

186. SPODIOPOGON Trinius, Fund. Agrost. 192. 1820.

大油芒属 da you mang shu

Chen Shouliang (陈守良); Sylvia M. Phillips

Eccoilopus Steudel.

Perennials, often rhizomatous. Culms erect, many-noded, simple or branched. Leaf blades linear to lanceolate, flat, sometimes narrowed to a pseudopetiole; ligule membranous, often hairy on margin or back. Inflorescence terminal, an open or contracted panicle with elongate central axis, primary branches subverticillate, typically capillary, smooth, bearing 1 or more racemes; racemes short, rachis fragile or tough, sessile and pedicelled spikelet of a pair similar, both pedicelled when rachis tough, both fertile, rarely spikelets solitary; rachis internodes and pedicels slender or thickened upward, often with cupular apex. Spikelets usually lanceolate, scarcely compressed; callus subglabrous to shortly bearded; glumes equal, firmly papery, lower glume rounded on back, puberulous to villous, closely many-veined, veins prominent, raised into ridges, apex acute to shortly awned; upper glume usually resembling lower glume, sometimes keeled; lower floret often staminate, lemma lanceolate to ovate, palea usually present; upper lemma deeply 2-lobed, awned from sinus; awn geniculate. $x = 10$.

Fifteen species: Turkey eastward to India, Thailand, and Japan, one species extending northward to Siberia; nine species (six endemic) in China.

Species with a tough rachis and pedicellate spikelets are sometimes separated as the genus *Eccoilopus*. However, the racemes have distinct joints in these species, so the lack of disarticulation at maturity appears to be a secondary development. The spikelets are typical of *Spodiopogon*.

- 1a. Racemes not disarticulating at maturity; spikelets of a pair both pedicelled.
 - 2a. Culms decumbent at base, branched; leaf blades lanceolate, 9–15 cm 1. *S. bambusoides*
 - 2b. Culms erect, not branched; leaf blades linear or linear-lanceolate, 15–60 cm.
 - 3a. Spikelets narrowly lanceolate, 5–6 mm; awn 12–18 mm 2. *S. cotulifer*
 - 3b. Spikelets broadly lanceolate, 4–5 mm; awn 0–5 mm 3. *S. formosanus*
- 1b. Racemes disarticulating at maturity; spikelets of a pair 1 sessile and 1 pedicelled, or spikelets solitary.
 - 4a. Lower leaf blades sagittate with long pseudopetiole 4. *S. sagittifolius*
 - 4b. Lower leaf blades not sagittate, pseudopetiole present or not.
 - 5a. Plant tufted; leaf blades pseudopetiolate; panicle branches 5–15 cm 5. *S. duclouxii*
 - 5b. Plant rhizomatous; leaf blades not pseudopetiolate; panicle branches 2–6(–8) cm.
 - 6a. Primary branches of panicle much branched, branchlets many.
 - 7a. Leaf blades villous; racemes of 7–11 spikelets 6. *S. dubius*
 - 7b. Leaf blades glabrous or abaxial surface tuberculate-hispid; racemes of 1–3 spikelets 7. *S. yuexiensis*
 - 6b. Primary branches simple or sparsely branched, branchlets few or none.
 - 8a. Culms 60–200 cm tall, not branched; leaf blades 10–40 cm; awn 10–15 mm 8. *S. sibiricus*
 - 8b. Culms 20–50 cm tall, branched; leaf blades 4–8 cm; awn 7–10 mm 9. *S. tainanensis*

1. *Spodiopogon bambusoides* (P. C. Keng) S. M. Phillips & S. L. Chen, **comb. nov.**

竹油芒 zhu you mang

Basionym: *Eccoilopus bambusoides* P. C. Keng, Guihaia 13: 320. 1993.

Perennial, tufted. Culms decumbent at base, rooting at lower nodes, hard, 1–1.4 m tall, 2–3 mm in diam., branched. Leaf sheaths smooth, glabrous, lower blades disarticulating from sheaths; leaf blades lanceolate, 9–15 × 1–1.7 cm, smooth, glabrous, base cuneate, apex acuminate; ligule ca. 1 mm, ciliate. Panicle elliptic in outline, 10–12 cm; branches spreading, 3–5 cm, undivided below middle, much branched above, ultimate branchlets shortly bearded at apex and bearing a spikelet pair or 3 spikelets; spikelets of a pair both pedicellate, pedicels unequal, clavate upward, shorter pedicel stout. Spikelets 4–4.7 mm; callus hairs ca. 0.7 mm; lower glume lanceolate-oblong, pilose, veins scaberulous, apex subacute or minutely mucronate; upper glume obtuse; lower floret staminate, palea well developed; upper lemma 2-lobed to below middle; awn 6–8

mm. Anthers 2.8–3 mm. Fl. and fr. Sep–Nov.

- Grassy mountain slopes. Guangxi, Guizhou.

2. *Spodiopogon cotulifer* (Thunberg) Hackel in A. Candolle & C. Candolle, Monogr. Phan. 6: 187. 1889.

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Andropogon cotulifer Thunberg in Murray, Syst. Veg., ed. 14, 903. 1784; *Eccoilopus andropogonoides* Steudel; *E. cotulifer* (Thunberg) A. Camus; *E. cotulifer* var. *sagittiformis* Ohwi; *Eulalia cotulifera* (Thunberg) Munro; *Miscanthus cotulifer* (Thunberg) Benth; *Saccharum cotuliferum* (Thunberg) Roberty.

Perennial. Culms solitary, erect, 60–150 cm tall, 3–8 mm in diam., unbranched. Leaf sheaths smooth, papery; leaf blades linear-lanceolate, 15–60 × 0.8–2 cm, scabrid, abaxial surface sparsely hispid, adaxial surface villous above ligule, base narrowed, lower blades pseudopetiolate, apex finely acute; ligule 2–3 mm. Panicle open, ovate-oblong in outline, 15–30 cm; branches capillary, flexuous, 3–10 cm, usually tipped

by a single raceme, infrequently branched; racemes 3–10-noded, articulation lines present, shortly bearded, not disarticulating at maturity, spikelets of a pair both pedicellate; rachis internodes 4–7 mm, filiform, apices swollen; pedicels unequal, clavate upward, shorter pedicel stout. Spikelets 5–6 mm; callus hairs ca. 1 mm; lower glume narrowly lanceolate, subglabrous to hispid, veins scabrid, margins densely hispid, apex emarginate, shortly awned to 1.5 mm; upper glume similar; lower floret sterile, palea narrow; upper lemma 2-lobed to middle; awn 12–18 mm. Anthers 2.5–3 mm. Fl. and fr. Sep–Nov. $2n = 40$.

Grassy hillsides, valleys, roadsides; 200–1000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [N India, Japan, Kashmir, S Korea].

The spikelets drop very readily at maturity, leaving slender, articulated raceme axes bearing paired, clavate pedicels of distinctive and easily recognizable appearance.

3. *Spodiopogon formosanus* Rendle, J. Linn. Soc., Bot. 36: 351. 1904.

台湾油芒 tai wan you mang

Eccoilopus formosanus (Rendle) A. Camus; *E. formosanus* var. *tohoensis* (Hayata) Honda; *E. taiwanicus* Honda; *E. tohoensis* (Hayata) A. Camus; *Spodiopogon kawakamii* Hayata; *S. kawakamii* var. *sativus* Honda; *S. tohoensis* Hayata.

Perennial, shortly rhizomatous. Culms erect, 60–130 cm tall, 2.5–5 mm in diam., unbranched. Leaf sheaths glabrous, mouth tuberculate-hispid; leaf blades linear-lanceolate, 20–50 × 1–1.5 cm, glabrous, abaxial surface smooth, adaxial surface scabrid, base narrowed, lower blades pseudopetiolate, apex acute; ligule 2–3 mm. Panicle open, ovate in outline, 5–15 cm; branches 3–6 cm, distal part branched; racemes 1–3-noded, articulation lines present, not bearded, not disarticulating at maturity, spikelets of a pair both pedicellate; rachis internodes 2–4 mm; pedicels unequal, clavate upward, shorter pedicel stout. Spikelets 4–5 mm, plump; callus hairs 0.2–0.5 mm; lower glume broadly lanceolate, glabrous to hispid, veins smooth except near apex, apex emarginate, minutely mucronate; upper glume with mucro to 0.5 mm; lower floret sterile; upper lemma 2-lobed in upper 1/3; awn 0–5 mm. Anthers 2–3 mm. Fl. and fr. summer–autumn.

- Dry mountain slopes; 1000–2000 m. Taiwan.

This species has been cultivated as a grain crop in the uplands of Taiwan.

4. *Spodiopogon sagittifolius* Rendle, J. Linn. Soc., Bot. 36: 352. 1904.

箭叶大油芒 jian ye da you mang

Perennial from a short knotty rhizome. Culms erect, 60–100 cm tall, 2–3 mm in diam., 3–4-noded, unbranched. Leaf sheaths glabrous; leaf blades linear-lanceolate, 8–30 × 0.5–1.5 cm, abaxial surface tuberculate-pilose, adaxial surface glabrous, margins smooth, base of lower blades deeply sagittate with pi-

lose pseudopetiole up to 10 cm and acuminate lobes to 1.5 cm, apex acuminate; ligule 2–6 mm. Panicle open, lanceolate in outline, 9–20 cm; branches 2–5 cm, pilose in axils, unbranched, tipped by a solitary spikelet, a spikelet pair, or 3 spikelets; disarticulating at maturity, rachis internodes (when present) and pedicels slenderly clavate, 3/4 as long to equaling spikelets, shortly ciliate. Spikelets 4–6 mm, yellowish green; callus hairs ca. 1.5 mm; lower glume lanceolate-oblong, pilose, 11–13-veined, veins smooth, apex subacute; upper glume similar, 8–11-veined, emarginate; lower floret staminate, palea well developed; upper lemma 2-lobed to below middle; awn 12–20 mm. Anthers 3.5–4 mm. Fl. and fr. autumn.

- Mountain slopes, forests, grasslands; 1500–1800 m. Yunnan.

Spodiopogon lacei Hole, from Bhutan, NE India, N Myanmar, and N Thailand, is another species with sagittate leaf blades. It differs in its more robust culms to 2.5 m tall and 3–4 mm thick; denser, brownish panicle of 2- or 3-noded, dense racemes with shorter, clavate rachis internodes; and by the upper glume of the sessile spikelet, which is strongly keeled and smooth without prominent veins.

5. *Spodiopogon duclouxii* A. Camus, Bull. Mus. Natl. Hist. Nat. 27: 551. 1921.

滇大油芒 dian da you mang

Perennial, tufted from a tough rootstock. Culms erect, 120–160 cm tall, 3–5 mm in diam., 8–10-noded, unbranched. Leaf sheaths glabrous; leaf blades linear-lanceolate, 30–60 × 1.2–1.8 cm, abaxial surface thinly pilose, adaxial surface scaberulous, base of lower blades narrowed into up to 8 cm pseudopetiole, upper blades narrowed to sheath, apex finely acuminate; ligule 1.4–1.5 mm, back villous. Panicle open, 10–30 cm; branches in distant whorls, capillary, flexuous, 5–15 cm, mostly unbranched, tipped by a raceme; racemes 2–5-noded with 7–13 spikelets, sometimes branched with up to 40 spikelets, disarticulating at maturity, one spikelet of a pair sessile, the other pedicellate; rachis internodes and pedicels slenderly clavate, margins ciliate, hairs 0.7–1 mm. Spikelets 4.5–5 mm; callus hairs ca. 1 mm; lower glume lanceolate, thinly pilose, veins smooth below middle, scaberulous above, apex acuminate; upper glume ciliate on margins, acuminate or emarginate and mucronate; lower floret sterile, palea reduced; upper lemma 2-lobed to middle; awn 5.5–8 mm. Anthers 2–3 mm. Fl. and fr. Aug–Nov.

- Moist grasslands. Sichuan (Miyi), Yunnan.

This is a robust species lacking creeping, scaly rhizomes. The pseudopetiolate lower leaf blades are often missing on herbarium specimens, but the species can also be recognized by the long, flexuous panicle branches.

6. *Spodiopogon dubius* Hackel in A. Candolle & C. Candolle, Monogr. Phan. 6: 186. 1889.

绒毛大油芒 rong mao da you mang

Perennial, with spreading scaly rhizomes. Culms solitary or tufted, erect, 1–2 m tall, 4–5 mm in diam., branched or unbranched. Leaf sheaths glabrous to villous, woolly at apex; leaf blades broadly linear, 20–30 × 1.2–1.5 cm, thinly appressed-pilose to densely villous, base rounded, apex long acuminate; lig-

ule ca. 0.3 mm, margin densely ciliate. Panicle dense, narrowly oblong in outline, 10–22 cm; branches 2–5 cm, branchlets many, short, pilose in axils; racemes 2–4-noded with 7–11 spikelets, disarticulating at maturity, one spikelet of a pair sessile, the other pedicellate; internodes and pedicels 2–2.5 mm, slender with expanded tips, densely ciliate. Spikelets 4–5 mm; callus hairs 1.5–2 mm; lower glume narrowly lanceolate, villos with ca. 3 mm hairs, veins smooth, apex subacute or emarginate; upper glume villous on keel, apex acute; lower floret sterile, palea absent; upper lemma 2-lobed to middle; awn 8–10 mm. Anthers 1.8–2.3 mm. Fl. and fr. summer–autumn.

Mountain slopes, forest margins; ca. 2400 m. Xizang [NW India, Nepal].

The name “*Spodiopogon villosus* L. Liu” (Fl. Reipubl. Popularis Sin. 10(2): 58. 1997, not Nees, 1838) belongs here, but was not validly published because no Latin description was provided.

7. *Spodiopogon yuexiensis* S. L. Zhong, J. S. W. Agric. Coll. 1982(4): 77. 1982.

白玉大油芒 bai yu da you mang

Perennial, rhizomatous. Culms 0.6–2 m tall, 2–6 mm in diam. Leaf sheaths glabrous; leaf blades lanceolate or linear-lanceolate, 8–30 × 0.3–2.2 cm, glabrous or abaxial surface tuberculate-hispid, margins scabrid, base narrow, apex acuminate; ligule 0.5–1 mm. Panicle open, lanceolate-oblong in outline, 6–27 cm; branches 2–8 cm, much branched, ultimate branchlets articulated, bearded at articulation; racemes mostly reduced to a solitary, readily disarticulating spikelet, or 1 or 2 pedicelled spikelets also present; branchlets and pedicels slender, glabrous, 6–7 mm, as long as or longer than spikelets. Spikelets 4.5–5 mm; callus hairs 2–3 mm, soft; lower glume lanceolate, softly pilose, hairs ca. 2 mm, grayish white or purplish; lower floret staminate, palea well developed; upper lemma 2-lobed to below middle; awn 8–12 mm. Anthers 3–3.5 mm. Fl. and fr. Jul–Nov.

• Roadsides, river banks, thickets; 1600–3000 m. W Sichuan.

Most spikelets on the type of *Spodiopogon yuexiensis* fall singly without any trace of an attached rachilla segment or pedicel.

The name “*Spodiopogon baiyuensis* L. Liu” (Fl. Reipubl. Popularis Sin. 10(2): 57. 1997) belongs here, but was not validly published because no Latin description was provided.

8. *Spodiopogon sibiricus* Trinius, Fund. Agrost. 192. 1820.

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Perennial, with spreading scaly rhizomes. Culms solitary, erect, 70–200 cm tall, 2–4 mm in diam., unbranched. Leaf sheaths glabrous; leaf blades linear-lanceolate, (10–)20–40 × 0.8–2 cm, glabrous or pubescent, base narrowed almost to midrib on lower blades, apex setaceously acuminate; ligule 1–2 mm. Panicle loosely contracted, narrowly lanceolate in outline, 10–20 cm; branches 2–6 cm, unbranched or lower branches branched once or twice, branchlets glabrous or pilose in axils; racemes 2–3-noded with 7–9 spikelets, disarticulating at maturity, one spikelet of a pair sessile, the other pedicellate; rachis internodes and pedicels 2.5–5 mm, slenderly clavate, ciliate, hairs 1.5–2 mm. Spikelets 4.5–6 mm; callus hairs 1.5–2.5

mm; lower glume broadly lanceolate, pilose with soft spreading hairs, veins smooth except near apex, apex acute or slightly emarginate, sometimes mucronate; upper glume acute or mucronate; lower floret staminate, palea well developed; upper lemma 2-lobed to lower 1/3; awn 10–15 mm. Anthers ca. 3 mm. Fl. and fr. summer–autumn. $2n = 40$.

Mountain slopes, roadsides, forest margins; below 1100 m. Anhui, Gansu, Guangdong, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shanxi, Shandong, Sichuan, Zhejiang [Japan, Korea, Mongolia, Russia (Siberia)].

1a. Spikelets 4.5–6 mm 8a. var. *sibiricus*
1b. Spikelets 6.5–8 mm 8b. var. *grandiflorus*

8a. *Spodiopogon sibiricus* var. *sibiricus*

大油芒(原变种) da you mang (yuan bian zhong)

Andropogon sibiricus (Trinius) Steudel; *Saccharum sibiricum* (Trinius) Roberty; *Spodiopogon depauperatus* Hackel var. *purpurascens* Honda; *S. sibiricus* var. *purpurascens* (Honda) Honda; *S. sibiricus* var. *tenuis* (Kitagawa) Kitagawa; *S. sibiricum* var. *tomentosus* Koidzumi; *S. tenuis* Kitagawa.

Leaf blades 20–40 cm; rachis internodes 2.5–5 mm; spikelets 4.5–6 mm.

Mountain slopes, roadsides, forest margins. Anhui, Gansu, Guangdong, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Zhejiang [Japan, Korea, Mongolia, Russia (Siberia)].

8b. *Spodiopogon sibiricus* var. *grandiflorus* L. Liu ex S. M. Phillips & S. L. Chen, var. nov.

大花大油芒 da hua da you mang

Type: China. Sichuan: Barkam Xian, 2600 m, 1 Sep 1957, *Li Xin* 71733 (holotype, PE).

Haec varietas a S. sibirico var. *sibirico spiculis majoribus 7–8 mm longis differt.*

Leaf blades 10–19 cm; rachis internodes 5–7 mm; spikelets 6.5–8 mm.

- 2400–2600 m. Sichuan.

This is a local variant with larger spikelets than usual. The type specimen was labeled at varietal rank by L. Liu, but the taxon was described at specific rank, as "*Spodiopogon grandiflorus* L. Liu" (Fl. Reipubl. Popularis Sin. 10(2): 57. 1997), which name was not validly published because no Latin description was provided.

9. *Spodiopogon tainanensis* Hayata, Bot. Mag. (Tokyo) 21: 53. 1907.

台南大油芒 tai nan da you mang

Spodiopogon gracilis Honda; *S. hayatae* Honda; *S. hogoensis* Hayata; *S. ramosus* Keng; *S. tainanensis* var. *hogoensis* (Hayata) Ohwi; *S. tainanensis* var. *takeoi* (Hayata) Honda; *S. takeoi* Hayata.

Perennial, rhizomatous. Culms erect or ascending, slender, 40–70 cm tall, 1–2 mm in diam., branched. Leaf sheaths gla-

brous or tuberculate-pilose upward and along margins; leaf blades linear-lanceolate, 6–14 × 0.3–0.8 cm, thinly pilose to glabrescent, narrowed to base, apex acuminate; ligule 1–2 mm. Panicle lax, narrowly lanceolate to ovate in outline, 5–12 cm; branches 2–4 cm, simple or once branched; racemes 1–3-noded with 3–9 spikelets, disarticulating at maturity, one spikelet of a pair sessile, the other pedicellate; rachis internodes 3–4 mm; pedicels 2.5–3 mm, ciliate, hairs up to 3 mm. Spikelets 4.5–6 mm; callus hairs 1–1.5 mm; lower glume lanceolate, softly pilose to silky villous, apex subacute or mucronate; upper glume acute, mucronulate; lower floret staminate, palea well developed; upper lemma 2-lobed to lower 1/4–1/3; awn 7–10 mm. Anthers 2.5–3.2 mm. Fl. and fr. Jun–Oct. $2n = 20^*$.

- Grassy mountain slopes; 2300–3400 m. S Gansu, Jiangsu, Sichuan, Taiwan, Xizang, Yunnan.

Species exclusae

The following two species names were not validly published because no Latin description was provided and no type was indicated. They do not appear to correspond with any known species of *Spodiopogon*. It has not been possible to validate the names here, as the specimens on which they were based have not been located.

"*Spodiopogon ludingensis*" L. Liu, Fl. Reipubl. Popularis Sin. 10(2): 55. 1997, nom. inval.

泸定大油芒 lu ding da you mang

Perennial. Culms erect, ca. 80 cm tall, 3–4 mm in diam., 3–5-noded. Leaf blades lanceolate, 10–20 × 0.5–1.2 cm; puberulous. Panicle purplish black, ca. 10 cm; branches 1–3 cm; racemes 2–3-noded, one spikelet of a pair sessile, the other pedicellate. Spikelets ca. 4 mm; callus glabrous; lower glume 9–11-veined, veins scabrid, puberulous between veins, apex obtuse or truncate; upper lemma 2-lobed to middle; awn 6–7 mm. Anthers ca. 1.5 mm. Fl. and fr. Aug–Oct.

- Dry mountain slopes; 1500–1600 m. W Sichuan.

"*Spodiopogon paucistachyus*" L. Liu, Fl. Reipubl. Popularis Sin. 10(2): 57. 1997, nom. inval.

寡穗大油芒 gua sui da you mang

Perennial. Culms erect, stiff, ca. 50 cm tall, 2–4 mm in diam., many-noded, farinose below node. Leaf sheaths purplish, longer than internodes; leaf blades lanceolate, 5–10 × 0.4–0.8 cm, puberulous, base contracted into false petiole, lower margin softly tuberculate-hairy, apex acute. Panicle lax, ca. 5 cm; branches 1–2 per node; racemes with 1 or 2 spikelet pairs; rachis internodes glabrous; pedicels pilose. Spikelets 6–6.5 mm; callus hairs ca. 2 mm; lower glume 9-veined, lower back softly pilose with ca. 3 mm hairs; upper lemma 2-lobed to middle; awn ca. 12 mm. Anthers ca. 2.5 mm. Fl. and fr. summer–autumn.

- Mountain slopes; 2600–2700 m. W Sichuan.

