BOTHRIOCHLOA GLABRA (POACEAE: PANICOIDEAE: ANDROPOGONEAE) IN TEXAS

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ABSTRACT

Bothriochloa glabra (Roxb.) A. Camus is reported for Texas. A key is provided to separate *B. glabra* from *B. bladhii* (Retz.) S.T. Blake.

RESUMEN

Bothriochloa glabra (Roxb.) A. Camus se reporta para Texas. Se aporta una clave para separar *B. glabra* de *B. bladhii* (Retz.) S.T. Blake.

Fieldwork in southeastern Texas has resulted in a collection of *Bothriochloa glabra* (Roxb.) A. Camus from Brazoria County. This species has not been reported in the Texas flora (Shaw et al. 2011; Shaw 2012; Hatch & Haile 2012).

Bothriochloa glabra is related to *B. bladhii*, and the two taxa are sometimes treated as conspecific. Harlan & de Wet (1963) proposed that *B. glabra* probably originated as an apomictic hybrid derived between *Bothriochloa bladhii* (Retz.) S.T. Blake and *Capillipedium parviflorum* (R. Br.) Stapf. Over its complete distribution range, extending from southern Africa to southeast Asia, tetraploid *B. bladhii* hybridizes with tetraploid *C. parviflorum* (de Wet & Harlan 1970). These intergeneric hybrids are commonly recognized as *Bothriochloa glabra*. Unfortunately, *B. glabra* has been often placed in synonymy under *B. bladhii* (e.g., Faruqi 1969; de Wet & Harlan 1970; Clayton & Renvoize 1982) following the trend of regarding *B. bladhii* as a very variable species. Simon (1989) questioned the point of view (de Wet 1987) that *B. glabra* is a hybrid between *B. bladhii* and *Capillipedium parviflorum* and furthermore that *C. spicigerum* S.T. Blake is the product of a back-cross between *B. glabra* and *C. parviflorum*. Simon stated that his questioning of this was based on the fact that *B. glabra* does not occur naturally in Australia (though *B. bladhii* and *C. parviflorum* do) and felt that these assumptions cannot be made. Simon (1989) proposed a rank of subspecies for *B. glabra*, because otherwise a lot of potentially valuable information would be lost if the taxon is put into synonymy with *B. bladhii*. He separated *B. bladhii* subsp. *bladhii* and subsp. *glabra* primarily on spikelet length (which can overlap slightly between the two taxa in Texas) and secondarily on presence or absence of a pit on the spikelet (though the presence/absence of pits appears to be of little diagnostic value outside of Australia). Most authors have used whether the primary branches are mostly unbranched or with a few primary branches with 1–2 secondary branches (*B. bladhii*) versus most of the primary branches rebranched and the longest primary branches with (3)4–8 branches (*B. glabra*) to distinguish the species. Bor (1960) used inflorescence axes length; branching or lack of branching of the primary branches; for the lower unbranched primary branches, measuring the distance from the base of the branch to the first spikelet; spikelet length; and leaf blade width to separate the two taxa.

De Wet and Scott (1965) analyzed essential oils extracted from the inflorescences of 17 species of *Bothriochloa* by means of a gas-liquid chromatography. They found that presence or absence of peaks on the chromatograms, as well as the relative amounts of these chemical components, can be used as taxonomic criteria. Species were found to be chemically unique, except for those that form interspecific agamic complexes. They reported that *Bothriochloa glabra*, though chemically variable, was quite distinct from *B. bladhii*.

As does Simon (1989), we believe that the recognition of *Bothriochloa glabra* at some taxonomic rank is warranted but agree with Clayton et al. (2020) that the rank should be at the specific level. The two taxa are

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distinct based on morphology (see key below) and the chemical data. Though there will be introgression between the two taxa they are usually distinct from one another.

Voucher Specimen (Fig. 1): TEXAS. Brazoria Co.: private property on and S of FM 213, 3.2 mi E of its intersection with FM 523, about 5 mi E of the town of Angleton, locally common perennial in weedy old fields and along fence rows, stems decumbent unless supported by woody plants along fence rows, 29°09'20.5", 95°21'07.8", 11 Oct 2019, *Rosen 7178* (BRIT, SHST, TEX).

KEY TO *BOTHRIOCHLOA GLABRA* AND *B. BLADHII*

1. Plants 40–90(–150) cm tall; cauline leaf blades 10–30(–40) cm long, 1–4.5(–5.5) mm wide; culm internodes 2–3 mm wide; primary branches of inflorescence unbranched or the lower primary branches sparingly rebranched, 0–2(3) secondary branches; unbranched lower primary branches, from base of branch to first spikelet 0.6–1.5(–1.6) cm long; in lower ½ of the inflorescence, 13–15 unbranched and 0–4 branched primary branches; sessile spikelets [mid-inflorescence, mid-primary branch] 3.5–4 mm long _____ **Bothriochloa bladhii** (Retz.) S.T. Blake
1. Plants 100–350 cm tall; cauline leaf blades mostly 40–50 cm long, 10–13 mm wide; culm internodes 3–5 mm wide; primary branches in lower ½–⅔ of inflorescence axes rebranched, the longer primary branches with (2)3–8 secondary branches; unbranched primary branches in lower ⅔ of inflorescence, from base of branch to first spikelet ≥1.6 cm long; in lower ½ of the inflorescence, 0–4 unbranched and 15+ branched primary branches; sessile spikelets [mid-inflorescence, mid-primary branch] 3–3.6 mm long _____ **Bothriochloa glabra** (Roxb.) A. Camus

Bothriochloa glabra (Roxb.) A. Camus, Ann. Soc. Linn. Lyon, sér. 2, 76:164. 1931. *Andropogon glaber* Roxb., Fl. Ind. 1:271. 1820. *Bothriochloa bladhii* subsp. *glabra* (Roxb.) B.K. Simon, Austrobaileya 3(1):79. 1989. TYPE: INDIA. BENGAL: elevated spots, *Roxburgh s.n.* (HOLOTYPE: BM 000959769, image!; ISOTYPES: K, image!; BRI, image!).

Perennial; culms 100–350 cm tall, stout, erect or decumbent. Plants cespitose, without rhizomes. Internodes 13–18 cm long, 3–5 mm wide, grooved, glabrous. Nodes pubescent with antrorse appressed hispid hairs, hairs 1–2.5 mm long. Sheaths 11.5–20 cm long, glabrous. Ligules 1–2 mm long, ciliolate membrane, truncate. Ligular area with long hairs at the base of the blade behind the ligules, hairs 1.5–4.5 mm long. Leaf blades mostly 40–50 cm long, 10–13 mm wide, glabrous except for base of blade, margins serrulate. Peduncles ±19 cm long. Inflorescences 18–19.5 cm long, 7–7.4 cm wide. Inflorescence axes 15–15.5 cm long, with 13–15 nodes, nodes and pulvini purple, pulvini sparsely short hairy; internodes glabrous; Lowermost node with 5 primary branches; primary branches verticillate on the lower 3–5 nodes; with 34–38 primary branches. Primary branches 4–9.6 cm long. Mid-inflorescence primary branches 6.8–9.6 mm long; longest primary branches in lower ½–⅔ of inflorescence axes rebranched, with (2)3–8 secondary branches; branches with 13–17+ spikelet pairs per branch. In lower ½ of the inflorescence, 0–4 unbranched and 15+ branched primary branches. Unbranched primary branches in lower ⅔ of inflorescence, from base of branch to first spikelet 1.6–2.1 cm long. Rame internodes and pedicels with a translucent, often purple, longitudinal groove; ciliate on the margins. Rame internodes 2.1–3.2 mm long; ciliate, hairs to 3 mm long, longest at apex; basally pubescent, hairs to 0.9 mm long. **Sessile spikelets (mid-inflorescence and mid-branch)**. Dorsally compressed; sessile spikelets with 2 florets. Sessile spikelet 3–3.5(–3.6) mm long [spikelets a base of primary branch can be up to 4 mm long]; callus hairs 0.2–0.7 mm long. Lower glumes 3–3.5(–3.6) mm long, rounded, 9(11)–veined, with or without a dorsal pit; keeled near margins, keels ciliate with short, stiff, ascending hairs; margins clasping the upper glume; densely short pubescent on lower half, hairs to 0.5 mm long. Upper glumes 3–3.5(–3.6) mm long, slightly keeled at midvein, 3-veined, glabrous except for finely ciliate margins. Lower lemmas 2–2.5 mm long, 0-veined, hyaline, delicate, unawned. Upper florets bisexual. Upper lemmas 1.5–2 mm long, 0.15–0.2 mm wide, narrow, membranous, transitioning into a twisted, twice geniculated awn; awn 11–14 mm long. Anthers 1.5–1.6 mm long, yellow to yellow-purplish. **Pedicellate spikelets (mid-inflorescence and mid-branch)**. Pedicels 2–2.7 mm long, flattened, ciliate, white hairs to 2.4 mm long, shorter proximally and longest distally. Pedicellate spikelets 3.3–4.1(–4.4) mm long; as long as, to longer than the sessile spikelet (rarely slightly shorter); neuter; awnless. Lower glumes 3.3–4.1(–4.4) mm long, rounded, 9(11)-veined, with or without a dorsal pit; keeled, keels ciliate with short, stiff, ascending hairs; margins clasping the upper glume. Upper glumes 3.3–3.9 mm long; 3-veined, often slightly keeled at midvein in upper ½. Its native range is Africa to Tropical and Subtropical Asia.

Fig. 1. Herbarium specimen of *Bothriochloa glabra* (*Rosen 7178,* TEX-00531633). Digital image courtesy of Amber Horning (TEX-LL) and George A. Yatskievych (TEX-LL).

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