

126. CLEISTOGENES Keng, Sinensia 5: 147. 1934.

隐子草属 yin zi cao shu

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Kengia Packer, nom. illeg. superfl.

Perennial. Culms usually tufted, many-noded. Leaf blades linear or linear-lanceolate, often inrolled when dry, lower blades usually disarticulating from the sheaths; ligule a line of hairs, sometimes on a very short membranous base. Inflorescence of often few-spiculate lax racemes spaced along a central axis, or a sparsely branched panicle, spikelets distant or loosely imbricate, shortly pedicellate; axillary cleistogamous spikelets also present concealed within the upper leaf sheaths. Spikelets laterally compressed, florets 1 to several, loosely spaced, rachilla slender, disarticulating above glumes and between florets, rachilla internodes pubescent at apex; glumes membranous, very unequal with the lower shorter, 1–5(–7)-veined; lemmas narrowly lanceolate to ovate, 3–5(–7)-veined, keeled, usually pubescent near margins, apex narrow, bidentulate or rarely entire, acute, mucronate or shortly awned; palea keels glabrous or ciliolate. Floret callus shortly bearded. Anthers 3, linear.

About 13 species: S Europe and Turkey eastward through C Asia, Pakistan, and NW India to Japan, concentrated in NE China; ten species (five endemic) in China.

A large proportion of the species comprises plants of semi-arid regions, where they provide useful fodder. The genus is remarkable for the regular formation of cleistogamous spikelets in the axils of the upper leaf sheaths that ensure the production of seed even under unfavorable climatic conditions. These cleistogamous spikelets generally have fewer florets, smaller, hyaline glumes, and narrower lemmas with longer awns than the chasmogamous spikelets.

The glumes are very variable even in the terminal, exerted inflorescences. Those of the lower spikelets, near the inflorescence base, tend to be smaller and fewer nerved than those above. Spikelets near the top of the inflorescence should be inspected. Awn measurements should be taken on the lowest floret of a spikelet near the top.

- 1a. Culms forming dense tussocks, fasciculately branched; uppermost internode elongate, serpentine when dry 1. *C. squarrosa*
- 1b. Culms solitary or tufted, unbranched or simply branched; uppermost internode not obviously longer than the rest, straight.
 - 2a. Lemmas awnless or shortly mucronate; mucro less than 0.5 mm.
 - 3a. Lemmas ovate, 3–4.5 mm; panicle branches spreading; culm bases slightly swollen with whitish old sheaths 2. *C. songorica*
 - 3b. Lemmas lanceolate, 4–6 mm; panicle branches laxly ascending; culm bases slender, old sheath remnants in dense clusters.
 - 4a. Lowest lemma 5–7 mm; leaf blades ascending, uppermost not noticeably shorter 3. *C. ramiflora*
 - 4b. Lowest lemma 4–5.5 mm; leaf blades patent, uppermost much shorter than blades at culm center 4. *C. mucronata*
 - 2b. Lemmas awned; awn 0.5–9 mm.
 - 5a. Leaf blades narrowly linear, 1–2(–2.7) mm wide; culms 0.5–1.5 mm in diam.
 - 6a. Glumes acuminate, lower glume 1.4–4.3 mm, 1(–3)-veined; awn 0.8–2.5 mm 5. *C. festucea*
 - 6b. Glumes obtuse to acute, lower glume 0.8–2 mm, 0–1-veined; awn 0.5–1 mm 6. *C. caespitosa*
 - 5b. Leaf blades linear to narrowly lanceolate, 2–9 mm wide; culms 1–2.5 mm in diam.
 - 7a. Panicle contracted, base included in uppermost leaf sheath; glumes 3–7-veined.
 - 8a. Leaf sheaths glabrous; basal scaly buds present 7. *C. kitagawae*
 - 8b. Leaf sheaths tuberculate-hispid; basal scaly buds absent 8. *C. polyphylla*
 - 7b. Panicle open, exerted from uppermost leaf sheath (if shortly included, glumes not 3–7-veined).
 - 9a. Lower glume 0–1-veined, often obtuse; awn 2–9 mm; lowest branch of panicle up to 4 cm, simple 9. *C. hackelii*
 - 9b. Lower glume 1–3-veined, acuminate; awn 1–2 mm; lowest branch of panicle up to 8 cm, often with branchlets 10. *C. hancei*

1. *Cleistogenes squarrosa* (Trinius) Keng, Sinensia 5: 156. 1934.

糙隐子草 cao yin zi cao

Molinia squarrosa Trinius in Ledebour, Fl. Altaic. 1: 105. 1829; *Cleistogenes andropogonoides* Honda; *C. squarrosa* var. *longearistata* (Rendle) Keng; *Diplachne squarrosa* (Trinius) Maximowicz; *D. squarrosa* var. *longearistata* Rendle; *Kengia andropogonoides* (Honda) Packer; *K. squarrosa* (Trinius) Packer.

Culms densely tufted, forming low tussocks, lacking basal scaly buds, 10–30 cm tall, 0.5–0.8 mm in diam. at base, lower internodes much shorter than their leaf sheaths, upper internodes elongate, serpentine when dry. Leaf sheaths glabrous, the lower imbricate in fascicles; leaf blades narrowly linear, erect, flat or involute, 3–6 × 0.1–0.2 cm, scabrid, apex filiform; ligule ca. 0.2 mm. Panicle depauperate, 4–7 cm, scarcely exceeding leaves, composed of few spikelets borne directly on the central axis or lowermost on patent 2–3-spiculate branchlets. Spikelets

5–10 mm, green or purplish green, florets 2–4; glumes narrowly lanceolate, subacute to acuminate-aristulate; lower glume 1–2.4 mm, 1-veined; upper glume 3–5 mm, 1(–3)-veined; lemmas lanceolate, lowest 5–6 mm, pilose near margins, minutely 2-toothed; awn 2.5–7 mm; palea keels scabrid, extended into 2 mucros to 0.7 mm. Anthers ca. 2.5 mm. Fl. and fr. Jul–Sep.

Grasslands, mountain slopes, dry sandy and stony places. Gansu, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Xinjiang [Kazakhstan, Mongolia, Russia; SW Asia (Caucasus)].

This distinctive species of arid places is recognized by its low mounds of dense foliage, few-flowered panicles of awned spikelets, and the curling, elongate upper internodes of the dried culm.

This is an excellent forage grass.

2. *Cleistogenes songorica* (Roshevitz) Ohwi, J. Jap. Bot. 18: 540. 1942.

无芒隐子草 wu mang yin zi cao

Diplachne songorica Roshevitz, Fl. URSS. 2: 752. 1934; *Cleistogenes mutica* Keng; *Kengia mutica* (Keng) Packer; *K. songorica* (Roshevitz) Packer.

Culms compactly tufted with tomentose roots, bases slightly swollen and clothed in pale papery old sheaths, lacking basal scaly buds, erect or ascending, 15–35(–50) cm tall, ca. 1 mm in diam., unbranched, leafy to base. Leaf sheaths longer than internodes, glabrous but pilose at mouth; leaf blades linear, grayish green, tough, flat or slightly involute, stiffly patent, 2–6 × 0.15–0.25 cm, glabrous, acute; ligule ca. 0.5 mm. Panicle open, 2–5 cm, exserted or not from uppermost leaf sheath; branches pilose in the axils, usually widely spreading, racemose, lowest branch 2–3.5 cm. Spikelets 4–8 mm, green or purple, florets 3–6; glumes lanceolate, 1-veined, acute; lower glume 2–3 mm; upper glume 3–4 mm; lemmas ovate, lowest 3–4.5 mm, pilose on lower flanks and back, apex entire, acute or with mucro less than 0.5 mm; palea keels ciliate. Anthers 1–2 mm. Fl. and fr. Jul–Sep.

Dry, sandy, or stony open grasslands, deserts. Gansu, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Xinjiang [Kazakhstan, Kyrgyzstan, Mongolia, Russia, Turkmenistan, Uzbekistan].

This species of desert steppe is recognized by its dense tufts of gray-green leaves, and awnless, often purple spikelets with broader lemmas than the other species of the genus. The name *Cleistogenes thordii* (*Orinus thordii* in this account) has been misapplied to *C. songorica* in C Asian literature.

This is an excellent forage grass.

3. *Cleistogenes ramiflora* Keng & C. P. Wang, Bull. Bot. Res., Harbin 6(1): 175. 1986.

枝花隐子草 zhi hua yin zi cao

Kengia ramiflora (Keng & C. P. Wang) H. Yu & N. X. Zhao.

Culms tufted, erect or slightly decumbent at base, 25–35 cm tall. Leaf sheaths glabrous but pilose at mouth; leaf blades narrowly linear, flat or involute, ascending, 3–10 × ca. 0.2 cm; ligule short. Panicle narrow, 5–9 cm, lowest branch 2–4 cm.

Spikelets 7–9 mm, florets 3–4; glumes lanceolate, 1-veined; lower glume 2–4 mm; upper glume 4–5 mm; lemmas lanceolate, purplish at margin and apex, lowest 5–6(–7) mm, acute or with a mucro to 0.5 mm; palea slightly shorter than lemma. Anthers ca. 3 mm. Fl. and fr. Jul–Sep.

• Mountain meadows, thickets. Nei Mongol.

No material of this species has been seen. The description is taken from the protologue. The spikelets are very similar to those of *Cleistogenes mucronata*, but the habit is different, as shown in the illustration accompanying the protologue, with softly ascending leaf blades of more or less equal length throughout.

4. *Cleistogenes mucronata* Keng ex P. C. Keng & L. Liu, Acta Bot. Sin. 9: 70. 1960.

小尖隐子草 xiao jian yin zi cao

Cleistogenes gracilis Keng ex P. C. Keng & L. Liu; *Kengia gracilis* (Keng ex P. C. Keng & L. Liu) Packer; *K. mucronata* (Keng ex P. C. Keng & L. Liu) Packer.

Culms densely tufted, clothed at base in old sheath remnants, lacking basal scaly buds, erect, wiry, 30–60 cm tall, 0.5–0.8 mm in diam., unbranched. Leaf sheaths longer than internodes, glabrous but pilose at mouth; leaf blades stiff, patent, longest at culm center, here 3–7 × 0.1–0.2 cm, uppermost 1–2 cm, glabrous, adaxial surface and margins scabrid, abaxial surface smooth, lower blades disarticulating; ligule 0.2–0.3 mm. Panicle open, 5–12 cm, exserted from uppermost leaf sheath; branches laxly ascending or spreading, racemose or lower branches with branchlets, lowest branch 4–8 cm. Spikelets oblong, (6–)8–14 mm, yellowish brown or purplish green, florets 3–8; glumes lanceolate, acute; lower glume 1.6–3.5 mm, 1(–3)-veined; upper glume 3.5–4.5 mm, 1–3-veined; lemmas lanceolate, lowest 4–5 mm, loosely pilose near margins; mucro 0.1–0.2 mm; palea keels ciliate. Anthers 2–3 mm. Fl. and fr. Jul–Sep.

• Rocky hills, mountain slopes. Gansu, Henan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi.

This is a densely tufted, wiry species with clumps of old sheaths at the base, numerous stiff, patent, narrow leaf blades, the uppermost very short, and exserted, flexuose panicles of spikelets with relatively short, inconspicuously mucronate lemmas. It is close to *Cleistogenes festucacea* and perhaps intergrades with that species through forms with slightly longer lemmas and awnlets.

5. *Cleistogenes festucacea* Honda, Rep. First Sci. Exped. Manchoukuo, Sect. IV, 4: 98. 1936.

薄鞘隐子草 bao qiao yin zi cao

Cleistogenes foliosa Keng; *C. kitagawae* Honda var. *foliosa* (Keng) S. L. Chen & C. P. Wang; *C. striata* Honda; *Kengia festucacea* (Honda) Packer; *K. foliosa* (Keng) Packer; *K. kitagawae* (Honda) Packer var. *foliosa* (Keng) H. Yu & N. X. Zhao; *C. longiflora* Keng ex P. C. Keng & L. Liu.

Culms densely tufted, base with old sheath remnants, lacking basal scaly buds, erect, wiry, 30–45 cm tall, 0.5–0.8 mm in diam., unbranched. Leaf sheaths longer than internodes, glabrous but pilose at mouth; leaf blades flat or involute when

dry, ascending to stiffly spreading, $4.5-7 \times 0.12-0.2(-0.27)$ cm, scaberulous especially toward the subulate-involute apex, lower blades disarticulating; ligule ca. 0.5 mm. Panicle lax, slightly flexuose, 7–10 cm, usually shortly exerted from uppermost leaf sheath; branches mostly narrowly ascending, few-spiculate, simple, lowest branch 3–5 cm. Spikelets 6–9 mm, pale green or purple-tinged, florets 2–5; glumes narrowly lanceolate, 1–3(-5)-veined, acuminate; lower glume 1.4–4.3 mm; upper glume (2.5–)3.5–5.7 mm; lemmas narrowly lanceolate, lowest (4.5–)5–6.5 mm, thinly pilose near margins; awn (0.2–)1–2(-2.5) mm; palea keels ciliolate. Anthers 2.2–2.5 mm. Fl. and fr. Aug–Oct.

- Gansu, Hebei, Nei Mongol, Ningxia, Shandong, Shanxi.

This species has a characteristic, densely tufted habit with very slender, wiry culms, narrow, spreading leaf blades and a loose, rather flexuose panicle. However, the spikelet parts are variable, which has led to the application of several different species names. The glumes are usually acuminate and 1-veined or faintly 2- or 3-veined. The name *Cleistogenes striata* was given to an unusually strongly veined variant with up to 5 prominent veins in the glumes and 7 veins in the lemmas. The length of the lemmas and awns is also variable, sometimes even within a single panicle.

6. *Cleistogenes caespitosa* Keng, Sinensia 5: 154. 1934.

丛生隐子草 cong sheng yin zi cao

Kengia caespitosa (Keng) Packer.

Culms densely tufted, base thickened by clustered old leaf sheaths, lacking basal scaly buds, 30–40 cm tall, 0.8–0.9 mm in diam., unbranched. Leaf sheaths longer than the internodes, glabrous but pilose at mouth; leaf blades flat or involute toward apex, stiffly spreading, $3-7.5 \times 0.2-0.4$ cm; ligule ca. 0.5 mm. Panicle open, lax, 4–6 cm; branches spreading at maturity, simple or lowest with branchlets, lowest branch 1–3 cm. Spikelets 5–12 mm, florets (1–)3–6; glumes ovate-lanceolate, obtuse; lower glume 0.8–2 mm, 0–1-veined; upper glume 1.5–3.5 mm, 1–3-veined; lemmas lanceolate, lowest 4–5.5 mm, pilose near margins; awn 0.4–1 mm; palea keels scabrid. Anthers ca. 3 mm. Fl. and fr. Jul–Oct.

- Dry hill slopes, forest margins. Gansu, Hebei, Henan, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi.

This is a variant from the *Cleistogenes festucacea* gene pool with unusually short, obtuse glumes.

7. *Cleistogenes kitagawae* Honda, Rep. First Sci. Exped. Manchoukuo, Sect. IV, 4: 99. 1936.

凌源隐子草 ling yuan yin zi cao

Kengia kitagawae (Honda) Packer.

Culms densely tufted with small scaly buds at base, erect, ca. 50 cm tall, 1–1.5 mm in diam. Leaf sheaths longer than internodes, lower clustered, glabrous but pilose at mouth; leaf blades linear or linear-lanceolate, usually involute, stiffly spreading, $5-7(-9) \times 0.2-0.4$ cm; ligule 0.2–0.3 mm. Panicle contracted, 5–8 cm, base included in uppermost sheath; branches narrowly ascending, simple, compactly spiculate, lowest branch (2–)3–4.5 cm. Spikelets 7–9 mm, florets 2–5; glumes narrowly

lanceolate-oblong, acuminate; lower glume 2.8–4 mm, 3-veined; upper glume 4.2–5.5 mm, 3–5-veined; lemmas lanceolate-oblong, lowest 5–5.3 mm, glabrous or sparsely pilose near margins and toward base; awn 0.5–1 mm; palea keels scabrid.

Mountain slopes, forest margins. Hebei, Liaoning [Mongolia, Russia (Far East)].

Cleistogenes hackelii (Honda) Honda var. *brachyphylla* Ohwi (J. Jap. Bot. 18: 540. 1942; *Kengia hackelii* (Honda) Packer var. *brachyphylla* (Ohwi) H. Yu & N. X. Zhao), described from Hebei, may belong here. The type has not been seen.

8. *Cleistogenes polyphylla* Keng ex P. C. Keng & L. Liu, Acta Bot. Sin. 9: 69. 1960.

多叶隐子草 duo ye yin zi cao

Cleistogenes hancei Keng var. *jeholensis* (Honda) Kitagawa; *C. serotina* (Linnaeus) Keng var. *jeholensis* Honda; *Kengia hancei* (Keng) Packer var. *jeholensis* (Kitagawa) H. Yu & N. X. Zhao; *K. polyphylla* (Keng ex P. C. Keng & L. Liu) Packer.

Culms loosely tufted from a knotty base with old sheath remnants, lacking basal scaly buds, erect, slender to moderately stout, 25–90 cm tall, 0.8–1.5 mm in diam., many-noded, sometimes branching. Leaf sheaths longer than internodes, tuberculate-hispid (especially the lower), older lower sheaths with disarticulated blades, glabrescent and spotted with tubercles; leaf blades lanceolate or linear-lanceolate, stiffly erect or becoming divaricate, flat with involute apex, $2-10 \times (0.2-0.3-0.6)$ cm; ligule ca. 0.5 mm. Panicle contracted, 4–8.5 cm, base included in uppermost sheath; branches glabrous in the axils, simple, lowest branch 2–2.5 cm. Spikelets 8–13 mm, green or purple, florets 4–9; glumes lanceolate or oblong; lower glume 1.5–3.5(-4) mm, 1–3(-5)-veined; upper glume 3–5 mm, 3–5-veined; lemmas lanceolate, lowest 4–5.5 mm, loosely pilose near margins and base, emarginate; awn 0.5–1.8 mm; palea keels scabrid. Anthers ca. 2 mm. Fl. and fr. Jul–Oct.

- Dry mountain slopes, along banks of streams. Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi.

The habit is distinctive, with many nodes obscured by the overlapping leaf sheaths, broad, often erect leaf blades, and a contracted inflorescence with the base included in the uppermost sheath. The tubercles on the lower leaf sheaths are often purple colored and obvious. Robust specimens are similar to *Cleistogenes hackelii* var. *nakaii*, but that taxon has scaly basal buds, longer internodes with the nodes often exposed, and glabrous leaf sheaths.

This is a good mountain forage grass.

9. *Cleistogenes hackelii* (Honda) Honda, Bot. Mag. (Tokyo) 50: 437. 1936.

朝阳隐子草 chao yang yin zi cao

Culms loosely tufted from a knotty base with scaly buds, erect, very slender to moderately stout, 30–90 cm tall, 0.5–1.5 mm in diam., often branched above base, internodes often purple. Leaf sheaths mostly shorter than internodes, pilose above middle with tubercle-based hairs or glabrous; leaf blades linear-lanceolate, thin, flat, patent, $3-15 \times 0.3-1$ cm, glabrous or thinly pilose, acute; ligule 0.3–0.5 mm. Panicle open, exerted,

4–10 cm; branches few, laxly spreading, lowest branch 2–5 cm. Spikelets 5–9 mm, florets 2–5; glumes lanceolate or lanceolate-ovate; lower glume 0.5–3 mm, 0–1-veined, obtuse to acute; upper glume wide, 1–4.7 mm, 1–3-veined (or terminal spikelet 3–5-veined), narrowly obtuse to acute; lemmas lanceolate, lowest 4–6 mm, usually with dark transverse blotches, pilose along lower margins and keel, emarginate; awn 2–9 mm; palea keels scabrid. Fl. and fr. Jul–Nov. $2n = 40$.

Hill slopes in forests, along forest margins. Anhui, Fujian, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Zhejiang [Japan, Korea].

This is a rather tall species with a sparse panicle, found in shady places. The spikelets are distinguished by the small, hyaline glumes and relatively long awns, although awn length is very variable. The scaly basal buds are an obvious feature. Japanese specimens (var. *hackelii*) are relatively uniform, but in China the species is much more variable and often slightly more robust with thicker culms and larger leaf blades (var. *nakaii*). It forms part of an intergrading complex with *Cleistogenes hancei*, which has a larger, open panicle, often with secondary branching, and spikelets with longer, acuminate glumes and shorter awns.

- 1a. Leaf blades 3.5–9 × 0.3–0.6 mm; leaf sheaths often tuberculate-hispid; lowest lemma 4–5.4 mm; upper glume 2.2–3.5 mm, 1-veined 9a. var. *hackelii*
1b. Leaf blades 6.5–12 × 0.4–0.8 mm; leaf sheaths usually glabrous; lowest lemma 5.4–6 mm; upper glume 3–4.7 mm, 1–3-veined 9b. var. *nakaii*

9a. *Cleistogenes hackelii* var. *hackelii*

朝阳隐子草(原变种) chao yang yin zi cao (yuan bian zhong)

Diplachne hackelii Honda, J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 3: 112. 1930; *Cleistogenes caespitosa* Keng var. *ramosa* F. Z. Li & C. K. Ni; *C. chinensis* (Maximowicz) Keng; *C. hackelii* var. *chinensis* (Maximowicz) Ohwi; *C. serotina* (Linnaeus) Keng var. *aristata* (Hackel) Keng; *C. serotina* var. *chinensis* (Maximowicz) Handel-Mazzetti; *Diplachne serotina* (Linnaeus) Link var. *aristata* Hackel; *D. serotina* var. *chinensis* Maximowicz; *Kengia caespitosa* (Keng) Packer var. *ramosa* (F. Z. Li & C. K. Ni) H. Yu & N. X. Zhao; *K. chinensis* (Maximowicz) Packer; *K. hackelii* (Honda) Packer.

Leaf sheaths often tuberculate-hispid; leaf blades 3.5–9 × 0.3–0.6 mm. Culms 0.6–1.2 mm in diam. Lower glume 1–2 mm, 0–1-veined; upper glume 2.2–3.5 mm, 1-veined; lowest lemma 4–5.4 mm. Fl. and fr. Jul–Nov. $2n = 40$.

Hill slopes in forests, along forest margins. Anhui, Fujian, Gansu, Guizhou, Hebei, Henan, Hubei, Jiangsu, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan [Japan, Korea].

In Japan the leaf sheaths are always conspicuously tuberculate-hispid; the older, lower sheaths with disarticulated blades are glabrescent and spotted with tubercles.

9b. *Cleistogenes hackelii* var. *nakaii* (Keng) Ohwi, Bot. Mag. (Tokyo) 55: 309. 1941.

宽叶隐子草 kuan ye yin zi cao

Cleistogenes serotina var. *nakaii* Keng, Sinensia 5: 151. 1934, based on *Diplachne latifolia* Nakai, Bot. Mag. (Tokyo) 35: 139. 1921, not (Grisebach) Hackel (1902); *C. nakaii* (Keng) Honda; *Kengia hackelii* subsp. *nakaii* (Keng) T. Koyama; *K. hackelii* var. *nakaii* (Keng) H. Yu & N. X. Zhao; *Kengia nakaii* (Keng) Packer.

Leaf sheaths usually glabrous; leaf blades 6.5–12 × 0.4–0.8 mm. Culms 0.9–1.5 mm in diam. Lower glume 2–3.6 mm, 1(–3)-veined; upper glume 3–4.7 mm, 1–3-veined; lowest lemma 5.4–6 mm. Fl. and fr. Jul–Oct.

Hill slopes in forests, along forest margins. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Zhejiang [Korea].

This is a good forage and sand-binding grass.

Cleistogenes ramiflora Keng & C. P. Wang var. *tianmushanensis*

F. Z. Li & C. K. Ni (Bull. Bot. Res., Harbin 15: 436. 1995; *Kengia ramiflora* (Keng & C. P. Wang) H. Yu & N. X. Zhao var. *tianmushanensis* (F. Z. Li & C. K. Ni) H. Yu & N. X. Zhao) is based on a specimen from Zhejiang (Tianmu Shan). It appears to match *C. hackelii* var. *nakaii*, the only *Cleistogenes* species known from Zhejiang, except for its awnless lemmas. The type has not been seen.

10. *Cleistogenes hancei* Keng, Sinensia 11: 408. 1940.

北京隱子草 bei jing yin zi cao

Diplachne sinensis Hance, J. Bot. 8: 76. 1870, not *Cleistogenes chinensis* (Maximowicz) Keng (1934); *C. hancei* var. *jeholensis* (Honda) Kitagawa; *C. nakaii* (Keng) Honda var. *purpurascens* Honda; *C. serotina* (Linnaeus) Keng var. *jeholensis* Honda; *C. serotina* var. *sinensis* (Hance) Keng; *C. serotina* var. *vivipara* Honda; *Kengia hancei* (Keng) Packer; *K. serotina* (Linnaeus) Packer var. *vivipara* (Honda) H. Yu & N. X. Zhao.

Culms loosely tufted from a knotty base with scaly buds, erect, 50–100 cm tall, 1–2 mm in diam., usually unbranched, internodes often purple. Leaf sheaths longer or slightly shorter than internodes, usually glabrous, rarely sparsely pilose with tubercle-based hairs, older lower sheaths with disarticulated blades; leaf blades linear, flat, stiffly divaricate to patent, 6–15 × 0.4–0.9 cm, scabrid on both surfaces, sharply acuminate; ligule ca. 0.5 mm. Panicle open, exserted, (6–)10–15 cm; branches widely spreading, clothed in loosely imbricate spikelets, lower branches often with branchlets, lowest 3–8 cm. Spikelets 8–14 mm, green or purplish, florets (3–)5–10; glumes lanceolate, acuminate; lower glume 2–4.2 mm, 1–3-veined; upper glume 3.5–5.7 mm, (1–)3–7-veined; lemmas lanceolate, lowest 5.5–6.5 mm, usually with dark transverse blotches, thinly pilose along lower margins or subglabrous, emarginate; awn (0.6–)1–2(–3) mm; palea keels scabrid. Fl. and fr. Jul–Nov.

Mountain slopes, roadsides, forest margins. Anhui, Fujian, Hebei, Henan, Jiangsu, Jiangxi, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi [Russia (Far East)].

This species is one of the largest in the genus, with relatively robust culms, long, broad leaf blades, and an open inflorescence, often with secondary branching. The spikelets typically have multiveined, acuminate glumes, long lemmas, and short awns, but there is much variation and the species is difficult to separate from *Cleistogenes hackelii* var. *nakaii*.

The epithet of *Diplachne sinensis* cannot be used in *Cleistogenes* because the heterotypic name *C. chinensis* already exists. The epithets “*sinensis*” and “*chinensis*” form homonyms when combined under the same generic name (Saint Louis Code, Art. 53.3 and Ex. 9).

This is a good forage and sand-binding grass.

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