaves 3-foliolate; petiole 1–2.5 cm; terminal leaflet blade narrowly obovate-elliptic, 7–15 × 3–6 cm, lateral leaflets slightly smaller, abaxially long sericeous especially on veins, adaxially glabrous, lateral veins 10–17 on each side of midvein, straight, reaching margin. Umbels 20–30-flowered. Pedicels not equal, densely appressed sericeous. Calyx 5–9 mm; tube 1.8–3 mm. Corolla white or pale yellow; standard broadly elliptic, shortly clawed; wings and keel oblong, base clawed. Stamens 0.8–1.2 cm. Pistil 0.7–1.4 cm; ovary densely pubescent; style 7–12 mm. Legume 2–2.5 cm, slightly arcuate, appressed sericeous, sessile, 3–6-jointed. Seed elliptic, 2.5–3.5 × 2–2.5 mm. Fl. Aug–Oct, fr. Oct–Dec. 2n = 22*.

Grassy riverbanks, thickets on mountain slopes; 100–1400 m. Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan [Cambodia, India, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; Africa].

The roots are used medicinally to strengthen bones and build muscle.

4. *Dendrolobium umbellatum* (Linnaeus) Bentham in Miquel, Pl. Jungh. 218. 1852.

伞花假木豆 san hua jia mu dou

Hedysarum umbellatum Linnaeus, Sp. Pl. 2: 747. 1753; *Desmodium umbellatum* (Linnaeus) Candolle.

Dwarf shrubs to shrubs or small trees, to 3 m tall. Young shoots terete, densely appressed sericeous. Leaves 3-foliolate; petiole 2–5 cm; terminal leaflet blade elliptic or ovate to orbicular or broadly ovate, 5–14(–17) × 3–7(–8.5) cm, lateral leaflets slightly smaller, abaxially appressed long hairy, adaxially glabrescent, lateral veins 7–12 on each side of midvein, reaching margin. Umbels often 10–20-flowered. Pedicel 3–7 mm at anthesis, 5–12 mm in fruit. Calyx 4–5 mm, upper lobe 2-toothed at apex. Corolla white; standard broadly obovate or elliptic, 1–1.3 cm × 6–10 mm, clawed; wings narrowly elliptic, 1.1–1.2 cm × 1–2 mm, clawed; keel broader than wings, 1.1–1.2 cm × 3–5 mm, clawed. Stamens ca. 1 cm. Pistil to 1.5 cm; ovary sericeous; style ca. 1.2 cm, glabrous. Legume narrowly oblong, 2–3.5 × 0.4–0.6 cm, (3–)8-jointed; articles broadly elliptic or oblong. Seed elliptic or broadly elliptic, ca. 4 × 3 mm. Fl. Aug–Oct, fr. Nov–Mar.

Seashores. S Taiwan [Cambodia, India, Indonesia, S Japan (Ryukyu Islands), Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam; Africa, Australia, Pacific islands].

5. *Dendrolobium rugosum* (Prain) Schindler, Report. Spec. Nov. Regni Veg. 20: 279. 1924.

多皱假木豆 duo zhou jia mu dou

Desmodium rugosum Prain, J. Asiatic. Soc. Bengal, Pt. 2, Nat. Hist. 66: 137. 1897.

Shrubs, to 2.5 m tall. Branches terete, glabrescent; young shoots 4–6-sided. Leaves 3-foliolate; petiole 1.5–7 cm; terminal leaflet blade rhombic to broadly obovate, 5–15(–17) × (3–)4–13 cm, lateral leaflets 3.5–13 × 2–8 cm, densely appressed tomentose on both surfaces, becoming glabrescent adaxially, lateral veins 9–15 on each side of midvein and reaching mar-

gin. Umbels often 10–20-flowered. Pedicel 2–3 mm at anthesis, afterward 3–7 mm. Calyx 5.5–6.5 mm, 4-lobed; upper lobes entire or minutely 2-toothed at apex. Corolla white; standard broadly obovate or broadly elliptic, 9–12.5 × 7.5–10.5 mm, shortly clawed; wings narrowly elliptic, 9.5–12.5 × 3–4.5 mm, base auriculate on both sides, claw 2.5–3 mm; keel 9.5–11.5 × 3.5–4.5 mm, claw 2.5–3 mm. Stamens 10–11 mm. Pistil

11–13.5 mm; ovary densely puberulent; style 9–11.5 mm, puberulent in lower half. Legume narrowly oblong, 13–27 × 4–5.5 mm, 2–5-jointed, densely appressed sericeous, both sutures undulate; articles broadly elliptic or nearly orbicular, 5–8 × 3–5 mm. Seeds transversely elliptic, 2.5–2.7 × 3.7–4 mm.

Snow-mountain ranges, streamsides; 800–2800 m. Yunnan [Cambodia, Laos, Myanmar, Thailand].

118. PHYLLODIUM Desvaux, J. Bot. Agric. 1: 123. 1813.

排钱树属 pai qian shu shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Shrubs or subshrubs. Leaves pinnately 3-foliolate, stipulate, stipellate. Inflorescences terminal, forming a racemose panicle, each umbellate, 4–15-flowered, subtended and enclosed by a pair of persistent leaflike bracts. Calyx campanulate, pubescent, 5-lobed; lower 3 lobes usually longer than upper ones; upper 2 lobes connate and entire or minutely 2-toothed at apex. Corolla white to pale yellow or rarely purple; standard obovate or broadly obovate, clawed or tapering to base; wings narrowly elliptic, clawed and auriculate at base; keel arcuate, base long clawed, auriculate. Stamens 10, monadelphous. Gynoecium longer than androecium. Legume sessile, indehiscent; lower suture more deeply incised, upper suture shallowly undulate, (1 or)2–7-jointed. Seed distinctly rimarillate around hilum; cotyledons epigeous.

Eight species: tropical and subtropical Asia, N Australia; four species in China.

- 1a. Terminal leaflet lanceolate or oblong, 13–20 cm, often 4–5 × as long as lateral ones 1. *P. longipes*
- 1b. Terminal leaflet ovate, elliptic, or sometimes obovate, often 5–12 cm, ca. 2 × as long as lateral ones or nearly equal.
 - 2a. Terminal leaflet slightly longer than lateral ones or nearly equal; leaflike bracts broadly elliptic or broadly ovate; legume slightly pubescent or glabrescent 2. *P. kurzianum*
 - 2b. Terminal leaflet ca. 2 × as long as lateral ones; leaflike bracts orbicular or broadly elliptic, if broadly elliptic, then legume densely silver-gray tomentose.
 - 3a. Leaflets adaxially nearly glabrous; leaflike bracts orbicular, slightly pubescent and ciliate; legume usually 2-jointed, glabrous or slightly pubescent and ciliate 3. *P. pulchellum*
 - 3b. Leaflets densely tomentose; leaflike bracts broadly elliptic, densely tomentose; legume often 3- or 4-jointed, densely silver-gray tomentose 4. *P. elegans*

1. Phyllodium longipes (Craib) Schindler, Repert. Spec. Nov. Regni Veg. 20: 270. 1924.

长叶排钱树 chang ye pai qian shu

Desmodium longipes Craib, Bull. Misc. Inform. Kew 1910: 20. 1910; *D. tonkinense* Schindler.

Shrubs, ca. 1 m tall. Branchlets densely brown pubescent. Petiole ca. 3 mm; terminal leaflet blade lanceolate or oblong, 13–20 × 3.7–6 cm, lateral ones obliquely ovate, 3–4 × 1.5–2 cm, abaxially densely brown soft hairy, adaxially sparsely pubescent or glabrescent, lateral veins 8–15 on each side of midvein, distinctly reticulate veined. Flowers (5–)9–15, enclosed by pair of leaflike bracts; bracts obliquely ovate, 2.5–3.5 × 2–2.7 cm. Pedicel 4–6 mm. Calyx 4–5 mm, white tomentose. Corolla white or pale yellow; standard obovate, 3–9 mm, clawed; wings 7–8 mm, base auriculate, clawed; keel arcuate, 8–8.5 mm. Ovary 3.5–4 mm, 7- or 8-ovuled. Legume narrowly oblong, 0.8–1.5 cm × ca. 3.5 mm, lower suture more deeply undulate, upper suture slightly undulate, both surfaces downy, 2–5-jointed; articles broadly oblong to nearly quadrangular. Seed broadly elliptic, ca. 3 × 2.3 mm. Fl. Aug–Sep, fr. Oct–Nov.

Thickets, dense forests; 900–1000 m. Guangdong, Guangxi, S Yunnan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

2. Phyllodium kurzianum (Kuntze) H. Ohashi, Ginkgoana 1: 272. 1973.

长柱排钱树 chang zhu pai qian shu

Meibomia kurziana Kuntze, Revis. Gen. Pl. 1: 197. 1891; *Desmodium grande* Kurz; *D. kurzii* Craib; *Phyllodium grande* (Kurz) Schindler; *P. kurzii* (Craib) Chun.

Shrubs, much branched, 1–2 m tall. Branchlets densely gray-yellow tomentose. Petiole 2–3 mm; terminal leaflet blade ovate or elliptic, 7–16 × 5–11 cm, lateral ones 7–11 × 5–6 cm, abaxially densely white tomentose, adaxially appressed white pubescent, lateral veins 8–10 on each side of midvein, reaching margin, both surfaces distinctly reticulate veined. Flowers 5–11, enclosed by pair of leaflike bracts; bracts broadly elliptic or broadly ovate, 2–3.5 × 1.5–2.5 cm. Pedicel 5–10 mm. Calyx 2–3.5 mm. Corolla white or pale yellow; standard ca. 10 × 5 mm, clawed; wings ca. 8 × 1.5 mm, clawed; keel ca. 9 mm, base long clawed, auriculate. Ovary 2.5–3 mm; style ca. 1 cm, slender. Legume 1–2 × 0.4–0.5 cm, slightly pubescent or glabrescent, 3- or 4-jointed; articles nearly quadrangular, reticulate veined. Seed orbicular, 2.3–2.7 mm in diam. Fl. Jul–Aug, fr. Oct–Nov.

Thickets on mountain slopes; below 1000 m. W Guangdong, S Guangxi, SW and W Yunnan [Laos, Myanmar, N Thailand, Vietnam].

3. Phyllodium pulchellum (Linnaeus) Desvaux, J. Bot. Agric. 1: 124. 1813.

排钱树 pai qian shu

Hedysarum pulchellum Linnaeus, Sp. Pl. 2: 747. 1753;
Desmodium pulchellum (Linnaeus) Benthham; *Dicerma pulchellum* (Linnaeus) Candolle.

Shrubs, 0.5–2 m tall. Branchlets white or gray pubescent. Petiole 5–7 mm; terminal leaflet blade ovate, elliptic, or obovate, 6–10 × 2.5–4.5 cm, ca. 2 × as long as lateral leaflets, abaxially densely pubescent on veins, adaxially sparsely pubescent, lateral veins 6–10 on each side of midvein. Flowers 5 or 6, enclosed by pair of leaflike bracts; bracts orbicular, 1–1.5 cm in diam., both surfaces slightly pubescent, ciliate. Pedicel 2–3 mm, pubescent. Calyx ca. 2 mm. Corolla white or pale yellow; standard 5–6 mm, base attenuate, shortly and broadly clawed; wings ca. 5 × 1 mm, auriculate, clawed; keel ca. 6 × 2 mm, clawed, not auriculate. Pistil 6–7 mm; style 4.5–5.5 mm. Legume ca. 6 × 2.5 mm, slightly constricted on both sutures, usually 2-jointed; articles glabrous or sparsely pubescent and ciliate. Seed broadly elliptic or nearly orbicular, 2.2–2.8 × ca. 2 mm. Fl. Jul–Sep, fr. Oct–Nov. 2n = 22.

Wastelands on hills, roadsides, sparse forests on mountain slopes; 200–2000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Jiangxi, Taiwan, S Yunnan [throughout tropical Asia to Australia and New Guinea].

The roots and leaves are used medicinally for reducing fever and as an antiphlogistic and diuretic.

4. Phyllodium elegans (Loureiro) Desvaux, Mém. Soc. Linn. Paris 4: 324. 1826.

毛排钱树 mao pai qian shu

Hedysarum elegans Loureiro, Fl. Cochinch. 2: 450. 1790;
Desmodium blandum Meeuwen; *D. elegans* (Loureiro) Benthham (1861), not Candolle (1825); *Dicerma elegans* (Loureiro) Candolle.

Shrubs, 0.5–1.5 m tall. Branchlets and petioles densely yellow tomentose. Petiole ca. 5 mm; terminal leaflet blade ovate or elliptic to obovate, 7–10 × 3–5 cm, lateral ones obliquely ovate, ca. 1/2 as long as terminal one, both surfaces densely tomentose especially abaxially, lateral veins 9 or 10 on each side of midvein, both ends obtuse. Flowers 4–9, enclosed by a pair of leaflike bracts; bracts broadly elliptic, 1.4–3.5 × 0.9–2.5 cm, densely yellow tomentose, base oblique, apex emarginate. Pedicel 2–4 mm. Calyx campanulate, 3–4 mm. Corolla white or pale green; standard 6–7 × 3–4 mm, base attenuate; wings 5–6 × ca. 1 mm, base auriculate, clawed; keel larger than wings, 7–8 × ca. 2 mm, clawed. Pistil 8–10 mm. Legume 1–2 × 0.3–0.4 cm, densely silver-gray tomentose, lower suture undulate, upper suture straight or shallowly undulate, usually 3- or 4-jointed. Seed elliptic, ca. 2.5 × 1.8–2 mm. Fl. Jul–Aug, fr. Oct–Nov.

Plains, wastelands on hills, grasslands, sparse forests, thickets on mountain slopes; sea level to 1100 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Cambodia, Indonesia (as *Phyllodium elegans* var. *javanicum* Schindler), Laos, Thailand, Vietnam].

The roots and leaves are used medicinally for reducing fever and as an antiphlogistic and diuretic.

119. APHYLLODIUM (Candolle) Gagnepain, Notul. Syst. (Paris) 3: 254. 1916.

两节豆属 liang jie dou shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Dicerma sect. *Aphyllodium* Candolle, Prodr. 2: 339. 1825; *Dicerma* Candolle, nom. illeg. superfl.

Subshrubs or shrubs. Leaves digitately 3-foliate; stipules united, amplexicaul, mostly 3-lobed at apex; stipels very minute. Inflorescences racemose, terminal and axillary; bracts narrowly triangular, bracteoles at base of calyx, 2–5-flowered at each node. Calyx campanulate or funnel-shaped, with appressed long hairs and minute uncinate hairs, 5-lobed; lower lobes nearly equal to or longer than upper ones, upper 2 lobes connate, entire or minutely 2-toothed at apex. Corolla red; standard narrowly obovate to obovate, not auriculate; wings narrowly oblong; keel narrowly elliptic, shorter than wings, auriculate, clawed. Stamens diadelphous (9+1). Gynoecium sessile. Legume mostly 2- or occasionally 1-jointed, both sutures deeply indented. Seeds distinctly rim-arillate around hilum.

Seven species: tropical Asia to N Australia; one species in China.

The name *Dicerma* is illegitimate because it was nomenclaturally superfluous when published. In the protologue (Candolle, Prodr. 2: 339. 1825), the earlier-named genus *Phyllodium* (1813) was included.

1. Aphyllodium biarticulatum (Linnaeus) Gagnepain, Notul. Syst. (Paris) 3: 254. 1916.

(Linnaeus) Candolle; *D. biarticulatum* var. *australiense* Schindler; *Echinolobium biarticulatum* (Linnaeus) Desvaux.

两节豆 liang jie dou

Hedysarum biarticulatum Linnaeus, Sp. Pl. 2: 747. 1753;
Aphyllodium australiense (Schindler) H. Ohashi; *Desmodium biarticulatum* (Linnaeus) F. Mueller; *Dicerma biarticulatum*

Subshrubs, 40–70 cm tall. Stem erect or creeping; young shoots with appressed soft hairs. Petiole 5–7 mm; leaflet blade narrowly obovate or narrowly elliptic, 1–1.8 cm × 3–8 mm, abaxially appressed pilose, adaxially glabrous, base cuneate to rounded, apex obtuse, mucronate. Inflorescences terminal or

axillary, simple, 5–15 cm. Pedicel 2–3 mm. Calyx ca. 3.5 mm; lobes lanceolate, ca. 2 × as long as tube. Standard 5–7 × 2.5–4 mm, not auriculate and clawed; wings 5–7.5 × 0.8–1.3 mm, ± auriculate, claw 1.5–2.5 mm. Ovary puberulent, 2-ovuled; style glabrous. Legume erect, ca. 1 cm, both sutures deeply indented; articles transversely broadly elliptic to orbicular, with dense ap-

pressed or spreading hairs, reticulate. Seeds transversely broadly elliptic to transversely elliptic, ca. 1 × 1.2–1.5 mm. Fl. Aug–Sep, fr. Sep–Oct. $2n = 22$.

Wastelands, grassy forest margins. Hainan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam; N Australia].

120. OHWIA H. Ohashi, Sci. Rep. Tohoku Imp. Univ., Ser. 4, Biol. 40: 243. 1999.

小槐花属 xiao huai hua shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Catenaria Bentham in Miquel, Pl. Jungh. 217, 220. 1852, not Roussel (1806), nor Sternberg (1825).

Shrubs. Leaves pinnately 3-foliolate; stipules persistent; petiole winged. Inflorescences terminal and axillary, pseudoracemose or paniculate. Calyx narrowly campanulate, 4-lobed; upper lobe bifid at apex, lowest lobe longer than lateral ones. Corolla white to pale yellow; petals slightly callose, distinctly veined; standard elliptic, clawed; keel longer than wings. Androecium diadelphous; vexillary stamen free. Disk present around base of gynoecium. Pistil stipitate; style curved upward; stigma small. Loment linear; articles narrowly elliptic. Cotyledons epigeous.

Two species: E and SE Asia; two species (one endemic) in China.

- 1a. Apices of leaflets attenuate to caudate; flowers 6–6.5 mm; corolla greenish or yellowish white 1. *O. caudata*
- 1b. Apices of leaflets obtuse; flowers ca. 9 mm; corolla pale yellow 2. *O. luteola*

1. Ohwia caudata (Thunberg) H. Ohashi, Sci. Rep. Tohoku Imp. Univ., Ser. 4, Biol. 40: 243. 1999.

小槐花 xiao huai hua

Hedysarum caudatum Thunberg in Murray, Syst. Veg., ed. 14, 675. 1784; *Catenaria caudata* (Thunberg) Schindler; *C. laburnifolia* (Poiret) Bentham; *Desmodium caudatum* (Thunberg) Candolle; *D. laburnifolium* (Poiret) Candolle; *H. laburnifolium* Poiret.

Shrubs or subshrubs, erect, 1–2 m tall, much branched. Leaves 3-foliolate; petiole 1.5–4 cm, often very narrowly winged; terminal leaflet blade lanceolate or oblong, 5–9 × 1.5–2.5 cm, lateral ones smaller, abaxially apparently glaucous and more densely hairy on raised veins, adaxially lucid and glabrescent, base cuneate, apex acuminate or acute. Racemes terminal or axillary, 5–30 cm; rachis densely pubescent intermixed with minute uncinate and appressed or spreading longer hairs, 2-flowered at each node. Pedicel 3–4 mm. Calyx 3.5–4 mm, upper 2 lobes united for 3/4 length or more. Corolla green-white or yellow-white; standard elliptic, shortly clawed; wings narrowly oblong, clawed; keel oblong, clawed. Ovary densely appressed pilose on both sutures. Legume linear, flat, 5–7 cm, sessile, 4–8-jointed; articles narrowly ellipsoidal, 9–12 × ca. 3 mm, with dense, short, brown, uncinate hairs. Fl. Jul–Sep, fr. Sep–Nov. $2n = 22^*$.

Mountain slopes, roadsides, grasslands, streamsides, forest margins; 100–1000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Sri Lanka, Vietnam].

The roots and leaves are used as a pesticide and medicinally as a diuretic.

2. Ohwia luteola H. Ohashi, Sci. Rep. Tohoku Imp. Univ., Ser. 4, Biol. 40: 244. 1999.

淡黄小槐花 dan huang xiao huai hua

Desmodium luteolum H. Ohashi & T. Nemoto, J. Jap. Bot. 73: 86. 1998, not Standley (1938); *D. sinoluteolum* H. Ohashi & T. Nemoto.

Shrubs, ca. 50 cm tall. Stems glabrescent. Leaves alternate, 3-foliolate; stipules persistent, narrowly triangular, 5–7 mm; petiole slightly winged; leaflet blades narrowly elliptic, principal lateral veins looped within margin, apex obtuse; terminal leaflet stipellate, ± larger than lateral ones, 4–5 × 1.5–2 cm, abaxially appressed straight pubescent on veins, adaxially glabrous; rachis 5–8 mm, slightly winged, sulcate adaxially; lateral leaflets pulvinate, sessile, stipellate adaxially; stipels filiform, 2–4 mm. Inflorescences terminal, pseudoracemose, 5–7-flowered per node, appressed pubescent and with minute hooked hairs, ca. 19 cm when young (probably shortly paniculate at lower nodes when mature); primary bracts narrowly triangular, 3–4 mm. Flowers ca. 9 mm; pedicel 2–4 mm, pubescent; bracteoles 2 at base of calyx, ovate, ca. 0.5 mm. Calyx campanulate, symmetric to base, 5-lobed but upper 2 united near tip, outside densely appressed pubescent; tube ca. 1.5 mm; lobes ca. 2 mm, almost equal in length, lateral one narrowly triangular, lowest one slightly longer than others, inside appressed pubescent. Corolla pale yellow, distinctly veined; standard elliptic, ca. 8 × 5 mm, with a claw ca. 1 mm, slightly auriculate at base, apex slightly retuse; wings smaller than keel, ca. 7 mm, apex obtuse, lamina narrowly elliptic, ca. 5.5 × 2 mm, slightly auriculate at upper side of base, claw 1–1.5 mm; keel 8–8.5 mm, apex rounded, lamina ca. 7 × 3 mm, auriculate at upper side of base, claw 1.5–2 mm. Vexillary stamen free from stamens of both sides and with small openings (fenestrae) at both sides at

base; remaining 9 stamens connate for 4/5 or more of length. Disk present at base of pistil, ca. 0.3 mm tall. Pistil slightly S-shaped, 7.5–8 mm, stipitate; stipe ca. 0.5 mm, glabrous; ovary 4–4.5 mm, 4-ovuled, densely appressed puberulent; style

curved upward, pilose on both sutures; stigma small. Legume and seeds unknown. Fl. Sep.

• Riverside thickets; 400–500 m. NE Yunnan.

121. DESMODIUM Desvaux, J. Bot. Agric. 1: 122. 1813, nom. cons.

山蚂蝗属 shan ma huang shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Herbs, subshrubs, or shrubs. Leaves pinnately 3-foliolate or 1-foliolate by reduction of lateral leaflets, stipulate, stipellate. Flowers usually smaller, in racemes or panicles, axillary or terminal, rarely solitary or binate in leaf axils. Bracts persistent or early deciduous; bracteoles present or absent. Calyx campanulate, 4- or 5-lobed, bilabiate; upper 2 lobes connate for all or most of length, entire or 2-toothed at apex, lower lobes free, longest. Corolla white, green-white, pink, purple, or violet; standard elliptic or obovate to nearly orbicular; wings ± adherent to keel, wholly clawed. Stamens diadelphous (9+1), rarely monadelphous. Ovary usually sessile, with several to many ovules. Legume compressed, usually indehiscent, transversely segmented, upper (adaxial) suture slightly constricted or straight, lower (abaxial) one constricted; articles mostly ellipsoidal to quadrangular. Cotyledons epigeous.

About 280 species: mostly in subtropical and tropical regions; 32 species (four endemic, three introduced) in China.

- 1a. Stamens monadelphous, axillary filament connate to other filaments above middle (only *D. sequax* to below middle).
 - 2a. Stipules linear; keel equal to wings; legume moniliform, with dense rust-colored or brown minute hooked hairs 32. *D. sequax*
 - 2b. Stipules mostly narrowly ovate; keel shorter than wings; legume not moniliform, with hooked and straight hairs or glabrous.
 - 3a. Bracteoles absent.
 - 4a. Legume densely appressed sericeous; leaflets abaxially sericeous, midvein and lateral veins conspicuous 25. *D. multiflorum*
 - 4b. Legume glabrous; leaflets abaxially velutinous, veins inconspicuous 26. *D. amethystinum*
 - 3b. Bracteoles present.
 - 5a. Terminal leaflet 5–17 cm wide.
 - 6a. Young branchlets white pubescent; terminal leaflet ovate or broadly ovate, base oblique, abaxially densely sericeous 30. *D. megaphyllum*
 - 6b. Young branchlets densely white or gray tomentose; terminal leaflet orbicular, ovate, or obovate, base not oblique, abaxially densely gray or white tomentose 31. *D. yunnanense*
 - 5b. Terminal leaflet 1–5 cm wide.
 - 7a. Terminal leaflet lanceolate or lanceolate-linear, more than 4 × as long as wide; legume glabrous 29. *D. stenophyllum*
 - 7b. Terminal leaflet not as above, if lanceolate, then less than 2 × as long as wide; legume hairy or subglabrous.
 - 8a. Apex of standard emarginate; keel not mucronate at apex; young branchlets pubescent 27. *D. elegans*
 - 8b. Apex of standard orbicular, not emarginate; keel mucronate at apex; young branchlets subglabrous 28. *D. callianthum*
 - 1b. Stamens diadelphous, axillary filament free from other filaments.
 - 9a. Legume linear, articles linear, oblong, or oblong-linear to narrowly obovoid, ca. 3 × as long as wide or more.
 - 10a. Leaves 1-foliolate (*D. gracillimum* rarely 3-foliolate near base of stem).
 - 11a. Leaves 1-foliolate, leaflet blade ovate, ovate-elliptic, or lanceolate, 5–12 × 2–5 cm; legume 8–12 cm, 6–8-jointed, articles longer than 12 mm 4. *D. zonatum*
 - 11b. Leaves often 1-foliolate, sometimes 3-foliolate near base of stem, leaflet blade broadly triangular or broadly ovate, 2–3.5 × 1.5–2.5 cm; legume 2–3.5 cm, 3–5-jointed, articles 6–7 mm 5. *D. gracillimum*
 - 10b. Leaves 3-foliolate.
 - 12a. Terminal leaflet elliptic-oblong, 1–4 × 0.7–2.5 cm, lateral veins 4 or 5; stipules ca. 2 mm 6. *D. scorpiurus*
 - 12b. Terminal leaflet basically ovate-elliptic, 4.5–10(–15) × 3–6(–8) cm, lateral veins 7–12; stipules 7–10 mm.
 - 13a. Legume plicate when young; pedicels deflexed after flowering; flowers opening almost at same time; articles oblong; leaves always 3-foliolate 3. *D. hispidum*

- 13b. Legume always straight; pedicels not deflexed after flowering; flowers opening one by one; articles linear to narrowly oblong; leaves 3- or 1-3-foliolate.
- 14a. Terminal leaflet ovate or ovate-elliptic, lateral veins 9-12; upper lobe of calyx entire or nearly so at apex 1. *D. laxiflorum*
- 14b. Terminal leaflet rhombic-ovate or obovate, lateral veins 7-9; upper lobe of calyx 2-toothed at apex 2. *D. diffusum*
- 9b. Legume narrowly oblong, articles often orbicular, nearly oblong, or nearly quadrate, nearly as long as wide or slightly longer.
- 15a. Leaves 1-foliolate (*D. styracifolium* sometimes 3-foliolate).
- 16a. Leaflets orbicular to broadly obovate, reniform, or compressed rhombic.
- 17a. Leaflets orbicular to broadly obovate, abaxially densely adpressed white sericeous, lateral veins 8-10 20. *D. styracifolium*
- 17b. Leaflets reniform or compressed rhombic, abaxially glabrous, lateral veins 3 or 4 21. *D. renifolium*
- 16b. Leaflets not as above, longer than wide.
- 18a. Leaflets 1-2.2 × 0.7-1.2 cm; legume glabrous 19. *D. rubrum*
- 18b. Leaflets longer than 3 cm; legume hairy or nearly glabrous.
- 19a. Flowers crowded on peduncles; leaflets yellow-brown velutinous on both surfaces 14. *D. velutinum*
- 19b. Flowers lax, scattered on peduncles; leaflets adaxially glabrous, abaxially pubescent or villous.
- 20a. Flowering pedicel ca. 12 mm; legume subglabrous, glabrescent 13. *D. oblongum*
- 20b. Flowering pedicel 2-5 mm; legume with hooked hairs.
- 21a. Corolla green-white; petioles with dense straight and minute hooked hairs 11. *D. gangeticum*
- 21b. Corolla purple; petioles sparsely villous 12. *D. flexuosum*
- 15b. Leaves 3-foliolate (*D. dichotomum*, *D. heterophyllum*, *D. microphyllum*, *D. reticulatum*, and *D. tortuosum* sometimes mixed 1-foliolate leaves near base of stem).
- 22a. Terminal leaflet shorter than 2.5 cm.
- 23a. Racemes 6-flowered to numerous.
- 24a. Leaflets obtiangular-ovate or obovate, 1-2.5 × 1-1.6 cm; branchlets spreading yellow-brown or rust-colored pubescent; seed without aril 15. *D. griffithianum*
- 24b. Larger leaflets narrowly obovate-elliptic or narrowly elliptic, 1-1.2 × 0.4-0.6 cm, smaller leaflets obovate or elliptic, 0.2-0.6 × 0.15-0.4 cm; branchlets nearly glabrous; seed arillate 22. *D. microphyllum*
- 23b. Flowers solitary, in pairs at axils, or 2 or 3 scattered on peduncle.
- 25a. Terminal leaflet broadly elliptic or broadly obovate; flowering pedicel 10-25 mm; articles of legume 3.5-4 mm 23. *D. heterophyllum*
- 25b. Terminal leaflet obcordate, obtiangular, or obovate; flowering pedicel 3-8 mm; articles of legume shorter than 2.5 mm 24. *D. triflorum*
- 22b. Terminal leaflet usually longer than 2.5 cm.
- 26a. Racemes shorter than 7 cm; flowers dense.
- 27a. Rachis densely yellowish spreading hooked hairy; legume erect 16. *D. heterocarpon*
- 27b. Rachis densely gray-white adpressed villous; legume pendent 17. *D. strigillosum*
- 26b. Racemes longer than 10 cm; flowers slightly sparse.
- 28a. Terminal leaflet narrowly ovate, or ovate-elliptic to narrowly elliptic, adaxially glabrous 18. *D. reticulatum*
- 28b. Terminal leaflet elliptic, broadly elliptic, ovate, broadly ovate, or rhombic-ovate to obovate, adaxially sparsely hairy.
- 29a. Upper suture of legume straight or slightly undulate, lower suture constricted between articles.
- 30a. Shrubs with terete and glabrescent branches; terminal leaflet elliptic or obovate 9. *D. concinnum*
- 30b. Prostrate or climbing herbs with triangular stems; terminal leaflet broadly ovate to rhombic, rarely elliptic 10. *D. intortum*
- 29b. Both sutures of legume constricted between articles, moniliform.
- 31a. Flowering pedicel 8-17 mm, with minute hooked and glandular hairs; bracts caducous; leaflets sparsely hairy on both surfaces 7. *D. tortuosum*
- 31b. Flowering pedicel 2-5 mm, with minute hooked hairs and minute pubescence; bracts persistent; leaflets adaxially with adpressed and intermixed hooked hairs, abaxially densely adpressed hairy 8. *D. dichotomum*

1. Desmodium laxiflorum Candolle, Ann. Sci. Nat. (Paris) 4: 100. 1825.

大叶拿身草 da ye na shen cao

Desmodium macrophyllum Desvaux; *D. recurvatum* (Roxburgh) Graham ex Wight & Arnott; *Hedysarum recurvatum* Roxburgh.

Subshrubs or shrubs, erect, 30–120 cm tall. Young branchlets with adpressed and minute hooked hairs. Leaves 3-foliate; petiole 1.5–4 cm; terminal leaflet blade ovate or ovate-elliptic, 9–19 × 3–8 cm, abaxially densely yellow sericeous, adaxially sparsely adpressed hairy, lateral veins 9–12, apex shortly acuminate. Racemes terminal and axillary, often 2 axillary, to 28 cm; rachis pubescent intermixed with minute hooked hairs, 2–7-flowered, fascicled. Pedicel 5–10 mm, densely hairy as rachis. Calyx densely villous; upper lobes entire or nearly so at apex. Corolla white to violet, 4–7 mm; standard broadly obovate or orbicular; wings auriculate and clawed; keel clawed. Legume linear, 2–6 cm, with dense, minute, hooked hairs, 4–12-jointed, both sutures nearly not constricted between articles; articles oblong. Fl. Aug–Oct, fr. Oct–Nov. 2n = 22.

Secondary forest margins, thickets, grassy slopes; 200–2400 m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam].

2. Desmodium diffusum Candolle, Ann. Sci. Nat. (Paris) 4: 100. 1825.

单序山蚂蝗 dan xu shan ma huang

Desmodium laxiflorum Candolle var. *formosense* Ohwi; *D. laxiflorum* subsp. *parvifolium* H. Ohashi & T. T. Chen; *D. unibotrysosum* C. Chen & X. J. Cui; *Hedysarum diffusum* (Candolle) Roxburgh (1832), not Willdenow (1801).

Subshrubs or shrubs, nearly erect, 30–100 cm tall. Branchlets with adpressed and minute hooked hairs. Leaves 3-foliate; petiole 1–4 cm; terminal leaflet blade rhombic-ovate or obovate, shorter than 9 cm, abaxially densely yellow sericeous, adaxially sparsely adpressed hairy, lateral veins 7–9, apex acute. Racemes solitary, often terminal, to 25 cm; rachis pubescent intermixed with minute hooked hairs. Pedicel 3–5 mm, densely hairy as rachis. Calyx densely villous; upper lobes minutely 2-toothed at apex. Corolla white to violet, 4–7 mm; standard broadly obovate or orbicular. Legume linear, 2–6 cm, with dense, minute, hooked hairs, 4–12-jointed, both sutures distinctly constricted between articles; articles oblong. Fl. and fr. Aug–Nov.

Thickets, forest margins, mountain slopes; 100–2500 m. Guangdong, Guangxi, Taiwan, Yunnan [India, Indonesia, Laos, Myanmar, Nepal, Philippines, Thailand, Vietnam].

This species has been confused with *Desmodium laxiflorum*. However, it is well distinguished from it by terminal leaflets rhombic-ovate or obovate, shorter than 9 cm, acute at apex, lateral veins often 7–9 pairs; racemes solitary; pedicel 3–5 mm; upper calyx lobe 2-toothed at apex; and both sutures of legume distinctly constricted between articles.

3. Desmodium hispidum Franchet, Pl. Delavay. 174. 1890.

粗硬毛山蚂蝗 cu ying mao shan ma huang

Uraria henryi Schindler; *U. hispida* (Franchet) Schindler.

Shrubs or subshrubs, erect, 0.5–1 m tall. Stems striate; branches densely yellowish villous; old branches purple, glabrous. Leaves 3-foliate; stipules ovate or narrowly triangular-ovate, 10–15 × 3–4 mm; petiole 1–2 cm, densely yellowish villous; petiolules 4–6 mm; leaflets papery; terminal leaflet ovate to elliptic, 5–17 × 3–8 cm, abaxially yellowish villous, adaxially densely hispid, glabrescent, lateral veins 8–11 on each side of midvein, reaching margin, margin entire, midvein and lateral veins prominent on both surfaces. Inflorescences densely yellowish villous, paniculate when terminal, fasciculate with (1 or) 2–4 racemes or sometimes panicles at axils, 8–25 cm; primary bracts narrowly triangular-ovate, 4–5 × ca. 1 mm at base; secondary bracts 1.5–2.5 mm. Pedicel 4–5 mm, deflexed after flowering; bracteoles absent. Flowers 2–8 per node, fasciculate, opening almost at same time. Calyx 3–4 mm, outside densely yellowish villous, 4-lobed; lobes lanceolate, subequal. Corolla white, pale yellow, or greenish white, 4–5 mm; standard elliptic to broadly elliptic, without auricles, claw ca. 1 mm; wings elliptic, claw ca. 1 mm; keel ca. 4 mm, auriculate, claw ca. 1 mm. Androecium diadelphous. Legume sessile, 1.2–1.8 cm, with dense hooked hairs, plicate when young, straight when mature, 4–7-jointed, both sutures undulate; articles elliptic, 2.5–3 × ca. 1.5 mm. Seeds elliptic. Fl. and fr. Sep–Dec.

700–2400 m. Guizhou, Sichuan, Yunnan [India, Myanmar].

4. Desmodium zonatum Miquel, Fl. Ned. Ind. 1: 250. 1855.

单叶拿身草 dan ye na shen cao

Desmodium shimadae Hayata; *Meibomia zonata* (Miquel) Kuntze.

Subshrubs, erect, 30–80 cm tall. Young branches with dense, minute, hooked hairs, intermixed with sparse adpressed hairs. Leaves 1-foliate; petiole 1–2.5 cm; blade ovate, ovate-elliptic, or lanceolate, 5–12 × 2–5 cm, abaxially densely yellow-brown pubescent, adaxially glabrous or with sparse, minute, hooked hairs on veins. Racemes usually terminal, 10–25 cm, densely hooked hairy and sparsely long straight pubescent on rachis, 2- or 3-flowered at each node. Pedicel 4–10 mm. Calyx 2.5–3 mm; lobes longer than tube. Corolla white or pink, 6–7 mm; standard obovate, attenuate to base; wings narrowly obovate-elliptic, auriculate, shortly clawed; keel curved. Legume linear, 8–12 cm, 6–8-jointed, both sutures shallowly undulate; articles oblong-linear, longer than 12 mm, with dense, yellow, minute, hooked hairs. Fl. Jun–Aug, fr. Aug–Sep.

Dense forests, forest margins; 500–1300 m. SW Guangxi, Guizhou, Hainan, Taiwan, Yunnan [India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Pacific islands].

5. Desmodium gracillimum Hemsley, Ann. Bot. (Oxford) 9: 152. 1895.

细叶山蚂蝗 xi ye shan ma huang

Subshrubs, prostrate, 30–60 cm tall. Stems sparsely appressed pubescent and spreading minutely uncinate hairy. Leaves 1-foliate, rarely 3-foliate near base of stem; petiole 0.5–2 cm; blade broadly triangular or broadly ovate, 2–3.5 × 1.5–2.5 cm, abaxially appressed sericeous, intermixed with

sparse, minute, uncinate hairs, adaxially with subspreading, uncinate hairs, base cordate, apex obtuse. Racemes terminal, 8–20 cm; rachis hairy, laxly flowered, often with 3-flowered fascicles. Pedicel 4–6 mm, densely uncinate hairy. Calyx 2–2.3 mm; lobes nearly equal to tube. Corolla white-purple, 4–5 mm; standard obovate, shortly clawed; wings and keel wholly shortly clawed. Legume linear, 2–3.5 × ca. 0.2 cm, lower suture more deeply undulate, upper suture shallowly undulate, 3–5-jointed; articles narrowly elliptic, 6–7 × ca. 2 mm, with dense, spreading, minute, uncinate hairs. Fl. Sep–Nov, fr. Nov–Dec.

• Wastelands; low elevations (200–300 m). S Taiwan.

6. Desmodium scorpiurus (Swartz) Desvaux, J. Bot. Agric. 1: 122. 1813.

蝎尾山蚂蝗 xie wei shan ma huang

Hedysarum scorpiurus Swartz, Prodr. 107. 1788; *Desmodium akoense* Hayata.

Herbs, perennial. Stems ascending or diffuse, hooked hairy. Leaves 3-foliolate; petiole 1.5–3 cm, minutely hooked hairy; terminal leaflet blade ovate or broadly elliptic to obovate, 1–4 × 0.7–2.5 cm, lateral ones slightly smaller, both surfaces adpressed hairy, lateral veins 4 or 5, base obtuse, apex obtuse-rounded or emarginate. Racemes terminal or axillary; rachis slender, minutely hooked hairy, laxly flowered, 1- or 2-flowered at each node. Pedicel 3–7 mm, with hooked hairs, sometimes intermixed with straight hairs. Calyx campanulate, ca. 2.5 mm; upper lobes slightly 2-toothed. Corolla pink, ca. 4 mm; standard obovate; wings oblong, clawed; keel obliquely obovate, long clawed. Ovary linear, ca. 3.5 mm; style curved. Legume linear, slender, 2–5 × ca. 0.25 cm, 3–8-jointed, constricted between articles; articles 4–6 mm, 3–4 × as long as wide, hooked hairy. Fl. and fr. Aug–Oct. $2n = 22^*$.

Open dry places; low and middle elevations (sea level to 500 m). Introduced and naturalized in S Taiwan [introduced in Australia, New Guinea, Pacific islands, and Philippines; native to tropical America].

7. Desmodium tortuosum (Swartz) Candolle, Prodr. 2: 332. 1825.

南美山蚂蝗 nan mei shan ma huang

Hedysarum tortuosum Swartz, Prodr. 107. 1788; *Desmodium purpureum* (Miller) Fawcett & Rendle; *H. purpureum* Miller.

Herbs, perennial, erect, 50–200 cm tall. Stems with hooked hairs, sometimes intermixed with long hairs. Leaves 3-foliolate, rarely 1-foliolate; petiole 1–8 cm, hairy as stems; terminal leaflet blade elliptic or ovate, 3–8(–14) × 1.5–3(–6) cm, both surfaces sparsely hairy, base cuneate, apex obtuse. Racemes or sometimes panicles, terminal or axillary; rachis with dense minute hooked and glandular hairs, 2-flowered at each node. Pedicel filiform, to 1.7 cm at fruiting, hairy as rachis. Calyx 3–4 mm, 5-parted; lobes longer than tube. Corolla red, white, or yellow; standard obovate, 2.5–3.5 × ca. 2 mm, base attenuate, apex emarginate; wings oblong, base auriculate, shortly clawed; keel obliquely oblong, clawed. Legume narrowly oblong, 1.5–2 cm, both sutures constricted between articles, moniliform, densely gray-yellow hooked hairy, (3–)5–7-jointed. Fl. and fr. Jul–Sep.

$2n = 22$.

Wastelands, plains; low elevations. Introduced and naturalized in Guangdong [native from S United States to subtropical South America; naturalized in tropics of Old World].

8. Desmodium dichotomum (Willdenow) Candolle, Prodr. 2: 336. 1825.

二歧山蚂蝗 er qi shan ma huang

Hedysarum dichotomum Willdenow, Sp. Pl. 3: 1180. 1802; *Desmodium diffusum* (Willdenow) Candolle (Nov 1825), not Candolle (Jan 1825); *H. diffusum* Willdenow (1801), not (Candolle) Roxburgh (1832).

Subshrubs or diffuse herbs, 20–80 cm tall. Stems adpressed long straight hairy and spreading hooked hairy. Leaves 3-foliolate, sometimes 1-foliolate near base of stem; petiole 1.5–3.5 cm, hairy; leaflet blade elliptic or ovate to broadly elliptic or broadly ovate, 1.5–7 × 1–6 cm, abaxially densely adpressed hairy, adaxially with sparse adpressed hairs, intermixed with sparse hooked hairs. Racemes terminal or axillary or usually panicles, 5–45 cm, hooked hairy, laxly flowered, 2- or 3-flowered at each node. Pedicel 2–5 mm. Calyx 4-lobed, ca. as long as tube; upper lobes 2-toothed. Corolla purple to violet, ca. 3 mm; standard obovate or broadly obovate, base shortly clawed; wings and keel wholly shortly clawed at base. Ovary densely pubescent, 5- or 6-ovuled. Legume narrowly oblong, 1–1.8 cm × 2.5–3 mm, densely hooked hairy, 5- or 6-jointed, both sutures shallowly constricted between articles. Fl. Jun–Aug, fr. Sep–Oct. $2n = 22$.

Forests, thickets. S Yunnan [India, Indonesia, Malaysia, Myanmar].

9. Desmodium concinnum Candolle, Ann. Sci. Nat. (Paris) 4: 101. 1825.

凹叶山蚂蝗 ao ye shan ma huang

Desmodium barbigerum H. Léveillé.

Shrubs, 80–150 cm tall. Young branches adpressed pubescent. Leaves 3-foliolate; petiole 0.8–1.3 cm, densely gray hairy; terminal leaflet blade elliptic or obovate, 4–9 × 1.5–3 cm, both surfaces adpressed pubescent, base cuneate, apex acute to obtuse-rounded, mucronate. Racemes terminal and axillary, 20–35 cm; rachis gray puberulent and hooked hairy, 2–4-flowered at each node. Pedicel ca. 1 cm, hooked hairy. Calyx 2–3.5 mm; lobes nearly equal. Corolla purple to violet; standard broadly obovate or orbicular, 5.5–7 × 5–6 mm, clawed; wings broadly obovate, 4.5–6 × ca. 3 mm, long clawed. Ovary hairy, 5- or 6-ovuled. Legume narrowly oblong, 4–6-jointed, lower suture deeply constricted near upper suture, upper suture thickened and nearly straight or slightly undulate, sparsely minutely hooked hairy. Fl. Sep–Oct, fr. Oct.

Grasslands, mountain slopes, thickets; ca. 1300 m. Guangxi, S Yunnan [Bhutan, India, Laos, Myanmar, Nepal, Pakistan, Vietnam].

10. Desmodium intortum (Miller) Urban, Symb. Antill. 8: 292. 1920.

扭曲山蚂蝗 niu qu shan ma huang

Hedysarum intortum Miller, Gard. Dict., ed. 8, *Hedysarum* no. 11. 1768; *Desmodium nantouense* Y. C. Liu & F. Y. Lu.

Herbs, perennial, scandent, to 3 m. Stems triangular, with white spongy pith, densely yellowish uncinate hispid and pilose or sometimes nearly glabrous. Leaves 3-foliolate; stipules ovate, 4–12 mm, acuminate or caudate, often persistent; petiole 3–9 cm, hairy as stems; terminal leaflet blade ovate or sometimes broadly elliptic, 5–13 × 2–7 cm, papery, both surfaces appressed pilose, base rounded to truncate, apex acute. Racemes terminal or axillary, to 30 cm; rachis with dense appressed to spreading hooked hairs, 2-flowered at each node. Pedicel filiform, 6–10 mm. Calyx 2.5–3 mm, 5-parted; lowest lobe longest. Corolla purplish red to violet becoming bluish or greenish white, 9–11 mm. Legume shortly stipitate, narrowly oblong, 2–4.5 cm × 3–4 mm, densely brownish hooked hairy, 5–10-jointed, lower suture deeply constricted, upper suture thickened, slightly sinuate; stipe ca. 2 mm; articles semicircular or rhombic, 4–5 mm. Fl. Jul–Oct, fr. Oct–Nov. 2n = 22, 24.

100–1400 m. Introduced in Taiwan [native to Central and South America].

11. Desmodium gangeticum (Linnaeus) Candolle, Prodr. 2: 327. 1825.

大叶山蚂蝗 da ye shan ma huang

Hedysarum gangeticum Linnaeus, Sp. Pl. 2: 746. 1753;
Desmodium cavaleriei H. Léveillé.

Shrubs, erect or nearly so, to 1 m tall, much branched, pilose. Leaves 1-foliolate, variable in shape and size; petiole 1–2 cm; blade narrowly elliptic-ovate, sometimes ovate or lanceolate, 3–13 × 2–7 cm, abaxially sparsely gray villous, adaxially glabrous except for hairy midvein, base rounded, apex acute. Racemes terminal and axillary or sometimes panicles, 10–30 cm, 2–6-flowered at each node. Pedicel 2–5 mm, hairy. Calyx ca. 2 mm, 4-lobed; lobes slightly longer than tube. Corolla green-white, 3–4 mm; standard obovate; wings oblong, base auriculate, shortly clawed; keel narrowly obovate, not auriculate. Ovary hairy. Legume linear, slightly curved, 1.2–2 × ca. 0.25 cm, lower suture deeply undulate, upper suture slightly constricted between seeds, hooked pubescent, 6–8-jointed. Fl. Apr–Aug, fr. Aug–Sep. 2n = 22.

Secondary forests, waste grasslands; 300–900 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, SC Taiwan, S and SE Yunnan [Bhutan, Cambodia, India, Kashmir, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; tropical Africa, Australia, Pacific islands; naturalized in the West Indies].

12. Desmodium flexuosum Wallich ex Bentham var. **cordifoliolatum** (P. C. Li) P. H. Huang, Bull. Bot. Res., Harbin 18: 6. 1998.

心叶山蚂蝗 xin ye shan ma huang

Desmodium cordifoliolatum P. C. Li, Acta Bot. Yunnan. 11: 301. 1989.

Subshrubs. Branchlets sparsely villous. Leaves 1-foliolate; stipules 5–6 mm; petiole 7–8 mm, sparsely villous; blade ovate, 2–3.5 cm, abaxially villous, adaxially glabrous. Racemes 10–15 cm; rachis sparsely villous, densely hooked pubescent, with 2–4 flowers, clustered. Pedicel ca. 2 mm. Calyx broadly campanulate, ca. 1.5 mm. Corolla purple; standard broadly obovate, 4.5–

4.7 × ca. 3.5 mm, base shortly clawed; wings oblong, ca. 3 × 1.5 mm, auriculate, clawed; keel falcate-oblong, longer than wings. Legume narrowly oblong, 0.8–1.8 cm × 2–2.5 mm, 3–7-jointed; articles broadly ovoid, hooked pubescent, reticulate veined.

• Meadows. Sichuan.

Desmodium cordifoliolatum was described from a specimen from Dechang, Sichuan. It differs from typical *D. flexuosum* in having smaller stipules, leaflets, and petioles. One of us (Ohashi) regards *D. cordifoliolatum* as a synonym of *D. gangeticum* (see J. Jap. Bot. 70: 113. 1995).

Desmodium flexuosum var. *flexuosum* occurs in Myanmar and Thailand. It is a subshrub, 30–50 cm tall, with leaves 1-foliolate, petiole 3–6 cm, blade (3–)4.5–7.5 × (2.5–)4–7.2 cm, and stipules 0.9–1.2 cm.

13. Desmodium oblongum Wallich ex Bentham in Miquel, Pl. Jungh. 224. 1852.

长圆叶山蚂蝗 chang yuan ye shan ma huang

Shrubs, erect, 70–150 cm tall, much branched, sparsely hooked hairy. Leaves 1-foliolate; petiole 1–1.4 cm, with dense, minute, hooked and straight, adpressed hairs; blade oblong or oblong-lanceolate, 7–12 × 2.5–4.5 cm, abaxially densely adpressed pubescent, veins sparsely minutely hooked hairy, adaxially glabrous except for hairy veins. Panicles terminal or axillary, 10–30 cm, laxly flowered, 2-flowered at each node. Pedicel ca. 1.2 cm, elongated to 1.7 cm at fruiting. Calyx ca. 3 mm; lobes ca. as long as tube. Corolla purple or violet, 8–10 mm; standard nearly orbicular to broadly obovate, shortly clawed; wings obliquely oblong, auriculate, shortly clawed; keel clawed. Stamens monadelphous. Ovary adpressed pubescent, 6–9-ovuled. Legume narrowly oblong, 1.5–3 × ca. 0.3 cm, lower suture crenate, upper suture deeply constricted, subglabrous, glabrescent, 5–7-jointed. Fl. and fr. Aug–Nov.

Broad-leaved forests or thickets; 1000–1900 m. Guangxi, Yunnan [Bhutan, Cambodia, India, Laos, Myanmar, Thailand, Vietnam].

14. Desmodium velutinum (Willdenow) Candolle, Prodr. 2: 328. 1825.

绒毛山蚂蝗 rong mao shan ma huang

Shrubs or subshrubs, to 150 cm tall. Young branches densely yellow-brown velutinous and shortly hooked hairy. Leaves 1-foliolate, rarely intermixed with 3-foliolate leaves; petiole 1.5–1.8 cm, densely yellow velutinous; blade ovate, ovate-lanceolate, triangular-ovate, or broadly ovate, 4–17 × 2.5–11.5 cm, both surfaces yellow velutinous, indumentum denser and longer abaxially. Inflorescences terminal and axillary, racemose or paniculate, 4–10 cm, terminal ones often broadly paniculate, to 20 cm, 2–5-flowered at each node; bracts subulate or lanceolate, 2.5–12 × 0.3–0.7 mm. Pedicel ca. 1.5 mm. Calyx 2–3 mm, 4-lobed. Corolla purple or pink, 3–5 mm; standard obovate-orbicular; wings narrowly elliptic, auriculate; keel narrow, not auriculate. Legume narrowly oblong, 1–2 cm × 2–3 mm, lower suture incised between seeds, upper suture nearly straight, with dense yellow straight hairs intermixed with short hooked hairs, 5–7-jointed. Fl. and fr. Aug–Nov. 2n = 22.

Sunny grassy slopes, streamsides, thickets, mixed forests; 100–

1400 m. Guangdong, SW Guangxi, Guizhou, Hainan, S Taiwan, S and SW Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa; introduced in tropical Americas and Australia].

- 1a. Bracts subulate, 2.5–3.5 × ca. 0.3 mm, sparsely hirsute; terminal inflorescences racemose or paniculate, 4–10 cm 14a. subsp. *velutinum*
- 1b. Bracts lanceolate, 7–10 × ca. 0.7 mm, densely hirsute; terminal inflorescences paniculate, to 20 cm 14b. subsp. *longibracteatum*

14a. *Desmodium velutinum* subsp. *velutinum*

绒毛山蚂蝗(原亚种) rong mao shan ma huang (yuan ya zhong)

Hedysarum velutinum Willdenow, Sp. Pl. 3: 1174. 1802; *Desmodium lasiocarpum* (Beauvois) Candolle; *D. latifolium* (Roxburgh) Candolle; *D. latifolium* var. *plukenetii* Wight & Arnott; *D. latifolium* var. *virgatum* Miquel; *D. plukenetii* (Wight & Arnott) Merrill & Chun; *D. velutinum* var. *plukenetii* (Wight & Arnott) Schindler; *D. virgatum* Prain; *H. lasiocarpum* Beauvois; *H. latifolium* Roxburgh.

Shrubs or subshrubs. Leaves 1-foliolate, rarely intermixed with 3-foliolate leaves; blade ovate-lanceolate, triangular-ovate, or broadly ovate, 4–11 × 2.5–8 cm. Terminal inflorescence racemose or paniculate, 4–10 cm; bracts subulate, 2.5–3.5 × ca. 0.3 mm, sparsely hirsute. Corolla ca. 3 mm. Fl. and fr. Sep–Nov. 2n = 22.

Sunny grassy slopes, streamsides, thickets; 100–900 m. Guangdong, SW Guangxi, Guizhou, Hainan, S Taiwan, S Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa; introduced in tropical Americas and Australia].

14b. *Desmodium velutinum* subsp. *longibracteatum* (Schindler) H. Ohashi, Ginkgoana 1: 194. 1973.

长苞绒毛山蚂蝗 chang bao rong mao shan ma huang

Desmodium longibracteatum Schindler, Repert. Spec. Nov. Regni Veg. 21: 7. 1925; *D. rufihirsutum* Craib; *D. velutinum* var. *longibracteatum* (Schindler) Meeuwen.

Shrubs. Leaves 1-foliolate; blade usually ovate, ca. 17 × 11.5 cm. Terminal inflorescence paniculate, to 20 cm; bracts lanceolate, 7–10 × ca. 0.7 mm, densely hirsute. Corolla ca. 5 mm. Fl. and fr. Aug–Oct.

Thickets, mixed forests; 200–1400 m. Guizhou, S and SW Yunnan [India, Indonesia, Laos, Myanmar, Thailand, Vietnam].

These subspecies were recognized at the rank of variety in FRPS (41: 29. 1995).

15. *Desmodium griffithianum* Bentham in Miquel, Pl. Jungh. 222. 1852.

疏果山蚂蝗 shu guo shan ma huang

Desmodium griffithianum var. *leiocarpum* X. F. Gao & C. Chen; *D. oxalidifolium* H. Léveillé, p.p.

Subshrubs or herbs, prostrate or ascending, 30–60 cm tall. Branches spreading yellow-brown or rust-colored pubescent. Leaves 3-foliolate; petiole 0.6–2.6 cm, densely hairy as branches; leaflet blade obtiangular-ovate or obovate, 1–2.5 × 1–1.6 cm, abaxially adpressed puberulent, adaxially subglabrous, base cuneate, apex truncate. Racemes terminal, ca. 10 cm, rachis hairy as branches. Flowers dichotomous. Pedicel 3–5 mm, hairy as branches. Calyx 3–3.5 mm; tube 1–1.3 mm; lower lobes triangular, upper lobes distinctly 2-toothed at apex. Corolla purple-red, ca. 7 mm; standard nearly orbicular, clawed; wings oblong, shortly clawed; keel smaller than wings, clawed. Ovary strigose; style glabrous. Legume deflexed, nearly oblong, 1–1.5 cm × 2.5–3.5 mm, lower suture constricted, upper suture straight, 3- or 4-jointed; articles nearly quadrate, with hooked and straight rigid hairs. Fl. and fr. Aug–Sep. 2n = 22.

Grassy slopes, roadsides, *Pinus* forests; 1500–2300 m. Guizhou, Sichuan, Yunnan [India, Laos, Myanmar, Thailand, Vietnam].

16. *Desmodium heterocarpon* (Linnaeus) Candolle, Prodr. 2: 337. 1825 ["*heterocarpum*".]

假地豆 jia di dou

Shrubs or subshrubs, erect or prostrate, 30–150 cm tall, much branched from base of stem. Leaves 3-foliolate; petiole 1–2 cm, slightly pubescent; terminal leaflet blade elliptic, narrowly elliptic, or broadly obovate, 2.5–6 × 1.3–3 cm, abaxially white adpressed pubescent, adaxially glabrous, base obtuse, apex rounded or obtuse, emarginate, mucronate. Racemes terminal or axillary, 2.5–7 cm; rachis with white, spreading, hooked hairs or yellowish or white, straight, appressed hairs, densely flowered. Pedicel 3–4 mm. Calyx 1.5–2 mm, 4-lobed; upper lobes slightly 2-toothed at apex. Corolla purple, purple-red, or white, ca. 5 mm; standard obovate-oblong, shortly clawed; wings obovate, auriculate, clawed; keel extremely curved, apex obtuse. Infructescence crowded. Legume erect, narrowly oblong, 1.2–2 cm × 2.5–3 mm, upper suture shallowly undulate, both sutures hooked hairy, 4–7-jointed; articles quadrate. Fl. Jul–Oct, fr. Oct–Dec. 2n = 22*.

Grasslands, grassy slopes, watersides, thickets, forests; 300–1800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Pacific islands].

We (Huang and Ohashi) differ in our circumscriptions of *Desmodium heterocarpon*. One of us (Ohashi) recognizes eight infraspecific taxa, including *D. heterocarpon* subsp. *angustifolium* H. Ohashi, which corresponds to *D. reticulatum* in this treatment, and *D. heterocarpon* subsp. *heterocarpon*, comprising var. *heterocarpon* and var. *strigosum* (see J. Jap. Bot. 66: 14–25. 1991).

- 1a. Rachis with white, spreading, hooked hairs 16a. var. *heterocarpon*
- 1b. Rachis with dense yellowish or white, straight, appressed hairs 16b. var. *strigosum*

16a. *Desmodium heterocarpon* var. *heterocarpon*

假地豆(原变种) jia di dou (yuan bian zhong)

Hedysarum heterocarpon Linnaeus, Sp. Pl. 2: 747. 1753;

Desmodium buergeri Miquel; *D. heterocarpon* var. *buergeri* (Miquel) Hosokawa.

Rachis with white, spreading, hooked hairs. Fl. Jul–Oct, fr. Oct–Dec.

Grasslands, watersides, thickets, forests; 300–1800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Pacific islands].

The whole plant is used medicinally for reducing fever and for treating contusions and strains.

16b. *Desmodium heterocarpon* var. *strigosum* Meeuwen, Reinwardtia 6: 95. 1961.

糙毛假地豆 cao mao jia di dou

Desmodium nervosum Vogel; *D. polycarpon* (Poiret) Candolle; *D. polycarpon* f. *hirsutum* Pampanini; *D. polycarpon* var. *trichocaulon* Baker; *D. siliquosum* (N. L. Burman) Candolle; *Hedysarum polycarpon* Poiret; *H. siliquosum* N. L. Burman.

Rachis with dense yellowish or white, straight, appressed hairs. Fl. Jul–Oct, fr. Oct–Nov.

Sparse thickets, grassy slopes, streamsides; 400–900 m. Guangdong, Guangxi, Hainan, Taiwan, S Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam; Africa, Australia, Pacific islands].

17. *Desmodium strigillosum* Schindler var. ***pendenticarpum*** (C. Z. Gao & Q. R. Lai) P. H. Huang, Bull. Bot. Res., Harbin 18: 6. 1998.

垂果山蚂蝗 chui guo shan ma huang

Desmodium pendenticarpum C. Z. Gao & Q. R. Lai, Bull. Bot. Res., Harbin 9(4): 41. 1989.

Subshrubs, prostrate or ascending, to 1 m tall. Young branchlets white adpressed villous. Leaves 3-foliolate; petiole 0.7–1.8 cm, villous; leaflet blade elliptic, narrowly elliptic, or obovate-elliptic, 1.7–4 × 1.1–2 cm, abaxially densely white villous, adaxially glabrous, base broadly cuneate or rounded, apex rounded or obtuse. Racemes terminal, 2.5–7.5 cm; rachis villous, densely flowered. Pedicel 2.5–3 mm. Calyx ca. 2 mm. Corolla purple, ca. 6 mm; standard broadly ovate-orbicular or orbicular; wings auriculate at base; keel nearly spatulate, curved. Legume pendent, 0.9–2 cm × ca. 2 mm, adpressed gray-white villous, constricted, lower suture undulate, upper suture straight, 3–8-jointed. Fl. Aug, fr. Oct.

• Mountain slopes; ca. 100 m. S Guangxi.

One of us (Huang) treats this taxon as a variety of *Desmodium strigillosum* on account of the difference in indumentum of the branchlets, legumes, petioles, and abaxial surface of the leaflets, as well as the difference in corolla color between both taxa. However, one of us (Ohashi) prefers to treat *Desmodium pendenticarpum* as a synonym of *D. strigillosum* (see J. Jap. Bot. 70: 115. 1995).

The typical variety occurs in Cambodia, Indonesia, Laos, Myanmar, and Vietnam, and is introduced in Australia. It is an erect shrub or subshrub, to 60 cm tall, with branchlets, petioles, and leaflets abaxially densely appressed gray or silver silky hairy; rachis of the inflorescence

with dense appressed white or silver silky hairs, intermixed with hooked hairs; corolla blue; and legume densely minutely hooked hairy and long straight white hairy.

18. *Desmodium reticulatum* Champion ex Bentham, Hooker's J. Bot. Kew Gard. Misc. 4: 46. 1852.

显脉山绿豆 xian mai shan lü dou

Desmodium heterocarpon (Linnaeus) Candolle subsp. *angustifolium* H. Ohashi.

Subshrubs, erect, 30–60 cm tall. Leaves 3- or sometimes 1-foliolate near lower stem; petiole 1.5–3 cm, sparsely hairy; terminal leaflet blade narrowly ovate or ovate-elliptic to narrowly elliptic, 3–5 × 1–2 cm, lucid, abaxially adpressed pilose, adaxially glabrous, base slightly cordate, both ends obtuse or apex acute. Racemes terminal, 10–15 cm or longer; rachis densely hooked hairy, remotely 2-flowered at each node. Pedicel ca. 3 mm, glabrous. Calyx 4-lobed; lobes ca. as long as tube. Corolla pink or blue, ca. 6 mm; standard ovate-orbicular; wings obovate-oblong, wings and keel distinctly curved. Legume oblong, 1–2 cm × ca. 2.5 mm, subglabrous or hooked pubescent, lower suture undulate, upper suture straight, 3–7-jointed. Fl. Jun–Aug, fr. Sep–Oct.

Thickets, grassy slopes; 200–1300 m. Guangdong, Guangxi, Hainan, S Yunnan [Myanmar, Thailand, Vietnam].

This is a species similar to *Desmodium heterocarpon* but differs by the terminal leaflets usually narrowly elliptic, narrower, thicker, lucid adaxially, and the inflorescences longer and laxly flowered. One of us (Ohashi) considers it to be a subspecies of *D. heterocarpon* due to fundamental similarity in having erect or ascending lomenta comprising quadrate articles of 2.5–3 mm.

19. *Desmodium rubrum* (Loureiro) Candolle, Prodr. 2: 327. 1825.

赤山蚂蝗 chi shan ma huang

Ornithopus ruber Loureiro, Fl. Cochinch. 2: 452. 1790; *Desmodium carlesii* Schindler.

Subshrubs, prostrate or erect, 30–50 cm tall, much branched. Leaves often 1-foliolate, rarely 3-foliolate; petiole 4–10 mm, densely adpressed pubescent; blade elliptic, sometimes narrowly elliptic to nearly orbicular, 1–2.2 cm × 7–12 mm, abaxially sparsely adpressed pubescent, adaxially glabrous, base narrowly cordate, both ends obtuse or apex slightly emarginate. Racemes terminal, 5–25 cm; rachis yellow hooked hairy. Flowers extremely lax. Pedicel 2–3 mm, elongated to 7 mm at fruiting. Calyx often red; lobes nearly equal. Corolla blue or pink, 5–6 mm; standard obcordate, ca. as long as keel; wings obliquely ovate, shorter, auriculate, wholly clawed. Legume narrowly oblong, ca. 2 cm, slightly curved, glabrous, lower suture constricted, upper suture straight, 2–7-jointed; articles nearly quadrate, distinctly reticulate veined. Fl. and fr. Apr–Jun.

Wastelands, sandy areas at seashores; sea level. Guangdong, Guangxi, Hainan [Cambodia, Vietnam].

Because of its long taproot system, this plant is used for protecting riverbanks.

20. Desmodium styracifolium (Osbeck) Merrill, Amer. J. Bot. 3: 580. 1916.

广东金钱草 guang dong jin qian cao

Hedysarum styracifolium Osbeck, Dagr. Ostind. Resa, 247. 1757; *Desmodium capitatum* (N. L. Burman) Candolle; *D. retroflexum* (Linnaeus) Candolle; *H. capitatum* N. L. Burman; *H. retroflexum* Linnaeus; *Nicolsonia styracifolia* (Osbeck) Desvaux; *Pseudarthria capitata* (N. L. Burman) Hasskarl; *Uraria retroflexa* (Linnaeus) Drake.

Herbs, subshrublike, erect, 30–100 cm tall, much branched. Young branches with dense, white or yellowish hairs. Leaves often 1(or 3)-foliolate; petiole 1–2 cm, densely sericeous; blade orbicular or nearly so to broadly obovate, 2–4.5 × 2–4.5 cm, abaxially densely adpressed white sericeous, adaxially glabrous, lateral veins 8–10, base rounded or cordate, apex rounded or emarginate. Racemes short, 1–3 cm; rachis densely sericeous, densely flowered, 2-flowered at each node. Pedicel 2–3 mm, drooping at fruiting. Calyx 4-lobed; lobes nearly equal. Corolla purple-red, ca. 4 mm; standard obovate or nearly orbicular, clawed; wings obovate, shortly clawed; keel longer than wings, extremely curved, long clawed. Ovary linear, hairy. Legume 1–2 cm × ca. 2.5 mm, pubescent and minutely hooked hairy, lower suture undulate, upper suture straight, 3–6-jointed, reticulate veined. Fl. and fr. Jun–Sep.

Mountain slopes, grasslands, thickets; below 1000 m. Fujian, Guangdong, Guangxi, Hainan, Hubei, S Yunnan [Cambodia, India, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

The whole plant is used medicinally for curing nephritis edema, urethra inflammation, jaundice, and irritation from nettles.

21. Desmodium reniforme (Linnaeus) Schindler, Repert. Spec. Nov. Regni Veg. 22: 262. 1926.

肾叶山蚂蝗 shen ye shan ma huang

Hedysarum reniforme Linnaeus, Syst. Nat., ed. 10, 2: 1169. 1759; *Desmodium reniforme* Candolle; *H. reniforme* Linnaeus, nom. illeg. superfl.

Subshrubs, 30–50 cm tall, much branched, often glabrous. Leaves 1-foliolate; petiole 1–2 cm; blade reniform or compressed rhombic, often broader than long, 1.5–3.5 × 2.5–5 cm, lateral veins 3 or 4, both ends truncate or base broadly cuneate or apex emarginate. Panicles terminal or racemes axillary, 5–15 cm, laxly flowered, 2–5-flowered at each node. Pedicel 2–8 mm, elongated to 1.3 cm at fruiting. Calyx 4-lobed; lobes triangular, ca. as long as tube. Corolla white to pale yellow or purple, ca. 5 mm; standard obovate, base broadly shortly clawed, apex slightly emarginate; wings narrowly oblong, long clawed; keel narrowly elliptic, long clawed. Stamens monadelphous, 3.2–4.2 mm. Ovary adpressed puberulent. Legume narrowly oblong, 2–3 × 0.25–0.4 cm, puberulent, becoming glabrescent, lower suture deeply or slightly constricted, upper suture straight or slightly constricted, 2–5-jointed. Fl. and fr. Sep–Nov.

Sunny grasslands, thickets, forest margins, broad-leaved forests; 100–1000 m. Hainan, Taiwan, S Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam; Australia].

22. Desmodium microphyllum (Thunberg) Candolle, Prodri. 2: 337. 1825.

小叶三点金 xiao ye san dian jin

Hedysarum microphyllum Thunberg in Murray, Syst. Veg., ed. 14, 675. 1784; *Codoriocalyx microphyllus* (Thunberg) H. Ohashi; *Desmodium microphyllum* var. *longipilum* Ohwi; *D. parvifolium* Candolle; *D. parvifolium* f. *yunnanense* Pampanini.

Herbs, erect or prostrate, perennial, nearly glabrous. Leaves 3- or sometimes 1-foliolate; petiole 2–3 mm, when 1-foliolate 3–10 mm; leaflet blade narrowly obovate-elliptic or narrowly elliptic and 1–1.2 cm × 4–6 mm, or obovate to elliptic and 2–6 × 1.5–4 mm, both ends rounded. Racemes terminal or axillary, yellow-brown spreading pubescent, 6–10-flowered. Pedicel 5–8 mm. Calyx 5-parted; lobes linear-lanceolate, 3–4 × as long as tube. Corolla pink, nearly as long as calyx; standard obovate or obovate-orbicular, below middle attenuate, shortly clawed; wings obovate, auriculate and clawed; keel narrowly elliptic, longer than wings. Stamens diadelphous. Ovary pubescent. Legume ca. 12 × 3 mm, both surfaces shallowly dentiform, (2 or)3- or 4(or 5)-jointed; articles nearly orbicular, flat, minutely uncinate hairy and ciliate or glabrescent, reticulate veined. Fl. May–Sep, fr. Sep–Nov. 2n = 22.

Wastelands, grasslands, thickets; 100–2500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Cambodia, India, Japan, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; Australia].

The roots are used medicinally for reducing fever, relieving coughs, and dispelling phlegm.

One of us (Ohashi) considers this species as a member of *Codoriocalyx*, *C. microphyllus* (Thunberg) H. Ohashi (see J. Jap. Bot. 79: 109. 2004). This transfer is supported by molecular analysis, but here we follow the treatment in FRPS for convenience.

23. Desmodium heterophyllum (Willdenow) Candolle, Prodri. 2: 334. 1825.

异叶山蚂蝗 yi ye shan ma huang

Hedysarum heterophyllum Willdenow, Sp. Pl. 3: 1201. 1802.

Herbs, prostrate or ascending, 10–70 cm tall. Young parts spreading pubescent. Leaves 3-foliolate, often intermixed with 1-foliolate leaves on lower part; petiole 0.5–1.5 cm; terminal leaflet blade broadly elliptic or broadly elliptic-obovate, 1–3 × 0.8–1.5 cm, base obtuse, apex rounded or nearly truncate, often emarginate. Flowers solitary or binate in leaf axils or 2 or 3 scattered on rachis. Pedicel 1–2.5 cm. Calyx 5-parted; upper 2 lobes deeply incised near base, villous and minutely hooked hairy. Corolla purple-red to white, ca. 5 mm; standard broadly obovate; wings obovate or narrowly elliptic, shortly auriculate; keel slightly curved, shortly clawed. Stamens diadelphous. Ovary adpressed pubescent. Legume narrowly oblong, straight or curved, 1.2–1.8 cm × ca. 3 mm, lower suture deeply undulate, upper suture straight, 3–5-jointed, flat; articles broadly oblong or quadrate, 3.5–4 mm, glabrescent, reticulate veined. Fl. and fr. Jul–Oct. 2n = 22.

Riversides, roadsides, field margins, grasslands; 200–500 m. Anhui, Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Taiwan, Yunnan

[Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Pacific islands].

24. Desmodium triflorum (Linnaeus) Candolle, Prodr. 2: 334. 1825.

三点金 san dian jin

Hedysarum triflorum Linnaeus, Sp. Pl. 2: 749. 1753; *Desmodium triflorum* var. *adpressum* Ohwi.

Herbs, perennial, prostrate, 10–50 cm tall, spreading pubescent. Leaves 3-foliolate; petiole ca. 5 mm; terminal leaflet blade obovate, obtriangular, or obovate, 2.5–10 × 2.5–10 mm, base cuneate, apex truncate, slightly emarginate. Flowers solitary or 2 or 3 in leaf axils. Pedicel 3–8 mm, elongated to 1.3 cm at fruiting. Calyx densely villous, 5-parted; lobes narrowly lanceolate, longer than tube. Corolla purple-red, nearly as long as calyx; standard obovate, base attenuate, long clawed; wings elliptic, shortly clawed; keel slightly falcate, longer than wings, curved, long clawed. Stamens diadelphous. Legume narrowly oblong, slightly falcate, flat, 5–12 × ca. 2.5 mm, lower suture undulate, upper suture straight, 3–5-jointed; articles nearly quadrate, with short, hooked hairs, reticulate veined. Fl. and fr. Jun–Oct. $2n = 22$.

Wastelands, grasslands, roadsides, riversides, sandy soils; 200–600 m. Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Taiwan, Yunnan, Zhejiang [Cambodia, India, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; tropics of Africa, Americas, SW Asia, Australia, Pacific islands].

The whole plant is used medicinally for inducing sweat and promoting digestion.

25. Desmodium multiflorum Candolle, Ann. Sci. Nat. (Paris) 4: 101. 1825.

饿蚂蝗 e ma huang

Desmodium dubium Lindley; *D. floribundum* (D. Don) Sweet ex G. Don; *D. mairei* Pampanini; *D. sambuense* (D. Don) Candolle; *Hedysarum floribundum* D. Don; *H. sambuense* D. Don.

Shrubs, erect, 1–2 m tall, yellow to white pubescent, becoming glabrescent. Leaves 3-foliolate; petiole 1.5–4 cm, densely tomentose; terminal leaflet blade elliptic or obovate, 5–10 × 3–6 cm, base cuneate or nearly rounded, apex obtuse or acute, mucronate. Inflorescences to 18 cm, terminal ones mostly paniculate, axillary ones mostly racemose; peduncle with dense antrorse sericeous and minute hooked hairs, often 2-flowered at each node. Pedicel ca. 5 mm. Calyx ca. 4.5 mm, densely hooked hairy; lobes ca. as long as tube. Corolla purple; standard elliptic, 0.8–1.4 cm, clawed; claw obovate, 8–11 mm; wings narrowly elliptic, 0.8–1.4 cm, clawed; keel 7–10 mm, long clawed, not auriculate at base. Stamens monadelphous. Legume 1.5–2.4 cm, lower suture crenate, upper suture nearly straight or slightly undulate, 4–7-jointed; articles obovate, 3–4 × ca. 3 mm, densely adpressed brown sericeous. Fl. Jul–Sep, fr. Aug–Oct. $2n = 22$.

Mountain slopes, grasslands, forest margins; 500–2800 m. Fujian, N Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Kashmir, Laos, Myanmar, Nepal, Thailand, Vietnam].

The flowers and branches are used medicinally for reducing fever by inducing sweat.

26. Desmodium amethystinum Dunn, Gard. Chron., ser. 3, 32: 210. 1902.

紫水晶山蚂蝗 zi shui jing shan ma huang

Shrubs, to 2 m tall. Young branches angular, densely white or brown velutinous. Leaves 3-foliolate; petiole 1.5–5 cm; leaflet blade ovate or elliptic, abaxially white or brown velutinous, adaxially velutinous then becoming sparsely so, base usually cuneately obtuse, margin entire, apex acute or mucronate, terminal leaflet 5–12 × 3.5–6.5 cm, lateral veins 8–10 on each side of midvein, reaching margin. Inflorescences 15–25 cm, terminal ones paniculate, axillary ones racemose, 2(or 3)-flowered at each node. Calyx 2.5–3 mm, 4-lobed. Corolla amethyst; standard obovate, 8.5–10 mm, base cuneate, apex slightly emarginate; wings longer than keel petal, 10.5–11.5 mm, auriculate at lamina base; keel 8–10.5 mm, apex acute. Stamens 8.5–9 mm. Legume flat, linear, 18–28 × 4–7 mm, glabrous, upper suture nearly straight, lower suture indented, 6- or 7-jointed.

Mountain thickets; ca. 1800 m. Yunnan [Thailand].

27. Desmodium elegans Candolle, Ann. Sci. Nat. (Paris) 4: 100. 1825.

圆锥山蚂蝗 yuan zui shan ma huang

Shrubs, much branched, 1–2 m tall. Branches glabrescent. Leaves 3-foliolate; petiole 2–4 cm; leaflet blade variable in shape and size, nearly ovate, ovate-lanceolate, ovate-elliptic, broadly ovate, rhombic, or orbicular-rhombic, 2–7 × 1.2–5 cm, base obliquely obtuse or cuneate, margin entire or shallowly undulate, apex usually acute to acuminate. Inflorescences 5–20 cm or longer, terminal ones mostly paniculate, axillary ones mostly racemose, often 2- or 3-flowered at each node. Calyx 3–4 mm, 4-lobed; lower calyx lobes longer or shorter than tube. Corolla purple or purple-red, 0.9–1.7 cm; standard broadly elliptic or obovate, base cuneate, apex slightly emarginate; wings and keel clawed, wings auriculate at base. Stamens 0.7–1.3 cm. Legume flat, linear, 3–5 × 0.4–0.5 cm, hairy, lower suture crenate, upper suture nearly straight, 4–6-jointed. $2n = 22$.

Forest margins, forests, thickets, mountain slopes, rocky places, roadsides, ditches; 1000–4000 m. Gansu, NW Guizhou, SW Shaanxi, Sichuan, Xizang, Yunnan [Afghanistan, Bhutan, NE and SW India, Kashmir, Nepal, Pakistan].

- 1a. Leaflets densely spreading white tomentose and sericeous abaxially; legume densely hairy as leaflet abaxially 27c. var. *handelii*
- 1b. Leaflets densely or sparsely pubescent to glabrous abaxially; legume sparsely adpressed pubescent or puberulent.
 - 2a. Terminal leaflet blade ovate-elliptic, broadly ovate, rhombic, or orbicular-rhombic; pedicel 4–10 mm; lower calyx lobes shorter than tube 27a. var. *elegans*
 - 2b. Terminal leaflet blade narrowly

ovate or ovate-lanceolate; pedicel
13–22 mm; lower calyx lobes
longer than tube 27b. var. *wolohoense*

27a. *Desmodium elegans* var. *elegans*

圆锥山蚂蝗(原变种) yuan zhui shan ma huang (yuan bian zhong)

Desmodium cinerascens Franchet; *D. cinerascens* var. *longipes* Pampanini; *D. cinerascens* var. *microphyllum* Franchet; *D. elegans* f. *albiflorum* (P. C. Li) H. Ohashi; *D. elegans* var. *albiflorum* P. C. Li; *D. esquirolii* H. Léveillé; *D. forrestii* Schindler; *D. franchetii* Rehder; *D. glaucophyllum* Pampanini; *D. rhabdoecladum* Franchet; *D. spicatum* Rehder; *D. tiliifolium* (D. Don) Wallich; *D. tiliifolium* var. *potaninii* Schindler; *D. tiliifolium* f. *rhabdoecladum* (Franchet) Schindler; *D. tiliifolium* var. *subtomentosum* E. Peter; *Hedysarum tiliifolium* D. Don.

Terminal leaflet blade ovate-elliptic, broadly ovate, rhombic, or orbicular-rhombic, 2–7 × 1.5–5 cm, abaxially densely or sparsely pubescent to nearly glabrous. Pedicel 4–10 mm. Lower calyx lobes shorter than tube. Legume sparsely adpressed pubescent. Fl. and fr. Jun–Oct. 2n = 22.

Margins of *Pinus*-*Quercus* forests, mountain slopes, roadsides, ditches; 1000–3700 m. Gansu, NW Guizhou, SW Shaanxi, Sichuan, Xizang, NW Yunnan [Afghanistan, Bhutan, NE and SW India, Kashmir, Nepal, Pakistan].

A white-flowered form has been recorded as *Desmodium elegans* f. *albiflorum* (P. C. Li) H. Ohashi (J. Jap. Bot. 70: 113. 1995; *D. elegans* var. *albiflorum* P. C. Li, Fl. Xizang, 2: 892. 1985).

27b. *Desmodium elegans* var. *wolohoense* (Schindler) H. Ohashi in H. Hara, Fl. E. Himalaya 2: 297. 1971.

川南山蚂蝗 chuan nan shan ma huang

Desmodium wolohoense Schindler, Repert. Spec. Nov. Regni Veg. 21: 1. 1925; *D. elegans* subsp. *wolohoense* (Schindler) H. Ohashi.

Terminal leaflet blade narrowly ovate or ovate-lanceolate, 3–4 × 1.2–2 cm, abaxially densely or sparsely pubescent or nearly glabrous. Pedicel 1.3–2.2 cm at anthesis, nearly glabrous. Lower calyx lobes longer than tube. Legume sparsely puberulent, glabrous at maturity.

• Forest margins, thickets; 2900–4000 m. Sichuan, NW Yunnan.

One of us (Ohashi) recognizes this taxon as a geographical subspecies (see J. Jap. Bot. 70: 113. 1995).

27c. *Desmodium elegans* var. *handelii* (Schindler) H. Ohashi in H. Hara, Fl. E. Himalaya 2: 297. 1971.

盐源山蚂蝗 yan yuan shan ma huang

Desmodium handelii Schindler, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 234. 1925.

Terminal leaflet blade ovate-elliptic, broadly ovate, or rhombic, 2–7 × 1.5–5 cm, abaxially densely spreading white tomentose and sericeous. Pedicel 4–10 mm. Lower calyx lobes longer than tube. Legume densely hairy as leaflet abaxially, ciliate.

• Mountain slopes, rocky places, forests; 1700–3100 m. Sichuan, Xizang, Yunnan.

28. *Desmodium callianthum* Franchet, Pl. Delavay. 173. 1890.

美花山蚂蝗 mei hua shan ma huang

Desmodium elegans Candolle subsp. *callianthum* (Franchet) H. Ohashi; *D. elegans* var. *callianthum* (Franchet) P. C. Li.

Shrubs, to 2 m tall, much branched, glabrescent. Leaves 3-foliolate; petiole 1–3 cm, sparsely pubescent or nearly glabrous; leaflet blade ovate-rhombic or ovate, 1.3–4 × 1–3 cm, base broadly cuneate, slightly oblique, apex obtuse-acute, mucronate. Racemes terminal or branched in panicles, 15–22 cm, 2–4-flowered at each node, internodes ca. 1 cm. Pedicel filiform, glabrous or nearly so. Calyx ca. 3 mm, 4-lobed; lobes triangular. Corolla purple or pink to white, 8–10 mm; standard elliptic, base clawed, apex rounded; wings auriculate, clawed; keel with base auriculate and clawed, apex mucronate. Stamens 7–8 mm. Pistil 8–9 mm. Legume 3–5 × ca. 0.5 cm, flat, slightly curved, nearly glabrous or puberulent, lower suture constricted and crenate, upper suture slightly constricted between articles, 5- or 6-jointed, reticulate veined. Fl. Jun–Aug, fr. Aug–Oct.

• Mountain slopes, roadsides, thickets, forests, ditches, rocky places in river valleys; 1700–3300 m. SW and W Sichuan, SE Xizang, NW Yunnan.

One of us (Ohashi, Bull. Univ. Mus. Univ. Tokyo 2: 291. 1971; J. Jap. Bot. 70: 113. 1995) recognizes this species as a subspecies of *Desmodium elegans* due to continuous ranges of variation in morphology, including the shape of the floral petals.

29. *Desmodium stenophyllum* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 17: 15. 1910.

狭叶山蚂蝗 xia ye shan ma huang

Desmodium elegans Candolle subsp. *stenophyllum* (Pampanini) H. Ohashi; *D. tiliifolium* (D. Don) Wallich var. *stenophyllum* (Pampanini) Schindler.

Shrubs, 1–2 m tall, glabrous except for hairy petiolules. Leaves 3-foliolate; petiole 2–5 cm; leaflet blade lanceolate or lanceolate-linear, 6–13 × 1.2–3 cm, base broadly cuneate or nearly rounded, apex acuminate. Racemes terminal or at lower parts 2- or 3-branched in terminal panicles, ca. 20 cm, 1–3-flowered at each node. Pedicel 1–1.2 cm, filiform. Calyx ca. 4 mm, 4-lobed; upper lobes connate, longer than lower ones. Corolla purple or purple-red, 1.2–1.3 cm; standard elliptic or broadly elliptic, base shortly clawed, apex emarginate; wings oblong-falcate, equal to keel, auriculate and clawed. Stamens ca. 1.2 cm. Pistil ca. 1.2 cm. Legume flat, slightly curved, slightly falcate, 4.5–6.5 × ca. 0.5 cm, glabrous, lower suture constricted and crenate between articles, upper suture slightly straight, 6- or 7-jointed; articles ca. 1 cm, slightly reticulate veined. Fl. and fr. Aug–Sep.

• Mountain slopes, thickets, riversides; 2300–2700 m. Yunnan.

One of us (Ohashi, J. Jap. Bot. 70: 115. 1995) recognizes this species as a rheophyte found along streams and supposedly having evolved from *Desmodium elegans*.

30. Desmodium megaphyllum Zollinger & Moritzi, Natuur-Geneesk. Arch. Ned.-Indie 3: 58. 1846.

滇南山蚂蝗 dian nan shan ma huang

Shrubs, 1–4 m tall. Young branches white pubescent, glabrescent. Leaves 3-foliolate; petiole 3–7 cm; terminal leaflet blade ovate or broadly ovate, occasionally rhombic or nearly orbicular, 8–15 × 6–9 cm, abaxially densely sericeous or sparsely pubescent, adaxially puberulent, base oblique, margin entire to shallowly crenate. Inflorescences 10–40 cm, terminal ones mostly paniculate, axillary ones racemose or paniculate, 2- or 3-flowered at each node; peduncle, pedicel, and calyx hairy or nearly glabrous. Pedicel 4–11 mm. Calyx 4-lobed. Corolla purple, 1–1.3 cm; standard elliptic or broadly elliptic, clawed; wings and keel long clawed; keel often hooked hairy at apex. Stamens ca. 1 cm. Ovary adpressed pubescent. Legume flat, both sutures shallowly constricted, 6–8-jointed; articles 6–7 × 5–7 mm or larger, with minute hooked hairs, sometimes intermixed with straight hairs or glabrous.

Mountain slopes, forest margins, forests; 700–1900 m. S and SE Yunnan [India (Assam), Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam].

- 1a. Leaflet densely sericeous abaxially; peduncle and pedicel with spreading pubescence and intermixed hooked hairs, calyx sericeous; articles 6–7 × 5–7 mm, with minute hooked hairs, sometimes intermixed with straight hairs 30a. var. *megaphyllum*
- 1b. Leaflet sparsely pubescent abaxially; peduncle, pedicel, and calyx sparsely hairy or nearly glabrous; articles 8–10 × 7–8 mm, glabrescent or glabrous 30b. var. *glabrescens*

30a. Desmodium megaphyllum var. ***megaphyllum***

滇南山蚂蝗(原变种) dian nan shan ma huang (yuan bian zhong)

Desmodium karensium Kurz; *D. prainii* Schindler, nom. illeg. superfl.

Leaflets densely sericeous abaxially. Peduncle and pedicel with spreading pubescence and intermixed hooked hairs. Pedicel 4–10 mm. Calyx adpressed sericeous. Articles 6–7 × 5–7 mm, with minute hooked hairs, sometimes intermixed with straight hairs, nearly glabrous at maturity. Fl. and fr. Jun–Nov.

Mountain slopes, forest margins, forests; 700–1900 m. S and SE Yunnan [India (Assam), Indonesia, Laos, Malaysia, Myanmar, Thailand, Vietnam].

30b. Desmodium megaphyllum var. ***glabrescens*** Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 399. 1897.

无毛滇南山蚂蝗 wu mao dian nan shan ma huang

Desmodium prainii var. *glabrescens* (Prain) Schindler.

Leaflets sparsely pubescent abaxially. Peduncle, pedicel, and calyx sparsely hairy or nearly glabrous. Pedicel 0.9–1.1 cm.

Articles 8–10 × 7–8 mm, glabrescent or glabrous. Fl. and fr. Jun–Nov.

Dense forests; ca. 1900 m. S Yunnan [Myanmar].

31. Desmodium yunnanense Franchet, Pl. Delavay. 172. 1890.

云南山蚂蝗 yun nan shan ma huang

Desmodium praestans Forrest; *D. rockii* Schindler; *D. yunnanense* subsp. *praestans* (Forrest) H. Ohashi; *D. yunnanense* var. *rockii* (Schindler) Y. C. Yang & P. H. Huang.

Shrubs, 1.2–3 m tall, much branched. Young branches densely white or gray tomentose, becoming glabrous. Leaves 3- or 1-foliolate; petiole 1–4 cm, hairy as young branches; terminal leaflet blade nearly orbicular, ovate, or obovate, 5–22 × 5–17 cm, abaxially densely gray or white tomentose, adaxially sparsely pubescent, margin entire or undulate. Panicles terminal, large, 16–27 cm; rachis shortly tomentose, 2–6-flowered at each node. Pedicel 0.6–1 cm, tomentose. Calyx 3–4.5 mm, 4-lobed; lobes ca. as long as tube or shorter. Corolla pink or purple, 1–1.3 cm; standard nearly orbicular or broadly elliptic, base shortly clawed, apex concave or emarginate; wings auriculate and clawed; keel shorter, clawed. Ovary pubescent. Legume compressed, 4–6 × ca. 0.5 cm, hairy when young, becoming glabrous, lower suture undulate, upper suture nearly straight, 4–7-jointed; articles 7–9 mm, reticulate veined. Fl. Aug–Sep, fr. Sep–Oct. $2n = 22^*$.

• Gravelly places, wastelands, grassy slopes, thickets, margins of *Pinus*-*Quercus* forests; 1000–2200 m. SW Sichuan, NW Yunnan.

32. Desmodium sequax Wallich, Pl. Asiat. Rar. 2: 46. 1831.

长波叶山蚂蝗 chang bo ye shan ma huang

Desmodium dasylobum Miquel; *D. hamulatum* Franchet; *D. sequax* var. *sinuatum* (Miquel) Hosokawa; *D. sinuatum* (Miquel) Blume ex Baker; *D. strangulatum* Wight & Arnott var. *sinuatum* Miquel; *Meibomia sinuata* (Miquel) Kuntze.

Shrubs, erect, 1–2 m tall, much branched. Young branches rust-colored pubescent, sometimes intermixed with minute hooked hairs. Leaves 3-foliolate; petiole 2–3.5 cm, hairy as young branches; terminal leaflet blade ovate-elliptic or orbicular-rhombic, 4–10 × 4–6 cm, abaxially adpressed pubescent and intermixed with minute hooked hairs, adaxially densely puberulent or glabrescent, base cuneate to obtuse, margin undulate above middle, apex acute. Racemes terminal and axillary or usually terminal panicles, to 12 cm; rachis densely spreading or upward hirsute or minutely tomentose, 2-flowered at each node. Pedicel 3–5 mm, slightly elongated at fruiting. Calyx ca. 3 mm; lobes ca. as long as tube. Corolla purple, ca. 8 mm; standard elliptic to broadly elliptic; wings narrowly elliptic, auriculate, clawed; keel long clawed. Stamens monadelphous. Legume moniliform, 3–4.5 × ca. 0.3 cm, with dense rust-colored or brown minute hooked hairs, both sutures constricted, 6–10-jointed; articles nearly quadrate. Fl. Jul–Sep, fr. Sep–Nov. $2n = 22$.

Grassy slopes, forest margins; 1000–2800 m. NW Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam].

122. HYLODESMUM H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 173. 2000.

长柄山蚂蝗属 *chang bing shan ma huang shu*

Huang Puhua (黄普华 *Huang Pu-hwa*); Hiroyoshi Ohashi

Desmodium sect. *Podocarpium* Bentham in Miquel, Pl. Jungh. 226. 1852; *Podocarpium* (Bentham) Y. C. Yang & P. H. Huang (1979), not A. Braun ex Stizenberger (1851), nor Unger (1864).

Perennial herbs or herbaceous subshrubs. Leaves pinnately compound, 3–7-foliate; leaflets entire or slightly undulate; stipules and stipels present. Racemes terminal, or axillary and terminal, rarely lax panicles, usually 2- or 3-flowered at each node; bracts present; bracteoles often absent. Calyx broadly campanulate, 4- or 5-lobed (upper lobes fully connate when 4-lobed or minutely 2-toothed at apex when 5-lobed). Standard shortly clawed at base; wings and keel clawed. Stamens monadelphous. Ovary long stipitate or slightly shortly stipitate. Legume 2–5-jointed, lower suture very deeply incised nearly to upper one between articles, upper suture straight or shallowly undulate; articles obliquely triangular or slightly broadly subobovate. Seed without rim-aril; cotyledons hypogeous.

Fourteen species: mostly in E Asia, three in North America; ten species (three endemic) in China.

- 1a. Calyx lobes ca. as long as tube or longer; bracts ovate to broadly ovate.
 - 2a. Terminal leaflet entire along margin, base rounded 10. *H. williamsii*
 - 2b. Terminal leaflet slightly undulate or irregularly undulate along margin, base cuneate.
 - 3a. Leaflets caudate or caudate-acuminate at apex, irregularly undulate along margin; roots distinctly tuberous 8. *H. longipes*
 - 3b. Leaflets shortly acuminate at apex, slightly undulate along margin; roots not tuberous 9. *H. repandum*
- 1b. Calyx lobes shorter than tube; bracts narrowly ovate or narrowly triangular.
 - 4a. Leaves 5–7-foliate 1. *H. oldhamii*
 - 4b. Leaves entirely 3-foliate.
 - 5a. Stems and leaves densely white strigose 6. *H. densum*
 - 5b. Stems and leaves pubescent or glabrous.
 - 6a. Stems and leaves glabrous 3. *H. menglaense*
 - 6b. Stems and leaves pubescent or subglabrous.
 - 7a. Wings and keel petals not clawed at base; stipules linear-lanceolate, 0.5–1 mm, broadest at base 7. *H. podocarpum*
 - 7b. Wings and keel petals distinctly clawed at base; stipules triangular-lanceolate, lanceolate, or ovate-lanceolate, 2–4 mm, broadest at base.
 - 8a. Articles of legume obliquely triangular, 12–14 × 4–6 mm, stipe 10–12 mm; fruiting pedicel 11–13 mm 2. *H. leptopus*
 - 8b. Articles of legume slightly broadly subobovate, (6–)9–10 × ca. 4 mm, stipe 4–10 mm; fruiting pedicel 4–10 mm.
 - 9a. Leaves often clustered at top of stem, terminal leaflet broadly ovate or ovate; legume articles 9–10 mm, stipe ca. 10 mm 4. *H. laxum*
 - 9b. Leaves often scattered on stem, terminal leaflet lanceolate; legume articles 6–7 mm, stipe 4–6 mm 5. *H. laterale*

1. *Hylodesmum oldhamii* (Oliver) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 180. 2000.

羽叶长柄山蚂蝗 *yu ye chang bing shan ma huang*

Desmodium oldhamii Oliver, J. Linn. Soc., Bot. 9: 165. 1865 [*"oldhamii"*]; *Podocarpium oldhamii* (Oliver) Y. C. Yang & P. H. Huang.

Herbs, perennial, 50–150 cm tall. Stems glabrescent. Leaves 5–7-foliate; petiole ca. 6 cm, pubescent; leaflet blade lanceolate, oblong, or ovate-elliptic, 6–15 × 3–5 cm, both surfaces sparsely pubescent, base cuneate or obtuse, apex acuminate. Racemes simple or shortly branched at lowermost part, to 40 cm, uncinate pubescent and yellow pubescent, laxly flowered. Pedicel 4–6 mm, elongated to 6–11 mm at fruiting. Calyx 2.5–3 mm; upper lobes distinctly 2-toothed at apex. Corolla purplish red, ca. 7 mm; standard broadly elliptic; wings and

keel narrowly elliptic, base shortly clawed. Stamens monadelphous. Ovary linear, stipitate. Legume flat, uncinate pubescent, mostly 2-jointed, rarely 1- or 3-jointed; articles obliquely triangular, 1–1.5 cm × 5–7 mm. Seeds ca. 9 × 5 mm. Fl. Aug–Sep, fr. Sep–Oct. 2n = 22.

Forests on mountain slopes, streamsides, thickets, rocky places; 100–1700 m. Anhui, Fujian, ?Guangdong, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Sichuan, Zhejiang [Japan, Korea, Russia (Far East)].

The whole plant is used medicinally for diuresis. It also is used as a pesticide.

2. *Hylodesmum leptopus* (A. Gray ex Bentham) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 179. 2000.

细长柄山蚂蝗 *xi chang bing shan ma huang*

Desmodium leptopus A. Gray ex Bentham in Miquel, Pl.

Jungh. 226. 1852; *D. gardneri* Bentham; *D. laxum* Candolle subsp. *leptopus* (A. Gray ex Bentham) H. Ohashi; *D. tashiroi* Matsumura; *Hylodesmum laxum* (Candolle) H. Ohashi & R. R. Mill var. *leptopus* Y. C. Yang & P. H. Huang; *Podocarpium leptopus* (A. Gray ex Bentham) Y. C. Yang & P. H. Huang.

Subshrubs, 30–70 cm tall. Young stems pubescent. Leaves caespitose or scattered, 3-foliate; petiole 5–10 cm, glabrous or sparsely pubescent; leaflet blade ovate to ovate-lanceolate, 10–15 × 3.5–6 cm, abaxially sparsely pubescent, adaxially glabrous except with minute hooked hairs on midvein, base cuneate, orbicular, or oblique, apex long acuminate. Racemes terminal or laxly branched panicles, laxly flowered. Pedicel 3–4 mm, elongated to 1.1–1.3 cm at fruiting, densely hooked pubescent. Calyx 2–3 mm. Corolla pink, ca. 5 mm; standard broadly elliptic, shortly clawed; wings and keel clawed. Ovary long stipitate. Legume flat, slightly curved, minutely hooked pubescent, 2- or 3-jointed; articles obliquely triangular, 1.2–1.4 cm × 4–6 mm; stipe 1–1.2 cm; fruiting pedicel 1.1–1.3 cm. Fl. and fr. Aug–Sep.

Dense valley forests, shaded places along streams; 700–1000 m. Fujian, Guangdong, Guangxi, Hainan, ?Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, ?Zhejiang [Indonesia, Japan, Laos, Malaysia, New Guinea, Philippines, Thailand, Vietnam].

At first glance, this species is very similar to *Hylodesmum laxum*; but, upon detailed examination, they differ in the abaxial leaflet surface, the shape and size of the articles, and the length of the fruiting pedicel and stipe.

3. *Hylodesmum menglaense* (C. Chen & X. J. Cui) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 180. 2000.

勐腊长柄山蚂蝗 meng la chang bing shan ma huang

Podocarpium menglaense C. Chen & X. J. Cui, Acta Bot. Yunnan. 9: 305. 1987; *Desmodium menglaense* (C. Chen & X. J. Cui) H. Ohashi.

Herbs, erect, 50–100 cm tall. Stems simple, glabrous, somewhat woody near base. Leaves 3-foliate; petiole 6–11 cm, glabrous; terminal leaflet base broadly ovate or broadly elliptic, 13–19 × 7–10 cm, both surfaces glabrous, abaxially white spotted, base rounded or nearly cuneate, apex acuminate or caudate-acuminate; lateral leaflets slightly smaller, narrowly ovate or narrowly elliptic, base oblique. Racemes terminal and axillary. Pedicel 5–7 mm. Ovary long stipitate, stipe 0.9–1.5 cm, glabrous. Legume 4- or 5-jointed, densely hooked pubescent; articles narrowly ovoid or narrowly ellipsoid, 3.2–5.4 cm × 3.5–4 mm. Fr. Nov.

• Forest margins, streamsides; ca. 600 m. S Yunnan.

4. *Hylodesmum laxum* (Candolle) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 178. 2000.

疏花长柄山蚂蝗 shu hua chang bing shan ma huang

Herbs, erect, 30–100 cm tall. Stem woody at base. Leaves 3-foliate, clustered at apex or scattered along stem; petiole 3–9 cm, pubescent; terminal leaflet blade broadly ovate, ovate, or lanceolate, 5–12 × 1.1–5.5 cm, both surfaces subglabrous or abaxially slightly pubescent, base orbicular, margin entire, apex acuminate. Racemes terminal or terminal and axillary, often branched, to 30 cm, laxly flowered, 2- or 3-flowered at each

node. Pedicel 3–4 mm, elongated to 4–10 mm at fruiting. Calyx ca. 2 mm; lobes shorter than tube. Corolla pink, 4–6 mm; standard elliptic, clawed; wings narrowly elliptic, auriculate and shortly clawed at base; keel obtuse, clawed, not auriculate. Legume often 2–4-jointed; articles slightly broadly subobovate, (6)–9–10 × ca. 4 mm or smaller, hooked pubescent; stipe 4–10 mm; fruiting pedicel 4–10 mm. Fl. and fr. Aug–Oct.

Broad-leaved forests on mountain slopes, grassy riversides, streamsides in forests; 700–1400 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, ?Jiangxi, Taiwan, Xizang, Yunnan [Bhutan, India, Indonesia, Japan, Laos, Nepal, Philippines, Sri Lanka, Thailand, Vietnam].

- 1a. Leaves evergreen, adaxially lustrous, usually sparse on stem or approximate on lower parts of stem 4a. subsp. *laxum*
- 1b. Leaves probably deciduous, adaxially not lustrous, approximate at apex or upper part of stem.
 - 2a. Leaves approximate at apex of stem; terminal leaflet broadly elliptic or broadly ovate, 4–5 × 2.7–3.2 cm 4b. subsp. *falfolium*
 - 2b. Leaves approximate on upper part of stem; terminal leaflet narrowly elliptic, ca. 4.5 × 1.5 cm 4c. subsp. *lateraxum*

4a. *Hylodesmum laxum* subsp. *laxum*

疏花长柄山蚂蝗(原亚种) shu hua chang bing shan ma huang (yuan ya zhong)

Desmodium laxum Candolle, Ann. Sci. Nat. (Paris) 4: 102. 1825; *D. podocarpum* Candolle var. *laxum* (Candolle) Baker; *Podocarpium laxum* (Candolle) Y. C. Yang & P. H. Huang.

Leaves sparse on or clustered at lower part of stem; terminal leaflet elliptic or ovate, 5–12 × 5–5.5 cm. Legume stipe ca. 1 cm. 2n = 22.

Broad-leaved forests on mountain slopes; 700–1400 m. Fujian, Guangdong, Guizhou, Hainan, Hubei, Hunan, ?Jiangxi, Xizang, Yunnan [Bhutan, India, Indonesia, Japan, Laos, Nepal, Philippines, Sri Lanka, Thailand, Vietnam].

4b. *Hylodesmum laxum* subsp. *falfolium* (H. Ohashi) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 179. 2000.

湘西长柄山蚂蝗 xiang xi chang bing shan ma huang

Desmodium laxum subsp. *falfolium* H. Ohashi, J. Jap. Bot. 70: 146. 1995.

Leaves approximate at apex of stem; terminal leaflet broadly elliptic or broadly ovate, 4–5 × 2.7–3.2 cm. Legume stipe 1.2–1.4 cm.

• Mountain forests. W Hunan.

Only one individual was found.

4c. *Hylodesmum laxum* subsp. *lateraxum* (H. Ohashi) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 179. 2000.

黔长柄山蚂蝗 qian chang bing shan ma huang

Desmodium laxum subsp. *lateraxum* H. Ohashi, J. Jap. Bot. 70: 147. 1995.

Leaves approximate on upper part of stem; terminal leaflet narrowly elliptic, ca. 4.5×1.5 cm. Legume stipe 1.2–1.8 cm.

• Guizhou.

Only one individual was found.

5. *Hylobodesmum laterale* (Schindler) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 177. 2000.

侧序长柄山蚂蝗 ce xu chang bing shan ma huang

Desmodium laterale Schindler, Repert. Spec. Nov. Regni Veg. 22: 258. 1926; *D. hainanense* Isely; *D. laxum* Candolle subsp. *laterale* (Schindler) H. Ohashi; *Podocarpium laxum* (Candolle) Y. C. Yang & P. H. Huang var. *laterale* (Schindler) Y. C. Yang & P. H. Huang.

Herbs, erect, 30–70 cm tall. Stem woody at base. Leaves 3-foliolate, scattered along stem; stipules lanceolate, 5–7 mm; petiole 3–5 cm, pubescent; terminal leaflet blade ovate or lanceolate, 5–13 × 2–4 cm, both surfaces subglabrous or pubescent, base suborbicular, margin entire, apex acuminate or acute. Racemes terminal, or terminal and axillary, to 30 cm, sometimes branched, laxly flowered, 2- or 3-flowered at each node. Pedicel 3–5 mm, elongated to 4–10 mm at fruiting. Calyx ca. 1 mm, glabrous or slightly pubescent; lobes shorter than tube. Corolla pink, 4–6 mm; standard elliptic, clawed; wings narrowly elliptic, auriculate and shortly clawed at base; keel obtuse, clawed, not auriculate. Legume 2- or 3-jointed; articles slightly broadly subobovate, 6–7 × ca. 4 mm or smaller, with hooked hairs; stipe 4–10 mm; fruiting pedicel 4–10 mm. Fl. and fr. Aug–Oct.

Broad-leaved forests; below 1400 m. Fujian, Guangdong, Guangxi, Hainan, ?Jiangxi, Taiwan [S Japan].

6. *Hylobodesmum densum* (C. Chen & X. J. Cui) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 176. 2000.

密毛长柄山蚂蝗 mi mao chang bing shan ma huang

Podocarpium fallax (Schindler) C. Chen & X. J. Cui var. *densum* C. Chen & X. J. Cui, Acta Bot. Yunnan. 9: 306. 1987; *Desmodium densum* (C. Chen & X. J. Cui) H. Ohashi; *P. densum* (C. Chen & X. J. Cui) P. H. Huang.

Herbs, erect, 50–70 cm tall. Stem simple or with a lateral branch at base, densely white strigose. Leaves 3-foliolate; petiole 12–14 cm; terminal leaflet blade broadly ovate, 5–7 × 3.2–5 cm, both surfaces densely white strigose, base broadly cuneate-rounded, apex acuminate; lateral blade narrowly ovate, slightly smaller, base oblique. Fruiting inflorescences racemose, terminal. Legume 2-jointed; articles obliquely narrowly triangular, 8–10 × 3–4 mm, minutely hooked pubescent, base obliquely cuneate, apex concave; stipe 5–6 mm; fruiting pedicel ca. 5 mm. Fl. unknown, fr. Sep–Oct.

• Forests; 600–800 m. SW Guangxi, SE Yunnan.

This species is characterized by the obliquely narrowly triangular articles and branches at the base of the stem similar to *Hylobodesmum leptopus* but easily distinguished by the feature of indumentum, shape

of terminal leaflet, shorter stipe of ovary, and shorter fruiting pedicel. The indumentum is quite distinct.

7. *Hylobodesmum podocarpum* (Candolle) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 181. 2000.

长柄山蚂蝗 chang bing shan ma huang

Herbs, erect, 50–110 cm tall. Stem and petiole sparsely spreading pubescent or glabrous. Leaves 3-foliolate; petiole 2–12 cm; terminal leaflet blade variable in shape and size, broadly ovate, ovate, or rhombic to narrowly lanceolate. Racemes or panicles, terminal or terminal and axillary, 20–30 cm, elongated to 40 cm at fruiting, often 2-flowered at each node. Pedicel 2–4 mm, elongated to 5–6 mm at fruiting. Calyx ca. 2 mm; lobes shorter than tube. Corolla purplish red, ca. 4 mm; standard broadly obovate; wings narrowly elliptic; keel similar to wings, not clawed. Ovary stipitate. Legume ca. 1.6 cm, often 2-jointed; articles slightly broadly subobovate, 5–10 × 3–4 mm, with hooked and minute straight hairs; stipe 3–5 mm; fruiting pedicel ca. 6 mm. $2n = 22^*$.

Roadsides, grassy slopes, grasslands on high mountains, mountain slopes, forests, thickets, forest margins, ditches; 100–2100 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, ?Hainan, Hebei, E Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Laos, Myanmar, Nepal, Pakistan, Philippines, Russia (Far East), Vietnam].

The whole plant including the root bark is used medicinally for reducing fever and curing malaria.

The *Hylobodesmum podocarpum* complex is extremely variable in the shape of the terminal leaflets, although the taxa resemble each other in having laxly flowered inflorescences, small flowers, non-clawed wings and keel petals, broadly subobovate small articles, and similar areas of distribution. The taxonomic ranks for these infraspecific taxa are somewhat confusing. Huang considers the complex to consist of one species, *Podocarpium podocarpum*, including four varieties, while Ohashi and Mill (loc. cit.) consider it to consist of *Hylobodesmum podocarpum* and three subspecies, one of which contains a variety.

- 1a. Terminal leaflet broadly obovate, broadest above middle, apex abruptly acute 7a. subsp. *podocarpum*
- 1b. Terminal leaflet not as above, broadest below middle.
 - 2a. Terminal leaflet broadly ovate or ovate, apex acuminate; leaves approximate below middle 7b. subsp. *fallax*
 - 2b. Terminal leaflet ovate, rhombic-ovate, elliptic-rhombic, lanceolate-rhombic, or lanceolate, apex acute; leaves scattered or partly approximate at middle.
 - 3a. Terminal leaflet lanceolate or narrowly lanceolate, 4–6 × as long as wide 7d. subsp. *szechuenense*
 - 3b. Terminal leaflet neither lanceolate nor narrowly lanceolate, 1–3 × as long as wide 7c. subsp. *oxyphyllum*

7a. *Hylodesmum podocarpum* subsp. *podocarpum*

长柄山蚂蝗(原亚种) chang bing shan ma huang (yuan ya zhong)

Desmodium podocarpum Candolle, Ann. Sci. Nat. (Paris) 4: 102. 1825; *D. bodinieri* H. Léveillé; *Hedysarum podocarpum* (Candolle) Sprengel; *Podocarpium podocarpum* (Candolle) Y. C. Yang & P. H. Huang.

Herbs, 50–110 cm tall. Stem sparsely pubescent. Terminal leaflet broadly obovate, 4–7 × 3.5–6 cm, broadest above middle, both surfaces sparsely pubescent to glabrescent, base cuneate or broadly cuneate, apex abruptly acute; lateral blade obliquely ovate, small, base oblique. Fl. Aug–Sep. 2n = 22.

Roadsides, grassy slopes, grasslands on high mountains, secondary forests; 100–2100 m. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [India, Japan, Korea, Nepal, Pakistan, Philippines, may occur in N Vietnam].

7b. *Hylodesmum podocarpum* subsp. *fallax* (Schindler) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 182. 2000.

宽卵叶长柄山蚂蝗 kuan luan ye chang bing shan ma huang

Desmodium fallax Schindler, Bot. Jahrb. Syst. 54: 55. 1916; *D. podocarpum* subsp. *fallax* (Schindler) H. Ohashi; *Hylodesmum podocarpum* var. *fallax* (Schindler) X. F. Gao; *Podocarpium fallax* (Schindler) C. Chen & X. J. Cui; *P. podocarpum* var. *fallax* (Schindler) Y. C. Yang & P. H. Huang.

Herbs, 70–100 cm tall. Stem pubescent. Terminal leaflet broadly ovate or ovate, 3.5–12 × 2.5–8 cm, both surfaces adpressed pubescent, base broadly cuneate or suborbicular, apex acuminate or caudate-acute. Fl. Aug–Nov. 2n = 22.

Roadsides on mountain slopes, thickets, sparse forests, forest margins; 300–1400 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, ?Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea].

The whole plant is used medicinally for treating dysentery and rheumatism. As well, it is used as forage for livestock.

7c. *Hylodesmum podocarpum* subsp. *oxyphyllum* (Candolle) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 182. 2000.

尖叶长柄山蚂蝗 jian ye chang bing shan ma huang

Desmodium oxyphyllum Candolle, Ann. Sci. Nat. (Paris) 4: 102. 1825; *D. fallax* var. *mandshuricum* (Maximowicz) Nakai; *D. mandshuricum* (Maximowicz) Schindler; *D. oxyphyllum* var. *mandshuricum* (Maximowicz) H. Ohashi; *D. podocarpum* var. *japonicum* Matsumura; *D. podocarpum* var. *mandshuricum* Maximowicz; *D. podocarpum* subsp. *oxyphyllum* (Candolle) Y. C. Yang & P. H. Huang; *D. racemosum* Candolle; *D. racemosum* var. *mandshuricum* (Maximowicz) Ohwi; *D. racemosum* var. *pubescens* F. P. Metcalf; *Hedysarum racemosum* Thunberg (1784), not Aublet (1775); *Hylodesmum oxyphyllum* (Candolle) X. F. Gao; *H. podocarpum* var. *oxyphyllum* (Candolle) H. Ohashi & R. R. Mill; *Podocarpium mandshuricum* (Maximowicz) Czerepanov; *P. podocarpum* var. *japonicum* (Matsumura) P. H. Huang; *P. podocarpum* var. *mandshuricum* (Maximowicz) P. H. Huang; *P. podocarpum* var. *oxyphyllum* (Candolle) Y. C. Yang & P. H. Huang.

Herbs, to 100 cm tall. Stem glabrous or subglabrous. Leaves scattered or approximate at middle; terminal leaflet elliptic-rhombic to lanceolate-rhombic or ovate to rhombic-ovate, 4–10 × 2–5 cm, both surfaces glabrous or subglabrous, or abaxially pubescent on veins, base cuneate or rounded, apex acuminate. Fl. Jul–Sep, fr. Aug–Nov. 2n = 22.

Mountain slopes, slope forests, thickets, roadsides, ditches, forest margins, broad-leaved forests; 400–2100 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, E Heilongjiang, Henan, ?Hubei, ?Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Sichuan, ?Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Korea, Laos, Myanmar, Nepal, Russia (Far East), Vietnam].

Plants with scattered leaves have been named *Hylodesmum podocarpum* var. *japonicum* (Matsumura) H. Ohashi (J. Jap. Bot. 77: 170. 2002). Plants with leaves at least partly approximate at middle have been named *H. podocarpum* var. *mandshuricum* (Maximowicz) H. Ohashi & R. R. Mill (Edinburgh J. Bot. 57: 183. 2000).

7d. *Hylodesmum podocarpum* subsp. *szechuenense* (Craib) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 185. 2000.

四川长柄山蚂蝗 si chuan chang bing shan ma huang

Desmodium podocarpum var. *szechuenense* Craib in Sargent, Pl. Wilson. 2: 104. 1914; *D. oxyphyllum* var. *szechuenense* (Craib) H. Ohashi; *D. podocarpum* subsp. *szechuenense* (Craib) H. Ohashi; *D. szechuenense* (Craib) Schindler; *Hylodesmum szechuenense* (Craib) X. F. Gao; *Podocarpium podocarpum* var. *szechuenense* (Craib) Y. C. Yang & P. H. Huang.

Herbs, to 100 cm tall. Stem pubescent. Terminal leaflet lanceolate or narrowly lanceolate, 4.2–6.8 × 1–1.3 cm, abaxially sparsely pubescent on veins, adaxially glabrescent, base cuneate, apex acute. Fl. Aug–Sep, fr. Sep–Nov.

- Ditches, roadsides, thickets, sparse forests; 300–2000 m. Gansu, N Guangdong, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan.

8. *Hylodesmum longipes* (Franchet) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 179. 2000.

云南长柄山蚂蝗 yun nan chang bing shan ma huang

Shuteria longipes Franchet, Pl. Delavay. 179. 1890; *Desmodium duclouxii* Pampanini; *D. duclouxii* var. *henryi* (Schindler) H. Ohashi; *D. henryi* Schindler; *Podocarpium duclouxii* (Pampanini) Y. C. Yang & P. H. Huang.

Herbs, perennial, erect, 20–100 cm tall. Rootstocks woody; tubers often 2, fusiform, ca. 4 cm. Leaves 3-foliate; petiole 5–8 cm, pilose; leaflet blade rhombic-orbicular or broadly ovate, 4–6 × 4–5 cm, both surfaces sparsely adpressed villous, base broadly cuneate or oblique, margin irregularly undulate, apex caudate-acute. Racemes terminal, 20–30 cm; peduncle pubescent, intermixed with hooked hairs, 2- or 3-flowered at each node. Pedicel 1.5–2.5 cm. Calyx ca. 7 mm; lobes longer than tube, lower lobes triangular, upper lobes fully connate. Corolla yellow or pink, ca. 1.5 cm; standard elliptic, shortly clawed; wings oblong; keel subequal to wings. Legume flat, 2- or 3-jointed; articles slightly broadly subobovate, 1.1–1.6 cm × 6–7 mm, with hooked hairy stipe 4–7 mm; fruiting pedicel 1.5–2 cm or more. Fl. and fr. Aug–Nov. 2n = 22*.

- Waste slopes, mixed forests; 1900–2100 m. Yunnan.

The roots are used medicinally to moisten the lungs and relieve coughs. The fruits are used medicinally to stop bleeding and as an antiphlogistic.

9. Hylodesmum repandum (Vahl) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 185. 2000.

浅波叶长柄山蚂蝗 qian bo ye chang bing shan ma huang

Hedysarum repandum Vahl, Symb. Bot. 2: 82. 1791; *Desmodium repandum* (Vahl) Candolle; *D. scalpe* Candolle; *Podocarpium repandum* (Vahl) Y. C. Yang & P. H. Huang.

Subshrubs, erect, 50–150 cm tall. Stem and petiole spreading pubescent. Leaves 3-foliate; petiole 3–9 cm; leaflet blade rhombic to ovate, 5–8 × 3.5–6 cm, both surfaces sparsely to densely adpressed hairy, more densely especially on veins abaxially, base cuneate, margin repand, apex acute to shortly acute. Racemes or sometimes panicles, terminal or often terminal and axillary, 15–30 cm. Pedicel 1.5–3 cm, with spreading straight or uncinate hairs. Calyx 2.5–3.5 mm; lobes longer than or equal to tube. Corolla red or orangish red; standard broadly elliptic, 8–10 × 7–8 mm, shortly clawed; wings narrowly elliptic, ca. 7 × 2 mm, clawed; keel ca. 10 × 3 mm, clawed. Legume often 3- or 4-jointed; articles slightly broadly subobovate, 6–3 × ca. 3 mm, densely uncinate pubescent; stipe ca. 5 mm; fruiting pedicel 2–4 cm. Fl. and fr. Jun–Nov. 2n = 22.

Ditches, mixed forests; 1300–2000 m. ?Sichuan, S Yunnan [Bhu-

tan, India, Indonesia, Laos, Malaysia, Myanmar, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa].

10. Hylodesmum williamsii (H. Ohashi) H. Ohashi & R. R. Mill, Edinburgh J. Bot. 57: 186. 2000.

大苞长柄山蚂蝗 da bao chang bing shan ma huang

Desmodium williamsii H. Ohashi, Ginkgoana 1: 163. 1973; *D. williamsii* subsp. *magnibracteatum* H. Ohashi; *D. williamsii* var. *magnibracteatum* (H. Ohashi) P. C. Li; *Podocarpium williamsii* (H. Ohashi) Y. C. Yang & P. H. Huang.

Herbs, perennial, 20–70 cm tall. Stem simple or branched, white pubescent, becoming glabrous. Leaves 3-foliate; petiole ca. 11 cm; leaflet blade broadly ovate or rhombic, 3–9 × 2.5–6 cm, both surfaces adpressed pubescent, base obtuse-rounded or often cordate, margin entire, apex acute or shortly acuminate. Racemes terminal, 10–40 cm; peduncle densely uncinate pubescent, laxly flowered, 2–4-flowered at each node. Pedicel 1–2 cm. Calyx 3–3.5 mm; lobes longer than tube. Corolla roseate or roseate-purple; standard elliptic or obovate, 1.2–1.6 cm × 7–8 mm, slightly clawed; wings and keel narrowly elliptic, 1.2–1.5 cm × 3–4 mm, shortly clawed, auriculate. Ovary stipitate. Legume 1- or 2-jointed, uncinate pubescent; fruiting pedicel 1–2 cm. Fl. and fr. Aug–Sep. 2n = 22*.

Ditches, grasslands, evergreen forests, limestone soils, thickets; 1400–2700 m. Sichuan, Xizang, Yunnan [Bhutan, India, Nepal].

123. CODORIOCALYX Hasskarl, Linnaea 15(Litt.): 80. 1841.

舞草属 wu cao shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Shrubs, erect. Leaves 3-foliate, often 1-foliate by reduction of lateral leaflets; stipules early deciduous; stipels scarious; terminal leaflet petiolulate, much larger than lateral ones. Inflorescences terminal and axillary, paniculate or racemose; bracts deciduous; bracteole absent. Calyx membranous, broadly campanulate, 5-lobed; upper lobe distinctly 2-toothed at apex. Corolla much longer than calyx; standard often oblique, nearly orbicular, base minutely clawed, not auriculate; wings nearly half-deltoid, base auriculate, clawed; keel falcate, not auriculate. Stamens diadelphous. Gynoecium linear, 6–13-ovuled. Legume 5–9-jointed, dehiscent along lower suture, lower suture undulate, upper suture not indented, lateral surfaces not reticulate veined, with dense minute uncinate and straight hairs. Seeds obliquely transversely elliptic, arillate; cotyledons epigeous.

Two species: SE Asia; both species in China.

In the protologue, the spelling “*Codoriocalyx*” was used, although the name has usually been spelled “*Codariocalyx*.”

- 1a. Terminal leaflet narrowly elliptic or lanceolate, 5.5–10 × 1–2.5 cm; legume with sparse short hooked hairs 1. *C. motorius*
- 1b. Terminal leaflet obovate or elliptic, 3.5–5 × 2.5–3 cm; legume long pilose intermixed with dense short hooked hairs 2. *C. gyroides*

1. Codoriocalyx motorius (Houttuyn) H. Ohashi, J. Jap. Bot. 40: 367. 1965.

舞草 wu cao

Hedysarum motorium Houttuyn, Nat. Hist. 10: 246. 1779; *Codoriocalyx gyrans* (Linnaeus f.) Hasskarl; *C. motorius* var. *glaber* X. Y. Zhu & Y. F. Du; *Desmodium gyrans* (Linnaeus f.) Candolle; *D. motorium* (Houttuyn) Merrill; *H. gyrans* Linnaeus f.

Shrubs, to 1.5 m tall. Stem simple or branched, glabrous. Leaves 3-foliate, often 1-foliate by reduction of lateral leaflets; petiole 1.1–2 cm; terminal leaflet blade narrowly ellip-

tic or lanceolate, 5.5–10 × 1–2.5 cm, abaxially appressed pubescent, adaxially glabrous; lateral ones when present narrowly elliptic or linear, very small. Panicles or racemes; rachis with reflexed uncinate and straight rigid hairs. Pedicel 1–4 mm at anthesis, 3–7 mm in fruit. Calyx 2–2.5 mm; tube 1–1.5 mm; lower lobe dentate, upper lobe deeply 2-toothed at apex. Corolla purplish red; standard 7.5–10 × 7.5–10 mm; wings 6.5–9.5 × 4–5 mm; keel 9–10 × ca. 3 mm, long clawed. Stamens 8–11 mm. Gynoecium 1–1.2 cm; ovary puberulent. Legume falcate or straight, with sparse short hooked hairs, dehiscent along lower suture when mature. Seeds 4–4.5 × 2.5–3 mm. Fl. Jul–Sep, fr. Oct–Nov. 2n = 22.

Mountain slopes, thickets; 200–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam].

The whole plant is used medicinally for dispelling stasis.

2. Codoriocalyx gyroides (Roxburgh ex Link) Hasskarl, Flora 25(2, Beibl.): 49. 1842.

圆叶舞草 yuan ye wu cao

Hedysarum gyroides Roxburgh ex Link, Enum. Hort. Berol. Alt. 2: 247. 1822; *Codoriocalyx conicus* Hasskarl; *Desmodium gyroides* (Roxburgh ex Link) Candolle; *D. oxalidifolium* H. Léveillé, p.p.

Shrubs, 1–3 m tall. Stem pubescent when young. Leaves 3-foliate; petiole 2–2.5 cm; terminal leaflet blade obovate or

elliptic, 3.5–5 × 2.5–3 cm, lateral leaflets 1.5–2 × 0.8–1 cm, both surfaces appressed white pubescent, base rounded or cordate, apex obtuse to rounded or emarginate. Inflorescences 6–15 cm. Pedicel 4–9 mm, densely yellow pubescent. Calyx broadly campanulate, 2–2.5 mm; tube 1.2–1.7 mm; lower lobe broadly triangular, ca. 0.8 mm, upper lobe 2-toothed at apex, ca. 1 mm. Corolla purple; standard broadly obovate, 0.9–1.1 cm × 8.5–10.5 mm; wings 7–9 × 4–6 mm, auriculate, shortly clawed; keel 0.9–1.2 cm, long clawed. Stamens 0.9–1.1 cm. Gynoecium 1.2–1.4 cm; ovary linear, sericeous. Legume falcate, 2.5–5 × 0.4–0.6 cm, long pilose intermixed with dense short hooked hairs, dehiscent along lower suture when mature. Seeds ca. 4 × 2.5 mm. Fl. Sep–Oct, fr. Oct–Nov.

Plains, grassy riverbanks, sparse forests on mountain slopes; 100–1500 m. ?Fujian, Guangdong, Guangxi, ?Guizhou, Hainan, ?Taiwan, S Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam].

124. PYCNOSPORA R. Brown ex Wight & Arnott, Prodr. Fl. Ind. Orient. 197. 1834.

密子豆属 mi zi dou shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Herbs or subshrubs. Leaves pinnately 3-foliate or sometimes only 1-foliate, stipulate and stipellate. Inflorescences terminal, racemose; bracts scarious, deciduous. Flowers small. Calyx campanulate; lobes long, upper 2 nearly connate. Corolla pale violet, obviously exserted; petals nearly equal; standard nearly orbicular, base attenuate; wings connate; keel obtuse. Stamens diadelphous (9+1); anthers uniform. Ovary sessile, many ovuled; style filiform, incurved; stigma capitate, small. Legume oblong, turgid, not jointed, transversely veined, dehiscent, not transversely septate, 8–10-seeded.

One species: tropical Africa, Asia to E Australia.

1. Pycnospora lutescens (Poiret) Schindler, J. Bot. 64: 145. 1926.

密子豆 mi zi dou

Hedysarum lutescens Poiret in Lamarck, Encycl. 6: 417. 1805; *Desmodium lutescens* (Poiret) Candolle; *D. viride* Vogel; *Phaca trifoliata* Linnaeus, nom. utique rej.; *Pycnospora hedsaroides* R. Brown ex Wight & Arnott; *P. nervosa* Wight & Arnott.

Plants 15–60 cm tall. Stem erect or procumbent, branched from base of stem. Branchlets gray pubescent. Petiole ca. 1 cm, gray pubescent; terminal leaflet blade obovate or obovate-oblong, 1.2–3.5 × 1–2.5 cm, lateral veins 4–7 on each side of midvein, distinctly reticulate veined, both surfaces densely ap-

pressed pubescent, base cuneate or slightly cordate, apex rounded or emarginate; lateral leaflets often smaller or sometimes absent. Racemes 3–6 cm, 2-flowered at each node. Pedicel 2–4 mm, gray pubescent. Calyx ca. 2 mm; lobes narrowly triangular, pubescent. Corolla ca. 4 mm. Ovary pubescent. Legume black when mature, 6–10 mm, turgid, transversely veined, slightly hairy, lower suture distinctly prominent, along upper suture dehiscent. Seeds reniform-elliptic, ca. 2 mm. Fl. and fr. Aug–Sep.

Grassy slopes on mountains, plains; sea level to 1300 m. ?Fujian, Guangdong, Guangxi, SW Guizhou, Hainan, S Jiangxi, Taiwan, Yunnan [Cambodia, India, Indonesia, Laos, Myanmar, New Guinea, Philippines, Thailand, Vietnam; E Australia].

This species is planted for soil conservation and green manure.

125. TADEHAGI H. Ohashi, Ginkgoana 1: 280. 1973.

葫芦茶属 hu lu cha shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Pteroloma Desvaux ex Benthham in Miquel, Pl. Jungh. 217, 219. 1852, not Hochstetter & Steudel (1837).

Shrubs or subshrubs. Leaves only 1-foliate; petiole winged. Inflorescences racemose, terminal or axillary, usually 2- or 3-flowered at each node. Calyx campanulate, 5-lobed; upper lobes 2, connate, entire or sometimes minutely 2-toothed at apex. Petals veined; standard orbicular, broadly elliptic, or obovate; wings elliptic or oblong, longer than keel, apex rounded, conspicuously auriculate and clawed; keel acute or obtuse at apex. Stamens 10, axillary ones free or slightly connate at base to others. Gynoecium sessile, distinct disks present around base of ovary. Ovary pubescent, 5–8-ovuled; style glabrous; stigma capitate. Legume usually 5–8-jointed, lower suture shallowly to deeply constricted, upper suture nearly straight or slightly undulate. Seed transversely broad to transversely elliptic, rim-arillate, concave at hilum; cotyledons epigeous.

About six species: tropical Asia, Pacific islands, N Australia; two species in China.

- 1a. Stem erect; legume densely yellowish or whitish strigose, not reticulate veined; mature leaflets $5.8-13 \times 1.1-3.5$ cm, usually more than $3 \times$ as long as wide 1. *T. triquetrum*
- 1b. Stem ascending; legume densely white pubescent on both sutures, entirely glabrous and reticulate veined on lateral surfaces; mature leaflets $3-10 \times 1.3-5.2$ cm, usually less than $3 \times$ as long as wide 2. *T. pseudotriquetrum*

1. Tadehagi triquetrum (Linnaeus) H. Ohashi, Ginkgoana 1: 290. 1973.

葫芦茶 hu lu cha

Hedysarum triquetrum Linnaeus, Sp. Pl. 2: 746. 1753; *Desmodium acrocarpum* Hance; *D. triquetrum* (Linnaeus) Candolle; *Pteroloma triquetrum* (Linnaeus) Desvaux ex Benthem.

Shrubs or subshrubs. Stem erect, 1–2 m tall. Leaves 1-foliolate; petiole 1–3 cm, wing 4–8 mm wide; blade narrowly lanceolate to ovate-lanceolate, $5.8-13 \times 1.1-3.5$ cm, usually more than $3 \times$ as long as wide, abaxially pubescent on midvein and lateral veins, adaxially glabrous, base rounded or shallowly cordate, apex acute or acuminate. Inflorescences 15–30 cm, 2- or 3-flowered at each node. Pedicel 2–6 mm, with spreading, minute, hooked and silky hairs. Calyx broadly campanulate, ca. 3 mm. Corolla pink to bluish or reddish purple, 5–6 mm; standard nearly orbicular, emarginate at apex; wings obovate, auriculate, clawed; keel arcuate, auriculate, clawed. Stamens diadelphous. Ovary densely puberulent except at upper part of style. Legume 5–8-jointed; articles not reticulate veined, densely yellowish or whitish strigose. Seed transversely broadly elliptic or elliptic, $2-3 \times 1.5-2.5$ mm. Fl. Jun–Oct, fr. Oct–Dec. $2n=22$.

Wastelands, forest margins, roadsides; below 1400 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Taiwan, Yunnan [Bangladesh, Bhutan, Cambodia, India, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; ?N Australia, Pacific islands].

The whole plant is used medicinally as an antipyretic, as a diuretic, for invigorating the spleen, and for promoting digestion.

2. Tadehagi pseudotriquetrum (Candolle) H. Ohashi, J. Jap. Bot. 70: 116. 1995.

蔓茎葫芦茶 man jing hu lu cha

Desmodium pseudotriquetrum Candolle, Ann. Sci. Nat. (Paris) 4: 100. 1825; *D. triquetrum* (Linnaeus) Candolle subsp. *pseudotriquetrum* (Candolle) Prain; *Pteroloma pseudotriquetrum* (Candolle) Schindler; *P. triquetrum* (Linnaeus) Desvaux ex Benthem subsp. *pseudotriquetrum* (Candolle) H. Ohashi; *Tadehagi triquetrum* (Linnaeus) H. Ohashi subsp. *pseudotriquetrum* (Candolle) H. Ohashi.

Subshrubs. Stem ascending, 30–60 cm tall. Leaves 1-folio-late; petiole 0.7–3.2 cm, conspicuously winged; wing 3–7 mm wide; blade ovate, sometimes ovate-orbicular, $3-10 \times 1.3-5.2$ cm, usually less than $3 \times$ as long as wide, lateral veins ca. 8 pairs, not reaching margin but arching and joining together, abaxially sparsely pubescent on veins, adaxially glabrous, base cordate, apex acute. Inflorescences to 25 cm, 2- or 3-flowered fascicles at each node. Pedicel ca. 5 mm, with minute hooked and silky hairs. Calyx ca. 5 mm; lobes lanceolate, slightly longer than tube. Corolla purplish red, ca. 7 mm; standard nearly orbicular, emarginate at apex; wings obovate, base auriculate; keel falcate, not auriculate, clawed. Ovary puberulent; style glabrous. Legume 5–8-jointed, densely white pubescent on both sutures, lateral surfaces reticulate veined, entirely glabrous. Fl. Aug, fr. Oct–Nov.

Sparse forests on mountains; 500–2000 m. ?Fujian, N Guangdong, Guangxi, Guizhou, Hunan, S Jiangxi, Sichuan, Taiwan, Yunnan, ?Zhejiang [?Bhutan, India, Nepal, Philippines].

126. MECOPUS Bennett in Bennett & R. Brown, Pl. Jav. Rar. 154. 1840.

长柄莢属 chang bing jia shu

Huang Puhua (黃普華 Huang Pu-hwa); Hiroyoshi Ohashi

Herbs, annual. Leaves 1-foliolate, stipulate and stipellate. Racemes dense, terminal; bracts subulate, persistent. Flowers small. Pedicel apically hooked-inflexed. Calyx campanulate, membranous; lobes lanceolate, upper 2 lobes connate. Standard broad, obovate, base attenuate; wings falcate; keel incurved, apex obtuse. Stamens diadelphous (9+1); anthers uniform. Ovary 2-ovuled; style incurved; stigma capitate, small. Legume elliptic, stipitate, compressed, 1-seeded, both surfaces slightly swollen, 1- or 2-jointed, reticulate veined; fruiting pedicel long, twisted at apex, becoming looped.

One species: tropical Asia.

1. Mecopus nidulans Bennett in Bennett & R. Brown, Pl. Jav. Rar. 154. 1840.

长柄莢 chang bing jia

Herbs, erect, 30–40 cm tall or more. Stem and branches glabrous. Petiole ca. 1 cm; leaflet blade broadly obovate-reniform, $0.9-2 \times 1-2.5$ cm, lateral veins 4 or 5 on each side of midvein, both surfaces glabrous, base rounded or nearly cordate, apex truncate or emarginate. Racemes 2.5–3 cm, 2-flow-

ered at each node. Pedicel 1–1.5 cm, longer than bracts, grayish yellow pubescent. Calyx ca. 1 mm, 5-lobed. Corolla white; standard obovate, base attenuate; wings falcate; keel incurved, apex obtuse. Filaments ca. 1.5 mm. Ovary stipitate. Legume 2–2.5 cm, pubescent, base stipitate, apex rostrate; fruiting pedicel long, twisted at apex, becoming looped. Seed reniform, ca. 2 mm. Fl. Sep, fr. Sep–Oct.

Grasslands, thickets on sunny slopes; 100–1000 m. Hainan [Cambodia, India, Indonesia, Laos, Malaysia, Thailand, Vietnam].

127. URARIA Desvaux, J. Bot. Agric. 1: 122. 1813.

狸尾豆属 li wei dou shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi, Yu Iokawa

Subshrubs, shrubs, or perennial herbs. Leaves 1-foliate or imparipinnately 3- or 5-9-foliate, stipulate and stipellate. Racemes or panicles, terminal or axillary. Flowers numerous, dense, small. Bracts deciduous or persistent, imbricate, 2-flowered at each bract; bracteoles absent. Pedicel elongated after anthesis, apically hooked, rarely not curved. Calyx 5-lobed, lower 3 lobes usually longer, upper 2 lobes partly connate. Standard orbicular or broadly obovate, clawed, auriculate; wings adherent to keel, shortly clawed, auriculate; keel obtuse, slightly incurved, auriculate. Stamens diadelphous (9+1); anthers uniform. Ovary subsessile, 2-10-ovuled; style incurved, linear; stigma capitate. Legume small, jointed; articles 2-8, plicate or peltate, folded laterally or longitudinally, not dehiscent, with 1 seed per article.

About 20 species: mostly in tropical Africa, Asia, and Australia; seven species in China.

- 1a. Leaves 5- or 7(9)-foliolate, sometimes mixed with (1-3)-foliolate leaves.
 - 2a. Leaflets linear to narrowly oblong, adaxially usually variegated on midvein, lateral veins looped with margin; pedicel 5-6 mm during anthesis, to 8 mm in fruit; lateral and lowest calyx lobes not elongate after anthesis, 2-3 mm; leaves (1-3)-foliolate on lower part of stem 1. *U. picta*
 - 2b. Leaflets narrowly ovate to ovate, elliptic, or oblong, without variegated area, lateral veins extending to margin; pedicel 6-12 mm during anthesis, to 15 mm in fruit; lateral and lowest calyx lobes elongating to 5-6 mm after anthesis; leaves sometimes (1-3)-foliolate on upper part of stem 2. *U. crinita*
- 1b. Leaves 3-foliate, often 1-foliate on upper part of stem.
 - 3a. Inflorescences usually terminal panicles, with dense glandular hairs 1-2 mm on inflorescence rachis, pedicels, and calyx; legume shortly pubescent 5. *U. lacei*
 - 3b. Inflorescences usually simple, sometimes with elongate branches but not paniculate, glandular hairs present or absent on inflorescence rachis, pedicels, and calyx; legume glabrous or pubescent.
 - 4a. Lateral and lowest calyx lobes more than 2 × as long as upper lobes; inflorescences usually 3-6 cm, densely flowered; bracts persistent, spreading at apex; leaflets usually orbicular to broadly ovate 3. *U. lagopodioides*
 - 4b. Lateral and lowest calyx lobes less than 2 × as long as upper lobes; inflorescences usually longer than 6 cm, densely or loosely flowered; bracts deciduous or persistent, erect along inflorescence when persistent; leaflets oblong to ovate, rarely (in *U. sinensis*) broadly obovate or obcordate, apices truncate or emarginate.
 - 5a. Inflorescence rachis, pedicels, and calyx with dense, spreading glandular hairs 1-2 mm; legume glabrous; inflorescences densely flowered; bracts 9-18 mm 4. *U. neglecta*
 - 5b. Inflorescence rachis, pedicels, and calyx without or with sparse glandular hairs 1-2 mm; legume shortly hairy; inflorescences ± loosely flowered; bracts usually shorter than 13 mm.
 - 6a. Apex of keel obtuse; pedicel 5-6 mm, recurved after anthesis; calyx lobes narrowly triangular, acuminate; legume minutely hairy; leaflets obtuse to acute or rarely rounded at apex 6. *U. rufescens*
 - 6b. Apex of keel apiculate; pedicel to 13 mm, not recurved after anthesis; calyx lobes triangular to broadly ovate, acute; legume subglabrous with long glandular hairs; leaflets obtuse to truncate or emarginate at apex 7. *U. sinensis*

1. Uraria picta (Jacquin) Desvaux ex Candolle, Prodr. 2: 324. 1825.

美花狸尾豆 mei hua li wei dou

Hedysarum pictum Jacquin, Collectanea 2: 262. 1788;
Doodia picta (Jacquin) Roxburgh; *Uraria leucantha* Zippelius ex Spanoghe; *U. linearis* Hasskarl.

Subshrubs or shrubs. Stems erect, 1-2 m tall, gray striate. Leaves imparipinnate, 5- or 7(9)-foliolate; petiole 4-7 cm; leaflet blades linear-oblong or narrowly lanceolate, terminal one 4.5-13 × 1-2 cm, abaxially densely hairy on veins, adaxially pubescent along midvein and basal margin, base rounded, apex narrowly acute. Racemes terminal, 10-30 cm. Pedicel 5-6 mm, elongated to 8 mm after anthesis, apically hooked. Calyx 5-parted, long hairy and ciliate; lower lobes slightly longer than upper. Corolla pink or pale blue, 5-6 mm; standard obovate, long clawed; wings auriculate, 4-7 mm, base

shortly auriculate; keel ca. as long as wings, upper parts curved. Ovary glabrous, 3-5-ovuled. Legume lead-colored, lucid, glabrous, 3-5-jointed; articles ca. 3 × 2 mm. Fl. and fr. Apr-Oct. 2n = 16, 22.

Grassy slopes; 400-1500 m. Guangxi, Guizhou, Sichuan, S Taiwan, Yunnan [Bangladesh, Bhutan, Cambodia, India, Japan (S Ryukyu Islands), Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa, Australia].

The roots are used medicinally for invigorating the liver and spleen and as a sedative.

2. Uraria crinita (Linnaeus) Desvaux ex Candolle, Prodr. 2: 324. 1825.

猫尾草 mao wei cao

Hedysarum crinitum Linnaeus, Mant. Pl. 1: 102. 1767;
Doodia crinita (Linnaeus) Roxburgh; *Hedysarum comosum*

Vahl; *Uraria comosa* (Vahl) Candolle; *U. cornosa* Spanoghe; *U. crinita* var. *macrostachya* Wallich; *U. macrostachya* (Wallich) Prain.

Subshrubs, 1–1.5 m tall. Stems erect, gray pubescent. Leaves imparipinnate; petiole 5.5–15 cm, gray-white pubescent; leaflets usually 3 on lower stem, 5(or 7) above; leaflet blades oblong, ovate-lanceolate, or ovate, terminal one 6–15 × 3–8 cm, abaxially pubescent on veins, adaxially glabrous or slightly gray pubescent on midvein, base rounded to slightly cordate, apex slightly acute, obtuse, or rounded. Racemes terminal, 15–30 cm or longer, stout, densely gray-white hirsute. Pedicel 6–12 mm in flower, elongated to 1–1.5 cm after anthesis, hooked, with short uncinate and long white hairs. Calyx shallowly cup-shaped, long white hirsute; lower lobes ca. 3.5 mm, upper lobes ca. 3 mm. Corolla purple, 6–9 mm. Legume slightly pubescent; articles (2–)5 or 6, elliptic, reticulate veined. Fl. and fr. Apr–Sep.

Dry waste slopes, roadsides, thickets; below 900 m. Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Taiwan, Yunnan [Bangladesh, Cambodia, India, Indonesia, Japan (S Ryukyu Islands), Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam; N Australia].

The whole plant is used medicinally for stopping bleeding, reducing fever, and relieving coughs.

3. Uraria lagopodioides (Linnaeus) Candolle, Prodr. 2: 324. 1825 [“*lagopoides*”].

狸尾豆 li wei dou

Hedysarum lagopodioides Linnaeus, Sp. Pl. 2: 1198. 1753; *Doodia lagopodioides* (Linnaeus) Roxburgh; *Lespedeza lagopodioides* (Linnaeus) Persoon.

Herbs, prostrate or spreading, to 60 cm tall. Leaves mostly 3-foliolate, rarely 1-foliolate; petiole 1–2 cm; terminal leaflet blade nearly orbicular or elliptic to ovate, 2–6 × 1.5–3 cm, abaxially gray-yellow pubescent, base rounded or cordate, apex rounded or emarginate. Racemes terminal, 3–6 cm, densely flowered. Pedicel ca. 4 mm, sparsely white villous. Calyx 5-parted; lower lobes ca. 2 × as long as upper ones, white villous. Corolla pale purple, ca. 6 mm; standard obovate, base attenuate. Ovary glabrous, 1- or 2-ovuled. Legume enclosed by calyx, black-brown at maturity, small; articles 1 or 2, elliptic, ca. 2.5 mm, swollen, glabrous, slightly lucid. Fl. and fr. Aug–Oct. 2n = 22.

Open waste slopes, thickets; below 1000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam; Australia, Pacific islands].

The whole plant is used medicinally for relieving swelling. It also is used as a pesticide.

“*Hedysarum lagopoides*” (N. L. Burman, Fl. Indica, 168. 1768) is here treated as an orthographical variant of *H. lagopodioides* Linnaeus.

4. Uraria neglecta Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 382. 1897.

福建狸尾豆 fu jian li wei dou

Uraria aequilobata Hosokawa; *U. fujianensis* Y. C. Yang & P. H. Huang; *U. hamosa* (Roxburgh) Wallich ex Wight & Arnott var. *formosana* Matsumura; *U. lagopus* Candolle var. *neglecta* (Prain) H. Ohashi; *U. longibracteata* Y. C. Yang & P. H. Huang.

Herbs, erect or subshrubs. Stems densely gray-yellow tomentose and spreading pubescent. Leaves pinnately 3-foliolate, sometimes 1-foliolate; petiole (1–)3–7 mm, densely hairy as stem; leaflet blades ovate, orbicular, or oblong, terminal one 1.8–6 × 1.9–4.5 cm, abaxially pubescent, adaxially pilose, lateral veins 11–14 on each side of midvein, base broadly cuneate, rounded, or slightly cordate, apex rounded or emarginate, mucronate. Racemes terminal, or sometimes terminal and axillary, sometimes with a few branches at base, 6–40 cm, densely hairy with gray-yellow spreading glandular hairs; internode 2–4 mm; bracts 9–18 mm. Pedicel 7–12 mm, densely villous, apically hooked. Calyx ca. 5 mm; lobes 5, narrowly triangular, subequal. Corolla purple, ca. 5 mm; standard obovate, ca. 5 × 3 mm, base cuneate, apex rounded; wings and keel auricular-oblong, ca. 4 × 1.5 mm. Ovary ca. 2.5 mm, glabrous; style ca. 4 mm, curved. Legume 5–7-jointed, slightly compressed, glabrous. Fl. and fr. Sep–Nov.

Mountain slopes, roadsides, field margins; below 500 m. Fujian, Guangdong, Guangxi, Hainan, Jiangxi, Taiwan, Zhejiang [Bangladesh, India, Nepal].

5. Uraria lacei Craib, Bull. Misc. Inform. Kew 1910: 276. 1910.

滇南狸尾豆 dian nan li wei dou

Uraria clarkei Gagnepain; *U. guangxiensis* W. L. Sha.

Shrubs or herbs, erect, to 2 m tall. Stems stout, with brown spreading long hairs. Leaves pinnately 3-foliolate; petiole 3.5–6 cm, densely yellow-brown spreading hirsute; leaflet blades elliptic or elliptic-lanceolate, terminal one (4.5–)5.5–10(–15) × 2–5.5(–6.5) cm, abaxially densely pilose, adaxially pilose, lateral veins 11–13 on each side of midvein, both ends rounded or obtuse, apex mucronate. Panicles terminal, 13–40 cm, densely brown spreading hairy. Pedicel 3–4 mm, elongated to 1 cm at fruiting, yellow-brown pubescent. Calyx 4–5 mm, densely hairy as pedicel; lower lobes ca. 2 × as long as upper ones or more. Corolla purple or purple-brown, 8–9 mm. Ovary hairy, 6–8-ovuled. Legume brown, shortly hairy, 6–8-jointed; articles ca. 2 × 1.8 mm. Fl. and fr. Jun–Oct.

Open grassy slopes, secondary seasonal rain forests; ca. 700 m. Guangdong, Guangxi, Yunnan [India, Laos, Myanmar, Thailand, Vietnam].

6. Uraria rufescens (Candolle) Schindler, Repert. Spec. Nov. Regni Veg. 21: 14. 1925.

钩柄狸尾豆 gou bing li wei dou

Desmodium rufescens Candolle, Ann. Sci. Nat. (Paris) 4: 101. 1825; *Doodia hamosa* Roxburgh; *Uraria hamosa* (Roxburgh) Wallich ex Wight & Arnott.

Subshrubs. Stems erect, 40–100 cm tall, gray-white pilose and brown hooked hairy. Leaves 3-foliolate; petiole 1–2.5 cm, hairy; leaflet blades elliptic or ovate-elliptic, 3–8 × 2–4 cm,

abaxially pilose, adaxially glabrous, lateral veins 11–13 on each side of midvein, base rounded or slightly cordate, apex rounded or sometimes emarginate. Inflorescences terminal, 10–20 cm, densely hooked hairy and pubescent. Flowers sparse. Pedicel short, initially ca. 3 mm, hairy, elongated to 5–6 mm at fruiting, apically hooked. Calyx ca. 3 mm, pubescent, 5-parted; lower lobes longer than tube, upper lobes slightly shorter. Corolla purple, 2–3 × as long as calyx. Legume 4–7-jointed; articles gray-brown, compressed, slightly reticulate veined. Fl. and fr. Oct–Nov. 2n = 22.

Roadsides, mountain slopes; below 900 m. Guangdong, Guangxi, Hainan, Xizang, S Yunnan [Bangladesh, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

7. *Uraria sinensis* (Hemsley) Franchet, Pl. Delavay. 172. 1890.

中华狸尾豆 zhong hua li wei dou

Uraria hamosa (Roxburgh) Wallich ex Wight & Arnott

var. *sinensis* Hemsley, J. Linn. Soc., Bot. 23: 177. 1887; *Desmodium bonatianum* Pampanini.

Subshrubs, ca. 1 m tall. Stems erect, gray-yellow hispidulous. Leaves pinnately 3-foliolate; petiole 2–4 cm, gray-yellow pubescent; leaflet blades oblong, obovate-oblong, or broadly ovate, terminal one 3–7 × 2–4 cm, abaxially gray-yellow villous, adaxially pilose on veins, lateral veins 6–8 on each side of midvein. Panicles terminal, 20–40 cm, gray-yellow hairy, sparsely flowered, 1- or 2-flowered at each node. Pedicel filiform, 8–10 mm, elongated to 1.3 cm at fruiting. Calyx ca. 3 mm; lower lobes ca. as long as tube or shorter. Corolla purple, ca. 4 × as long as calyx. Ovary pilose. Legume ca. as long as pedicel, 4- or 5-jointed, subglabrous, reticulate veined. Fl. and fr. Sep–Oct.

Dry river valleys, mountain slopes, sparse forests, thickets, alpine grasslands; 500–2300 m. Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India].

128. URARIOPSIS Schindler, Bot. Jahrb. Syst. 54: 51. 1916.

算珠豆属 suan zhu dou shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi, Yu Iokawa

Shrubs or subshrubs, erect. Leaves 1-foliolate, stipulate and stipellate. Racemes terminal or axillary, rarely slightly branched panicles, 2-flowered at each bract; bracts large, early deciduous; bracteole absent. Calyx campanulate; lobes 5, upper 2 connate to apex or above middle. Standard obovate; wings auriculate at base of lamina, nearly not clawed; keel obtuse, clawed, not auriculate. Stamens diadelphous (9+1). Ovary shortly stipitate, 2- or 3-ovuled; style curved; stigma capitate; disk cylindric. Legume usually 3- or 4-jointed; articles compressed from front to back, beadlike, easily deciduous at maturity.

Two species: Cambodia, China, India, Indonesia, Laos, Myanmar, Thailand, Vietnam; two species (one endemic) in China.

- 1a. Leaflet blade ovate or broadly ovate, apex obtuse, not mucronate; inflorescences terminal, 13–20 cm; fruiting pedicel not curved apically 1. *U. cordifolia*
 1b. Leaflet blade cordate, apex acute, mucronate; inflorescences terminal or axillary, only 4–5 cm at fruiting; fruiting pedicel distinctly curved apically 2. *U. brevissima*

1. *Urariopsis cordifolia* (Wallich) Schindler, Bot. Jahrb. Syst. 54: 51. 1916.

算珠豆 suan zhu dou

Uraria cordifolia Wallich, Pl. Asiat. Rar. 1. 33. 1830.

Shrubs, erect, 0.4–1 m tall. Branches stout, densely yellow tomentose. Leaves 1-foliolate; petiole 4–5 cm, yellow tomentose; blade ovate or broadly ovate, 4–12 × 6–10 cm, both surfaces shortly tomentose, base shallowly cordate, apex obtuse, not mucronate. Racemes terminal, 13–20 cm, simple or once branched at base, densely shortly yellow tomentose. Pedicel 1–1.2 cm at fruiting, with grayish yellow spreading hairs. Calyx 4–5 mm; upper 2 lobes connate above middle. Corolla pale red or white, 5–6 mm; standard obovate; wings ca. 5 × 1–2 mm, base auriculate; keel obtuse, clawed. Ovary 2- or 3-ovuled; style enlarged from apex to middle, 8–10 × as long as ovary. Legume brown, with short hairs, 2- or 3-jointed. Seeds reniform, ca. 2 × 1.5 mm. Fl. May–Jun, fr. Aug–Sep.

Sunny slopes, roadsides, weedy places; below 1000 m. Guangxi, Guizhou, Yunnan [Cambodia, India, Indonesia, Laos, Myanmar, Thailand, Vietnam].

Two of us (Ohashi and Iokawa) prefer to treat this species as *Uraria cordifolia*.

2. *Urariopsis brevissima* Y. C. Yang & P. H. Huang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 1980(8): 7. 1980.

短序算珠豆 duan xu suan zhu dou

Subshrubs, erect, ca. 1 m tall. Stems and branches densely yellow tomentose and sparsely spreading white pubescent. Leaves 1-foliolate; petiole hairy as stem; blade cordate, 5.5–10 × 5–8 cm, both surfaces spreading pubescent, base cordate, apex acute, mucronate. Racemes short, axillary or terminal, simple or 1-branched at base, 4–5 cm, densely yellow tomentose and spreading straight pubescent. Pedicel 1.2–1.3 cm, spreading yellow villous. Calyx lobes lanceolate; upper 2 lobes connate, villous; tube short, ca. 1.5 mm. Standard obovate, 7.5–8 mm; wings falcate-oblong, ca. 6 mm; keel falcate-oblong. Ovary ca. 3 mm, 3- or 4-ovuled; style ca. 6 mm. Legume 3- or 4-jointed; articles ca. 3 mm in diam., rugose, adpressed pubescent; fruiting pedicel distinctly curved apically. Fl. and fr. Oct–Dec.

- Dry grasslands, mountain slopes; 100–500 m. Guangdong, Guangxi, S Yunnan.

Two of us (Ohashi and Iokawa) prefer to treat this entity as conspecific with *Uraria cochinchinensis* Schindler (Repert. Spec. Nov. Regni Veg. 21: 14. 1925), which occurs in Cambodia, Laos, and Vietnam.

129. CHRISTIA Moench, Suppl. Meth. 39. 1802.

蝙蝠草属 bian fu cao shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi

Herbs or subshrubs, erect or diffuse. Leaves pinnately 3-foliate or only 1-foliate, stipellate. Flower small, 3–6 mm. Panicles or racemes terminal, rarely axillary. Calyx membranous, campanulate, accrescent, 5-lobed; lobes ovate-lanceolate, ca. as long as tube and slightly broader. Corolla ca. as long as calyx or more; standard broad, base attenuate, clawed; wings adherent to keel; keel obtuse. Stamens diadelphous (9+1); anthers uniform. Ovary many ovuled; style linear, incurved; stigma capitate. Legume many jointed, articles folded, reticulate veined, enclosed by calyx.

About 13 species: tropical Asia and Australia; five species (one endemic) in China.

- 1a. Terminal leaflet much longer than broad, lateral veins 10–15 on each side of midvein; upper 2 lobes of calyx connate; articles 2–4, pubescent 1. *C. campanulata*
- 1b. Terminal leaflet much broader than long, lateral veins 2–5 on each side of midvein; upper 2 lobes of calyx free or slightly connate; articles 4 or 5, glabrous (only *C. hainanensis* with 2 or 3 articles, extremely shortly uncinate pubescent).
 - 2a. Upper 2 lobes of calyx free, tube 3–4 × as long as lobes, calyx not half-hyaline, with dense uncinate hairs, small verrucae, and obscure reticulate veins; terminal leaflet obovate-rhombic, sometimes nearly square; subshrubs 2. *C. constricta*
 - 2b. Upper 2 lobes of calyx slightly connate, lower lobes ca. as long as tube, calyx dry-membranous, half-hyaline, obviously reticulate veined; herbs.
 - 3a. Terminal leaflet mostly rhombic or narrowly rhombic, 4–6 × broader than long 3. *C. vespertilionis*
 - 3b. Terminal leaflet mostly reniform, orbicular-triangular, obovate, or nearly obtriangular, less than 3 × broader than long.
 - 4a. Terminal leaflet mostly reniform, orbicular-triangular, or obovate, 5–15 × 10–20 mm; articles 4 or 5, glabrous 4. *C. obcordata*
 - 4b. Terminal leaflet nearly obtriangular, 20–30 × 15–25 mm; articles 2 or 3, shortly uncinate pubescent 5. *C. hainanensis*

1. Christia campanulata (Bentham) Thothathri, Cur. Sci. 32: 178. 1963.

台湾蝙蝠草 tai wan bian fu cao

Lourea campanulata Bentham in Miquel, Pl. Jungh. 215. 1852; *Desmodium formosanum* Hayata; *Uraria formosana* (Hayata) Hayata; *U. latisepala* Hayata.

Shrubs or subshrubs. Stem erect, simple, densely hirsute or villous. Leaves pinnately 3-foliate, rarely 1-foliate; petiole 1.5–3 cm, with dense brown uncinate hairs; terminal leaflet blade oblong or elliptic, 5–8 × 3–5 cm, lateral ones 4–6 × 2–2.5 cm, lateral veins 10–15 on each side of midvein, abaxially densely appressed gray pubescent, adaxially appressed gray pubescent, base cuneate or slightly oblique, apex obtuse, mucronate. Inflorescences 15–20 cm, with rust-colored uncinate hairs, 1- or 2-flowered at each node of rachis. Pedicel ca. 3 mm, densely hairy as inflorescences. Calyx grayish yellow pubescent and ciliate outside; upper lobes connate. Corolla 4–6 mm; standard broadly orbicular or obovate; wings oblong; keel cymbiform. Legume 2–4-jointed; articles ellipsoidal, ca. 3 × 2 mm, slightly reticulate veined, pilose, wholly enclosed by calyx. Fl. and fr. Sep–Dec.

Waste grassy slopes, roadsides; 400–1100 m. Fujian, ?Guangdong, SW Guangxi, SW Guizhou, S Taiwan, S Yunnan [India, Myanmar, Thailand, Vietnam].

This species resembles plants in the genus *Uraria*, but the calyx is accrescent and envelops the folded legume, which is characteristic of *Christia*. In Advances Legume Syst. (1: 299. 1981), Ohashi et al. considered this as belonging to *Uraria*.

2. Christia constricta (Schindler) T. C. Chen, Acta Phytotax. Sin. 8: 348. 1963.

长管蝙蝠草 chang guan bian fu cao

Lourea constricta Schindler, Bot. Jahrb. Syst. 54: 64. 1916.

Subshrubs, prostrate, ca. 1 m or longer, base branched. Young parts densely grayish yellow tomentose and pubescent. Leaves 1-foliate or 3-foliate; petiole 0.8–1.5 cm, densely hairy as young branchlets; terminal leaflet obovate-rhombic, sometimes nearly square, 1.5–2.5 × 1.5–2.5 cm, lateral veins 4–6 on each side of midvein, both surfaces pilose, lateral ones narrowly elliptic or square and 1–1.2 × 0.9–1.1 cm, base slightly cordate, apex truncate. Inflorescences ca. 20 cm, spreading pubescent. Pedicel extremely short at anthesis, to 3–4 mm after anthesis. Calyx initially ca. 4 mm, to 8–10 mm at fruiting; lobes 5, upper 2 free, 1/4–1/3 as long as tube. Legume 4- or 5-jointed, reticulate veined, glabrous. Fl. Aug–Sep, fr. Nov.

Seasides, dry sandy soils. Guangdong, Hainan [Vietnam].

3. Christia vespertilionis (Linnaeus f.) Bakhuizen f. ex Meeuwen, Reinwardtia 6: 90. 1961.

蝙蝠草 bian fu cao

Hedysarum vespertilionis Linnaeus f., Suppl. Pl. 331. 1782; *Lourea vespertilionis* (Linnaeus f.) Desvaux.

Herbs, perennial, erect, 60–120 cm tall. Leaves usually 1-foliate, rarely 3-foliate; petiole 2–2.5 cm, pilose; terminal leaflet blade rhombic or narrowly rhombic, 0.8–1.5 × 5–9 cm,

base slightly cordate, apex broad and truncate or slightly emarginate; lateral ones obcordate or obtriangular, usually inequilateral, $0.8-1.5 \times 1.5-2$ cm, lateral veins 3 or 4 on each side of midvein, abaxially pilose, adaxially glabrous, base cuneate or nearly rounded, apex truncate. Inflorescences 5–15 cm, pubescent. Pedicel 2–4 mm, gray pubescent. Calyx half-hyaline, crescent, 0.8–1.2 cm, reticulate veined, pubescent; lobes triangular, ca. as long as tube, upper 2 slightly connate. Corolla yellowish white, not exserted, ca. 6 mm. Legume 4- or 5-jointed; articles blackish brown at maturity, ca. 3×2 mm, reticulate veined, glabrous, wholly enclosed by calyx. Fl. Mar–May, fl. Oct–Dec.

Open grasslands, thickets, roadsides, seashores. Guangdong, Guangxi, Hainan [widespread in all tropical regions].

The whole plant is used medicinally for treating tuberculosis and snake bites. The leaves are used as a topical treatment for healing bone fractures.

4. Christia obcordata (Poiret) Bakhuizen f. ex Meeuwen, Reinwardtia 6: 91. 1961.

铺地蝙蝠草 pu di bian fu cao

Hedysarum obcordatum Poiret in Lamarck, Encycl. 6: 425. 1805; *Lourea obcordata* (Poiret) Desvaux.

Herbs, perennial, prostrate, 15–60 cm. Leaves often 3-foliolate, rarely 1-foliolate; petiole 8–10 mm, filiform, gray pilose; terminal leaflet blade mostly reniform, orbicular-triangular, or obovate, $0.5-1.5 \times 1-2$ cm, abaxially pilose, adaxially glabrous, base broadly cuneate, apex truncate and slightly emarginate; lateral ones obovate, cordate, or nearly orbicular, $6-7 \times$ ca. 5 mm, lateral veins 3–5 on each side of midvein. Racemes

mostly terminal, 3–18 cm, 1-flowered at each node. Pedicel 2–3 mm. Calyx half-hyaline, initially ca. 2 mm, to 6–8 mm at fruiting, distinctly reticulate veined; lobes ca. as long as tube. Corolla bluish purple or roseate, 3–5 mm, slightly longer than calyx. Legume 4- or 5-jointed, wholly enclosed by calyx; articles orbicular, ca. 2.5 mm in diam., glabrous. Fl. May–Aug, fr. Sep–Oct.

Open grasslands, waste slopes, thickets; below 500 m. Fujian, Guangdong, Guangxi, Hainan, S Taiwan [Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Vietnam; N Australia].

5. Christia hainanensis Y. C. Yang & P. H. Huang, Bull. Bot. Lab. N. E. Forest Inst., Harbin 1980(8): 5. 1980.

海南蝙蝠草 hai nan bian fu cao

Herbs, perennial. Stems erect, to 100 cm tall. Leaves 3-foliolate; petiole 1.5–2 cm, grayish yellow uncinate and sparsely white pubescent; terminal leaflet blade nearly obtriangular, $2-3 \times 1.5-2.4$ cm, base broadly cuneate or nearly rounded, apex truncate or emarginate; lateral ones obovate, $1.5-2.4 \times 0.9-1.4$ cm, lateral veins 4 or 5 on each side of midvein, abaxially gray appressed pubescent, adaxially gray pubescent, base cuneate, apex truncate. Panicles terminal or axillary, 6–12 cm, 1- or 2-flowered at each node of rachis; internodes 5–8 mm. Pedicel 5–6 mm, densely grayish yellow uncinate pubescent. Calyx ca. 6 mm, upper 2 lobes connate. Legume 2- or 3-jointed, wholly enclosed by calyx; articles ellipsoidal, $2.5-3 \times$ ca. 2 mm, reticulate veined, extremely shortly uncinate pubescent. Fl. and fr. Sep–Nov.

• Sparse forests; ca. 100 m. Hainan.

130. ALYSICARPUS Necker ex Desvaux, J. Bot. Agric. 1: 120. 1813, nom. cons.

链莢豆属 lian jia dou shu

Huang Puhua (黃普華 Huang Pu-hwa); Hiroyoshi Ohashi

Herbs, perennial. Stems erect or diffuse, branched. Leaves 1-foliolate, rarely pinnately 3-foliolate, stipulate and stipellate; stipules scarious or nearly leathery, free or connate. Racemes axillary or terminal; flowers small, mostly ca. 5 mm, usually binate at each node of rachis; bracts scarious, early deciduous. Calyx 4-lobed; lobes dry, rigid, nearly equal, upper lobe 2-toothed at apex. Corolla not or slightly longer than calyx; standard broad, obovate or nearly orbicular; keel obtuse, adherent to wings. Stamens diadelphous (9+1); anthers uniform. Ovary sessile or nearly so, many ovuled; style linear, incurved; stigma capitate. Legume cylindric, swollen, many jointed, 1-seeded per article, indehiscent.

About 30 species: tropical Africa, Asia, Australia, and tropical America; five species (one endemic, one introduced) in China.

- 1a. Corolla pale yellow or yellow with green or white; calyx longer than first article of legume; legume glabrous.
 - 2a. Lobes of calyx not ciliate; corolla pale yellow or yellow with green; leaflets linear to linear-lanceolate 4. *A. bupleurifolius*
 - 2b. Lobes of calyx densely yellow ciliate; corolla white; leaflets oblong, rarely orbicular or linear-lanceolate 5. *A. rugosus*
- 1b. Corolla purplish blue or pinkish purple; calyx shorter than first article of legume or slightly longer; legume pubescent.
 - 3a. Whole leaflets oblong or nearly orbicular; legume cylindric-moniliform, constricted between articles, without raised linear ridges 3. *A. yunnanensis*
 - 3b. Upper leaflets usually ovate-oblong or lanceolate, lower ones nearly orbicular to ovate; legume compressed cylindric, not constricted between articles, with raised linear ridges.
 - 4a. Leaflets usually uniform but variable in size, ovate, oblong, or oblong-elliptic, reticulate veinlets prominent on both surfaces; inflorescences laxly flowered; lomentous with septa inside and with furrows at joint; prostrate or spreading perennial herbs 1. *A. vaginalis*

- 4b. Leaflets distinctly dimorphic, lower ones orbicular to broadly oblong, upper ones lanceolate, reticulate veinlets obscure on both surfaces; inflorescences densely flowered; lomenta without septa inside and with ridges at joint; erect or spreading annual herbs 2. *A. ovalifolius*

1. Alysicarpus vaginalis (Linnaeus) Candolle, Prodr. 2: 353. 1825.

链莢豆 lian jia dou

Herbs, perennial. Stem erect or procumbent, 30–90 cm tall, glabrous or slightly pubescent. Leaves 1-foliate; petiole 5–14 mm, glabrous; blade often ovate-oblong or oblong-lanceolate to lanceolate, to $6.5 \times 1\text{--}2$ cm on upper stem, cordate, nearly orbicular, or ovate, $1\text{--}3 \times$ ca. 1 cm on lower stem, abaxially slightly pubescent, adaxially glabrous. Racemes axillary or terminal, 1.5–7 cm, 6–12-flowered, binate at each node; internodes 2–5 mm. Pedicel 3–4 mm. Calyx 5–6 mm, slightly longer than first article of legume. Corolla red, reddish purple, purplish blue, or yellow, slightly longer than calyx, ca. 5 mm; standard obovate. Ovary pubescent, 4–7-ovuled. Legume compressed, cylindric, 1.5–2.5 cm \times 2–2.5 mm, pubescent, 4–7-jointed, not constricted between articles, with raised linear ridges. Seeds ellipsoidal, slightly compressed. Fl. Sep, fr. Sep–Nov. $2n = 14$, 16.

Open grassy slopes, roadsides, sandy seashores, grasslands in parks; 100–700 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Cambodia, India, Indonesia, Japan, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; E and W Africa, throughout Old World tropics; introduced in the Neotropics].

It is grown for green manure and used as a forage. The whole plant is used medicinally for treating sword wounds and bone fractures.

- 1a. Corolla red, reddish purple, or purplish blue 1a. var. *vaginalis*
1b. Corolla yellow 1b. var. *taiwanianus*

1a. Alysicarpus vaginalis var. *vaginalis*

链莢豆(原变种) lian jia dou (yuan bian zhong)

Hedysarum vaginalis Linnaeus, Sp. Pl. 2: 746. 1753; *Alysicarpus vaginalis* var. *diversifolius* Chun.

Corolla red, reddish purple, or purplish blue; keel oblong, 0.5–0.6 cm.

Open grassy slopes, roadsides, sandy seashores; 100–700 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Cambodia, India, Indonesia, Japan, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; E and W Africa, throughout Old World tropics; introduced in South America].

1b. Alysicarpus vaginalis var. *taiwanianus* S. S. Ying, Coloured Ill. Fl. Taiwan 2: 378. 1987.

台湾链莢豆 tai wan lian jia dou

Corolla yellow; keel oblong, 1.5–2 cm.

• Grasslands in parks, possibly naturalized. NE Taiwan.

2. Alysicarpus ovalifolius (Schumacher) J. Léonard, Bull. Jard. Bot. État Bruxelles 24: 88. 1954.

卵叶链莢豆 luan ye lian jia dou

Hedysarum ovalifolium Schumacher, Beskr. Guin. Pl. 359. 1827.

Herbs, annual. Stem erect or spreading, sometimes woody at base, 10–60 cm tall, puberulent, glabrescent. Leaflets usually dimorphic, elliptic or oblong in lower part and lanceolate in upper part, $1\text{--}10 \times 0.6\text{--}3$ cm. Inflorescences terminal or leaf-opposed, laxly flowered; bracteoles absent. Pedicel 1–2 mm, with spreading hooked hairs. Calyx glumaceous, scarious, persistent, 4-lobed, with minute spreading hooked hairs and sparsely ciliate straight hairs; lobes not imbricate, subequal, narrowly triangular-ovate, 3–4 mm, ciliate, apex acuminate. Petals pink or reddish purple, subequal with calyx at anthesis. Legume (1)–4–6(–8)-jointed, (0.5)–1.5–2.2 cm \times 1.8–2.3 mm, indehiscent, with dense minute hooked hairs, mostly without septa inside and with ridges at joint. Fl. Sep–Oct, fr. Sep–Dec.

Introduced; open places, sunny grasslands along roads, riverbanks, seashores; sea level to 500 m. Taiwan [Afghanistan, India, Japan (Ryukyu Islands, introduced); tropical Africa, SW Asia, Madagascar].

3. Alysicarpus yunnanensis Y. C. Yang & P. H. Huang, Bull. Bot. Lab. N. E. Forest Inst., Harbin 1980(8): 8. 1980.

云南链莢豆 yun nan lian jia dou

Herbs, perennial, caespitose. Stem diffuse, ca. 22 cm tall, uncinate pubescent and spreading hirsute. Leaves 1-foliate; petiole 3–5 mm, glabrous; blade oblong or nearly orbicular, $4\text{--}13 \times 3\text{--}9$ mm, both surfaces puberulent, abaxially sparsely setose on veins, both ends rounded or base slightly cordate. Racemes axillary or terminal, 1.5–3 cm, 4–10-flowered, binate at each node; internodes 3–7 mm. Pedicel ca. 1 mm. Calyx ca. 4 mm, nearly as long as first article of legume. Corolla pinkish purple, ca. 5 mm; standard obovate. Ovary 2.5–3 mm (style 3–5.5 mm), uncinate pubescent, (3)–5–7-ovuled. Legume cylindric-moniliform, 1–2 \times ca. 0.2 cm, (3)–5–7-jointed, constricted between articles, without raised linear ridges, not reticulate veined, uncinate pubescent. Fl. and fr. Aug–Sep.

• Rocky riverbanks; ca. 1300 m. NW Yunnan.

4. Alysicarpus bupleurifolius (Linnaeus) Candolle, Prodr. 2: 352. 1825.

柴胡链莢豆 chai hu lian jia dou

Hedysarum bupleurifolium Linnaeus, Sp. Pl. 2: 745. 1753.

Herbs, perennial. Stem erect or diffuse, much branched, 25–120 cm tall, glabrous or subglabrous. Leaves 1-foliate; petiole ca. 2 mm or leaves subsessile; blade linear to linear-lanceolate, 4–7 \times 0.4–0.5 cm, abaxially sparsely pubescent on midvein, adaxially glabrous, base rounded or cuneate, apex acute. Racemes terminal, 3–18 cm, 20–40-flowered, binate at each node; internodes 8–10 mm. Pedicel ca. 1 mm or flowers subsessile. Calyx 6–8 mm, longer than first article of legume; lobes lanceolate, ca. 2 \times as long as tube. Corolla pale yellow or yellowish green, ca. 5 mm. Legume brown at maturity, 0.6–1.5 cm \times ca. 1.8 mm, higher than calyx, 3–6-jointed, constricted between articles, glabrous. Fl. and fr. Sep–Nov. $2n = 16$.

Wastelands, grasslands, field margins, sunny places in valleys;

100–1000 m. Guangdong, SW Guangxi, S Taiwan, S Yunnan [India, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Indian Ocean islands (Mauritius), Pacific islands, South America (Bolivia)].

5. Alysicarpus rugosus (Willdenow) Candolle, Prodr. 2: 353. 1825.

皱缩链莢豆 zhou suo lian jia dou

Hedysarum rugosum Willdenow, Sp. Pl. 3: 1172. 1802;
Alysicarpus bracteatus X. F. Gao.

Herbs, perennial. Stem erect, to 1.5 m tall, glabrous or pilose. Leaves 1-foliolate; petiole 3–9 mm, glabrous or pilose;

blade oblong, rarely orbicular or linear-lanceolate, 2–6 × 0.2–1 cm, abaxially pilose and villous on veins, adaxially glabrous, base rounded, margin entire, ciliate, apex acute. Racemes terminal and axillary, 2–5 cm, 10–24-flowered, binate at each node. Pedicel 2–3 mm, pubescent. Calyx glabrous, 4–10 mm, longer than first article of legume. Corolla white, ca. 4 mm; standard obovate. Ovary glabrous, 3–5-ovuled. Legume moniliform, swollen, glabrous, 3–5-jointed; article broader than long, prominently transversely ridged, articles enclosed in calyx or slightly exserted. Fl. Sep, fr. Sep–Nov. 2n = 16*.

Moist places in dense valley forests, wasteland; 600–1200 m. ?Taiwan, NC and S Yunnan [India, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam; throughout Old World tropics].

131. CAMPYLOTROPIS Bunge, Pl. Mongholico-Chin. 6. 1835.

杭子梢属 hang zi shao shu

Huang Puhua (黃普華 Huang Pu-hwa); Hiroyoshi Ohashi, Yu Iokawa

Oxyramphis Wallich ex Meisner; *Phlebospermum* Junghuhn.

Shrubs or shrublets. Leaves pinnately 3-foliolate; stipules narrowly triangular or rarely triangular to deltoid-ovate, persistent; stipels nearly always absent, or rarely always present, linear; leaflets entire. Inflorescences axillary, racemose, rarely umbellate or spicate, sometimes terminal panicle composed of several upper racemes with reduced subtending leaves, 1-flowered per bract; bracts persistent or caducous. Pedicels articulate; bracteoles 2, usually caducous before anthesis. Calyx campanulate, 4-lobed; lower lobe narrower and longer than upper and lateral ones, upper lobe minutely 2-toothed at apex. Corolla violet to pinkish white or rarely yellow; standard shortly clawed at base; wings auriculate and clawed at base; keel incurved at ca. right angle, acute at apex, auriculate, clawed at base. Stamens monadelphous; vexillary stamen connate to staminal tube for 2/3–4/5 of its length, rarely almost diadelphous. Pistil minutely stipitate; ovary 1-ovuled, superior; style filiform, incurved; stigma terminal, small, ciliate with minute hairs. Legumes compressed, lenticular, indehiscent, 1-seeded. Seeds reniform, rim-arillate with ringlike margin around hilum.

About 37 species: mostly in temperate zone of Asia; 32 species (20 endemic) in China.

Because most species tolerate arid soils, they are important for soil conservation. The branchlets can be used as knitting needles. The young shoots and leaves are used as forage for livestock and as green manure. The roots and leaves of some species are used medicinally.

- 1a. Leaves dimorphic, lower leaves petiolate with obovate leaflets and distinct rachis, upper leaves sometimes subsessile.
 - 2a. Upper leaflets deltoid 10. *C. diversifolia*
 - 2b. Upper leaflets elliptic, orbicular, or transversely elliptic 13. *C. harmsii*
- 1b. Leaves not dimorphic.
 - 3a. Leaflets consistently stipellate.
 - 4a. Glandular hairs present on pedicel, calyx, and inflorescence rachis 22. *C. polyantha*
 - 4b. Glandular hairs absent 32. *C. yunnanensis*
 - 3b. Leaflets estipellate, rarely including a few leaves with rudimentary stipels.
 - 5a. Glandular hairs present on pedicel, calyx, and inflorescence rachis.
 - 6a. Calyx lobes more than 2 × as long as tube, more than 3 mm.
 - 7a. Bracts narrowly ovate, usually shorter than 3 mm; leaflet adaxially glabrous 9. *C. delavayi*
 - 7b. Bracts linear, usually more than 3.5 mm; leaflet adaxially densely puberulent 21. *C. pinetorum*
 - 6b. Calyx lobes usually as long as tube or, if longer, less than 2 × as long as tube.
 - 8a. Leaflet adaxially ± densely puberulent with spreading, very short hairs, rarely glabrescent; branches velutinous.
 - 9a. Leaves and stems with white hairs; leaflets broadly elliptic to ovate, often more than 8 cm 17. *C. latifolia*
 - 9b. Leaves and stems with tawny to pale brown hairs; leaflets narrowly ovate to elliptic, usually less than 7 cm.
 - 10a. Racemes extended, often more than 10 cm; bracts narrowly ovate, 2–2.5 mm; bracteoles ca. 1 mm 11. *C. fulva*
 - 10b. Racemes usually less than 9 cm; bracts narrowly ovate, 3–5 mm; bracteoles ca. 2 mm 25. *C. sulcata*
 - 8b. Leaflet adaxially glabrous or ± densely pubescent; branches not velutinous.

- 11a. Flowers small; standard usually less than 9 mm.
- 12a. Legumes more than 10 mm; leaflet abaxially densely white pubescent 18. *C. luhitensis*
- 12b. Legumes less than 8 mm.
- 13a. Leaflet abaxially with sparse appressed short hairs; legume apex obtuse 7. *C. cytisoides*
- 13b. Leaflet abaxially with dense white silky hairs; legume apex rounded 28. *C. thomsonii*
- 11b. Flowers larger; standard usually more than 10 mm.
- 14a. Leaflets usually less than 1 cm, obdeltoid 31. *C. wilsonii*
- 14b. Leaflets usually more than 2 cm, not obdeltoid.
- 15a. Bracts usually caducous before flowering 19. *C. macrocarpa*
- 15b. Bracts mostly persistent until fruiting.
- 16a. Inflorescence usually a panicle; bracts mostly more than 2 mm; petioles not abaxially angled.
- 17a. Leaflets deltoid to ovate, lateral veins thick, prominent abaxially 15. *C. hirtella*
- 17b. Leaflets obovate to oblong, lateral veins not prominent 2. *C. alopochroa*
- 16b. Inflorescence not a panicle; bracts mostly less than 2 mm.
- 18a. Petioles sulcate, neither abaxially angled nor winged 8. *C. decora*
- 18b. Petioles abaxially angled, often slightly convex above, bisulcate and narrowly winged along both sides 14. *C. henryi*
- 5b. Glandular hairs absent from pedicel and calyx.
- 19a. Petioles abaxially angled, often narrowly winged along both sides; young branches distinctly angled.
- 20a. Young branches quadrangular; corolla purple 12. *C. grandifolia*
- 20b. Young branches triquetrous; corolla yellow or purple 29. *C. trigonoclada*
- 19b. Petioles neither abaxially angled nor winged.
- 21a. Calyx lobes ca. 3 × as long as tube; flowers subsessile, clustered at top of peduncle as an umbel; leaflet adaxially white pubescent 1. *C. alba*
- 21b. Calyx lobes usually nearly equal to tube or, if longer, less than 2 × as long as tube; inflorescences not umbelliform.
- 22a. Leaflet adaxially densely puberulent.
- 23a. Calyx, inflorescence, young branches, and leaflets abaxially densely appressed sericeous; leaflets elliptic to oblong 3. *C. argentea*
- 23b. Calyx, inflorescence, young branches, and leaflets abaxially densely white villous; leaflets obdeltoid to broadly obovate 5. *C. brevifolia*
- 22b. Leaflet adaxially glabrous, sparsely pubescent, or sericeous.
- 24a. Pedicels usually less than 5 mm.
- 25a. Flowers clustered at upper part of racemes.
- 26a. Flowers larger; standard ca. 10 mm; pedicels more than 1.5 mm; racemes not terete 16. *C. howellii*
- 26b. Flowers small; standard ca. 7 mm; pedicels less than 1.5 mm; racemes terete, very densely flowered, spikelike 27. *C. teretiracemosa*
- 25b. Flowers distributed equally in racemes.
- 27a. Legumes ovoid to elliptic, pubescent; inflorescences racemose 24. *C. speciosa*
- 27b. Legumes narrowly ovoid to narrowly elliptic, lateral surface glabrous; inflorescences paniculate 30. *C. wenshanica*
- 24b. Pedicels usually more than 5 mm.
- 28a. Flowers less than 8 per raceme.
- 29a. Pedicels more than 15 mm; vexillary stamen connate to tube at base for ca. 1/6 of its length 20. *C. pauciflora*
- 29b. Pedicels less than 8 mm; vexillary stamen connate to tube at base for ca. 1/3 of its length 26. *C. tenuiramea*
- 28b. Flowers 10 or more per raceme.
- 30a. Leaflets obdeltoid to obcordate; lateral veins dense, straight, parallel 4. *C. bonii*
- 30b. Leaflets elliptic to obovate; lateral veins arcuate with net venation.
- 31a. Pedicels slender, 6–20 mm; leaflets papery 6. *C. capillipes*
- 31b. Pedicels stout, 4–6 mm; leaflets subleathery 23. *C. sargentiana*

1. Campylotropis alba Iokawa & H. Ohashi, J. Jap. Bot. 72: 139. 1997.

白花杭子梢 bai hua hang zi shao

Shrubs. Young branches densely white soft hairy. Petiole ca. 1.5 mm, white tomentose; stipels absent; leaflets broadly obovate, terminal one ca. 1 × 0.8 cm, abaxially densely pubescent, adaxially sparsely covered with ascending soft hairs, base

obtuse, apex rounded to retuse and mucronulate. Inflorescences umbel-like racemose with reduced axes; peduncles ca. 1.5 cm, densely ascending sericeous. Pedicels short, ca. 1.5 mm, ascending sericeous. Calyx deeply 4-lobed, densely ascending sericeous; tube ca. 2 mm; lobes narrowly triangular, 6–7 mm. Standard broadly obovate, ca. 9.5 mm, apex rounded; wings ca. 9.5 mm, clawed at base; keel incurved, ca. 14.5 mm, clawed at base. Gynoecium ca. 11.5 mm; ovary ca. 2.5 mm; style incurved, ca. 9 mm.

• Yunnan.

2. *Campylotropis alopochroa* H. Ohashi, J. Jap. Bot. 49: 108. 1974 [“*aloPOCHLOA*”].

西藏杭子梢 xi zang hang zi shao

Shrublets, 0.5–1 m tall. Branches densely ferruginous pubescent. Petiole 1–1.5 cm, with dense ascending hairs; stipels absent; leaflets obovate to elliptic, terminal one 2–2.5 × 1–2 cm, abaxially densely pubescent, adaxially sparsely covered with ascending short hairs, base obtuse, apex retuse and mucronulate. Racemes usually large paniculate, 6–8 cm; rachis and pedicels with dense ferruginous spreading hairs and sparse glandular hairs. Pedicels 4–5 mm. Calyx deeply 4-lobed, densely ascending sericeous with glandular hairs; tube ca. 1.5 mm; lobes narrowly triangular, 2.5–3 mm. Corolla red-purple; standard obovate or narrowly elliptic, ca. 12 mm, apex obtuse; wings 10–11 mm, shortly clawed at base; keel incurved, ca. 14 mm, clawed at base. Gynoecium ca. 13 mm; ovary ca. 2 mm; style incurved, 10.5–11 mm.

• Xizang.

3. *Campylotropis argentea* Schindler, Repert. Spec. Nov. Regni Veg. 11: 426. 1912.

银叶杭子梢 yin ye hang zi shao

Lespedeza argentea (Schindler) H. Léveillé.

Shrubs or shrublets, 0.5–1 m tall. Branches densely appressed sericeous. Petiole 1.5–4 cm, densely appressed hairy; stipels rarely present, linear, ca. 2 mm; leaflets elliptic to oblong, terminal one 1.2–3 × 0.7–2 cm, abaxially whitish or silvery with dense appressed silky hairs, adaxially puberulent, base rounded, apex retuse and mucronulate. Racemes 5–15 cm, often paniculate; rachis and pedicels with dense ascending short hairs. Pedicels 1.5–4 mm. Calyx deeply 4-lobed, with appressed short hairs; tube ca. 1.5 mm; lobes triangular to narrowly triangular, ca. 2 mm. Corolla purple; standard obovate, 9–10 mm, apex obtuse; wings ca. 10 mm, clawed at base; keel inflexed at an obtuse angle, ca. 11.5 mm, clawed at base. Ovary ca. 2.5 mm, appressed puberulent near suture and apex; style incurved, ca. 7 mm. Legume obliquely oblong, 7–9 × 3.5–5 mm, with subappressed short hairs, apex rounded. Seeds dark reddish brown, reniform, 2–2.2 × 3.5–4 mm.

• Sunny places, mountain slopes; 1300–1500 m. Yunnan.

4. *Campylotropis bonii* Schindler var. *stipellata* Iokawa & H. Ohashi, J. Jap. Bot. 79: 227. 2004.

密脉杭子梢 mi mai hang zi shao

Shrubs, to 4 m tall. Branches shortly appressed hairy. Peti-

ole 0.5–3 cm, densely appressed hairy; stipels linear; leaflets obcordoid to obcordate, terminal one 1.5–4 × 0.8–3 cm, abaxially appressed hairy, adaxially glabrous, lateral veins dense, straight, parallel, base cuneate, apex retuse and mucronulate. Racemes densely flowered, 2–7 cm, often paniculate. Pedicels 4–8 mm, with appressed short hairs. Calyx with appressed short hairs; tube ca. 1.5 mm; lobes triangular to narrowly triangular, ca. 1 mm. Corolla pale pink or pale red-purple; standard obovate to elliptic, 8–9 mm, narrowed to a claw, obtuse at apex; wings ca. 9 mm, clawed at base; keel incurved, ca. 8.5 mm, clawed at base. Ovary puberulent. Legume obliquely oblong, 13–16 × 5–8 mm, with subappressed short hairs, apex rounded. Seeds reniform, ca. 3 × 6 mm.

• Forests, thickets, grasslands; 300–2900 m. Guangxi.

Campylotropis bonii var. *bonii* occurs in N Thailand and N Vietnam.

5. *Campylotropis brevifolia* Ricker, J. Wash. Acad. Sci. 36: 37. 1946.

短序杭子梢 duan xu hang zi shao

Campylotropis yajiangensis P. Y. Fu var. *deronica* P. Y. Fu.

Shrubs or shrublets, usually 0.8–2 m tall. Branches glabrescent, young parts densely white villous. Petiole 0.5–1 cm, densely white villous; stipels absent; leaflets obcordoid to broadly obovate, terminal one 0.6–1.6 × 0.5–1.2 cm, abaxially densely white villous, adaxially densely puberulent, base obtuse, apex retuse and mucronulate. Racemes 1–2 cm, few flowered; rachis and pedicels with dense ascending soft hairs. Pedicels 1.5–2 mm. Calyx with dense ascending soft hairs; tube 1.5–1.8 mm; lobes triangular, nearly same length as tube. Corolla reddish purple; standard obovate, ca. 10 mm, base obtuse, apex rounded; wings ca. 9.5 mm, clawed at base; keel incurved, ca. 13.5 mm, clawed at base. Ovary ca. 2.5 mm; style incurved, ca. 8 mm. Legume obliquely ovoid, with ascending short hairs. Fl. Sep–Oct.

• Sunny grasslands, rocky mountain slopes, dry grassy slopes, thickets; 1600–3500 m. W Sichuan, E Xizang.

6. *Campylotropis capillipes* (Franchet) Schindler, Repert. Spec. Nov. Regni Veg. 11: 341. 1912.

细花梗杭子梢 xi hua geng hang zi shao

Shrubs, usually 1–2 m tall. Young branches shortly appressed hairy. Petiole 0.3–4 cm, densely shortly appressed hairy; stipels absent; leaflets obovate to oblong, terminal one 1–3 × 0.7–2 cm, both surfaces sparsely shortly appressed hairy or adaxially glabrous, base obtuse, apex retuse and mucronulate. Racemes ± densely flowered, 1.5–3(–8) cm. Pedicels slender, subfiliform, 6–20 mm, with appressed short hairs. Calyx with appressed short hairs; tube 1.8–2.7 mm; lobes triangular to narrowly triangular. Corolla purple to reddish purple; standard elliptic, 10–14 mm, apex obtuse; wings 10–14 mm, clawed at base; keel incurved, 12–16 mm, clawed at base. Ovary ca. 3.5 mm, puberulent or glabrous; style incurved, ca. 10 mm. Legume obliquely elliptic, 8–16 × 4.5–7 mm, shortly appressed hairy or glabrous, apex obtuse. Seeds reddish brown, reniform, ca. 2 × 3 mm. Fl. Sep–Nov, fr. Nov–Apr.

Forests, thickets, forest margins, valleys, mountain slopes, stream-sides; 1000–3000 m. W Guangxi, Sichuan, Yunnan [Myanmar, Thailand].

- 1a. Leaflets adaxially sparsely shortly appressed hairy; racemes short, 1.5–3 cm; calyx lobes almost as long as tube, more than 1.5 mm 6a. subsp. *capillipes*
- 1b. Leaflets adaxially glabrous; racemes 2–8 cm; calyx lobes distinctly shorter than tube, 1–1.5 mm 6b. subsp. *prainii*

6a. *Campylotropis capillipes* subsp. *capillipes*

细花梗杭子梢(原亚种) xi hua geng hang zi shao (yuan ya zhong)

Lespedeza capillipes Franchet, Pl. Delavay. 165. 1890.

Leaflets adaxially sparsely shortly appressed hairy. Racemes short, 1.5–3 cm. Calyx lobes almost as long as tube, more than 1.5 mm.

• Forests, thickets; 1000–3000 m. Sichuan, Yunnan.

6b. *Campylotropis capillipes* subsp. *prainii* (Collett & Hemsley) Iokawa & H. Ohashi, J. Jap. Bot. 77: 209. 2002.

草山杭子梢 cao shan hang zi shao

Lespedeza prainii Collett & Hemsley, J. Linn. Soc., Bot. 28: 46. 1890; *Campylotropis prainii* (Collett & Hemsley) Schindler.

Leaflets adaxially glabrous. Racemes 2–8 cm. Calyx lobes distinctly shorter than tube, 1–1.5 mm. Fl. Sep–Nov, fr. Nov–Apr.

Forest margins, forests, valleys, mountain slopes, thickets, stream-sides; 1000–3000 m. W Guangxi, Yunnan [Myanmar, Thailand].

7. *Campylotropis cytisoides* Miquel, Fl. Ned. Ind. 1: 229. 1855.

小花杭子梢 xiao hua hang zi shao

Lespedeza cytisoides Bentham in Miquel, Pl. Jungh. 230. 1852, not Bertoloni (1851).

Shrubs, 1.5–3 m tall. Young branches shortly appressed hairy. Petiole 1.5–5.5 cm, with dense appressed short hairs; stipels absent; leaflets narrowly ovate to elliptic, terminal one 2.3–6.5 × 1–2 cm, abaxially with sparse appressed short hairs, adaxially glabrous, base obtuse, apex retuse and mucronulate. Racemes 4–15 cm; rachis and pedicels shortly ascending hairy mixed with sparse glandular hairs. Pedicels 2–5 mm. Calyx densely shortly ascending hairy mixed with glandular hairs; tube 1.2–1.4 mm; lobes narrowly triangular, 1.7–2.1 mm. Corolla pinkish white; standard elliptic, ca. 8 mm, apex obtuse; wings ca. 7.7 mm, clawed at base; keel incurved, ca. 10 mm, clawed at base. Ovary ca. 2 mm; style incurved, ca. 5 mm, shortly appressed hairy at basal half. Legume obliquely ovoid, 6.5–8 × 3.8–4.5 mm, shortly ascending hairy, apex obtuse. Seeds reddish brown, reniform, 2–2.2 × 3.3–3.8 mm. Fl. and fr. (Nov–)Dec–Apr.

Sparse or dense forests; 400–1500 m. S Yunnan [N Laos, Myanmar, Thailand, Vietnam].

The Chinese plants as treated here are *Campylotropis cytisoides* f. *parviflora* (Kurz) Iokawa & H. Ohashi (J. Jap. Bot. 77: 212. 2002; *Lespedeza parviflora* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 231. 1874; *C. parviflora* (Kurz) Schindler). *Campylotropis cytisoides* f. *cytisoides* occurs in Indonesia.

8. *Campylotropis decora* (Kurz) Schindler, Repert. Spec. Nov. Regni Veg. 11: 428. 1912.

华美杭子梢 hua mei hang zi shao

Lespedeza decora Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 231. 1874; *Campylotropis sericophylla* (Collett & Hemsley) Schindler; *C. sessilifolia* Schindler; *L. sericophylla* Collett & Hemsley.

Shrubs, 1–1.5 m tall. Young branches densely ascending or spreading hairy. Petiole 0.5–3.5 cm, densely ascending hairy; stipels absent; leaflets obovate to elliptic, terminal one 2–5 × 1–3.5 cm, abaxially densely appressed or ascending hairy, adaxially glabrous or pubescent, base obtuse, apex retuse and mucronulate. Racemes 2–9 cm; rachis and pedicels with ascending or spreading short hairs and dense glandular hairs. Pedicels 4–10 mm. Calyx with appressed or ascending short hairs mixed with glandular hairs; tube 1.5–2.5 mm; lobes narrowly triangular, ca. 4 mm. Corolla blue; standard elliptic, ca. 10 mm, apex obtuse; wings ca. 9 mm, clawed at base; keel incurved, ca. 14 mm, clawed at base. Ovary ca. 2 mm; style incurved, ca. 9.5 mm. Legume obliquely ovoid or obovoid, 6–7 mm, shortly ascending hairy, apex obtuse. Seeds purplish brown, reniform, ca. 2 × 3.5 mm.

S Yunnan [Laos, Myanmar, Thailand].

9. *Campylotropis delavayi* (Franchet) Schindler, Repert. Spec. Nov. Regni Veg. 11: 426. 1912.

西南杭子梢 xi nan hang zi shao

Lespedeza delavayi Franchet, Pl. Delavay. 165. 1890; *L. atrokermesina* Forrest.

Shrubs, 1–3 m tall. Young branches densely appressed whitish sericeous. Petiole 1–3 cm, densely appressed whitish sericeous; stipels absent; leaflets obovate to oblong, terminal one 1.5–7 × 1.3–5.7 cm, leathery, abaxially with dense appressed whitish sericeous hairs, adaxially glabrous, base obtuse or rounded, apex retuse and mucronulate. Racemes ± densely flowered, 2–11 cm, often paniculate; rachis and pedicels with dense spreading whitish short hairs and glandular hairs; bracts narrowly ovate, usually shorter than 3 mm. Pedicels 2–4 mm. Calyx with dense appressed whitish sericeous hairs and sparse glandular hairs; tube 1.6–2.5 mm; lobes narrowly triangular, 4.3–5.5 mm. Corolla dark purple; standard elliptic, 10–13 mm, apex obtuse; wings ca. 12.5 mm, clawed at base; keel ca. 14.5 mm, clawed at base. Ovary 2.2–2.5 mm; style incurved, 10–10.5 mm. Legume obliquely elliptic, 6–7 × 4–5 mm, shortly appressed hairy, apex obtuse. Seeds purplish brown, reniform, ca. 1.7 × 2.7 mm. Fl. Oct–Dec, fr. Nov–Dec.

• Mountain slopes, thickets, sunny grasslands; 400–2200 m. Sichuan, Yunnan.

The roots are used medicinally for reducing fevers.

10. *Campylotropis diversifolia* (Hemsley) Schindler, Repert. Spec. Nov. Regni Veg. 11: 342. 1912.

异叶杭子梢 yi ye hang zi shao

Lespedeza diversifolia Hemsley, Hooker's Icon. Pl. 27: t. 2625. 1899.

Shrubs, 1–2 m tall. Young branches sparsely shortly appressed hairy. Leaves dimorphic; lower leaves petiolate, with obovate leaflets and distinct rachis, petioles 0.5–1.2 cm, sparsely appressed shortly hairy, rachis 4–8 mm; upper leaves subsessile, with deltoid leaflets and a minute rachis, rachis 0.5–4 mm; terminal leaflets 2–3.5 × 1.2–2.8 cm on lower leaves, 1.5–3 × 1.8–3 cm on upper leaves, abaxially with sparse appressed short hairs, adaxially glabrous or sparsely shortly hairy, obtuse at base and obtuse and mucronulate at apex on lower leaves, cordate or truncate at base and acuminate at apex on upper leaves; stipels absent. Racemes 2–5 cm, often paniculate. Pedicels 5–9 mm, shortly appressed hairy and also with sparse glandular hairs. Calyx with dense appressed short hairs, rarely also with glandular hairs; tube 2–2.5 mm; lobes narrowly triangular, 2–3 mm. Corolla purple; standard elliptic, 12–14 mm, apex obtuse; wings 12–13 mm, clawed at base; keel incurved, 16–18 mm, clawed at base. Ovary ca. 3 mm; style incurved, ca. 11.5 mm. Legume obliquely elliptic, 9–10 × ca. 5 mm, shortly appressed hairy, apex obtuse. Seeds brown, reniform, ca. 2.5 × 3.6 mm. Fl. Nov–Dec, fr. Jan–May.

• Mountain slopes, thickets, sparse forests, hot arid valleys; 800–1700 m. Yunnan.

11. *Campylotropis fulva* Schindler, Repert. Spec. Nov. Regni Veg. 11: 426. 1912.

暗黄杭子梢 an huang hang zi shao

Lespedeza fulva (Schindler) H. Léveillé.

Shrublets or shrubs. Young branches densely yellowish velutinous. Petiole 0.4–2 cm, densely yellowish velutinous; stipels absent; leaflets narrowly ovate to ovate or narrowly oblong to oblong, terminal one 2.5–5 × 1–2.5 cm, abaxially densely ascending hairy, adaxially with dense very minute spreading hairs (puberulent), base obtuse or rounded, apex obtuse and mucronulate. Racemes 6–12 cm, often panicle composed of several upper racemes with reduced subtending leaves; rachis with spreading short hairs and glandular hairs; bracts narrowly ovate, 2–2.5 mm; bracteoles ca. 1 mm. Pedicels ca. 3 mm, densely shortly ascending hairy mixed with glandular hairs. Calyx with dense appressed short hairs and sparse glandular hairs; tube ca. 1.5 mm; lobes narrowly triangular, ca. 2.5 mm. Corolla purple; standard elliptic, 9–9.5 mm, apex obtuse; wings ca. 8 mm, clawed at base; keel ca. 13.2 mm, clawed at base. Ovary ca. 1.5 mm; style incurved, ca. 9.2 mm. Legume obliquely elliptic, shortly appressed hairy.

• SE Yunnan.

This species is known only from the type specimen collected from Mengzi in SE Yunnan.

12. *Campylotropis grandifolia* Schindler, Repert. Spec. Nov. Regni Veg. 11: 346. 1912.

弥勒杭子梢 mi le hang zi shao

Shrubs, ca. 1.5 m tall. Young branches distinctly quadrangular, sparsely shortly appressed hairy. Petiole abaxially angled, often narrowly winged along both sides, 2–4 cm, with dense appressed short hairs; stipels absent; leaflets ovate to elliptic, terminal one 3–8 × 1.5–4.5 cm, abaxially sparsely appressed or ascending hairy, adaxially glabrous, base obtuse or rounded, apex obtuse or retuse and mucronulate. Racemes ± densely flowered, 3–5 cm, often paniculate; rachis with ± dense appressed short hairs. Pedicels 6–8 mm, with ± dense appressed or ascending short hairs. Calyx with dense appressed short hairs; tube ca. 2 mm; lobes narrowly triangular, 3–4 mm. Corolla purple; standard elliptic, 13–14 mm, apex obtuse; wings ca. 12 mm, clawed at base; keel incurved, 16–17 mm, clawed at base. Ovary ca. 2.5 mm; style incurved, 11–11.5 mm. Legume ovoid, 6–9 × 3–5 mm, appressed shortly hairy, apex obtuse.

• SE Yunnan.

This species is known only from the type specimen collected at Mile in SE Yunnan.

Although winged petioles and distinctly angled young branches are also observed in *Campylotropis trigonoclada* and *C. henryi*, this species is easily recognized by the quadrangular branches and lack of glandular hairs in the inflorescences.

13. *Campylotropis harmsii* Schindler, Repert. Spec. Nov. Regni Veg. 11: 342. 1912.

思茅杭子梢 si mao hang zi shao

Lespedeza harmsii (Schindler) H. Léveillé.

Shrubs, 1–2 m tall. Young branches ± densely ascending hairy. Leaves dimorphic; lower leaves petiolate, with obovate leaflets, petioles 1–2 cm, ± densely shortly ascending hairy; upper leaves sometimes subsessile, with orbicular or transversely elliptic leaflets; terminal leaflet 1.5–3.5 × 1.3–3 cm, abaxially appressed hairy, adaxially with sparse appressed minute hairs, base cuneate to broadly cuneate, apex obtuse and mucronulate or acuminate; stipels absent. Racemes 2–3 cm, often paniculate at apex; panicle zigzag, bent at nodes; rachis and pedicels ± densely ascending hairy, rarely also with glandular hairs. Pedicels 10–14 mm. Calyx with dense ascending short hairs, rarely with glandular hairs; tube 2–2.5 mm; lobes narrowly triangular, 2–3 mm. Corolla purple; standard elliptic, 12.5–13 mm, apex obtuse; wings 12–13 mm, clawed at base; keel incurved, 15–16 mm, clawed at base. Ovary ca. 3 mm; style incurved at base, ca. 10 mm. Legume obliquely elliptic, 12–15 × 5–6 mm, shortly ascending hairy, apex acute. Seeds purplish black, reniform, ca. 3 × 6 mm.

Dense forests; 100–1300 m. S Yunnan [Thailand].

14. *Campylotropis henryi* (Schindler) Schindler, Repert. Spec. Nov. Regni Veg. 11: 347. 1912.

元江杭子梢 yuan jiang hang zi shao

Lespedeza henryi Schindler, Repert. Spec. Nov. Regni Veg. 9: 517. 1911; *Campylotropis esquierlii* Schindler.

Shrubs, 1–2 m tall. Young branches often distinctly quadrangular, sparsely shortly appressed hairy. Petiole adaxially

angled, often slightly convex above, bisulate and narrowly winged along both sides, 1–5 cm, shortly appressed hairy; stipels absent; leaflets oblong to ovate, terminal one 3–10 × 1.5–5 cm, abaxially appressed hairy particularly on veins and margin, adaxially glabrous, base rounded, apex obtuse to rounded and retuse and mucronulate. Racemes 3–15 cm; rachis and pedicels with ± dense appressed to ascending short hairs and sparse glandular hairs. Pedicels 6–8.5 mm. Calyx with densely appressed short hairs and glandular hairs; tube 2–2.5 mm; lobes narrowly triangular, 3–4.5 mm. Corolla purple; standard elliptic, 10–13 mm, apex obtuse; wings 10–12.5 mm, clawed at base; keel incurved, 12.5–15 mm, clawed at base. Ovary 2.5–3 mm, shortly appressed hairy; style incurved, ca. 10 mm. Legume ovoid, 6–9 × 4–5.5 mm, shortly ascending hairy, apex obtuse. Seeds purplish black, reniform, ca. 2 × 4 mm. Fl. and fr. Oct–Dec.

- Mountain slopes, thickets, forests; 600–1600 m. Guizhou, Yunnan.

The wings of this species are sometimes not so prominent, especially on the petioles of small upper leaves. In such a form, this species somewhat resembles *Campylotropis polyantha*, but it is easily distinguished by the lack of stipels and longer calyx lobes (3–4.5 mm in *C. henryi* vs. 1.3–2.5 mm in *C. polyantha*).

Campylotropis henryi was recorded from Thailand (Gagnepain in Lecomte, Fl. Indo-Chine 2: 520. 1920, as *Lespedeza henryi*) and Laos (Thuan et al., Fl. Cambodge, Laos & Vietnam 23: 144. 1987), but these are *C. decora*.

15. *Campylotropis hirtella* (Franchet) Schindler, Repert. Spec. Nov. Regni Veg. 11: 428. 1912.

毛杭子梢 mao hang zi shao

Lespedeza hirtella Franchet, Pl. Delavay. 167. 1890; *L. mairei* Pampanini.

Shrublets, 0.5–1 m tall. Young branches ± densely ferruginous spreading hairy. Aerial stems annual and coming from axillary or adventitious buds at basal perennial parts of stems, usually with several withered shoots from previous year persistent at base of annual shoots. Petiole 0.1–2 cm, very short on upper leaves, densely ascending or appressed hairy; stipels absent; leaflets deltoid to ovate, terminal one 1–6 × 1–4 cm, abaxially ± densely ascending hairy, adaxially sparsely or ± densely ascending hairy, base cordate, truncate, or rounded, apex retuse and mucronulate. Racemes 4–17 cm, usually paniculate; rachis and pedicels with dense spreading short hairs and glandular hairs. Pedicels 1.5–7 mm. Calyx with ± dense ascending short hairs and glandular hairs; tube 2–2.8 mm; lobes narrowly triangular, 2.5–3.2 mm. Corolla purple; standard elliptic, 13–15 mm, apex obtuse; wings ca. 13 mm, clawed at base; keel incurved, 15.5–17 mm, clawed at base. Ovary narrowly ovoid, ca. 2 mm, shortly appressed hairy; style incurved, ca. 13 mm. Legume obliquely obovoid, 4.5–6 × 3–4 mm, shortly ascending hairy, apex obtuse. Seeds purplish brown, reniform, ca. 3.7 × 2 mm. Fl. Jun–Oct, fr. Oct–Nov.

Thickets, forest margins, streamsides, sparse forests, mountain slopes, sunny grasslands; 900–4100 m. Guizhou, Sichuan, Xizang, Yunnan [India].

16. *Campylotropis howellii* Schindler, Trans. Bot. Soc. Edinburgh 26: 285. 1914.

腾冲杭子梢 teng chong hang zi shao

Shrubs or shrublets, ca. 1 m tall. Young branches sparsely appressed or ascending shortly hairy. Petiole 0.3–2.5 cm, densely appressed or ascending hairy; stipels absent; leaflets obovate to oblong, terminal one 1.5–3 × 1–2 cm, abaxially sparsely shortly appressed hairy, adaxially glabrous, base obtuse or rounded, apex retuse and mucronulate. Racemes axillary or terminal, 2.5–11 cm, densely flowered on long peduncle; rachis and pedicels densely shortly ascending hairy. Pedicels 1.5–3 mm. Calyx with ± dense appressed short hairs; tube 2–2.5 mm; lobes narrowly triangular, 2.5–3.5 mm. Corolla purple; standard obovate, 10–10.5 mm, apex obtuse; wings ca. 10.5 mm, clawed at base; keel shallowly incurved, 12.5–13 mm, clawed at base. Ovary narrowly ovoid, ca. 2 mm, shortly appressed hairy; style incurved, ca. 7.2 mm. Legume obliquely obovoid, ca. 5.5 × 3 mm, shortly ascending hairy, apex obtuse. Seeds purplish brown, reniform.

- Sparse forests on mountain slopes; 1900–2300 m. Yunnan.

17. *Campylotropis latifolia* (Dunn) Schindler, Repert. Spec. Nov. Regni Veg. 11: 428. 1912.

阔叶杭子梢 kuo ye hang zi shao

Lespedeza latifolia Dunn, J. Linn. Soc., Bot. 35: 488. 1903.

Shrubs, usually 1–2 m tall. Young branches densely whitish velutinous. Petiole 1.5–5 cm, densely ascending whitish velutinous; stipels absent; leaflets ovate to broadly ovate or broadly elliptic, terminal one 4–10 × 2–6 cm, leathery, abaxially ± densely whitish pubescent, adaxially ± densely puberulent, rarely glabrescent, base rounded, apex retuse and mucronulate. Racemes 6–13 cm; rachis and pedicels ± densely pubescent and with glandular hairs. Pedicels 2.5–5 mm. Calyx with ± dense ascending short hairs and glandular hairs; tube 1.5–1.8 mm; lobes triangular, 1.2–1.5 mm. Corolla purple; standard obovate, ca. 12 mm, apex obtuse; wings ca. 11.5 mm, clawed at base; keel incurved, 14.5–15.5 mm, clawed at base. Ovary narrowly ovoid, ca. 2.5 mm, shortly ascending hairy; style incurved, ca. 11.5 mm. Legume obliquely oblong, 8–11 × ca. 3.5 mm, shortly spreading hairy, apex acute.

- Mountain slopes, sunny places; 1200–1400 m. Yunnan.

18. *Campylotropis luhitensis* H. Ohashi, J. Jap. Bot. 51: 345. 1976.

藏东杭子梢 zang dong hang zi shao

Shrubs. Young branches densely whitish hairy. Petiole 0.5–1.5 cm, densely pubescent; stipels absent; leaflets elliptic, terminal one 1–3.5 × 0.6–1.8 cm, abaxially densely whitish appressed pubescent, adaxially glabrous, base obtuse, apex retuse and mucronulate. Racemes usually paniculate, each raceme 2–4 cm; rachis densely spreading pubescent mixed with glandular hairs. Pedicels 5–8 mm, densely spreading pubescent mixed with glandular hairs. Calyx ± densely shortly ascending hairy; tube 1.5–2 mm; lobes narrowly triangular, 2–2.4 mm. Corolla purple; standard elliptic, 8–9.5 mm, apex obtuse; wings 7.8–9.5

mm, clawed at base; keel incurved, ca. 11 mm, clawed at base. Ovary narrowly ovoid, ca. 2.5 mm, shortly appressed hairy; style incurved, 6.5–7.5 mm. Legume obliquely ovoid, 11–14 × ca. 4 mm, densely shortly hairy. Seeds reniform, ca. 4 × 2.5 mm.

E Xizang [Myanmar].

19. *Campylotropis macrocarpa* (Bunge) Rehder in Sargent, Pl. Wilson. 2: 113. 1914.

杭子梢 hang zi shao

Shrubs, usually 1–2 m tall. Young branches appressed or ascending hairy. Petiole 1–5 cm, appressed or ascending pubescent; stipels absent, rarely rudimentarily present and linear on base of petiolule of lateral leaflet; leaflets oblong or ovate, rarely obovate, terminal one 1.2–6.5 × 0.7–3.7 cm, abaxially sparsely to densely ascending pubescent, adaxially glabrous or sparsely pubescent, base obtuse or rounded, apex retuse and mucronulate. Racemes 2.5–15 cm, sometimes paniculate; rachis and pedicels appressed or ascending pubescent mixed with glandular hairs. Pedicels 2–11 mm. Calyx ± densely appressed or ascending shortly hairy mixed with glandular hairs; tube 1.2–2 mm; lobes triangular, 0.8–3 mm. Corolla purple to pinkish white; standard elliptic, 11–12 mm, apex obtuse; wings 10–12 mm, clawed at base; keel incurved, 11.5–14.5 mm, clawed at base. Ovary 2.5–3 mm; style incurved, 8.5–9 mm. Legume obliquely obovoid to oblong, 9–15 × 3.5–6 mm, lateral surface glabrous or pubescent, apex acute. Seeds reddish brown, reniform, 2.7–5 × 1.5–3 mm.

Mountain slopes, valleys, thickets, forest margins, streamsides, forests, open places; 100–2000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, ?Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Korea].

- 1a. Lateral surface of legumes glabrous;
calyx lobes shorter than tube,
0.8–1.2 mm 19a. var. *macrocarpa*
- 1b. Lateral surface of legumes pubescent;
calyx lobes almost as long as tube,
2.2–3 mm 19b. var. *hupehensis*

19a. *Campylotropis macrocarpa* var. *macrocarpa*

杭子梢(原变种) hang zi shao (yuan bian zhong)

Lespedeza macrocarpa Bunge, Enum. Pl. China Bor. 18. 1833; *Campylotropis chinensis* Bunge, nom. illeg. superfl.; *C. gracilis* Ricker; *C. hersii* Ricker; *C. huberi* Ricker; *C. macrocarpa* subsp. *hengduanshanensis* C. J. Chen; *C. macrocarpa* f. *lanceolata* P. Y. Fu; *C. mortolana* Ricker; *C. smithii* Ricker; *L. ciliata* Bentham; *L. distincta* L. H. Bailey; *L. ichangensis* Schindler; *L. rosthornii* Schindler.

Calyx lobes shorter than tube, 0.8–1.2 mm. Lateral surface of legumes glabrous. Fl. and fr. (May–)Jun–Oct.

Mountain slopes, thickets, valleys, forest margins, streamsides, forests; 100–1900 m. Anhui, Fujian, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan, Zhejiang [Korea].

This variety includes two forms: *Campylotropis macrocarpa* f.

macrocarpa, with purple to pinkish white flowers, and *C. macrocarpa* f. *alba* (S. Y. Wang) Iokawa & H. Ohashi, with pure white flowers.

19b. *Campylotropis macrocarpa* var. *hupehensis* (Pampanini) Iokawa & H. Ohashi, J. Jap. Bot. 77: 272. 2002.

太白山杭子梢 tai bai shan hang zi shao

Lespedeza macrocarpa var. *hupehensis* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 17: 399. 1910; *Campylotropis bodinieri* Schindler; *C. giralddii* (Schindler) Schindler; *C. glauca* (Schindler) Schindler; *C. longepedunculata* Ricker; *C. macrocarpa* f. *giralddii* (Schindler) P. Y. Fu; *C. macrocarpa* var. *giralddii* (Schindler) K. T. Fu ex P. Y. Fu; *C. macrocarpa* f. *hupehensis* (Pampanini) P. Y. Fu; *C. macrocarpa* f. *longepedunculata* (Ricker) P. Y. Fu; *C. macrocarpa* f. *microphylla* K. T. Fu ex P. Y. Fu; *L. bodinieri* (Schindler) H. Léveillé; *L. giralddii* Schindler; *L. glauca* Schindler; *L. macrocarpa* Franchet (1894), not Bunge (1833); *L. pseudomacrocarpa* Hayata.

Calyx lobes almost as long as tube, 2.2–3 mm. Lateral surface of legumes pubescent. Fl. and fr. Jun–Oct(–Nov).

• Mountain slopes, thickets, open places, forest margins, forests, valleys; 200–2000 m. Gansu, Guangdong, Guizhou, Hebei, Henan, Hubei, Shaanxi, Shanxi, Sichuan, Taiwan.

20. *Campylotropis pauciflora* C. J. Chen, Acta Bot. Yunnan. 10: 433. 1988.

少花杭子梢 shao hua hang zi shao

Shrubs, ca. 1 m tall. Young branches ± densely shortly appressed hairy. Petiole 0.8–1.6 cm, ascending or spreading pubescent; stipels absent; leaflets obovate, terminal one 1.3–2.4 × 0.9–1.5 cm, abaxially sparsely shortly appressed hairy, adaxially glabrous, base obtuse, apex retuse and mucronulate. Racemes few flowered, 0.6–1.4 cm; rachis and pedicels sparsely shortly appressed hairy. Pedicels 20–22 mm, capillaceous. Calyx ± densely shortly appressed hairy; tube 2–2.3 mm; lobes narrowly triangular, 2–2.3 mm. Corolla blue; standard elliptic, 11–12.5 mm, apex obtuse; wings 11–12.5 mm, clawed at base; keel incurved, 15–17 mm, clawed at base. Vexillary stamen connate to tube at base for ca. 1/6 of its length. Ovary narrowly ovoid, ca. 3 mm, shortly appressed hairy; style incurved, ca. 10 mm. Legume obliquely obovoid, shortly appressed hairy, apex acute. Fl. and fr. Aug–Oct.

• Mixed forests; ca. 2300 m. W Yunnan.

21. *Campylotropis pinetorum* (Kurz) Schindler, Repert. Spec. Nov. Regni Veg. 11: 429. 1912.

松林杭子梢 song lin hang zi shao

Lespedeza pinetorum Kurz, J. Asiatic. Soc. Bengal, Pt. 2, Nat. Hist. 42: 230. 1874.

Shrubs, 1–2 m tall. Branches tawny velutinous. Petiole 1–5 cm, densely velutinous; stipels absent; leaflets ovate or elliptic, terminal one 2–13 × 1–6 cm, adaxially tawny velutinous, base obtuse or rounded, apex acute. Racemes 2–10 cm, densely flowered; rachis tawny velutinous mixed with dense glandular hairs; bracts linear, usually more than 3.5 mm. Pedicels 1.5–4 mm, densely pubescent mixed with glandular hairs. Calyx ± densely shortly ascending hairy mixed with glandular hairs;

tube 1.7–2.5 mm; lobes narrowly triangular, 3–4.5 mm, upper lobe distinctly 2-toothed. Corolla pinkish white; standard elliptic, 9–10.5 mm, apex obtuse; wings 7.5–9 mm, clawed at base; keel shallowly inflexed, 10.5–12 mm, clawed at base. Ovary narrowly ovoid, ca. 2.3 mm, shortly hairy; style incurved, ca. 7.7 mm. Legume obliquely elliptic to narrowly obovoid, 6–6.5 × 3–4 mm, shortly ascending hairy sometimes mixed with glandular hairs, apex acute. Seeds purplish brown, obliquely oblong, 3.2–4 × 1.5–2 mm.

Mountain slopes, thickets, forest margins, sparse forests, open grassy slopes, streamsides; 700–2800 m. Guangxi, Guizhou, Yunnan [Laos, Myanmar, Thailand, Vietnam].

Campylotropis pinetorum subsp. *pinetorum* occurs in Laos, Myanmar, Thailand, and Vietnam. Two other subspecies occur in China.

- 1a. Branches, inflorescence rachises, calyces, and both surfaces of leaflets densely white pubescent; leaflets ovate to elliptic, acute at apex 21a. subsp. *albopubescens*
- 1b. Branches, inflorescence rachises, calyces, and abaxial surface of leaflets tawny velutinous; leaflets oblong to narrowly ovate, rounded or obtuse at apex 21b. subsp. *velutina*

21a. *Campylotropis pinetorum* subsp. *albopubescens* (Iokawa & H. Ohashi) Iokawa & H. Ohashi, J. Jap. Bot. 77: 282. 2002.

白柔毛杭子梢 bai rou mao hang zi shao

Campylotropis pinetorum var. *albopubescens* Iokawa & H. Ohashi, J. Jap. Bot. 72: 141. 1997.

Branches, inflorescence rachises, calyces, and both surfaces of leaflets densely white pubescent. Leaflets ovate to elliptic, apex acute.

• Yunnan.

21b. *Campylotropis pinetorum* subsp. *velutina* (Dunn) H. Ohashi, J. Jap. Bot. 49: 43. 1974.

绒毛叶杭子梢 rong mao ye hang zi shao

Lespedeza velutina Dunn, Hooker's Icon. Pl. 27: t. 2700. 1901; *Campylotropis velutina* (Dunn) Schindler; *Millettia cavaleriei* H. Léveillé.

Branches, inflorescence rachises, calyces, and abaxial surface of leaflets tawny velutinous. Leaflets oblong to narrowly ovate, apex rounded or obtuse. Fl. and fr. Dec–Apr.

• Mountain slopes, thickets, forest margins, sparse forests, open grassy slopes, streamsides; 700–2800 m. Guangxi, Guizhou, Yunnan.

The root is used medicinally as an astringent and pain reliever.

22. *Campylotropis polyantha* (Franchet) Schindler, Repert. Spec. Nov. Regni Veg. 11: 340. 1912.

小雀花 xiao que hua

Shrubs, 1–2 m tall. Young branches appressed or ascending hairy. Petiole 0.5–4 cm, appressed or ascending pubes-

cent; stipels present at top of petioles, linear, 1–2 mm, sometimes also present at top of rachis; leaflets oblong, obovate, or ovate to narrowly ovate, terminal one 1–4 × 0.5–2.5 cm, abaxially ± densely appressed or ascending pubescent, adaxially glabrous or sparsely pubescent, base obtuse or rounded, apex retuse and mucronulate. Racemes 2–13 cm; rachis and pedicels appressed or ascending pubescent mixed with glandular hairs. Pedicels 3–9 mm. Calyx ± densely shortly ascending hairy mixed with glandular hairs; tube 1.5–2.5 mm; lobes narrowly triangular, 1.3–2.5 mm. Corolla purple to pinkish white; standard elliptic, 10–14 mm, obtuse at apex; wings 10–13 mm, clawed at base; keel incurved, 11.3–16.2 mm, clawed at base. Ovary 2.5–4 mm; style incurved, 7.5–9 mm. Legume obliquely ovoid to elliptic or obovoid, 6–11 × 3–5 mm, apex acute. Seeds pale brown, reniform, 2.5–3.6 × 1.6–2 mm.

• Mountain slopes, sunny thickets, rocky mountains, roadsides, grasslands, streamsides, waste grasslands, valleys, forest margins, forests; 400–3200 m. Guizhou, Sichuan, E Xizang, Yunnan.

- 1a. Bracts 1–3.5 mm, caducous before flowering; pedicels 3–8 mm 22a. var. *polyantha*
- 1b. Bracts 3–5 mm, persistent until fruiting; pedicels 7–9 mm 22b. var. *neglecta*

22a. *Campylotropis polyantha* var. *polyantha*

小雀花(原变种) xiao que hua (yuan bian zhong)

Lespedeza eriocarpa Candolle var. *polyantha* Franchet, Pl. Delavay. 168. 1890; *Campylotropis muehleana* (Schindler) Schindler; *C. polyantha* f. *macrophylla* P. Y. Fu; *C. polyantha* f. *souliei* (Schindler) P. Y. Fu; *C. polyantha* var. *tomentosa* P. Y. Fu; *C. reticulata* S. S. Chien; *C. reticulinervis* C. Y. Wu; *C. souliei* Schindler; *C. tomentosipetiolata* P. Y. Fu; *C. wangii* Ricker; *L. blinii* H. Léveillé; *L. dichromoxylon* H. Léveillé; *L. eriocarpa* var. *chinensis* Pampanini; *L. eriocarpa* subvar. *polyantha* (Franchet) Pampanini; *L. muehleana* Schindler; *L. polyantha* (Franchet) Schindler.

Bracts 1–3.5 mm, caducous before flowering. Pedicels 3–8 mm. Fl. and fr. Mar–Nov(–Dec).

• Mountain slopes, sunny thickets, rocky mountains, roadsides, grasslands, streamsides; 400–3200 m. Guizhou, Sichuan, E Xizang, Yunnan.

The root is used medicinally for reducing fever, promoting diuresis, expelling phlegm, and relieving pain.

This variety includes two forms: one with pubescent legumes, *Campylotropis polyantha* f. *polyantha*, and the other with glabrous lateral surfaces of legumes, *C. polyantha* f. *leiocarpa* (Pampanini) Iokawa & H. Ohashi (J. Jap. Bot. 77: 319. 2002; *Lespedeza eriocarpa* f. *leiocarpa* Pampanini, Nuovo Giorn. Bot. Ital. 17: 22. 1910; *C. polyantha* var. *leiocarpa* (Pampanini) E. Peter).

22b. *Campylotropis polyantha* var. *neglecta* (Schindler) Iokawa & H. Ohashi, J. Jap. Bot. 77: 319. 2002.

蒙自杭子梢 meng zi hang zi shao

Campylotropis neglecta Schindler, Repert. Spec. Nov. Regni Veg. 11: 340. 1912; *Lespedeza neglecta* (Schindler) H. Léveillé.

Bracts 3–5 mm, persistent until fruiting. Pedicels 7–9 mm. Lateral surface of legumes pubescent.

• Yunnan.

23. *Campylotropis sargentiana* Schindler, Repert. Spec. Nov. Regni Veg. 11: 341. 1912.

四川杭子梢 si chuan hang zi shao

Lespedeza sargentiana (Schindler) H. Léveillé.

Shrubs, 1–2 m tall. Young branches appressed hairy. Petiole 0.7–2.4 cm, with dense appressed short hairs; stipels sometimes present, linear, 0.5–1 mm; leaflets oblong to elliptic, terminal one 1.2–3 × 0.6–1.5 cm, abaxially sericeous, adaxially glabrous or sparsely pubescent, base obtuse or rounded, apex retuse and mucronulate. Racemes 2–11 cm, sometimes paniculate; rachis densely appressed or ascending shortly hairy. Pedicels 4–6 mm, densely appressed or ascending shortly hairy. Calyx densely shortly appressed hairy; tube 1.8–2 mm; lobes narrowly triangular, 2–2.2 mm. Corolla purple; standard obovate, 10–11 mm, apex obtuse; wings 9.5–10.5 mm, clawed at base; keel shallowly inflexed, 12–16 mm, clawed at base. Ovary narrowly ovoid, ca. 2.5 mm, shortly hairy; style ca. 7.5 mm. Legume obliquely elliptic, ca. 7 mm, shortly ascending hairy, acute at apex. Seeds reniform, ca. 2.7 × 2 mm.

• Sichuan.

24. *Campylotropis speciosa* (Royle ex Schindler) Schindler subsp. ***eriocarpa*** (Schindler) Iokawa & H. Ohashi, J. Jap. Bot. 77: 325. 2002.

绵毛果杭子梢 mian mao guo hang zi shao

Campylotropis eriocarpa Schindler, Repert. Spec. Nov. Regni Veg. 11: 347. 1912.

Shrubs, usually ca. 1 m tall. Young branches ± densely shortly appressed hairy. Petiole 0.5–4.5 cm, with ± dense appressed short hairs; stipels absent; leaflets obovate to oblong, terminal one 1.2–4.8 × 0.8–2.8 cm, abaxially densely sericeous, adaxially glabrous or sparsely shortly hairy, base obtuse or cuneate, apex retuse and mucronulate. Racemes 2.5–20 cm; rachis and pedicels densely appressed or ascending shortly hairy. Pedicels slender, 3–7 mm. Calyx ± densely appressed shortly hairy; tube 1.5–2.5 mm; lobes narrowly triangular, 2–3.5 mm. Corolla purple; standard obovate, 10.5–12 mm, apex obtuse; wings 9.8–11.5 mm, clawed at base; keel incurved, 12–15 mm, clawed at base. Ovary narrowly ovoid, ca. 2.5 mm, shortly hairy; style ca. 8.3 mm. Legumes obliquely obovoid, 6.5–7.5 × 3.3–4.5 mm, shortly ascending hairy. Seeds dark brown, reniform, 3–3.5 × 1.5–2 mm.

Xizang [Bhutan, India, Nepal].

Campylotropis speciosa subsp. *speciosa* (*Lespedeza speciosa* Royle ex Schindler) occurs in India and Nepal.

25. *Campylotropis sulcata* Schindler, Bot. Jahrb. Syst. 54: 65. 1916.

槽茎杭子梢 cao jing hang zi shao

Campylotropis purpurascens Ricker; *C. rockii* Schindler.

Shrubs, 1–3 m tall. Young branches multi-angular, often sulcate, with dense appressed tawny hairs. Petiole 0.5–2.5 cm, densely ascending pubescent; stipels absent or rarely present; leaflets elliptic to oblong, terminal one 2.5–9 × 1–3 cm, abaxially densely tawny sericeous, adaxially densely puberulent, base obtuse or rounded, apex retuse and mucronulate. Racemes 4–9 cm, sometimes paniculate; rachis densely ascending pubescent mixed with glandular hairs; bracts narrowly ovate, 3–5 mm; bracteoles ca. 2 mm. Pedicels 2–4 mm, densely ascending pubescent mixed with glandular hairs. Calyx densely ascending pubescent; tube 1.5–2 mm; lobes narrowly triangular, 1.5–1.6 mm. Corolla purple to rose; standard obovate, 9–10 mm, apex obtuse; wings 8.5–9 mm, clawed at base; keel incurved, 11–12 mm, clawed at base. Ovary narrowly ovoid, ca. 1.8 mm, shortly hairy; style 7.5–8 mm. Legume obliquely elliptic, 4.5–7 × 3.5–4 mm, shortly ascending hairy. Fl. and fr. Aug–Oct.

Mountain slopes, thickets, forests; 1200–2100 m. Yunnan [Thailand].

26. *Campylotropis tenuiramea* P. Y. Fu, Bull. Bot. Res., Harbin 7(4): 37. 1987.

细枝杭子梢 xi zhi hang zi shao

Shrubs, usually ca. 2 m tall. Young branches densely shortly appressed hairy. Petiole 0.1–1.8 cm, with dense ascending short hairs; stipels absent; leaflets obovate to elliptic, terminal one 0.8–3 × 0.6–2 cm, abaxially ± densely ascending sericeous, adaxially sparsely pubescent, base obtuse or rounded, apex retuse and mucronulate. Racemes 2–3 cm, several flowered at top of peduncles; rachis densely shortly appressed hairy. Pedicels 5–8 mm, densely shortly appressed hairy. Calyx densely shortly appressed hairy; tube ca. 1.5 mm; lobes narrowly triangular, 2–3 mm. Corolla purple; standard elliptic, 11.5–12 mm, apex obtuse; wings ca. 10.5 mm, clawed at base; keel incurved, 13.5–15 mm, clawed at base. Vexillary stamen connate to tube at base for ca. 1/3 of its length. Ovary narrowly ovoid, ca. 2.6 mm, shortly hairy; style ca. 9.6 mm.

• Dry slopes; ca. 1800 m. Yunnan.

27. *Campylotropis teretiracemosa* P. C. Li & C. J. Chen in C. J. Chen, Acta Bot. Yunnan. 10: 434. 1988.

柱序杭子梢 zhu xu hang zi shao

Shrubs. Young branches densely appressed or ascending yellowish pubescent. Petiole 0.2–0.8 cm, with dense appressed yellowish hairs; stipels absent; leaflets oblong to elliptic, terminal one 1.3–4.5 × 0.7–1.5 cm, abaxially densely yellowish ascending pubescent, adaxially glabrous, base obtuse, apex retuse and mucronulate. Racemes 5–10 cm, spikelike with many very small flowers on a distinct peduncle; rachis densely yellowish ascending pubescent. Pedicels very short, ca. 1 mm, densely yellowish ascending pubescent. Calyx densely yellowish pubescent; tube ca. 1.5 mm; lobes triangular, 1.3–1.7 mm. Corolla purple; standard elliptic, ca. 7 mm, apex obtuse; wings ca. 6 mm, clawed at base; keel incurved, 9–9.5 mm, clawed at base. Ovary ca. 1 mm; style incurved, ca. 6 mm. Legume obliquely obovoid, 6.5–7.5 × 3.3–4.5 mm, shortly ascending hairy. Seeds brown, oblong to ovoid, 2.2–2.5 × 1.2–1.5 mm.

- Mountain slopes; 2400–2500 m. Sichuan.

28. *Campylotropis thomsonii* (Bentham ex Baker) Schindler, Repert. Spec. Nov. Regni Veg. 11: 427. 1912.

汤姆逊杭子梢 tang mu xun hang zi shao

Lespedeza thomsonii Bentham ex Baker in J. D. Hooker, Fl. Brit. India 2: 144. 1876 [“*thomsonii*”]; *Campylotropis kingdonii* H. Ohashi; *C. rogersii* Schindler.

Shrubs. Young branches ± densely shortly appressed silky hairy. Petiole 1–3.5 cm, with dense appressed or ascending silky hairs; stipels absent; leaflets oblong to elliptic, terminal one 3–7 × 1.2–2.5 cm, abaxially densely appressed silky hairy, adaxially glabrous or ± densely pubescent, base rounded or obtuse, apex retuse and mucronulate. Racemes 5–10 cm, sometimes paniculate; rachis and pedicels with dense ascending silky hairs. Pedicels 3–10 mm. Calyx with dense appressed or ascending silky hairs; tube 1.5–2 mm; lobes narrowly triangular, 1.5–2.2 mm. Corolla purple; standard elliptic, 6.5–8.5 mm, apex obtuse; wings 6–8 mm, clawed at base; keel incurved, 9.5–11 mm, clawed at base. Ovary narrowly ovoid, ca. 2 mm, shortly hairy; style incurved, ca. 6.5 mm. Legume obliquely obovoid, 7–8 × 3.5–4 mm, shortly appressed hairy, apex rounded. Seeds blackish purple, oblong, ca. 2.5 × 1.5 mm.

Yunnan [India, Myanmar, Vietnam].

29. *Campylotropis trigonoclada* (Franchet) Schindler, Repert. Spec. Nov. Regni Veg. 11: 430. 1912.

三棱枝杭子梢 san leng zhi hang zi shao

Shrubs, usually 1–3 m tall. Young branches triquetrous, with sparse appressed short hairs or glabrous; older parts terete, glabrescent. Petiole bisulcate or convex above, often winged along both sides, ridged beneath, 0.5–6 cm, sparsely shortly appressed hairy or glabrous; stipels rarely present, linear, 1–2 mm; leaflets obovate, oblong, or ovate to narrowly ovate or elliptic, rarely linear, terminal one 1.2–5 × 0.8–3 cm, abaxially sparsely shortly appressed hairy or glabrescent, adaxially glabrous, base obtuse or cuneate, apex retuse and mucronulate. Racemes 3–26 cm, sometimes paniculate; rachis and pedicels with sparse appressed or ascending short hairs or glabrescent. Pedicels 3–10 mm. Calyx with ± dense appressed short hairs; tube 2–2.5 mm; lobes narrowly triangular, lower lobe 3–4.5 mm, longer than others, upper lobe 2–2.5 mm, lateral lobes 2–2.5 mm. Corolla yellow or purple; standard elliptic, 9–11 mm, apex obtuse; wings 9–10.5 mm, clawed at base; keel incurved, 12–15 mm, clawed at base. Ovary narrowly ovoid, 2.2–2.5 mm, shortly hairy; style 8–8.5 mm. Legumes obliquely obovoid, 6–8 × 4–4.5 mm, shortly ascending hairy, apex rounded. Seeds purplish brown, oblong, 3–3.7 × ca. 2 mm. Fl. Jul–Nov, fr. Oct–Dec.

- Mountain slopes, thickets, forest margins, forests, grasslands, roadsides; 1000–3000 m. Guangxi, Guizhou, Sichuan, Yunnan.

The whole plant is used medicinally for reducing fever and relieving coughs. The roots are used for treating mastitis and strokes.

1a. Flowers yellow; plants glabrescent
..... 29a. var. *trigonoclada*

1b. Flowers purple; young branches, abaxial surface of leaflets, and inflorescence rachis pubescent 29b. var. *bonatiana*

29a. *Campylotropis trigonoclada* var. *trigonoclada*

三棱枝杭子梢(原变种) san leng zhi hang zi shao (yuan bian zhong)

Lespedeza trigonoclada Franchet, Pl. Delavay. 167. 1890; *Campylotropis alata* Schindler; *C. balfouriana* (Diels ex Schindler) Schindler; *L. alata* (Schindler) H. Léveillé; *L. angulicaulis* Harms ex Schindler; *L. balfouriana* Diels ex Schindler; *L. trigonoclada* var. *angustifolia* Pampanini; *L. trigonoclada* f. *intermedia* Pampanini.

Plants glabrescent. Flowers yellow.

- Guangxi, Guizhou, Sichuan, Yunnan.

29b. *Campylotropis trigonoclada* var. *bonatiana* (Pampanini) Iokawa & H. Ohashi, J. Jap. Bot. 77: 339. 2002.

马尿藤 ma niao teng

Lespedeza bonatiana Pampanini, Nuovo Giorn. Bot. Ital., n.s., 17: 19. 1910; *Campylotropis bonatiana* (Pampanini) Schindler; *C. franchetiana* Lingelsheim & Borza.

Young branches, abaxial surface of leaflets, and inflorescence rachis pubescent. Flowers purple. Fl. and fr. Aug–Dec.

- Mountain slopes, thickets, forest margins, forests, grasslands, roadsides; 1200–3000 m. Yunnan.

The whole plant is used medicinally for treating strokes, influenza, nephritis, and skin diseases.

30. *Campylotropis wenshanica* P. Y. Fu, Bull. Bot. Res., Harbin 7(4): 35. 1987 [“*wenshaica*”].

秋杭子梢 qiu hang zi shao

Shrubs, ca. 2 m tall. Young branches sparsely shortly appressed hairy. Petiole 2–7 cm, sparsely shortly appressed hairy; stipels absent; leaflets broadly obovate to elliptic, terminal one 2–5 × 1.7–4 cm, abaxially sparsely shortly appressed hairy, adaxially glabrous, base obtuse, apex retuse and mucronulate. Racemes 1.5–9 cm, usually paniculate. Pedicels 3–7 mm, shortly ascending hairy. Calyx with sparse appressed short hairs; tube 2–2.2 mm; lobes narrowly triangular, 2–2.4 mm. Corolla purple; standard elliptic, ca. 10 mm, apex obtuse; wings ca. 9.5 mm, clawed at base; keel incurved, 13–14.5 mm, clawed at base. Ovary ca. 2.5 mm; style incurved, ca. 7 mm. Legume obliquely narrowly obovoid, 9–11 × 3.5–4 mm, glabrous, apex rounded.

- Yunnan.

31. *Campylotropis wilsonii* Schindler, Repert. Spec. Nov. Regni Veg. 11: 343. 1912.

小叶杭子梢 xiao ye hang zi shao

Campylotropis yajiangensis P. Y. Fu.

Shrublets, 0.3–1 m tall. Young branches sparsely shortly appressed hairy. Petiole 0.1–1.4 cm, with sparse appressed short

hairs; stipels absent; leaflets obdeltoid to obovate or obovate, terminal one $0.4\text{--}0.9 \times 0.3\text{--}0.8$ cm, abaxially sparsely or \pm densely shortly appressed hairy, adaxially glabrous or sparsely pubescent, base obtuse or cuneate, apex retuse and mucronulate. Racemes axillary or terminal, 1–12 cm; rachis and pedicels with sparse ascending short hairs, rarely mixed with glandular hairs. Pedicels 0.8–3 mm. Calyx \pm densely shortly ascending hairy, rarely mixed with glandular hairs; tube 1.5–2 mm; lobes narrowly triangular, 1.6–2 mm. Corolla purple; standard elliptic, 11–12 mm, apex obtuse; wings 10–11 mm, clawed at base; keel incurved, 11–13 mm, clawed at base. Ovary ca. 3.5 mm, puberulent; style incurved, ca. 6.6 mm. Legume obliquely narrowly ovoid, $8\text{--}12 \times 3.5\text{--}5$ mm, with ascending short hairs, apex obtuse. Seeds obliquely oblong. Fl. and fr. Jun–Aug.

• Mountain slopes, rocky places; 1500–2200 m. Sichuan.

32. *Campylotropis yunnanensis* (Franchet) Schindler, Repert. Spec. Nov. Regni Veg. 11: 338. 1912.

滇杭子梢 dian hang zi shao

Shrubs, 1–2 m tall. Young branches sparsely shortly appressed hairy. Petiole 1.6–5.1 cm, glabrous or sparsely shortly appressed hairy; stipels present at top of petioles, linear, 1–3 mm, sometimes also present at top of rachis; leaflets narrowly ovate to ovate or narrowly oblong to oblong, terminal one $1.8\text{--}9 \times 0.3\text{--}3$ cm, abaxially glabrous or sparsely shortly appressed hairy, adaxially glabrous, base obtuse or rounded, apex retuse and mucronulate. Racemes 1.5–15 cm, sometimes paniculate at apex; rachis hairy. Pedicels 2.5–14 mm, hairy. Calyx \pm densely appressed or ascending shortly hairy; tube 1.5–2.7 mm; lobes narrowly triangular, 1.2–2 mm. Corolla purple; standard elliptic, 9.5–10.5 mm, apex obtuse; wings 8.5–10.5 mm, clawed at base; keel incurved, 12.5–15.5 mm, clawed at base. Ovary 2.5–3 mm; style incurved, 7.5–9 mm. Legume obliquely oblong, 8–

$12 \times 4\text{--}5$ mm, lateral surface glabrous, apex obtuse. Seeds reddish brown, obliquely oblong, $3.5\text{--}4.5 \times 2\text{--}2.7$ mm.

• Mountain slopes, valleys, thickets, forest margins; 1400–2800 m. Sichuan, Yunnan.

- 1a. Inflorescence rachis and pedicels ascending or spreading shortly hairy; pedicels 2.5–5(–7) mm 32a. subsp. *yunnanensis*
- 1b. Inflorescence rachis and pedicels sparsely shortly appressed hairy; pedicels 5–14 mm 32b. subsp. *filipes*

32a. *Campylotropis yunnanensis* subsp. *yunnanensis*

滇杭子梢(原亚种) dian hang zi shao (yuan ya zhong)

Lespedeza yunnanensis Franchet, Pl. Delavay. 166. 1890;
Campylotropis yunnanensis var. *zhongdianensis* P. Y. Fu.

Inflorescence rachis and pedicels ascending or spreading shortly hairy. Pedicels 2.5–5(–7) mm. Fl. and fr. Jul–Dec.

• Mountain slopes, valleys, thickets, forest margins; 1400–2800 m. Yunnan.

32b. *Campylotropis yunnanensis* subsp. *filipes* (Ricker) Ioka-wa & H. Ohashi, J. Jap. Bot. 77: 345. 2002.

丝梗杭子梢 si geng hang zi shao

Campylotropis filipes Ricker, J. Wash. Acad. Sci. 36: 37. 1946; *C. yunnanensis* var. *filipes* (Ricker) P. Y. Fu.

Inflorescence rachis and pedicels sparsely shortly appressed hairy. Pedicels 5–14 mm.

• Mountain slopes, forest margins, thickets; 1900–2800 m. Sichuan.

132. LESPEDEZA Michaux, Fl. Bor.-Amer. 2: 70. 1803.

胡枝子属 hu zhi zi shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi, Tomoyuki Nemoto

Subshrubs, shrubs, or perennial herbs. Leaves pinnately compound, 3-foliate; stipule small, subulate or linear, persistent or caducous; stipels absent; leaflets entire. Racemes axillary or flowers fasciculate; bracts persistent, 2-flowered at each bract; bracteoles 2, often persistent; flowers often dimorphic, corollate or not (cleistogamous plants). Calyx campanulate; tube short; lobes 5, upper 2 often connate at base. Corolla exserted; standard oblong or obovate; wings oblong, straight, clawed, auriculate, connivent with keel; keel obtuse and incurved. Stamens 10, diadelphous (9+1), equal. Ovary superior, 1-ovuled; style incurved; stigma terminal. Legume ovoid, obovoid, or ellipsoidal, rarely slightly globose, lenticular, indehiscent, reticulate veined, 1-seeded.

About 60 species: E Asia to India and North America, introduced from Malesia to NE Australia; 25 species (ten endemic) in China.

Because most species can tolerate arid soils, they are good for soil conservation and sand stabilization. They are also used as honey plants and for nitrogen fixation. The young shoots and leaves are used as forage for livestock and as green manure.

- 1a. Flowers all chasmogamous, usually longer than 10 mm, in compound racemes; standard usually pink to rose-purple, rarely yellowish or white; lomenta shortly stipitate; shrubs to subshrubs (*L.* subg. *Macrolespedeza* (Maximowicz) H. Ohashi).
- 2a. Inflorescences almost sessile, not longer than subtending leaves; lateral and lowermost calyx lobes acuminate to caudate.
 - 3a. Leaflets broadly ovate, ovate-elliptic, or obovate; bracteoles nearly 1/2 as long as calyx tube; wings longer than keels; legumes globose, less than 7 mm 1. *L. cyrtobotrya*
 - 3b. Leaflets ovate-oblong to oblong; bracteoles ca. as long as calyx tube; wings equal to keels; legumes oblong-ellipsoidal, 13–15 mm 2. *L. fordii*

- 2b. Peduncles distinct, inflorescences longer than subtending leaves; lateral and lowermost calyx lobes obtuse or acute to acuminate.
- 4a. Winter buds depressed, scales distichously arranged; leaflets sharply acute, rarely obtuse; branches woody.
- 5a. Corolla pale yellow; calyx lobes acute and not spine-tipped at apex 3. *L. buergeri*
- 5b. Corolla red-purple; calyx lobes acuminate to caudate and spine-tipped at apex.
- 6a. Leaflets acute and sharply pointed at apex; standard longer than keel 5. *L. maximowiczii*
- 6b. Leaflets obtuse to rounded or retuse at apex; standard shorter than keel 7. *L. dunnii*
- 4b. Winter buds thickened, scales spirally arranged; leaflets rounded, obtuse, or acute; branches herbaceous to herbaceous-woody.
- 7a. Lateral calyx lobes ovate or triangular to narrowly ovate, apically acute to shortly acuminate, rarely obtuse, less than 2.5 mm; keel claw nearly as long as keel lamina; legumes orbicular 8. *L. bicolor*
- 7b. Lateral calyx lobes narrowly ovate to narrowly triangular, apically acuminate, longer than 4 mm; keel claw nearly 1/2 as long as keel lamina; legumes ovoid, obovoid, or obovoid-oblong.
- 8a. Stems distinctly angled, densely spreading tomentose; leaflets thickly papery, broadly ovate-elliptic; calyx lobes long acuminate; legumes ovoid 6. *L. davidii*
- 8b. Stems terete or striate, appressed sericeous; leaflets papery, usually ovate-elliptic; calyx lobes acute to acuminate; legumes obovoid or obovoid-oblong 4. *L. thunbergii*
- 1b. Flowers chasmogamous and cleistogamous (except *L. forrestii*), usually less than 10 mm (except *L. gerardiana*), in ± elongated racemes of chasmogamous flowers with basal fascicles of cleistogamous flowers, or composed only of fasciculate racemes of cleistogamous flowers; standard white to yellowish or purplish; loment sessile or subsessile; herbs to subshrubs (*L.* subg. *Lespedeza*).
- 9a. Stems procumbent to weakly ascending, spreading pilose, rarely appressed sericeous.
- 10a. Leaflets narrowly obovate; stem short, usually less than 20 cm; corolla pink to purplish red; cleistogamous flowers and legumes unknown 11. *L. forrestii*
- 10b. Leaflets broadly obovate or broadly elliptic to orbicular; stem elongated, more than 20 cm; both chasmogamous and cleistogamous flowers and legumes known.
- 11a. Corolla reddish purple; plants spreading pilose, rarely appressed sericeous 10. *L. fasciculiflora*
- 11b. Corolla yellow-white or white; plants densely spreading pilose.
- 12a. Leaflets broadly obovate or broadly elliptic to orbicular, both surfaces densely spreading pilose 9. *L. pilosa*
- 12b. Leaflets narrowly oblong, rarely elliptic to broadly elliptic, abaxially grayish white hispid, adaxially glabrous 17. *L. potaninii*
- 9b. Stems erect or strongly ascending, mostly appressed sericeous.
- 13a. Stems tomentose.
- 14a. Stems densely tomentose throughout; leaflets elliptic or ovate-oblong, 3–6 × 1.5–3 cm, abaxially densely tomentose 14. *L. tomentosa*
- 14b. Stems tomentose at upper part, downward more sparsely so; leaflets obovate or obcordate, 1–2 × 1–1.3 cm, abaxially densely hirsute 16. *L. mucronata*
- 13b. Stems appressed sericeous.
- 15a. Leaflets narrowly elliptic or narrowly obovate (length:width ratio 3:1–6:1) to linear (length:width ratio 12:1), without visible reticulate venation between principle lateral veins; inflorescence sessile or peduncle 2 mm or less (except *L. caraganae*).
- 16a. Leaflets narrowly obovate (length:width ratio 6:1) above middle; flowers more than 10 mm; calyx with lobes 5–6 mm; bracteoles distinct, 4–5 mm 23. *L. gerardiana*
- 16b. Leaflets ± narrowly elliptic (length:width ratio 3:1) to linear (length:width ratio 12:1); flowers less than 10 mm; calyx with lobes less than 3 mm; bracteoles minute, less than 3 mm.
- 17a. Leaflets oblong-linear (length:width ratio 6:1); principle lateral veins reaching margin and then running upward along margin; lateral calyx lobes sharply narrowly triangular (more than 3 × as long as tube); peduncle 2 mm or more 19. *L. caraganae*
- 17b. Leaflets narrowly elliptic to narrowly obovate (length:width ratio 3:1–6:1); principle lateral veins not reaching margin but running upward within margin; lateral calyx lobes narrowly triangular or slightly narrowly ovate (less than 3 × as long as tube); inflorescence sessile or peduncle less than 2 mm.
- 18a. Flowers reddish purple; corolla almost or more than 2 × as long as calyx; lateral calyx lobes narrowly ovate; abaxial surface of leaflets densely sericeous with rather thick hairs 24. *L. lichiyuniae*
- 18b. Flowers white; corolla 1.3–1.5 × as long as calyx; lateral calyx lobes narrowly triangular.

- 19a. Abaxial surface of leaflets densely appressed or ascending pubescent; bracteoles 1.5–2.5 mm, longer than calyx tube; calyx densely pubescent, lobes with 3–5 conspicuous veins in flower; corolla 1.3–1.5 × as long as calyx 25. *L. hispida*
- 19b. Abaxial surface of leaflets sparsely appressed pubescent; bracteoles less than 1.5 mm, almost equal to or shorter than calyx tube; calyx sparsely appressed pubescent; corolla more than 1.5 × as long as calyx 20. *L. cuneata*
- 15b. Leaflets elliptic (length:width ratio 3:2) or narrowly elliptic-obovate (length:width ratio 3:1–6:1) with visible (with lens) reticulate venation or a thin central vein between principle lateral veins; peduncle usually more than 2 mm.
- 20a. Leaflets narrowly elliptic-obovate (length:width ratio 3:1–6:1); calyx lobes ca. 2 × as long as tube.
- 21a. Leaflets length:width ratio ca. 3:1, large ones more than 5 mm wide; pedicel ca. 1 mm; lateral calyx lobes narrowly acuminate ovate, distinctly veined in flower ... 22. *L. inschanica*
- 21b. Leaflets length:width ratio ca. 6:1, large ones less than 5 mm wide; pedicel 3–4 mm; lateral calyx lobes narrowly triangular, inconspicuously veined in flower 21. *L. juncea*
- 20b. Leaflets elliptic (length:width ratio ca. 3:2) to narrowly elliptic (length:width ratio 3:1); calyx lobes more than 3 × as long as tube.
- 22a. Leaflet with a thin central vein between principle lateral veins; inflorescence usually densely several to ca. 10-flowered.
- 23a. Flowers white; calyx lobes linear to narrowly triangular (length:width ratio 6:1–12:1); bracteoles longer than calyx tube; cleistogamous legumes with caudate apex 18. *L. chinensis*
- 23b. Flowers reddish purple; calyx lobes narrowly ovate (length:width ratio 6:1); bracteoles shorter than calyx tube; cleistogamous legumes with rounded apex 12. *L. floribunda*
- 22b. Leaflet with reticulate venation between principle lateral veins; inflorescence laxly few flowered or densely flowered.
- 24a. Leaflets elliptic (length:width ratio ca. 3:2); inflorescence laxly few flowered; peduncles filiform, glabrous; flowers sessile or pedicel less than 1 mm; bracteoles shorter than calyx tube 13. *L. virgata*
- 24b. Leaflets narrowly elliptic to elliptic (length:width ratio 2:1–3:1); inflorescence densely flowered; peduncles pubescent; pedicel 1–3 mm; bracteoles longer than calyx tube 15. *L. davurica*

1. *Lespedeza cyrtobotrya* Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 48. 1867.

短梗胡枝子 duan geng hu zhi zi

Shrubs, erect, 1–3 m tall, much branched. Branchlets adpressed pilose. Leaves 3-foliolate; petiole 1–2.5 cm; leaflets broadly ovate, ovate-elliptic, or obovate, terminal one 1.5–4.5 × 1–3 cm, abaxially adpressed pilose, adaxially glabrous, apex rounded or emarginate, apiculate. Racemes axillary, shorter than subtending leaves, rarely subequal to leaves; peduncle short or inflorescences subsessile. Pedicel short, white hairy. Calyx 2–2.5 mm, 5-lobed; lobes lanceolate. Corolla reddish purple, ca. 1.1 cm; standard obovate, base clawed; wings oblong, ca. 1/3 shorter than standard and keel, base distinctly auriculate, clawed; keel subequal to standard, base auriculate, clawed. Legume globose, slightly flat, 6–7 × ca. 5 mm, densely hairy, reticulate veined. Fl. Jul–Aug, fr. Sep. 2n = 22.

Mountain slopes, thickets, forests; below 1500 m. Gansu, Guangdong, Hebei, Heilongjiang, Henan, Jiangxi, Jilin, Liaoning, Shaanxi, Shanxi, Zhejiang [Japan, Korea, Russia].

The branchlets are used for making baskets, and the leaves are used as forage for livestock.

2. *Lespedeza fordii* Schindler, Bot. Jahrb. Syst. 49: 586. 1913.

广东胡枝子 guang dong hu zhi zi

Lespedeza anhweiensis Ricker; *L. paradoxa* Ricker.

Shrubs, erect, ca. 40 cm tall. Branchlets glabrous. Leaves 3-foliolate; petiole ca. 1 cm, glabrous; leaflets ovate-oblong, obovate-oblong, or oblong, terminal one 2.5–5 × 1–2 cm, abaxially adpressed pubescent or subglabrous, adaxially glabrous, base rounded, apex rounded or emarginate, apiculate. Racemes axillary, shorter than leaves. Pedicel ca. 3.5 mm. Calyx 4–5 mm, 5-lobed to below middle, upper 2 lobes connate to middle. Corolla purplish red, 7–8 mm; standard broadly obovate, base auriculate, shortly clawed; wings narrowly oblong, shorter than standard and keel, base auriculate, clawed; keel slightly obliquely obovate, slightly longer than standard, narrowly clawed. Ovary hairy. Legume oblong-ellipsoidal, flat, ca. 1.5 cm, adpressed hairy, apiculate. Fl. Jun–Aug, fr. Aug–Oct.

• Mountain slopes, roadsides, valleys; below 800 m. Anhui, Fujian, Guangdong, Guangxi, Hunan, Jiangsu, Jiangxi, Zhejiang.

3. *Lespedeza buergeri* Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 47. 1867.

绿叶胡枝子 lü ye hu zhi zi

Lespedeza bracteolata Ricker; *L. buergeri* f. *angustifolia* Makino.

Shrubs, erect, 1–3 m tall. Branchlets sparsely hairy. Leaves 3-foliolate; petiole 2–5 cm; leaflets ovate-elliptic, terminal one 3–7 × 1.3–2.5 cm, abaxially adpressed hairy, adaxially glabrous, base slightly acute or obtuse-rounded, apex acute. Racemes axillary or in panicles at upper part of branchlets. Calyx ca. 4 mm, 5-lobed; lobes ovate-lanceolate or ovate, densely villous. Corolla pale yellowish green, ca. 1 cm; standard nearly orbicular, base auriculate, shortly clawed; wings elliptic-oblong, base auriculate, clawed, sometimes apex slightly purple; keel obovate-oblong, slightly longer than standard, base distinctly auriculate, long clawed. Ovary hairy. Legume oblong-ovoid, ca. 1.5 cm, villous, reticulate veined. Fl. Jun–Jul, fr. Aug–Sep.

Mountain slopes, forests, roadsides, ditches; below 1500 m. Anhui, Gansu, Henan, Hubei, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, Zhejiang [Japan].

4. *Lespedeza thunbergii* (Candolle) Nakai, *Lespedeza* Japan Korea 15. 1927.

日本胡枝子 ri ben hu zhi zi

Shrubs, subshrubs, or perennial herbs, erect, 1–3 m tall, much branched, pilose. Leaves 3-foliolate; petiole 1–5 cm, pubescent; leaflets elliptic, oblong-elliptic, or ovate, rarely terminal one obovate, terminal one 2.5–6 × 1–3 cm, abaxially adpressed pubescent, adaxially puberulent or glabrescent, rarely glabrous, both ends slightly acute or obtuse. Racemes simple, axillary, longer than leaves, or branched in panicles, terminal; peduncle to 10 cm, pubescent. Pedicel short, hairy. Calyx 4–7 mm, 5-lobed; lobes oblong-lanceolate, 1–4 × as long as tube. Corolla reddish purple or more rarely white, 1–1.5 cm; standard nearly orbicular or slightly long, auriculate, clawed; wings obovate-oblong, 7–8 mm, auriculate, clawed; keel longer than or equal to standard, distinctly longer than wings, auriculate, clawed. Legume obovoid or obovoid-oblong, ca. 8 × 4 mm, pilose, reticulate veined. Fl. Jul–Sep, fr. Sep–Oct. 2n = 40*.

Mountain slopes, forest margins, roadsides, thickets; below 2800 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan, Korea].

- 1a. Corolla 3–4 × as long as calyx; lateral calyx lobes nearly equal to or slightly shorter than calyx tube 4b. subsp. *formosa*
- 1b. Corolla 2–3 × as long as calyx; lateral calyx lobes longer than or equal to calyx tube.
 - 2a. Lateral calyx lobes usually 1–1.5 × as long as calyx tube ... 4a. subsp. *thunbergii*
 - 2b. Lateral calyx lobes usually 1.5–3 × as long as calyx tube 4c. subsp. *elliptica*

4a. *Lespedeza thunbergii* subsp. *thunbergii*

日本胡枝子(原亚种) ri ben hu zhi zi (yuan ya zhong)

Desmodium thunbergii Candolle, Prodr. 2: 337. 1825; *D. penduliflorum* Oudemans; *Lespedeza bicolor* Turczaninow var. *velutina* Nakai; *L. formosa* (Vogel) Koehne subsp. *velutina* (Nakai) S. Akiyama & H. Ohba; *L. formosa* var. *velutina* (Nakai) S. Akiyama & H. Ohba; *L. intermedia* Nakai var.

angustifolia Nakai; *L. japonica* L. H. Bailey f. *angustifolia* (Nakai) Murata; *L. liukiuensis* Hatusima; *L. penduliflora* (Oudemans) Nakai; *L. sieboldii* Miquel.

Shrubs or perennial herbs. Lateral calyx lobes usually 1–1.5 × as long as calyx tube.

Mountain slopes, forest margins, roadsides, thickets; below 2800 m. Anhui, Fujian, Gansu, Guangdong, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Zhejiang [India, Japan, Korea].

4b. *Lespedeza thunbergii* subsp. *formosa* (Vogel) H. Ohashi in Iwatsuki et al., Fl. Jap. 2b: 262. 2001.

美丽胡枝子 mei li hu zhi zi

Desmodium formosum Vogel, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 29. 1843; *Lespedeza albiloba* Ricker; *L. bicolor* subsp. *formosa* (Vogel) P. S. Hsu, X. Y. Li & D. X. Gu; *L. chekiangensis* Ricker; *L. formosa* (Vogel) Koehne; *L. formosa* var. *pubescens* (Hayata) S. S. Ying; *L. penduliflora* subsp. *cathayana* P. S. Hsu; *L. pubescens* Hayata; *L. viatorum* Champion ex Benthham; *L. wilfordii* Ricker.

Subshrubs. Leaflets adaxially puberulent or rarely glabrescent. Lateral calyx lobes nearly equal to or slightly shorter than calyx tube. Corolla 3–4 × as long as calyx.

- Mountain slopes, forest margins, roadsides, thickets; below 2800 m. Fujian, Guangdong, Guangxi, Jiangsu, Jiangxi, Taiwan, Zhejiang.

The Chinese record of *Lespedeza patens* Nakai (Li & Chen, FRPS 41: 140. 1995) is referable to *L. thunbergii* subsp. *formosa*.

4c. *Lespedeza thunbergii* subsp. *elliptica* (Bentham ex Maximowicz) H. Ohashi, J. Jap. Bot. 84: 218. 2009.

椭圆叶胡枝子 tuo yuan ye hu zhi zi

Lespedeza elliptica Bentham ex Maximowicz, Trudy Imp. S.-Peterburgsk. Bot. Sada 2: 353. 1873; *L. bicolor* subsp. *elliptica* (Bentham ex Maximowicz) P. S. Hsu, X. Y. Li & D. X. Gu; *L. formosa* subsp. *elliptica* (Bentham ex Maximowicz) S. Akiyama & H. Ohba.

Subshrubs. Lateral calyx lobes usually 1.5–3 × as long as calyx tube.

Guizhou, Hubei, Shaanxi, Sichuan, Yunnan [E India].

5. *Lespedeza maximowiczii* C. K. Schneider, Ill. Handb. Laubholzk. 2: 113. 1907.

宽叶胡枝子 kuan ye hu zhi zi

Lespedeza buergeri Miquel var. *praecox* Nakai; *L. friebiana* Schindler.

Shrubs, erect, much branched, white pilose. Leaves 3-foliolate; petiole 1–4.5 cm, pilose; leaflets broadly elliptic or ovate-elliptic, terminal one 3–6(–9) × 2–4 cm, abaxially adpressed pubescent, adaxially sparsely pubescent, base rounded or rounded-cuneate, apex acuminate to acute, mucronate. Racemes axillary or in terminal panicles, overtopping leaves; peduncle 3–5 cm. Pedicel ca. 3 mm, pubescent. Calyx 4–5 mm, middle 4-lobed; lobes ovate-lanceolate, acuminate at apex. Corolla purplish red; standard obovate, 9–10 mm, base clawed,

apex emarginate; wings oblong, 6–8 mm, auriculate, slenderly clawed; keel slightly falcate, 8–9 mm, auriculate, slenderly clawed. Ovary hairy. Legume ovoid-elliptic, ca. 9 × 10 mm, pubescent, reticulate veined. Fl. Jul–Aug, fr. Sep–Oct. 2n = 20.

Mountain slopes, forests; below 1000 m. Anhui, Henan, Zhejiang [Japan, Korea].

6. *Lespedeza davidii* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 5: 246; Pl. David. 1: 94. 1883 [“*davidii*”].

大叶胡枝子 da ye hu zhi zi

Lespedeza davidii var. *exalata* L. H. Lou; *L. hupehensis* Ricker; *L. merrillii* Ricker.

Shrubs, erect, 1–3 m tall. Branchlets distinctly angular, densely villous. Leaves 3-foliolate; petiole 1–4 cm, densely hispidulous; leaflets broadly ovate or broadly obovate, terminal one 3.5–7(–13) × 2.5–5(–8) cm, both surfaces densely yellowish white sericeous, base rounded or broadly cuneate, apex rounded or emarginate. Racemes axillary or in panicles at apex of branchlets, longer than leaves; peduncle 4–7 cm, densely villous. Calyx ca. 6 mm, 5-lobed, villous; lobes lanceolate, acuminate, more than 2 × as long as tube. Corolla reddish purple; standard obovate-oblong, 1–1.1 cm × ca. 5 mm, auriculate, shortly clawed; wings narrowly oblong, shorter than standard and keel, auriculate, slenderly clawed; keel petals slightly falcate, subequal to standard, distinctly auriculate and clawed. Ovary densely hairy. Legume ovoid, 8–10 mm, somewhat densely sericeous, reticulate veined. Fl. Jul–Sep, fr. Sep–Oct. 2n = 22*.

• Arid mountain slopes, roadsides, thickets; ca. 800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, ?Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Zhejiang [naturalized in Japan].

Because this species tolerates arid soils, it is used for soil conservation.

Lespedeza merrillii was described from Zhejiang (Lingnan Sci. J. 20: 202. 1942). Its description is based on a single specimen (C. Y. Chiao 14377). Ricker said that this species is nearest to *L. davidii* but distinguished from it by the sparsely appressed, instead of velvety, pubescence of the stems and longer calyx teeth. One of us (Huang), following Li and Chen (FRPS 41: 140. 1995), retains *L. merrillii* here in synonymy due to the lack of specimens. Two of us (Ohashi and Nemoto) regard this species as merely a glabrous form of *L. davidii*.

7. *Lespedeza dunnii* Schindler, Bot. Jahrb. Syst. 49: 585. 1913.

春花胡枝子 chun hua hu zhi zi

Lespedeza metcalfii Ricker.

Shrubs, erect, much branched, puberulent or tomentose. Leaves 3-foliolate; petiole 7–10 mm, yellow or white pubescent; leaflets narrowly obovate or ovate-elliptic, terminal one 3–5.5 × ca. 2 cm, abaxially villous or sericeous, adaxially pilose, base rounded, apex rounded or emarginate, mucronate. Racemes axillary, 4–5 cm, longer than leaves, densely shortly spreading tomentose. Pedicel 1–5 mm, densely hairy. Calyx 5–9 mm, 5-lobed; lobes linear-lanceolate. Corolla purplish red, ca. 1 cm; standard obovate, base shortly clawed, apex emarginate; wings oblong, slightly shorter than standard and keel, auriculate, clawed; keel obliquely obovate, subequal to standard,

clawed. Ovary densely hairy. Legume oblong-elliptic, ca. 8 mm, densely hairy, both ends acute, apex long rostrate. Fl. Apr–May, fr. Jun–Jul.

• Coniferous forests, mountain slopes, roadsides; ca. 800 m. Anhui, Fujian, ?Zhejiang.

8. *Lespedeza bicolor* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 13: 69. 1840.

胡枝子 hu zhi zi

Lespedeza bicolor var. *japonica* Nakai; *L. bicolor* f. *pendula* S. L. Tung & Z. Lu; *L. ionocalyx* Nakai; *L. veitchii* Ricker.

Shrubs, erect, 1–3 m tall, much branched. Branchlets sparsely pubescent. Leaves 3-foliolate; petiole 2–7(–9) cm; leaflets abaxially pale green, adaxially green, ovate, obovate, or ovate-oblong, terminal one 1.5–6 × 1–3.5 cm, abaxially pilose, adaxially glabrous, base subrounded or broadly cuneate, apex obtuse-rounded or emarginate, mucronate. Racemes axillary, longer than leaves, often branched in large lax panicles; peduncle 4–10 cm. Pedicel ca. 2 mm, densely hairy. Calyx ca. 5 mm, 5-lobed; lobes shorter than tube. Corolla reddish purple, ca. 1 cm; standard obovate, apex emarginate; wings suboblong, short, base auriculate, clawed; keel subequal to standard, base long clawed, apex obtuse. Ovary hairy. Legume obliquely obovoid, slightly flat, ca. 10 × 5 mm, densely pubescent, reticulate veined. Fl. Jul–Sep, fr. Sep–Oct. 2n = 22*.

Mountain slopes, forest margins, roadsides, thickets, forests; 100–1000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Hebei, Heilongjiang, Henan, Hunan, Jiangsu, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Zhejiang [Japan, Korea, ?Mongolia, Russia].

The seed oil is used as a lubricant, the leaves as a tea substitute, and the branchlets for making baskets. Because this species tolerates arid soils, it is grown as a windbreak and for sand stabilization and soil conservation.

9. *Lespedeza pilosa* (Thunberg) Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(2): 121. 1843.

铁马鞭 tie ma bian

Hedysarum pilosum Thunberg in Murray, Syst. Veg., ed. 14, 675. 1784; *Desmodium pilosum* (Thunberg) Candolle; *Lespedeza nantcianensis* Pampanini.

Herbs, perennial, densely villous throughout. Stems procumbent, 60–100 cm, slender. Leaves 3-foliolate; petiole 0.6–1.5 cm; leaflets broadly obovate or obovate, terminal one 1.5–2 × 1–1.5 cm, base rounded or subrounded, apex rounded, subrounded, or emarginate, mucronate. Racemes axillary, shorter than leaves; peduncle short. Calyx 5-parted; lobes lanceolate, upper 2 connate at base. Corolla yellowish white or white; standard elliptic, 7–8 mm, clawed; wings shorter than standard and keel. Cleistogamous flowers often 1–3, crowded in leaf axils on upper stem, sessile or subsessile, fruit-bearing. Legume broadly ovoid, 3–4 mm, convex, both surfaces densely villous, apex acute-rostrate. Fl. Jul–Sep, fr. Sep–Oct. 2n = 20.

Waste slopes, grasslands; below 1000 m. Anhui, Fujian, Gansu, Guangdong, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Xizang, Zhejiang [Japan, Korea].

The whole plant is used medicinally for invigorating the stomach and as a sedative.

10. *Lespedeza fasciculiflora* Franchet, Pl. Delavay. 169. 1890.

束花铁马鞭 shu hua tie ma bian

Herbs, perennial, 60–80 cm tall. Stems much branched at base, procumbent or ascending, densely white hirsute or adpressed strigulose. Leaves 3-foliolate; leaflets obcordate or obtiangular, terminal one 4–9 × 2–7 mm, abaxially densely villous or hoary, adaxially sparsely hairy, subglabrous, or sparsely strigulose, base cuneate, apex emarginate or subtruncate, mucronate. Racemes axillary, distinctly overtopping leaves; peduncle densely hirsute. Calyx ca. 7 mm, 5-parted; lobes linear-lanceolate. Corolla pink, pale purplish red, white, or yellowish, slightly overtopping calyx; standard obovate, ca. 1.3 × 0.6 cm, claw with auriculate appendage at upper part; wings oblong, ca. 5 × 1 mm (claw ca. 2.5 mm); keel subequal to standard. Cleistogamous flowers in leaf axils, sessile, fruit-bearing. Legume narrowly ovoid, subequal to persistent calyx, densely hirsute, apex long rostrate.

- Sandy grasslands on high mountains, thickets in dry river valleys; 1600–3000 m. ?Guizhou, Sichuan, Xizang, NW Yunnan.

1a. Stems and branchlets densely white

hirsute; leaflets obcordate,
4–9 × 4–7 mm, abaxially
densely villous 10a. var. *fasciculiflora*

1b. Stems and branchlets adpressed

strigulose; leaflets obtiangular,
4–7 × 2–4 mm, abaxially
densely hoary 10b. var. *hengduanshanensis*

10a. *Lespedeza fasciculiflora* var. *fasciculiflora*

束花铁马鞭(原变种) shu hua tie ma bian (yuan bian zhong)

Lespedeza floribunda Bunge var. *fasciculiflora* (Franchet) Schindler; *L. monnoyeri* H. Léveillé.

Stems and branchlets densely white hirsute. Leaflets obcordate, terminal one 4–9 × 4–7 mm, abaxially densely villous, adaxially sparsely hairy or subglabrous. Corolla pink or pale purplish red. Fl. Jul–Aug, fr. Sep–Feb.

- Sandy grasslands on high mountains; 1600–3000 m. W Sichuan, Xizang, NW Yunnan.

10b. *Lespedeza fasciculiflora* var. *hengduanshanensis* C. J. Chen, Acta Phytotax. Sin. 30: 375. 1992.

横断山铁马鞭 heng duan shan tie ma bian

Stems and branchlets adpressed strigulose. Leaflets obtiangular, terminal one 4–7 × 2–4 mm, abaxially densely hoary, adaxially sparsely strigulose. Corolla white or yellowish. Fl. Aug–Sep.

- Thickets in dry river valleys; 1800–2600 m. Sichuan, Xizang.

Two of us (Ohashi and Nemoto) believe that *Lespedeza fasciculiflora* var. *hengduanshanensis* is included within the range of morphological variation of var. *fasciculiflora*.

11. *Lespedeza forrestii* Schindler, Repert. Spec. Nov. Regni Veg. 10: 406. 1912.

矮生胡枝子 ai sheng hu zhi zi

Lespedeza pampaninii H. Léveillé; *L. variegata* Cambes-sèdes var. *cinerascens* Franchet.

Subshrubs, to 20 cm tall, densely spreading white villous throughout. Rhizome creeping; stems numerous, simple, procumbent or ascending. Leaves 3-foliolate; leaflets oblong-linear, terminal one 1–2.5 × 0.3–0.6 cm, base cuneate, apex emarginate or obtuse, mucronate. Flowers 1–3, axillary. Calyx 7–8 mm, 5-parted; upper 2 lobes connate at base, free at apex. Corolla pink, with purple spots, ca. 2 × as long as calyx; standard broadly elliptic, ca. 10 × 5 mm, claw with incurved appendage at upper part; wings oblong, ca. 10 × 2.5 mm, base auriculate and long clawed, apex obtuse; keel ca. 9 × 2 mm, apex obtuse. Ovary pilose, stipitate. Fruit not seen. Fl. Jun–Sep.

- Mountain slopes, thickets; 2200–2800 m. Sichuan, Yunnan.

12. *Lespedeza floribunda* Bunge, Pl. Mongholico-Chin. 13. 1835.

多花胡枝子 duo hua hu zhi zi

Lespedeza dielsiana Schindler; *L. floribunda* var. *alopecuroides* Franchet; *L. stottae* L. H. Bailey.

Subshrubs, small, 30–60(–100) cm tall. Branchlets grayish white tomentose. Leaves 3-foliolate; leaflets obovate, broadly obovate, or oblong, terminal one 1–1.5 × 0.6–0.9 cm, abaxially densely white adpressed pubescent, adaxially sparsely adpressed hairy, base cuneate, apex emarginate, obtuse-rounded, or subtruncate, mucronate. Racemes axillary; peduncle slender, distinctly overtopping leaves. Flowers numerous. Calyx 4–5 mm, 5-lobed; lobes lanceolate or ovate-lanceolate, upper 2 lobes connate at lower part, free above. Corolla purple, purplish red, or bluish purple; standard elliptic, ca. 8 mm, base clawed, apex rounded; wings slightly short; keel longer than standard, apex obtuse. Legume broadly ovoid, ca. 7 mm, overtopping persistent calyx, densely pubescent, reticulate veined. Fl. Jun–Sep, fr. Sep–Oct.

Rocky mountain slopes; below 1300 m. Anhui, Fujian, Gansu, Guangdong, Hebei, Henan, Hubei, Jiangsu, SW Liaoning, ?Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, ?Zhejiang [India, Pakistan; naturalized in Japan].

Following Li and Chen (FRPS 41: 148. 1995), one of us (Huang) retains *Lespedeza stottae* (Gentes Herb. 1: 32. 1920), described from Jigong Shan, Henan, and *L. dielsiana* (Repert. Spec. Nov. Regni Veg. 10: 404. 1912), described from Sichuan, here in synonymy due to the lack of authentic specimens. Two of us (Ohashi and Nemoto) agree that these entities are conspecific with *L. floribunda*.

13. *Lespedeza virgata* (Thunberg) Candolle, Prodr. 2: 350. 1825.

细梗胡枝子 xi geng hu zhi zi

Subshrubs or perennial herbs, small, 20–50 cm tall, sometimes to 1 m. Stems branched at base; branchlets purple, thin, adpressed white pubescent. Leaves 3-foliolate; petiole 1–2 cm, adpressed white hairy; leaflets elliptic, oblong, or ovate-oblong, terminal one (0.6–)1–3.5 × 0.4–1.5 cm, abaxially densely adpressed pubescent, adaxially glabrous, base rounded, apex rounded or obtuse-rounded, sometimes emarginate, mucronate.

Racemes axillary, laxly flowered, often 3-flowered; peduncle thin, filiform or stouter, distinctly overtopping leaves, adpressed white or spreading hairy. Pedicel short. Calyx 4–7 mm. Standard white, with purple spots at base, ca. 6 mm; wings shorter; keel longer than standard or subequal. Cleistogamous flowers clustered in leaf axils, sessile, fruit-bearing. Legume nearly orbicular, often not overtopping calyx.

Rocky mountain slopes, mountain forests, roadsides, thickets; below 800 m. Anhui, Fujian, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Taiwan, Zhejiang [Japan, Korea].

- 1a. Flowering peduncles thin, filiform, adpressed white pubescent; calyx 4–6 mm; leaflets thinner, often elliptic or oblong 13a. var. *virgata*
- 1b. Flowering peduncles stouter, spreading hairy; calyx ca. 7 mm; leaflets thicker, ovate-oblong 13b. var. *macrovirgata*

13a. *Lespedeza virgata* var. *virgata*

细梗胡枝子(原变种) xi geng hu zhi zi (yuan bian zhong)

Hedysarum virgatum Thunberg in Murray, Syst. Veg., ed. 14, 675. 1784; *L. swinhoei* Hance.

Leaflets often elliptic or oblong, terminal one (0.6–)1–2(–3) × 0.4–1(–1.5) cm, abaxially densely adpressed pubescent. Flowering peduncle thin, filiform, adpressed white pubescent. Calyx 4–6 mm. Fl. Jul–Sep, fr. Sep–Oct.

Rocky mountain slopes, mountain forests, roadsides, thickets; below 800 m. Anhui, Fujian, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Taiwan, Zhejiang [Japan, Korea].

13b. *Lespedeza virgata* var. *macrovirgata* (Kitagawa) Kitagawa, Lin. Fl. Manshur. 289. 1939.

大细梗胡枝子 da xi geng hu zhi zi

Lespedeza macrovirgata Kitagawa, Bot. Mag. (Tokyo) 48: 100. 1934.

Leaflets often ovate-oblong, terminal one 3–3.5 × 1–1.5 cm, abaxially spreading hairy. Flowering peduncle relatively stout, not filiform, spreading hairy. Calyx ca. 7 mm. Fl. Jul–Sep, fr. Sep–Oct.

• S Liaoning.

Two of us (Ohashi and Nemoto) regard this taxon as a hybrid between *Lespedeza tomentosa* and *L. virgata*, i.e., *L. ×macrovirgata*.

14. *Lespedeza tomentosa* (Thunberg) Siebold ex Maximowicz, Trudy Imp. S.-Peterburgsk. Bot. Sada 2: 376. 1873.

绒毛胡枝子 rong mao hu zhi zi

Hedysarum tomentosum Thunberg in Murray, Syst. Veg., ed. 14, 675. 1784; *Desmodium tomentosum* (Thunberg) Candolle; *H. coriaceum* Poiret; *H. villosa* Willdenow; *Lespedeza macrophylla* Bunge; *L. tomentosa* var. *globiracemosa* S. L. Tung & Z. Lu; *L. villosa* Persoon.

Subshrubs or perennial herbs, to 1 m tall, densely yellowish brown tomentose throughout. Stems simple or branched

above. Leaves 3-foliate; petiole 2–3 cm; leaflets elliptic or ovate-oblong, terminal one 3–6 × 1.5–3 cm, margin slightly involute, apex obtuse or emarginate. Racemes terminal or axillary at upper part of stem; peduncle 4–8(–12) cm, stout. Pedicel short. Calyx ca. 6 mm, 5-parted; lobes narrowly lanceolate, ca. 4 mm. Corolla yellow or yellowish white; standard elliptic, ca. 1 cm; wings shorter, oblong; keel subequal to standard. Cleistogamous flowers in leaf axils of upper stems. Legume obovoid, 3–4 × 2–3 mm, apex shortly acute. Fl. Jul–Aug, fr. Sep–Oct.

Arid mountain slopes, grasslands, thickets; below 1000 m except in Xinjiang and Xizang. Widely distributed throughout China [India, Japan, Kashmir, Korea, Mongolia, Nepal, Pakistan, Russia].

15. *Lespedeza davurica* (Laxmann) Schindler, Repert. Spec. Nov. Regni Veg. 22: 274. 1926 [“*daurica*”].

兴安胡枝子 xing an hu zhi zi

Trifolium davuricum Laxmann, Novi Comment. Acad. Sci. Imp. Petrop. 15: 560. 1771; *Hedysarum trichocarpum* Stephan ex Willdenow; *Lespedeza davurica* subsp. *huangheensis* C. J. Chen; *L. davurica* var. *sessilis* V. N. Vassiljev; *L. davurica* var. *shimadae* (Masamune) Masamune & Hosokawa; *L. fauriei* H. Léveillé; *L. feddeana* Schindler; *L. medicaginoides* Bunge; *L. shimadae* Masamune; *L. trichocarpa* (Stephan ex Willdenow) Persoon.

Subshrubs or perennial herbs, 30–100 cm tall. Stems often ascending, simple or branched at base. Branchlets pubescent. Leaves 3-foliate; petiole 1–2 cm; leaflets oblong or narrowly oblong, terminal one 0.8–3 × 0.4–1.6 cm, abaxially adpressed or erect pubescent, adaxially sparsely pubescent or glabrous, base rounded, apex rounded or emarginate, mucronate. Racemes axillary, shorter than or ca. as long as leaves; peduncle densely pubescent. Calyx 3–6 mm, 5-parted; lobes lanceolate. Corolla white or yellowish white; standard oblong, ca. 1 cm, mixed with purple at middle, base clawed; wings oblong, short; keel longer than wings. Cleistogamous flowers clustered in leaf axils, fruit-bearing. Legume obovoid or narrowly obovoid, 3–4 × 2–3 mm, lenticular, pubescent, apex rostrate, enclosed in persistent calyx.

Dry mountain slopes, grasslands, roadsides, sandy soils. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, ?Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan [Korea, Mongolia, Russia].

This is a good plant for livestock forage and is used as green manure.

16. *Lespedeza mucronata* Ricker, Amer. J. Bot. 33: 257. 1946.

短叶胡枝子 duan ye hu zhi zi

Subshrubs, ca. 60 cm tall. Stems erect, tomentose at upper part, downward gradually more sparsely so. Leaves 3-foliate; petiole 5–6 mm; leaflets obovate or obcordate, terminal one 1–2 × 1–1.3 cm, abaxially densely hirsute, more densely so on mid-vein, adaxially sparsely adpressed hairy, base broadly cuneate, apex truncate or emarginate. Racemes axillary, few flowered. Calyx ca. 4 mm, 5-parted; lobes narrowly lanceolate, ca. 3 mm, apex aristate. Corolla yellow or white; standard ca. 6 mm,

shortly clawed; wings oblong, ca. 7 mm, clawed; keel ca. 7 mm. Cleistogamous flowers clustered in leaf axils of lower stems, fruit-bearing. Legume ovoid to broadly ovoid, 3–4 × 2–3 mm, slightly overtopping persistent calyx, apex mucronate. Fl. Aug–Sep, fr. Sep–Oct.

- Arid sandy places. Fujian, Guangdong, Jiangxi, Zhejiang.

Two of us (Ohashi and Nemoto) regard this species as conspecific with *Lespedeza chinensis*.

17. *Lespedeza potaninii* V. N. Vassiljev, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.R. 9: 202. 1946.

牛枝子 niu zhi zi

Lespedeza davurica (Laxmann) Schindler subsp. *potaninii* (V. N. Vassiljev) C. J. Chen; *L. davurica* var. *potaninii* (V. N. Vassiljev) Y. X. Liou; *L. davurica* f. *prostrata* (W. Wang & P. Y. Fu) Kitagawa; *L. davurica* var. *prostrata* W. Wang & P. Y. Fu; *L. potaninii* f. *breviracemi* S. L. Tung & Z. Lu; *L. potaninii* var. *breviracemi* (S. L. Tung & Z. Lu) X. Y. Zhu.

Subshrubs, 20–60 cm tall. Stems procumbent or ascending, hispid, much branched at base. Leaves 3-foliolate; leaflets narrowly oblong, rarely elliptic to broadly elliptic, terminal one 0.8–1.5(–2.2) × 0.3–0.5(–0.7) cm, abaxially grayish white hispid, adaxially glabrous, base slightly oblique, apex obtuse-rounded or emarginate, mucronate. Racemes axillary; peduncle long, distinctly overtopping leaves, laxly flowered. Calyx densely villous, 5-parted; lobes lanceolate, 5–8 mm, apex long acuminate, aristate. Corolla yellowish white, slightly overtopping calyx lobes; standard mixed with purple at middle; wings short; keel mixed with purple at apex. Cleistogamous flowers axillary, sessile or subsessile. Legume obovoid, 3–4 mm, lenticular, densely hispid, enclosed in persistent calyx. Fl. Jul–Sep, fr. Sep–Oct.

- Desert steppes, sandy soils of steppe zone, rocky soils, hills, rocky slopes, foot of mountains. Gansu, Hebei, Henan, Jiangsu, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Yunnan.

This is a good plant for livestock forage. Because it can tolerate arid soils, it is grown for sand stabilization and soil conservation.

Two of us (Ohashi and Nemoto) regard *Lespedeza potaninii* as conspecific with *L. davurica*.

18. *Lespedeza chinensis* G. Don, Gen. Hist. 2: 307. 1832.

中华胡枝子 zhong hua hu zhi zi

Lespedeza canescens Ricker; *L. chinensis* var. *nokoensis* Ohwi; *L. formosensis* Hosokawa.

Subshrubs, small, to 1 m tall, adpressed white hairy throughout. Stems erect or diffuse. Leaves 3-foliolate; petiole ca. 1 cm; leaflets obovate-oblong, oblong, or ovate-obovate, terminal one 1.5–4 × 1–1.5 cm, margin slightly involute, apex truncate, subtruncate, emarginate, or obtuse, mucronate. Racemes axillary, not overtopping leaves, few flowered; peduncle short. Pedicel 1–2 mm. Calyx 5-parted; lobes narrowly lanceolate. Corolla white or yellow; standard elliptic, ca. 7 × 3 mm, clawed and with 2 auriculate appendages at base; wings narrowly oblong, ca. 6 mm, long clawed; keel ca. 8 mm. Cleistogamous flowers clustered in leaf axils. Legume ovoid, ca. 4 × 2.5–3 mm, reticulate veined, densely adpressed white hairy, base slightly oblique, apex rostrate. Fl. Aug–Sep, fr. Oct–Nov.

amous flowers clustered in leaf axils of lower stems. Legume ovoid, ca. 4 × 2.5–3 mm, reticulate veined, densely adpressed white hairy, base slightly oblique, apex rostrate. Fl. Aug–Sep, fr. Oct–Nov.

- Thickets, forest margins, roadsides, mountain slopes, grasslands, forests; below 2500 m. Anhui, Fujian, Guangdong, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang.

19. *Lespedeza caraganae* Bunge, Pl. Mongholico-Chin. 11. 1835.

长叶胡枝子 chang ye hu zhi zi

Subshrubs or perennial herbs, ca. 50 cm tall. Stems erect, much angulate, adpressed shortly hairy. Leaves 3-foliolate; petiole 3–5 mm, adpressed shortly hairy; leaflets oblong-linear, terminal one 2–4 × 0.2–0.4 cm, abaxially adpressed hairy, adaxially subglabrous, base narrowly cuneate, margin slightly involute, apex obtuse or emarginate, mucronate. Racemes axillary; peduncle 0.5–1 cm, densely adpressed white hairy, 3–5-flowered. Pedicel ca. 2 mm. Calyx narrowly campanulate, 5-parted. Corolla white or yellow, distinctly overtopping calyx; standard broadly elliptic, ca. 8 × 5 mm; wings oblong, ca. 7 × 1 mm; keel ca. 8.5 mm, base long clawed, apex obtuse. Legume oblong-ovoid, 4.5–5 × ca. 2 mm, sparsely adpressed white hairy, apex rostrate. Legume of cleistogamous flower obovoid-orbicular, ca. 3 × 2.5 mm, apex shortly rostrate. Fl. Jun–Sep, fr. Oct.

- Mountain slopes; below 1400 m. Gansu, Hebei, Henan, Liaoning, ?Nei Mongol, Shaanxi, Shandong.

20. *Lespedeza cuneata* (Dumont de Courset) G. Don, Gen. Hist. 2: 307. 1832.

截叶铁扫帚 jie ye tie sao zhou

Anthyllis cuneata Dumont de Courset, Bot. Cult. 6: 100. 1811; *Aspalathus cuneata* (Dumont de Courset) D. Don; *Hedysarum sericeum* Thunberg (1784), not Miller (1768); *Lespedeza argyraea* Siebold & Zuccarini; *L. juncea* (Linnaeus f.) Persoon var. *sericea* Forbes & Hemsley; *L. sericea* Miquel; *L. sericea* var. *latifolia* Maximowicz.

Subshrubs or perennial herbs, to 1 m tall. Stems erect or ascending, hairy. Leaves crowded, 3-foliolate; petiole short; leaflets cuneate or linear-cuneate, terminal one 1–3 × 0.2–0.7 cm, abaxially densely adpressed hairy, adaxially subglabrous, base cuneate, apex truncate or subtruncate, mucronate. Racemes axillary, 2–4-flowered; peduncle short. Calyx narrowly campanulate, 5-lobed; lobes lanceolate. Corolla yellowish or white; standard with purple spots at base; wings subequal to standard; keel slightly long, sometimes mixed with purple at apex. Cleistogamous flowers clustered in leaf axils. Legume broadly ovoid or subglobose, 2.5–3.5 × ca. 2.5 mm, adpressed hairy. Fl. Jul–Aug, fr. Sep–Oct. $2n = 20^*$.

Mountain slopes, roadsides; below 2500 m. ?Fujian, Gansu, Guangdong, ?Guizhou, ?Hainan, Henan, Hunan, ?Jiangsu, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, ?Zhejiang [Afghanistan, Bhutan, India, Indonesia, Japan, Korea, Laos, Malaysia, Nepal, Pakistan, Philippines, Thailand, Vietnam; naturalized in North America and Australia].

21. *Lespedeza juncea* (Linnaeus f.) Persoon, Syn. Pl. 2: 318. 1807.

尖叶铁扫帚 jian ye tie sao zhou

Hedysarum junceum Linnaeus f., Dec. Pl. Horti Upsal. 1: 7. 1762; *Lespedeza cystoides* Nakai; *L. hedysaroides* (Pallas) Kitagawa; *L. hedysaroides* var. *subsericea* (Komarov) Kitagawa; *L. hedysaroides* var. *umbrosa* (Komarov) Kitagawa; *L. juncea* var. *subsericea* Komarov; *L. juncea* f. *umbrosa* Komarov; *Trifolium hedysaroides* Pallas.

Subshrubs or perennial herbs, small, to 1 m tall, adpressed hairy throughout. Leaves 3-foliolate; petiole 0.5–1 cm; leaflets oblanceolate, linear-oblong, or narrowly oblong, terminal one 1.5–3.5 × 0.2–0.7 cm, base attenuate, margin slightly involute, apex acute or obtuse-rounded, mucronate. Racemes axillary, slightly overtopping leaves, 3–7-flowered. Calyx narrowly campanulate, 5-parted; lobes lanceolate, distinctly 3-veined after fruiting. Corolla white or yellowish; standard with purple spots at base, not or rarely reflexed at fruiting; keel mixed with purple at apex; standard and wings subequal to keel, sometimes standard short. Cleistogamous flowers clustered in leaf axils, subsessile. Legume broadly ovoid, slightly overtopping persistent calyx, both surfaces adpressed white hairy. Fl. Jul–Sep, fr. Sep–Oct. 2n = 20.

Mountain slopes, thickets; below 1500 m. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shandong, Shanxi [Japan, Korea, Mongolia, Russia (Far East, E Siberia)].

22. *Lespedeza inschanica* (Maximowicz) Schindler, Bot. Jahrb. Syst. 49: 603. 1913.

阴山胡枝子 yin shan hu zhi zi

Lespedeza juncea (Linnaeus f.) Persoon var. *inschanica* Maximowicz, Trudy Imp. S.-Peterburgsk. Bot. Sada 2: 371. 1873; *L. cystoides* Nakai var. *inschanica* (Maximowicz) Nakai; *L. hedysaroides* (Pallas) Kitagawa var. *inschanica* (Maximowicz) Kitagawa; *L. inschanica* var. *flava* S. L. Tung & Z. Lu.

Subshrubs or perennial herbs, to 80 cm tall. Stems erect or ascending, pubescent above. Leaves 3-foliolate; petiole 3–10 mm; leaflets oblong or obovate-oblong, terminal one 1–2.5 × 1–1.5 cm, abaxially densely adpressed hairy, adaxially subglaious, base broadly cuneate or rounded, apex obtuse-rounded or emarginate. Racemes axillary, subequal to leaves, 2–6-flowered. Calyx 5–6 mm, 5-lobed; lobes lanceolate, distinctly 3-veined and ciliate, upper 2 lobes connate above middle. Corolla white; standard suborbicular, ca. 7 × 5.4 mm, base with large purple spots, apex emarginate, reflexed at anthesis; wings oblong, 5–6 × 1–1.5 mm; keel ca. 6.5 mm, often mixed with purple at apex. Legume obovoid, ca. 4 × 2 mm, shorter than persistent calyx, densely adpressed hairy.

Arid mountain slopes. Anhui, Gansu, Hebei, Hubei, Hunan, Jiangsu, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Yunnan [Japan, Korea].

23. *Lespedeza gerardiana* Wallich ex Maximowicz, Trudy Imp. S.-Peterburgsk. Bot. Sada 2: 373. 1873.

西藏胡枝子 xi zang hu zhi zi

Subshrubs or perennial herbs, 20–30 cm tall. Stem erect or ascending, densely appressed or ascending pubescent. Leaves 3-foliolate; stipules linear-triangular, 4.8–5.5 × 0.7–1.1 mm, 3- or 4-veined; petiole 1.6–2.2 mm; leaflets narrowly obovate, terminal one 1–1.4 cm × 2.5–4.4 mm, abaxially sericeous, adaxially glabrous, base cuneate, apex mucronate. Racemes axillary, slightly longer than subtending leaves, almost sessile, 6-flowered. Pedicel 2.5–3.2 mm, densely appressed or ascending pubescent; bracteoles narrowly ovate, 4–4.8 × ca. 0.9 mm, distinctly longer than calyx tube. Calyx 7.3–9 mm, 5-parted; lobes narrowly triangular, densely appressed or ascending pubescent. Corolla pale yellow, 1.4–1.5 × as long as calyx; standard elliptic, 10.5–12.5 × 5–6 mm, clawed and with 2 auriculate appendages at base; wings obliquely narrowly elliptic, 9.5–11 × 1.5–2 mm, obtuse, slightly auriculate at base, claw ca. 3 mm; keel obliquely elliptic, 10.5–12.5 × 2.8–3.3 mm, apex obtuse. Cleistogamous flowers axillary, sessile, 6-flowered. Legumes and seeds unknown (in China). Fl. Sep.

In grass on mountain slopes, at foot of mountains. Xizang [Bhutan, India, Nepal, Pakistan].

24. *Lespedeza lichiyuniae* T. Nemoto, H. Ohashi & T. Itoh, Jap. Bot. 82: 223. 2007.

红花截叶铁扫帚 hong hua jie ye tie sao zhou

Subshrubs or perennial herbs, 50–120 cm tall. Stems erect or ascending, ascending or appressed pubescent. Leaves 3-foliolate; petiole (1.5)–2–15 mm; leaflets narrowly obovate, terminal one 0.7–2.8 × 0.2–0.8 cm, abaxially densely adpressed hairy, adaxially glabrous, base cuneate, apex obtuse or truncate, mucronate. Racemes axillary, peduncle short, (1 or)2–4-flowered. Calyx 3–4 mm, 5-parted; lobes appressed or ascending, lanceolate. Corolla pink or pale purple; standard broadly elliptic to circular, 7–7.5 × 5–5.5 mm, base with dark purple spots; wings pale purplish white, narrowly obovate to obovate, 6.7–7.3 × 2–2.3 mm; keel pale purplish white with dark purple tip, 7.2–7.6 × 2.2–2.7 mm. Cleistogamous flowers clustered in leaf axils, sessile. Legumes ellipsoid, ca. 2.4 × 1.7–2 mm, slightly longer than persistent calyx, densely adpressed hairy. Fl. Aug–Sep, fr. (Sep–)Oct–Nov.

• Mountain valleys, sunny mountain slopes; (200)–500–1700 (–3000) m. Anhui, Chongqing, Gansu, Guizhou, Henan, Hubei, Hunan, Jiangsu, Shaanxi, Sichuan, Yunnan [naturalized in Japan].

25. *Lespedeza hispida* (Franchet) T. Nemoto & H. Ohashi, Jap. Bot. 84: 156. 2009.

粗硬毛胡枝子 cu ying mao hu zhi zi

Lespedeza juncea (Linnaeus f.) Persoon var. *hispida* Franchet, Pl. Delavay. 170. 1890; *L. sericea* Miquel f. *hispida* (Franchet) Schindler.

Subshrubs or perennial herbs, to 80 cm tall. Stem erect or ascending, densely spreading or ascending pubescent. Leaves 3-foliolate; petiole 0.5–2.5 mm, densely spreading or ascending pubescent (or sericeous); leaflets narrowly obtriangular or narrowly obovate, terminal one 0.7–2.2 cm × 2.2–6.5 mm, abaxially densely adpressed or ascending pubescent, adaxially glabrous, base narrowly cuneate, apex truncate, emarginate, or ob-

tuse, mucronate. Racemes axillary, peduncle short, ca. 1 mm, 2–4-flowered. Pedicel 0.7–0.8 mm, pubescent; bracteoles (1.5–)1.7–2.5 mm, longer than calyx tube. Calyx 3.5–5 mm, 5-lobed, densely appressed or ascending pubescent. Corolla white, 1.3–1.5 × as long as calyx; standard elliptic, 5–5.7 × ca. 2.6 mm, inflexed-auriculate at base; wings narrowly or linearly elliptic, ca. 4.7 × 0.8 mm, obviously shorter than other petals;

keel obliquely obovate, ca. 6 × 1.8 mm, claw ca. 1.5 mm. Cleistogamous flowers in leaf axils. Legumes ovoid, 3.6–4 × 2.3–2.5 mm, shorter than or almost equal to calyx, densely pubescent, base truncate, apex acuminate. Cleistogamous legumes 2.7–3 × ca. 2 mm, slightly longer than calyx. Fl. Jul–Sep, fr. Oct–Nov.

Grassy slopes, sunny roadsides; 1500–2500 m. Xizang, Yunnan [India, Nepal, Pakistan].

133. KUMMEROWIA Schindler, Report. Spec. Nov. Regni Veg. 10: 403. 1912.

鸡眼草属 ji yan cao shu

Huang Puhua (黄普华 Huang Pu-hwa); Hiroyoshi Ohashi, Tomoyuki Nemoto

Lespedeza subg. *Microlespedeza* Maximowicz, Trudy Imp. S.-Peterburgsk. Bot. Sada 2: 346, 382. 1873; *Microlespedeza* (Maximowicz) Makino.

Herbs, annual, usually much branched. Leaves 3-foliate; stipules membranous, large and persistent, usually longer than petiole, ciliate. Flowers 1 or 2, usually fascicled in axils of leaf, rarely 3 or more. Bracteoles 4, attached to lower part of calyx. Calyx 5-lobed. Corolla pink or purple; standard nearly equal to wings, often shorter than keel. Corolla and staminal column of perfect flowers deciduous at fruiting; corolla and staminal column of cleistogamous flowers clinging to legume and remaining until fruit matures, deciduous. Stamens diadelphous (9+1). Ovary 1-ovuled. Legume compressed, 1-jointed, indehiscent, 1-seeded.

Two species: China, Japan, Korea, and Russia; two species in China.

- 1a. Branchlets with downward-pointing hairs; leaflets with apex usually rounded; stipules long ciliate; pedicel glabrous; legume ca. 2 × as long as calyx or slightly longer 1. *K. striata*
- 1b. Branchlets with upward-pointing hairs; leaflets with apex emarginate; stipules shortly ciliate; pedicel pubescent; legume 2.5–3 × as long as calyx 2. *K. stipulacea*

1. Kummerowia striata (Thunberg) Schindler, Report. Spec. Nov. Regni Veg. 10: 403. 1912.

鸡眼草 ji yan cao

Hedysarum striatum Thunberg in Murray, Syst. Veg., ed. 14, 675. 1784; *Lespedeza striata* (Thunberg) Hooker & Arnott; *Microlespedeza striata* (Thunberg) Makino.

Herbs, diffuse or prostrate. Stem and branchlets with downward-pointing white hairs. Stipules ovate-oblong, 3–4 mm, longer than petiole, striate, long ciliate; petiole 1–2 mm; leaflets obovate, narrowly obovate, or oblong, terminal one 0.6–2.2 cm × 3–8 mm, lateral veins dense, base nearly rounded or broadly cuneate, apex rounded, rarely emarginate. Flowers 1–3 in upper axils of leaves. Pedicel ca. 1 cm, glabrous; bracteoles 4, attached to proximal part of calyx, 1 very small bracteole placed at article of pedicel, others larger. Calyx 5-lobed. Corolla 5–6 mm; standard elliptic, base attenuate, clawed, auriculate; keel subequaling or slightly longer than standard; wings slightly shorter than keel. Legume orbicular or ovoid, slightly compressed, 3.5–5 mm, ca. 2 × as long as calyx or slightly longer, pubescent, apex mucronate. Fl. Jul–Sep, fr. Aug–Oct. 2n = 22*.

Sandy soils, streamsides, roadsides, grasslands; below 500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, ?Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Japan, Korea, E Russia, Vietnam; naturalized in SE United States].

The whole plant is used medicinally as a diuretic, for reducing

fever, and for treating diarrhea. It is also used for forage and green manure.

2. Kummerowia stipulacea (Maximowicz) Makino, Bot. Mag. (Tokyo) 28: 107. 1914.

长萼鸡眼草 chang e ji yan cao

Lespedeza stipulacea Maximowicz, Prim. Fl. Amur. 85. 1859; *L. striata* (Thunberg) Hooker & Arnott var. *stipulacea* (Maximowicz) Debeaux; *Microlespedeza stipulacea* (Maximowicz) Makino.

Herbs, prostrate, ascending, or erect. Stem and branches with sparse upward-pointing white hairs. Stipules ovate, 3–8 mm, longer than petiole or sometimes nearly equal, shortly ciliate; petiole short; leaflets obovate or broadly obovate, terminal one 0.5–1.8 cm × 3–12 mm, base cuneate, apex emarginate or nearly truncate. Flowers 1 or 2, axillary. Pedicel hairy. Calyx broadly campanulate; standard elliptic, shorter than keel, base attenuate, clawed, apex emarginate; wings narrowly lanceolate, nearly equal to standard; keel obtuse, with dark purple spots adaxially, intermixed with apetalous flowers. Legume ovoid or elliptic, ca. 3 mm, usually 2.5–3 × as long as calyx, slightly compressed. Fl. Jul–Aug, fr. Aug–Oct. 2n = 20, 22*.

Roadsides, grasslands, mountain slopes, stable or semistable sand dunes; 100–1200 m. Anhui, Fujian, Guangdong, Guangxi, ?Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Taiwan, Zhejiang [Japan, Korea, Russia; naturalized in SE United States].

This plant's uses are the same as those of *Kummerowia striata*.