

203. **BOTHRIOCHLOA** Kuntze, Revis. Gen. Pl. 2: 762. 1891.

孔颖草属 kong ying cao shu

Chen Shouliang (陈守良); Sylvia M. Phillips

Amphilophis Nash; *Gymnandropogon* (Nees) Duthie.

Perennial. Leaf blades linear or lanceolate, sometimes aromatic; ligule membranous, margin ciliate. Inflorescence terminal, usually of digitate, subdigitate, or corymbiform racemes, infrequently paniculate; racemes shortly pedunculate, composed of several spikelet pairs (if paniculate, more than 8 spikelet pairs present), basal homogamous spikelet pairs absent; rachis internodes and pedicels slender with a median translucent stripe between thickened margins. Sessile spikelet dorsally compressed; callus short, obtuse, bearded; lower glume cartilaginous with herbaceous apex, occasionally herbaceous throughout, broadly convex to slightly concave, flanks rounded, back sometimes with 1–3 deep circular pits, apex subacute; upper glume boat-shaped, dorsally keeled; lower floret reduced to an empty hyaline lemma; upper lemma stipitiform, entire, awned from apex; awn geniculate, glabrous. Pedicelled spikelet similar to the sessile or smaller, herbaceous.

About 30 species: throughout the tropics and subtropics; three species in China.

The rachis internodes and pedicels of the closely related genera *Bothriochloa* and *Capillipedium* are most distinctive, providing an easy diagnostic character for these genera. The central cells, between the thickened margins, are translucent and frequently purple pigmented. *Dichanthium* also belongs to this group, but has normal, solid internodes and pedicels. Circular, pitted glands on the lower glume are another remarkable feature of some species in this group.

- 1a. Inflorescence with an elongate central axis 1. *B. bladhii*
- 1b. Inflorescence subdigitate.
 - 2a. Lower glume of sessile spikelet without a circular pit 2. *B. ischaemum*
 - 2b. Lower glume of sessile spikelet with a circular pit 3. *B. pertusa*

1. *Bothriochloa bladhii* (Retzius) S. T. Blake, Proc. Roy. Soc. Queensland 80: 62. 1969.

臭根子草 chou gen zi cao

Perennial, tufted. Culms erect or decumbent at base, fairly robust, up to 130 cm tall, many-noded, nodes glabrous or appressed bearded. Leaf sheaths glabrous; leaf blades linear, 10–40 × 0.2–1 cm, hairy with tubercle-based hairs on both surfaces or abaxial surface glabrous, apex finely acuminate; ligule 0.5–1.5 mm. Inflorescence 9–20 cm, composed of many racemes borne in loose whorls along an elongate central axis, axis usually longer than lowest raceme, sometimes paniculate with branched peduncles; racemes 2–5 cm, often purplish, not obviously hairy; rachis internodes and pedicels thinly ciliate, shortly bearded at apex. Sessile spikelet 3–4 mm; lower glume narrowly oblong-lanceolate, herbaceous or cartilaginous and glossy, 5–7-veined, back slightly concave, glabrous or pubescent below middle, sometimes with a pit, margins keeled and scabrid near apex; awn of upper lemma 1–2.5 cm. Pedicelled spikelet barren or rarely staminate, narrower than sessile spikelet, sometimes pitted. Fl. and fr. Jul–Oct. $2n = 40, 60, 80$.

Exposed slopes, waste ground; 400–1600 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xinjiang, Yunnan [Bhutan, India, Indonesia, Japan, Malaysia, Nepal, New Guinea, Pakistan, Thailand, Vietnam; Africa, SW Asia, Australia; introduced in America].

Bothriochloa bladhii hybridizes easily and frequently with some other species of *Bothriochloa*, and also with *Capillipedium parviflorum* and *Dichanthium annulatum*, blurring the boundaries between these genera and leading to a host of intermediates. New, apomictic races have arisen from among these products of introgression, causing much

taxonomic difficulty. The name *B. glabra* has been applied to hybrids between *B. bladhii* and *C. parviflorum*.

Bothriochloa bladhii is most practicably treated in a broad sense to include all forms with an elongate inflorescence axis. Additionally, the habit is usually not stoloniferous, and the racemes are less obviously hairy than in *B. ischaemum* and *B. pertusa*.

- 1a. Lower glume of sessile and pedicelled spikelet without pits on back 1a. var. *bladhii*
- 1b. Lower glume of sessile and pedicelled spikelet with 1–3 pits on back 1b. var. *punctata*

1a. *Bothriochloa bladhii* var. *bladhii*

臭根子草(原变种) chou gen zi cao (yuan bian zhong)

Andropogon bladhii Retzius, Observ. Bot. 2: 27. 1781; *Amphilophis intermedia* Stapf; *Andropogon glaber* Roxburgh; *A. intermedius* R. Brown; *A. vachellii* Nees; *Bothriochloa anamitica* Kuntze; *B. glabra* (Roxburgh) A. Camus; *B. intermedia* (R. Brown) A. Camus; *Dichanthium bladhii* (Retzius) Clayton.

Lower glume of both sessile and pedicelled spikelets usually without pits on back. Fl. and fr. Jul–Oct.

Exposed slopes, waste ground. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xinjiang, Yunnan [Bhutan, India, Indonesia, Japan, Malaysia, Nepal, New Guinea, Pakistan, Thailand, Vietnam; Africa, SW Asia, Australia; introduced in America].

1b. *Bothriochloa bladhii* var. *punctata* (Roxburgh) R. R. Stewart, Kew Bull. 29: 444. 1974.

孔颖臭根子草 kong ying chou gen zi cao

Andropogon punctatus Roxburgh, Fl. Ind. 1: 268. 1820; *Bothriochloa intermedia* (R. Brown) A. Camus var. *punctata*

(Roxburgh) Keng; *B. punctata* (Roxburgh) L. Liu.

Lower glume of sessile and pedicelled spikelets with 1–3 pits on back. Fl. and fr. Jul–Nov.

Exposed slopes, waste ground; 400–1600 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xinjiang, Yunnan [Bhutan, India, Indonesia, Japan, Malaysia, Nepal, New Guinea, Pakistan, Thailand, Vietnam; Africa, SW Asia, Australia; introduced in America].

2. *Bothriochloa ischaemum* (Linnaeus) Keng, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 10: 201. 1936.

白羊草 bai yang cao

Andropogon ischaemum Linnaeus, Sp. Pl. 2: 1047. 1753; *Amphilophis ischaemum* (Linnaeus) Nash; *Andropogon ischaemum* var. *songaricus* Ruprecht ex Fischer & Meyer; *Bothriochloa ischaemum* var. *songarica* (Ruprecht ex Fischer & Meyer) Celarier & J. R. Harlan.

Perennial, tussocky from a branching rootstock. Culms slender, erect or geniculately ascending, 25–70 cm tall, 3–6-noded, nodes glabrous or appressed bearded. Leaf sheaths keeled, congested at plant base; leaf blades linear, 5–16 × 0.2–0.3 cm, usually sparingly hairy with tubercle-based hairs, apex acuminate; ligule ca. 1 mm. Inflorescence composed of 5–15 racemes, subdigitate or inserted on a brief axis; racemes 3–7 cm, silvery-green or tinged purplish brown; rachis internodes and pedicels ciliate with long white or pinkish silky hairs. Sessile spikelet 4–5 mm; lower glume oblong-lanceolate, usually cartilaginous, sometimes herbaceous, back flat to slightly concave, 5–7-veined, silky-pilose below middle, lacking a pit, margins keeled and stiffly ciliate near apex; awn of upper lemma 1–1.5 cm. Pedicelled spikelet male or barren, subequal to sessile spikelet, glabrous. Fl. and fr. autumn. $2n = 40, 50, 60$.

Rocky and sandy slopes, roadsides, disturbed places. Anhui, Fujian, Guangdong, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Sichuan, Taiwan, Xinjiang, Xizang, Yunnan, Zhejiang [Afghanistan, Bhutan, N India, Kazakhstan, Korea, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, Turkmenistan, Uzbekistan; N Africa, SW Asia, Europe; introduced in United States].

Dichanthium annulatum is similar, but can be distinguished by its conspicuously bearded nodes with spreading hairs and by the broadly obtuse sessile spikelet with long hairs on the upper margins. It also lacks a purple stripe on the pedicels.

Bothriochloa ischaemum introgresses with *B. bladhii*, leading to a range of intermediates. The name *Andropogon taiwanensis* Ohwi (J. Jap. Bot. 12: 652. 1936), described from Taiwan, has been applied to one of these intermediates. The name "*Bothriochloa taiwanensis*" (Ohwi, loc. cit.) was not validly published because it was merely cited as a synonym of *A. taiwanensis*.

3. *Bothriochloa pertusa* (Linnaeus) A. Camus, Ann. Soc. Linn. Lyon, n.s., 76: 164. 1931 ["1930"].

孔颖草 kong ying cao

Holcus pertusus Linnaeus, Mant. Pl. 2: 301. 1771; *Amphilophis pertusa* (Linnaeus) Stapf; *Andropogon pertusus* (Linnaeus) Willdenow; *Bothriochloa nana* W. Z. Fang; *Dichan-*

thium pertusum (Linnaeus) Clayton.

Perennial, often stoloniferous, sward forming. Culms erect or geniculately ascending, up to 100 cm tall, 5- or more-noded, nodes bearded. Leaf sheaths keeled; leaf blades linear, 5–20 × 0.1–0.4 cm, tubercle-based hairs on both surfaces or abaxial surface glabrous, apex acute; ligule 0.5–2 mm. Inflorescence composed of 3–5(–)8 racemes, subdigitate; racemes 3–8 cm, tinged purplish; rachis internodes and pedicels ciliate with long silky hairs. Sessile spikelet 3–4.5 mm; lower glume narrowly elliptic, cartilaginous, back concave, 5–7-veined, glossy, sparsely hirtellous to silky-pilose below middle, a circular pit above hairs, 2-keeled, margins keeled and scabrid near apex; awn of upper lemma 1–2 cm. Pedicelled spikelet male or barren, pur-

Flora of China 22: 607–609. 2006.

plish, subequal to sessile spikelet, glabrous. Fl. and fr. Jul–Oct.
 $2n = 40, 60$.

Grassy hills, disturbed ground; 1200–1500 m. Guangdong, Sichuan, Yunnan [India, Indonesia, Malaysia, Nepal, Pakistan, Thailand, Vietnam; introduced in Australia and United States].

The type of *Bothriochloa nana* is a stunted specimen of *B. pertusa* with the spikelets infected by a smut fungus.

Flora of China 22: 607–609. 2006.