

2. LEPTOPUS Decaisne in Jacquemont, Voy. Inde 4(Bot.): 155. 1835–1844.

雀舌木属 que she mu shu

Li Bingtao (李秉滔 Li Ping-tao); Maria Vorontsova

Andrachne [unranked] *Arachne* Endlicher; *Arachne* (Endlicher) Pojarkova; *Archileptopus* P. T. Li; *Thelypetalum* Gagnepain.

Herbs to shrubs, monoecious; indumentum of simple hairs, sometimes absent. Leaves alternate, petiolate; stipules small, usually membranous, glabrous or ciliate, persistent; leaf blade simple, membranous to leathery, margin entire, venation pinnate. Inflorescences axillary, 1-flowered or fascicled, male flowers sometimes on short densely bracteate inflorescences. Male flowers: pedicels usually filiform; sepals 5(or 6), free or connate at base, imbricate; petals 5(or 6), usually shorter than sepals, mostly membranous; disk with 5(or 6) contiguous regular segments bilobed for 1/3–4/5 of their length; stamens 5(or 6), opposite sepals; filaments free; anthers introrse or extrorse, longitudinally dehiscent; pistillode composed of 3 free segments or 3-lobed. Female flowers: pedicels apically dilated; sepals larger than male; petals membranous, minute and often hidden under disk lobes; disk annular, regularly divided into 5(or 6) emarginate segments; ovary 3–6-locular; ovules 2 per locule; styles 3–6, apex bifid to base or nearly so, recurved; stigmas apically dilated to capitate. Fruit a capsule, dehiscent into 3(–6) 2-valved cocci when mature, smooth, sometimes with faint reticulate venation. Seeds without caruncle, rounded triquetrous to almost reniform, smooth, rugose or pitted, dull; endosperm fleshy; embryo curved; cotyledons flattened and broad.

Nine species: China, India, Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Thailand, Vietnam; SW Asia (Caucasus, Iran); six species (three endemic) in China.

Some authors treated *Leptopus* as part of a more widely circumscribed *Andrachne* Linnaeus, but that view is not accepted here (see Vorontsova et al., Amer. J. Bot. 94: 2026–2040. 2007; Vorontsova & Petra Hoffmann, Kew Bull., in press).

Andrachne cavaleriei H. Léveillé (Repert. Spec. Nov. Regni Veg. 12: 187. 1913) is the basionym of *Lysimachia capillipes* Hemsley var. *cavaleriei* (H. Léveillé) Handel-Mazzetti in the Primulaceae (see Fl. China 15: 52. 1996). *Andrachne millietii* H. Léveillé (Bull. Géogr. Bot. 24: 146. 1914) is the basionym of *Lysimachia millietii* (H. Léveillé) Handel-Mazzetti in the Primulaceae (see Fl. China 15: 50. 1996).

“*Arachne Necker*” (Elem. Bot. 2: 348. 1790) was not validly published because the work in which it appeared is among the Opera Utique Opressa.

- 1a. Leaves leathery, almost succulent, petioles 2–4 × 0.8–1 mm 1. *L. pachyphyllus*
- 1b. Leaves membranous to papery, petioles either longer and/or thinner.
 - 2a. Ascendant herbs to subshrubs up to 0.5 m tall; leaf base attenuate to cuneate; plants densely hirsute; female pedicels 2–5 mm in flower, 5–9 mm in mature fruit 2. *L. australis*
 - 2b. Erect to procumbent shrubs 0.5–4 m tall; leaf base rounded to cuneate; plants glabrous to sparsely hirsute, rarely densely hirsute; female pedicels 5–30 mm in flower, 7–36 mm in mature fruit.
 - 3a. Branchlets white or near white; male pedicels less than 2 mm 3. *L. hainanensis*
 - 3b. Branchlets light green to brown; male pedicels 3–22 mm.
 - 4a. Plants ascendant or procumbent, stem flexuous; female flowers predominantly narrowly cupular, female sepals apically acute to acuminate; branches strongly ribbed 4. *L. clarkei*
 - 4b. Plants erect, stem straight; female flowers rotate, female sepals apically rounded to cuspidate, rarely acute; branches terete to moderately ribbed.
 - 5a. Petiole less than 1/10 as long as leaf blade; fruit 4–6-locular; male disk lobes divided for 4/5 of their length 5. *L. fangdingianus*
 - 5b. Petiole more than 1/10 as long as leaf blade; fruit 3-locular; male disk lobes divided for 1/2–2/3 of their length 6. *L. chinensis*

1. *Leptopus pachyphyllus* X. X. Chen, Guihaia 8: 233. 1988.

厚叶雀舌木 hou ye que she mu

Andrachne pachyphylla (X. X. Chen) Govaerts.

Erect shrubs, up to 2 m tall, monoecious. Branchlets flattened, reddish. Stipules triangular, base not auriculate, apex acute, almost black; petiole 2–4 × 0.8–1 mm; leaf blade ovate to elliptic or orbicular, (1.7–)2–3.5(–4) × (1.2–)1.5–2.5(–2.7) cm, leathery, almost succulent, both surfaces drying reddish brown, glabrous, base acute to rounded, apex obtuse; secondary veins 4–6 pairs. Inflorescences unisexual, always fasciculate. Male

flowers solitary, ca. 5 mm in diam.; pedicel ca. 17 mm; sepals ovate, 3–4 × 2.5–3 mm, apex acute to obtuse, eglandular; petals obovate, apex acute, 0.7–2 × 0.5–0.7 mm; disk bilobed for 1/3 of length. Female flowers solitary, 4–5 mm in diam., widely cupular; pedicel 20–28 mm; sepals ovate to elliptic, 3–5 × 2–2.5 mm, apex obtuse to acuminate, eglandular; petals linear, ca. 1.8 × 0.6 mm, apex acute; disk bilobed for 1/3–1/2 of length; ovary 3-locular, glabrous; styles 3, glabrous. Capsule glabrous.

• Guangxi.

Leptopus pachyphyllus is clearly distinct; its thick leathery leaves, almost succulent receptacle, and long female pedicels are unlike any

other *Leptopus*. It is only known from two collections.

2. *Leptopus australis* (Zollinger & Moritz) Pojarkova, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 270. 1960.

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Andrachne australis Zollinger & Moritz in Zollinger, Natuur- Geneesk. Arch. Ned.-Indië 2: 17. 1845; *Agyneia tenera* Zollinger & Moritz ex Miquel; *Andrachne australis* var. *angustifolia* Müller Argoviensis; *A. calcarea* Ridley; *A. hirta* Ridley; *A. lanceolata* Pierre ex Beille; *A. polypetala* Kuntze; *A. tenera* Miquel; *Leptopus calcareus* (Ridley) Pojarkova; *L. hirtus* (Ridley) Pojarkova; *L. lanceolatus* (Pierre ex Beille) Pojarkova; *L. philippinensis* Pojarkova; *L. polypetalus* (Kuntze) Pojarkova; ?*L. sanjappae* Sumathi et al.; *Thelypetalum pierrei* Gagnepain.

Ascendant to erect herbs to subshrubs, 0.1–0.5 m tall, monoecious. Branchlets terete to flattened, light green to brown. Stipules triangular to subulate, base not auriculate, apex acute, ferruginous to almost black; petiole 5–20 × 0.5–0.8 mm; leaf blade ovate to lanceolate or obovate, (1.5–)2.5–7(–10) × (0.7–)1.2–2(–3.2) cm, membranous to thinly papery, drying discolorous to concolorous reddish to yellowish or grayish green, abaxially hirsute, adaxially glabrous to hirsute, base long attenuate to acute, sometimes obtuse, apex acute; secondary veins 4–6 pairs. Inflorescences unisexual or bisexual, male inflorescence axis 0–3 mm. Male flowers 1–4(–6) per fascicle, 1.5–2.5 mm in diam.; pedicel 4–8 mm; sepals obovate to oblong, apex rounded, 1–1.6 × 0.6–1 mm, eglandular; petals obovate to linear, apex rounded, 0.6–1.2 × 0.2–0.3 mm; disk bilobed for 4/5–5/6 of length. Female flowers 1–4 per fascicle, 3–6 mm in diam., rotate; pedicel 2–5 mm; sepals ovate to obovate or oblong, 1.5–3 × 1–2 mm, apex acute to cuspidate, eglandular; petals linear to obovate, 0.1–0.5 × 0.1–0.2 mm, apex rounded; disk bilobed for 1/2–3/4 of length; ovary 3-locular, densely hirsute; styles 3, glabrous to basally hirsute. Fruiting pedicel 5–9 mm; sepals accrescent to 2–6 × 1–3.5 mm; capsule smooth to faintly reticulate, hirsute, drying red-brown to orange-brown. Seed transversely to irregularly ridged, orange to brown.

Evergreen forest understories on sand or limestone. Hainan [India (Andaman Islands), Indonesia, Malaysia, Philippines, Thailand, Timor, Vietnam].

The variable and widespread *Leptopus australis* can be immediately distinguished from other species of *Leptopus* by its smaller stature, dense indumentum, short female pedicels, small orange-brown fruit, and often attenuate leaf bases. *Leptopus australis* is the only Chinese species of *Leptopus* with a deeply ridged seed. J. D. Hooker (Icon. Pl. 18: t. 1704. 1887) treated material of this species as *Andrachne fruticosa*.

3. *Leptopus hainanensis* (Merrill & Chun) Pojarkova, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 271. 1960.

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Andrachne hainanensis Merrill & Chun, Sunyatsenia 5: 102. 1940; *A. hainanensis* var. *nummulariifolia* Merrill &

Chun.

Erect shrubs, 0.5–3 m tall, monoecious (often apparently dioecious). Branchlets terete, white to light brown, much lighter than leaves. Stipules triangular, base not auriculate, apex acute, almost black; petiole 1.5–4 × 0.3–0.4 mm; leaf blade ovate to elliptic, sometimes orbicular or obovate, (0.2–)0.4–1.5(–2) × (0.2–)0.3–0.8(–1.5) cm, thickly papery, drying slightly to strongly discolorous gray, dark red or brown, abaxially glabrous to sparsely hirsute, adaxially glabrous, base acute, sometimes obtuse or rounded, apex acute, sometimes rounded; secondary veins not visible or 2 or 3 pairs. Inflorescences unisexual, male inflorescence axis 0–3 mm. Male flowers 1–3 per fascicle, 1.5–2.5 mm in diam.; pedicel 1–2 mm; sepals obovate to oblong, apex rounded, 1.2–2 × 0.7–0.8 mm, eglandular; petals linear to narrowly obovate, 0.8–1.2 × 0.15–0.25 mm, apex acute to rounded; disk bilobed for 1/2–2/3 of length. Female flowers solitary, 3.5–6 mm in diam., rarely 6-merous, rotate; pedicel 7–14 mm; sepals rarely 6, obovate, 2–4 × 1–2 mm, apex obtuse to cuspidate, eglandular; petals linear, 0.2–1 × ca. 0.1 mm, apex acute; disk bilobed for 1/3–1/2 of length; ovary 3(or 4)-locular, hirsute; styles 3(or 4), basally hirsute. Fruiting pedicel 9–14 mm; sepals not accrescent; capsule smooth to faintly reticulate, hirsute, drying red-brown. Seed smooth, orange.

• Riverine forests. Hainan.

Leptopus hainanensis is easily distinguishable by its whitish stems, small leaves, and short male pedicels. It is most likely affiliated with *L. chinensis*.

4. *Leptopus clarkei* (J. D. Hooker) Pojarkova, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 272. 1960.

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Andrachne clarkei J. D. Hooker, Fl. Brit. India 5: 285.1887; *A. attenuata* Handel-Mazzetti; *A. attenuata* var. *microcalyx* Handel-Mazzetti; *A. esquirolii* H. Léveillé; *A. esquirolii* var. *microcalyx* (Handel-Mazzetti) Rehder; *A. hypoglauca* H. Léveillé; *A. persicariifolia* H. Léveillé; *Leptopus attenuatus* (Handel-Mazzetti) Pojarkova; *L. esquirolii* (H. Léveillé) P. T. Li; *L. esquirolii* var. *villosus* P. T. Li; *L. kwangsiensis* Pojarkova.

Procumbent to ascendent herbs to subshrubs, up to 1.5 m tall, monoecious. Branchlets longitudinally strongly ribbed, white to light green, rarely reddish. Stipules triangular, base not auriculate, apex acute, ferruginous; petiole 1.5–10 × 0.4–0.7 mm; leaf blade ovate to lanceolate, (1.5–)2–6.5(–10) × (0.8–)1–2(–3) cm, papery, sometimes membranous, drying concolorous to slightly discolorous light whitish green to yellowish or grayish light green, abaxially glabrous to sparsely hirsute, adaxially glabrous, base rounded, sometimes obtuse, rarely acute, apex acuminate; secondary veins 3–6 pairs, sometimes not visible. Inflorescences unisexual or bisexual, male inflorescence axis 0–0.1(–3) mm. Male flowers 1–3 per fascicle, 2–4 mm in diam.; pedicel 5–17 mm; sepals obovate to oblong, apex rounded, 1.2–3 × 0.7–1.4 mm, eglandular; petals obovate, apex rounded, 0.8–1.5 × 0.25–1 mm; disk bilobed for 4/5–5/6 of length. Female flowers 1–2 per fascicle, 2.5–6 mm in diam., mostly narrowly cupular; pedicel 10–20 mm; sepals

ovate to elliptic, 1.5–5 × 0.7–1.8 mm, apex acute to acuminate, eglandular; petals obovate, 0.2–0.5 × 0.2–0.3 mm, apex rounded; disk bilobed for 3/4 of length; ovary 3-locular, glabrous to sparsely hirsute; styles 3, glabrous. Fruiting pedicel 14–35 mm; sepals not accrescent; capsule smooth to faintly reticulate, glabrous to sparsely hirsute, drying red-brown to brown. Seed smooth, orange to brown.

Mixed forest understories on sand, granite, or limestone; 500–2500 m. Guangxi, Guizhou, Sichuan, Yunnan [India (Assam), Myanmar, Vietnam].

Leptopus clarkei is an ascending creeper. Plants of this species have a lax habit, generally with longer thinner sepals and acuminate leaves. Leaf size, sepal size, and indumentum all vary.

The distinction between *Leptopus clarkei* and *L. esquirolii* has caused much confusion, partly due to inaccessibility of type specimens. Type collections of both names are strikingly similar in their habit and long-acuminate, papery leaf blades. Accordingly, *L. clarkei* and *L. esquirolii* are here considered conspecific.

5. *Leptopus fangdingianus* (P. T. Li) Vorontsova & Petra Hoffmann, Kew Bull., in press.

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Archileptopus fangdingianus P. T. Li, J. S. China Agric. Univ. 12(3): [see Kew Bull. for page number]. 1991.

Erect shrubs, 1–2 m tall, monoecious. Branchlets terete, green-brown. Stipules triangular, base not auriculate, apex acute, ferruginous to almost black; petiole 4–8 × 0.7–0.9 mm; leaf blade elliptic, (3–)6–10(–12) × (2–)2.5–4(–4.5) cm, thickly papery, drying slightly discoloured yellowish green, both surfaces glabrous to sparsely hirsute, base acute, apex acute to acuminate; secondary veins 4 or 5 pairs. Inflorescences unisexual, always fasciculate. Male flowers 1 or 2 per fascicle, 2.5–3 mm in diam.; pedicel 4–5 mm; sepals obovate to oblong, 1–1.8 × 0.7–0.9 mm, apex rounded, eglandular; petals obovate to linear, 0.5–0.7 × 0.15–0.3 mm, apex acute to rounded; disk bilobed for ca. 4/5 of length. Female flowers 1 or 2 per fascicle, ca. 4.5 mm in diam., rotate; pedicel 20–25 mm; sepals oblong to elliptic, 2–3.5 × 1–1.5 mm, apex acute, eglandular; petals linear, 0.5–0.8 × ca. 0.1 mm, apex rounded; disk bilobed for 3/4 of length; ovary 4–6-locular, glabrous; styles 4 or 6, glabrous. Fruiting pedicel 17–25 mm; sepals not accrescent; capsule smooth to faintly reticulate, glabrous, drying brown. Seed smooth, brown.

- Evergreen forest understories on limestone. Guangxi.

This narrow endemic was originally described as the unispecific genus *Archileptopus* P. T. Li (loc. cit.), based on its extrorse anthers and 4 or 5 ovary locules, as distinct from the introrse anthers and 3 locules of *Leptopus*. However, the anthers were found to be anatomically identical to those of *Leptopus* species in bud. Increased locule number can be observed in *L. hainanensis* and *L. pachyphyllus* as well as in *Archileptopus*. Molecular phylogenetic analysis of tribe Poranthereae using ITS and *matK* sequences places *Archileptopus* within *Leptopus* with high bootstrap support (Vorontsova et al., Amer. J. Bot. 94: 2026–2040. 2007). *Archileptopus* is affiliated with *L. clarkei*.

6. *Leptopus chinensis* (Bunge) Pojarkova, Bot. Mater. Gerb. Bot. Inst. Komarova Akad. Nauk S.S.S.R. 20: 274. 1960.

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Andrachne chinensis Bunge, Enum. Pl. China Bor. 59. 1833; *A. bodinieri* H. Lévêillé; *A. capillipes* (Pax) Hutchinson; *A. capillipes* var. *pubescens* Hutchinson; *A. chinensis* var. *pubescens* (Hutchinson) Handel-Mazzetti; *A. colchica* Fischer & C. A. Meyer ex Boissier; *A. cordifolia* Hemsley; *A. hirsuta* Hutchinson; *A. lolonum* Handel-Mazzetti; *A. montana* Hutchinson; *A. nana* (P. T. Li) Govaerts; *A. yunnanensis* (P. T. Li) Govaerts; *Flueggea capillipes* Pax; *Leptopus capillipes* (Pax) Pojarkova; *L. chinensis* var. *hirsutus* (Hutchinson) P. T. Li; *L. chinensis* var. *pubescens* (Hutchinson) S. B. Ho; *L. colchicus* (Fischer & C. A. Meyer ex Boissier) Pojarkova; *L. hirsutus* (Hutchinson) Pojarkova; *L. lolonum* (Handel-Mazzetti) Pojarkova; *L. montanus* (Hutchinson) Pojarkova; *L. nanus* P. T. Li; *L. yunnanensis* P. T. Li.

Erect shrubs, 0.5–4 m tall, monoecious (rarely dioecious). Branchlets longitudinally ribbed, sometimes terete, light green to brown. Stipules ovate to triangular, base truncate to cordate or auriculate, apex acute to acuminate, ferruginous to almost black; petiole 0.5–8 × 0.15–0.4 mm; leaf blade ovate to lanceolate, sometimes oblong or orbicular, (0.5–)0.8–3(–5) × (0.3–)0.4–1.5(–2.3) cm, membranous to papery, drying concolorous to discoloured green to yellow-green, brown, gray, or dark red, both surfaces glabrous to densely hirsute, base acute to truncate,

rarely cordate, apex obtuse to acuminate, usually acute, sometimes mucronate; secondary veins 3–6 pairs. Inflorescences unisexual or bisexual, male inflorescence axis 0–0.1(–3) mm. Male flowers 1–4 per fascicle, 2–5 mm in diam.; pedicel 3–12 mm; sepals obovate to oblong, apex rounded, 1.8–3.5 × 0.8–1.8 mm, rarely with 1 or 2 digitate glands at base; petals obovate to spatulate or elliptic, 1–1.8 × 0.3–1 mm, apex rounded to truncate; disk bilobed for 1/3–2/3 of length. Female flowers 1 or 2 per fascicle, 3–6 mm in diam., rotate; pedicel 6–14 mm; sepals ovate to obovate or oblong, 1–3.5 × 0.8–2.5 mm, apex rounded to cuspidate, often with 1 or 2 digitate glands at base; petals obovate, 0.2–0.6 × 0.2–0.3 mm, apex rounded; disk bilobed for 1/3–1/2 of length; ovary 3-locular, glabrous to hirsute; styles 3, glabrous. Fruiting pedicel 7–22 mm; sepals not accrescent; capsule smooth to faintly reticulate, glabrous to hirsute, drying red-brown to brown. Seed smooth, yellow to red-brown.

Stony slopes, open scrub or mixed forest understories on a variety of substrates; sea level to 3000 m. Gansu, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan [Myanmar, Pakistan, Russia (N Caucasus); SW Asia (Abkhazia, Georgia, Iran)].

Leptopus chinensis encompasses a great variety of flexible phenotypes, several of which have been described as separate species. Leaf size and overall appearance can also vary with plant age. *Leptopus chinensis* is cultivated in many botanic gardens in Europe and North America, usually labeled as *L. colchicus*.

Leptopus yunnanensis falls within the polymorphic species *L. chinensis*. The type of *L. yunnanensis* has cordate leaf blade bases, wide acuminate female sepals with digitate glands at the base, and a yellowish drying color. However, these characters vary independently from one another over a wide geographic range, and many plants have intermediate characteristics.

Fl. China 11: 169–172. 2008.