
Notes on Grasses (Poaceae) for the *Flora of China*, V. New species in *Cymbopogon*

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ABSTRACT. Two new species of *Cymbopogon* are described from China, *C. liangshanensis* and *C. minor*. Both belong to *Cymbopogon* series *Proceri*, previously mainly confined to Australia. A third species in this series, *Cymbopogon quinhonensis* from Vietnam, is transferred from *Andropogon*.

Key words: China, *Cymbopogon*, Vietnam.

This paper describes two new species in *Cymbopogon* Sprengel from China. Both were recognized as new by Liu Liang, who died in 2001, but neither has been validly published. They represent the first records from continental Asia of *Cymbopogon* series *Proceri* Soenarko, the most primitive series in the genus, which until now was thought to be confined to Australia and parts of Indonesia and New Guinea. The apparent disjunct distribution is bridged by one species in Vietnam, here transferred from *Andropogon* L. to *Cymbopogon*.

Cymbopogon liangshanensis L. Liu ex S. M. Phillips & H. Peng, sp. nov. TYPE: China. Sichuan: Liangshan, 21 Aug. 1964, *Zhu Tai-ping* 411 (holotype, PE).

Haec species omnibus sinensis racemis non deflexis cum spiculis homogamis vestigialibus vel nullis, spiculis pedicellatis redactis manifeste distinguenda; *C. proceri* culmis 50–110 cm (non 100–200 cm) altis, internodiis rachidis pedicellis ciliatis pilis 0.5–1.5 mm (non 6 mm) differt.

Perennial; culms solitary or in small tufts, slender, 50–110 cm tall, ca. 1.5 mm diam., 4- to 6-noded. Leaf blades linear, gray green, 20–30 cm × 3–5 mm, slightly scaberulous, lower blades narrowed almost to midrib toward base; ligule scarious, 1.5–2.5 mm. Inflorescence a spathate compound panicle, 30–40 cm long; branches laxly ascending, bearing several tiers of spathes. Spatheoles greenish brown, narrowly lanceolate, 2–2.5 cm. Racemes paired, 1.5–1.8 cm, 3- to 5-noded; peduncle in-

cluded within spatheole, glabrous. Raceme bases subequal, linear, not deflexing, apices cupuliform, scarious; homogamous spikelets often absent, or one reduced or vestigial pair present on lower raceme base; rachis internodes and pedicels subequal, slenderly linear, ca. 3/4 length of sessile spikelet, ciliate with ca. 0.5 mm long white trichomes increasing to ca. 1.5 mm at apex, apices of rachis internodes and pedicels expanded, cupuliform, scarious, toothed. Sessile spikelet 3.7–4 mm; callus ca. 0.5 mm, shortly and sparsely pilose; lower glume narrowly elliptic oblong, papyraceous, laterally keeled with inflexed margins, glabrous, back shallowly concave below middle, keels scabrid, unwinged, 2- to 4-veined between keels above middle, narrowed to 2-denticulate apex; upper glume acute; lower floret reduced to an oblong hyaline lemma; upper lemma 2-lobed, awned from sinus; awn geniculate, glabrous, 1.3–1.5 cm; pedicelled spikelet narrow, reduced to the glumes, lower glume 2.5–3.5 mm, upper glume 1–2 mm. Caryopsis not seen.

Distribution. China: southwest Sichuan.

Liu Liang (1997: 197, fig. 48, 1–4) included this species in her account of the genus *Cymbopogon* for volume 10(2) of the Chinese-language *Flora of China*, with a reference to her publication “Plant Resources of Gramineae 11: 14. 1989.” In fact, this work has never been published, and her description in 1997 was without a validating Latin description. The species is validated here, and the opportunity is taken to provide a full description in English.

Cymbopogon liangshanensis differs from all other members of the genus in China in possessing a rather lax spathate panicle, and racemes with slender, non-deflexing raceme bases. The homogamous spikelet pair normally present on the lower raceme base in *Cymbopogon* is reduced or vestigial, or even completely absent, and the pedicelled spikelets are



Figure 1. *Cymbopogon minor* B. S. Sun & R. Zhang ex S. M. Phillips & H. Peng. —A. Habit. —B. Spatheole and raceme bases. —C. Spikelet pair. —D. Pedicel with pedicelled spikelet and rachis internode. Drawn from the holotype, Team of Northeastern Yunnan 1466 (YUNU), by Margaret Tebbs.

similar, being narrow and reduced to the glumes. In these characters the taxon approaches the closely related genus *Andropogon*. However, the subequal raceme bases, and the presence of a homog-

amous pair (albeit often very small), which is normally completely absent in *Andropogon*, are indicative of *Cymbopogon*.
Cymbopogon liangshanensis appears to be a first

record for continental Asia of *Cymbopogon* series *Proceri*, whose members are otherwise mainly confined to Australia. This is the most primitive series in the genus, including species with equal, frequently non-deflexing raceme bases and reduced pedicelled spikelets. It is distinguished from the Australian *C. procerus* (R. Brown) Domin by its smaller habit and much shorter trichomes in the racemes.

Cymbopogon minor B. S. Sun & R. Zhang ex S. M. Phillips & H. Peng, sp. nov. TYPE: China. Yunnan: Qiaojia County, Xiaohe, bank of Niu-lan Jiang [river], roadside in grassland, 900 m, 28 Oct. 1964, *Team of Northeastern Yunnan 1466* (holotype, YUNU). Figure 1.

Haec species *C. liangshanensis* affinis, sed laminis foliorum angustioribus (1–2 mm non 3–5 mm latis), spatheolibus angustioribus brevioribus (1.2–1.5 cm non 2–2.5 cm longis), praecipue basibus racemorum deflexis differt.

Perennial, tufted; culms wiry, 60–70 cm tall, 1 mm diam., ca. 4-noded. Leaf blades narrowly linear, pale green, ca. 20 cm \times 1–2 mm, smooth, glabrous, narrowed toward base; ligule scarious, 1.3–2 mm. Inflorescence a narrow spathate panicle, moderately dense, up to 30 cm long, spathes and spatheoles in clusters; spatheoles red, narrowly linear, 1.2–1.5 cm; racemes paired, 4- or more-noded (no complete racemes on type); peduncle slender, glabrous, ca. 1/2 length of spatheole, shortly exerted at maturity; raceme bases subequal, short, flattened, deflexed at maturity, pubescent, bearded at apex with ca. 2.5 mm long hairs, apices cupuliform, scarious. Homogamous spikelets reduced, one pair present on lower raceme base, lower spikelet of pair resembling pedicelled spikelets, upper spikelet vestigial; rachis internodes and pedicels subequal, slenderly linear, ca. 3/4 length of sessile spikelet, densely ciliate with ca. 0.7 mm long white trichomes increasing to 2–3 mm at apex, apex of internode expanded, cupuliform, scarious, toothed, apex of pedicel similar but smaller; sessile spikelet 3.8–4 mm; callus ca. 0.3 mm, shortly bearded, a trichome tuft projecting into base of lower glume concavity; lower glume narrowly oblong, herbaceous, margins inflexed, lightly keeled below middle, sharply keeled above, glabrous, back shallowly concave below middle, keels scabrid, unwinged, 2- to 4-veined between keels above middle, narrowed to emarginate apex; upper glume acute; lower floret reduced to an oblong hyaline lemma; upper lemma 2-lobed, awned from sinus; awn geniculate, glabrous, 1.2–1.3 cm; pedicelled spikelet narrow, 0.5–

2.5 mm, reduced to empty lower glume. Caryopsis not seen.

Distribution. China: northeast Yunnan.

This species is known only from the type specimen, which bears two determination labels, “*Hyparrhenia gracilis* L. Liu, sp. nov.” and “*Cymbopogon minor* B. S. Sun et R. Zhang, sp. nov.” Neither of these names has been published. The taxon is clearly excluded from *Hyparrhenia* by the short callus of the sessile spikelet, which is inserted into the expanded apex of the rachis internode below. It was correctly placed in *Cymbopogon* by B. S. Sun and R. Zhang, whose specific epithet is taken up here.

Cymbopogon minor resembles *C. liangshanensis*, as described above, in its reduced homogamous and pedicelled spikelets. The small sessile spikelets are also similar, but differ slightly in shape, texture, and a more strongly bearded callus with a trichome tuft. However, it differs markedly by its strongly deflexing, flattened, bearded raceme bases. This makes it rather anomalous in *Cymbopogon* series *Proceri*, into which it would otherwise fit comfortably.

A species described in *Andropogon* from Vietnam by A. Camus also has slender, equal, non-deflexing raceme bases with absent or reduced homogamous pairs, and reduced pedicelled spikelets. It also is best placed in *Cymbopogon* series *Proceri*, and is transferred to the genus here.

Cymbopogon quinhonensis (A. Camus) S. M. Phillips & H. Peng, comb. nov. Basionym: *Andropogon quinhonensis* A. Camus, Bull. Mus. Hist. Nat. (Paris) 25: 204. 1919. TYPE: Vietnam. Annam: Qui-nhon, *Balansa* 4872 (holotype, P not seen, K photo).

A. Camus (1919) remarked on the similarity of this grass to *Cymbopogon* in the protologue. It has more conspicuously white-villous racemes than *C. liangshanensis*, and the lower glume of the sessile spikelet lacks intercarinal veins.

Additional specimen seen. VIETNAM. **Annam:** Tourane [Da Nang], border of thickets, May–July 1927, J. & M. S. Clemens 4454 (K).

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