

LEPTOCHLOA (POACEAE: CHLORIDOIDEAE) IN COLOMBIA

Neil Snow

Herbarium Pacificum
Bishop Museum
1525 Bernice Street
Honolulu, HI 96817, U.S.A.
neil.snow@bishopmuseum.org

Paul M. Peterson

Department of Botany
National Museum of Natural History
Smithsonian Institution
Washington, DC 20013-7012, U.S.A.
peterson@si.edu

Diego Giraldo-Cañas

Instituto de Ciencias Naturales
Facultad de Ciencias
Universidad Nacional de Colombia
Apartado 7495, Bogotá D.C., COLOMBIA
dagiraldoc@unal.edu.co

ABSTRACT

A taxonomic summary is presented for the Colombian species of *Leptochloa*. The classification, nomenclature, generic affinities, and morphological variation of the genus are discussed. *Leptochloa* is represented in Colombia by six species and one nontypical subspecies. Keys to recognize Colombian species are given, as well descriptions of the species, illustrations, geographical distributions, and morphological and ecological observations. The basionym *Chloris dubia* Kunth is lectotypified.

RESUMEN

Se presenta un estudio taxonómico de las especies colombianas del género *Leptochloa*. Se analizan diversos aspectos relativos a la clasificación, la nomenclatura, las afinidades genéricas y la variación morfológica de los caracteres. El género *Leptochloa* está representado en Colombia por seis especies y una subespecie. Se presentan las claves para reconocer las especies presentes en Colombia, así como las descripciones de éstas, la iconografía, la distribución geográfica y se comentan algunas observaciones morfológicas y ecológicas. Se lectotipifica el nombre *Chloris dubia* Kunth.

Leptochloa P. Beauv., sensu lato (including *Diplachne* P. Beauv.) is a genus of approximately 32 annual or perennial species (Snow 1997). The native range of the genus is pantropical into warmer temperate regions, with several species being weedy and widely distributed. Although Parodi (1927), McNeill (1979), Phillips (1982), Nicora and Rúgolo de Agrasar (1987), and Nicora (1995) recognized *Diplachne* as a separate genus, we agree with McVaugh (1983), Clayton and Renvoize (1986), Nowack (1994), Renvoize (1998), and Snow (1997, 1998a) that the number of florets, the size of the spikelets, shape of the caryopsis, arrangement of spikelets on the panicle branches (i.e., secund or not secund), and other morphological characters intergrade strongly and are unable to support generic separation (Snow 1997). Moreover, based on a numerical analysis of morphological characters, Phillips (1982) found that species placed in *Diplachne* and *Leptochloa* overlapped one another in a principal coordinates scatter plot. Although it is likely (next paragraph) that some elements of *Leptochloa* may need to be segregated in the future with further analyses, in our opinion it is unlikely that such a generic segregate would correspond closely to *Diplachne* as recognized by the authors cited above. Thus at this time it seems more appropriate to recognize *Leptochloa* in its broad sense (Peterson et al. 1997; Snow 1997).

The monophyly of *Leptochloa* sensu lato was not supported when tested cladistically with morphological and anatomical data, depending on the number of outgroups included (Snow 1997). Moreover, its monophyly has not been tested in breadth using molecular data, and the relationship of *Leptochloa* with other genera is far from certain (Columbus et al. 2007; Peterson et al. 1997, 2007). For example, in a restriction fragment analysis of cpDNA using a few representatives of New World genera (Duvall et al. 1994), *Leptochloa* [*L. dubia* (Kunth) Nees] was a member of a basal clade, sharing a common ancestor with *Scleropogon* Phil., *Dasyochloa*

Willd. ex Rydb., *Munroa* Torr., and *Erioneuron* Nash. In a strict consensus tree with bootstrap analysis, species of *Leptochloa* did not form a particularly strong clade with the other genera, and instead shared a common ancestor in a clade that included the Muhlenbergiinae, Munroinae, *Scleropogon*, *Sporobolus* R. Br., *Eleusine* Gaertn., *Tridens* Roem. & Schult., *Tripogon* Roem. & Schult., and *Eustachys* Desv. (Duvall et al. 1994). In a phylogenetic study of Chloridoideae based on *matK* sequences, *Leptochloa* (*L. dubia*) formed a clade with *Coelachyrum* Hochst. & Nees, and *Astrebla* F. Muell. emerged as sister to these (Hilu & Alice 2001). Other genera in the C₁ clade of Hilu and Alice (2001) included *Brachyachne* (Benth.) Stapf, *Chloris* Sw., *Cynodon* Rich., *Dinebra* Jacq., *Eleusine*, *Enteropogon* Nees, *Eustachys* Desv., *Lepturus* R. Br., *Lintonia* Stapf, *Microchloa* R. Br., *Oxychloris* Lazarides, *Tetrapogon* Desf., and *Trichloris* E. Fourn. & Benth. In another phylogenetic study of Chloridoideae based on analysis of combined *trnL-F* and ITS sequences, the placement of species of *Leptochloa* [*L. dubia*, *L. fusca* (L.) Kunth, and *L. panicea* (Retz.) Ohwi] in separate clades suggests a polyphyletic origin (Columbus et al. 2007). In a phylogenetic analysis of *rps16* sequences, *Leptochloa dubia* formed a clade with *Eleusine* [*E. coracana* (L.) Gaertn.], whereas in a tree based on analysis of *waxy* sequences, *Leptochloa* formed a clade with *Eleusine coracana* and *Dactyloctenium aegyptium* (L.) Willd. and *D. radulans* (R. Br.) P. Beauv. (Ingram & Doyle 2007). In summary, the monophyly of *Leptochloa* has not been corroborated with molecular data, and phylogenetic relationships of *Leptochloa* with other genera remain obscure (Columbus et al. 2007, Peterson et al. 2007). For these reasons Peterson et al. (2007) treated the genus as *incertae sedis* within the tribe Cynodonteae.

Leptochloa is represented by 17 species in the New World (13 of these native), six of which occur in Colombia (Peñalosa-Jiménez et al. 2002; Peterson et al. 2001, 2007). Our taxonomic treatment contains keys for determining the species, descriptions, distributions, specimens studied, illustrations, and synonymies. Only synonyms used frequently in Colombian literature are given. For further synonymy see Snow (1997), Peterson et al. (2001), and Soreng et al. (2008). This study is based on the examination of herbarium specimens from COAH, CAUP, COL, HUA, MO, and US, including the type specimens of most species studied. The present study aims to contribute to the knowledge of the Colombian grasses by collaborating with the Biodiversity Program and Colombian Flora Inventories.

Leptochloa P. Beauv., Ess. Agrostogr. 71. 1812. TYPE: *Leptochloa virgata* (L.) P. Beauv.

Plants annual or perennial; caespitose, lacking stolons and rhizomes but sometimes geniculate and rooting at the lower nodes in mesic habitats. Flowering culms 30–150 cm tall, ascending to erect, glabrous to sometimes pilose, arising from fibrous roots. Leaves cauline; sheaths longer or shorter than internodes with smooth margins; ligules a membrane or a ciliate membrane; blades narrowly lanceolate to linear, flat, often inrolled on drying, not pungent. Inflorescence a panicle of spicate primary branches exserted (or lower branches occasionally inserted proximally) along an elongated main axis; main axis scabrous; primary branches spaced or sometimes subdigitate, ascending to spreading from main axis, terminating in a spikelet; glabrous or scabrous. Cleistogamous spikelets absent or present in axils of lower sheaths (in *L. dubia* or rarely in *L. fusca* subsp. *fascicularis*). Disarticulation above glumes, lemma and palea falling as a unit; callus glabrous to sparsely sericeous. Spikelets solitary, laterally compressed or terete, sessile to shortly (<2 mm) pedicellate, distant but often imbricate, often secund; glumes shorter than spikelets, unequal, smooth, glabrous or slightly scabrous; lower glumes 1-veined; upper glumes shorter than lower lemma, 1–3-veined, unawned; rachilla pronounced between florets, glabrous; florets 2–13 per spikelet, sterile florets often present above fertile florets (and uppermost floret often reduced to small, awnless rudiment); lemma 3-veined (rarely 4–5-veined in *L. dubia* at base), membranous, smooth, glabrous or hairy along veins and sometimes between veins, apex entire, emarginate or lobed, awnless, mucronate, or awned; paleas glabrous to sericeous, unawned, membranous, margins not enfolding fruit, smooth; lodicules truncate; stamens 2 or 3; anthers yellow or reddish-purple; stigmas 2. Fruit with adnate pericarp (sometimes weakly so); caryopses dorsiventrally compressed or laterally compressed (Snow 1998a). Base chromosome number of $x = 10$.

Comments.—*Leptochloa* and *Diplachne* were established by Palisot de Beauvois (1812). *Leptochloa* was based on three species, while *Diplachne* was based on *D. fascicularis* (Lam.) P. Beauv. [= *L. fusca* (L.) Kunth

subsp. *fascicularis* (Lam.) N. Snow]. *Leptochloa* was later lectotypified with *L. virgata* (L.) P. Beauv. by Nash (1913), which was ineffective according to Index Nominum Genericorum Art. 10.5 example 6. In addition, both genera were placed in the same “cohors,” which suggested that Palisot de Beauvois regarded them as more or less closely related. In his “*Tabula Methodica*” he mentioned that the lemmas of *Diplachne* were shortly awned, whereas those of *Leptochloa* were said to be awnless. However, this feature varies considerably and the lemma of *Leptochloa* can be entire, emarginate, lobed, awned, mucronate, or unawned. The micromorphological characters of the lemma vary little in *Leptochloa* (Snow 1996), and with few exceptions, cork cells are present, silica cells are absent, chloridoid bicellular microhairs are present, prickles are present, and macrohairs are present. However, the occurrence of papillae on long cells and short cells is more variable, suggesting their presence or absence may be phylogenetically informative within the genus (Snow 1996).

Ecology and geographic distribution.—The native range of *Leptochloa* is nearly worldwide in warm-temperate to tropical regions. Its ecological distribution mostly includes semi-open vegetation such as grasslands. The species most frequently grow in periodically disturbed or seasonally saturated areas such as riparian corridors, ephemeral pools, or artificial impoundments, although *L. dubia* generally prefers well drained soils. All widespread annual species are considered weedy in agricultural situations (Snow 1997) and some have become established on continents far beyond their native range (Snow & Simon 1999; Snow 2004).

KEY TO THE SPECIES OF *LEPTOCHLOA* IN COLOMBIA

1. Sheaths sparsely to moderately pilose, the hairs papillose-based _____ **L. panicea** subsp. **brachiata**
1. Sheaths glabrous to sparsely hairy, the hairs usually not papillose-based.
 2. Ligules membranous and neither ciliate nor erose (but sometimes lacerate), 5–8 mm long, apically attenuate _____ **L. fusca**
 2. Ligules membranous and sometimes ciliate or erose apically, less than 5 mm long, apically obtuse or truncate.
 3. Plants perennial; ligules 0.2–1.5 mm long.
 4. Apex of lemma broad and usually notched; hidden inflorescences present in lower leaf sheaths; florets widely divergent (40–90°) from rachilla during anthesis _____ **L. dubia**
 4. Apex of lemma acute, not notched but sometimes awned; hidden inflorescences absent in lower leaf sheaths; florets on slightly diverging from rachilla at anthesis (if at all) _____ **L. virgata**
 3. Plants annual; ligules 2.2–3.8 mm long.
 5. Culms more or less round in cross section; panicle branches mostly somewhat stiff; lemmas 2.4–3 mm long; anthers 0.6–0.8 mm long _____ **4. L. panicoides**
 5. Culms strongly compressed (especially lower internodes) in cross section; panicle branches flexuous to prominently arcuate; lemmas 2.1–2.4 mm long; anthers 0.2–0.4 mm long _____ **5. L. scabra**

1. *Leptochloa dubia* (Kunth) Nees, Syll. Pl. Nov. 1:4. 1824. (**Fig. 1, A–C**). *Chloris dubia* Kunth, Nov. Gen. Sp. (quarto ed.) 1:169. 1816. *Leptostachys dubia* (Kunth) G. Mey., Prim. Fl. Esseq. 74. 1818. *Diplachne dubia* (Kunth) Scribn., Bull. Torrey Bot. Club. 10:30. 1883. *Rabdochloa dubia* (Nees) Kuntze ex Stuck., Anales Mus. Nac. Buenos Aires 11:121. 1904. *Sieglingia dubia* (Kunth) Kuntze ex Stuck., Anales Mus. Nac. Buenos Aires 11:128. 1904. TYPE: MÉXICO: *F. Humboldt & A. Bonpland 4172* (LECTOTYPE, here designated: P!; DUPLICATES OF LECTOTYPE: K, K-microfiche, US-865876 fragm. ex P!).

Perennials, mostly erect or infrequently decumbent or sprawling. Culms (5–)30–110 cm tall, 1.0–4.5 mm wide, unbranched or only as tillers from very base, round or flattened below; nodes glabrous, internodes 3–11 cm long, herbaceous, solid (or occasionally hollow by virtue of aging). Leaf sheaths longer or shorter than internodes, sparsely pilose, especially below, and occasionally pilose (sometimes densely so) near the collar, the hairs occasionally from papillose bases, the margins glabrous or somewhat pilose; collars green or tan; ligules mostly 1.0–1.5 mm long, membranous, truncate, ciliate apically; blades (2–)8–35 cm long, 2–8 mm wide, mostly linear or somewhat lanceolate, scabrous above at base or with a sparse covering of pilose hairs, glabrous to minutely scabrous below, flat but drying involute, midvein mostly prominent or sometimes not. Panicles of two types, the apical ones generally exerted at maturity and the lateral ones completely hidden in lower leaf sheaths; apical panicles 10–45 cm long, (2–)3–25 cm wide; the branches (2–)5–15, (1.5–)3–19 cm long, alternate or infrequently subdigitate, ascending to reflexed, often somewhat lax, minutely scabrous, the branch axils pilose or merely scabrous. Spikelets 4.0–12.0 mm long, imbricate

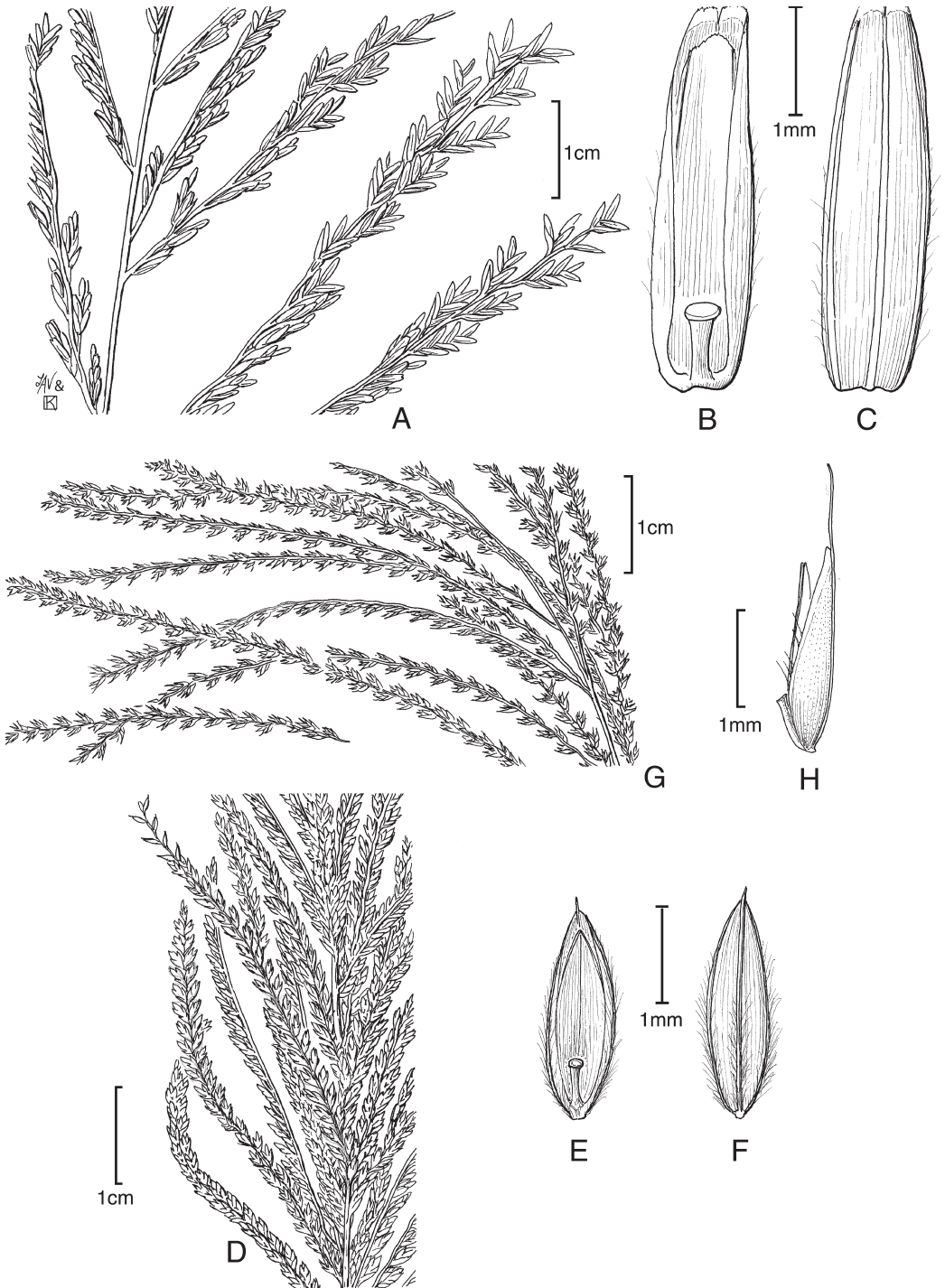


FIG. 1. *Leptochloa dubia*. A. Inflorescence. B. Floret with rachilla and palea enclosed by lemma (ventral view). C. Lemma. *Leptochloa scabra*. D. Inflorescence. E. Floret with rachilla and palea (ventral view). F. Lemma. *Leptochloa virgata*. G. Inflorescence. H. Floret with rachilla (lateral view).

to distant, mostly sessile; florets 4–13; callus glabrous or with a few short hairs; lower glumes (1.6–)2.3–4.8 mm long, membranous, narrowly triangular or ovate, scabrous along midvein, sometimes papillate on sides, acute; upper glumes 3.3–6.0 mm long, membranous, ovate to lanceolate, scabrous on midvein (and sometimes with 1 or 2 additional veins at least basally) and papillate on edges, acute; lemmas 3.5–5.0 mm long, membranous, ovate to obovate or widely obovate, light brown, bronze, light to very dark green, the lateral veins usually prominent but sometimes not so, sericeous at least along lower portions of lateral veins and sometimes on midvein and between veins, the apex usually bifid, broadly acute, obtuse, or truncate, awnless or mucronate; paleas subequal to lemma, lanceolate, membranous above but somewhat cartilaginous near base, distinctly ciliate on edges, sometimes sericeous between veins, apex acute; stamens 3; anthers (0.3–)1.0–1.6 mm long, yellow. Caryopses 1.5–2.3 mm long, 0.9–1.0 mm wide, narrowly elliptic, elliptic or very widely obovate in hilar profile, depressed obovate in transverse section, with a broad, shallow groove on hilar side, smooth, brown; pericarp weakly adnate to the endosperm.

Distribution and habitat.—Native in the USA from Arizona to Oklahoma and Texas, southern Florida, common in México, sporadically in the Caribbean and in Mesoamerica through Bolivia, more common again from Bolivia and Chile through Paraguay, Uruguay, and southern Brazil and much of Argentina; in a variety of soil and vegetation types, but most frequently on well-drained slopes, 100–2600 m, but occasionally to 3150 m in Peruvian and Bolivian Andes.

Specimens examined. **COLOMBIA. Nariño:** Mun. Imúes, corregimiento El Pedregal, Pilcuán, 2000 m, 11 Jan 1989, B. Ramírez 1259 (COL, PSO). Carretera Pasto-Túquerres, 1820–2600 m, 30 Nov 1962, C. Saravia & R. Jaramillo 1869 (COL). Río Guaitara valley near junction of Panamericana and road to Túquerres, 1700 m, 1 Mar 1986, J. Wood 5326 (COL, K, US).

2. *Leptochloa fusca* (L.) Kunth, Révis. Gramin. 1:91. 1829. *Festuca fusca* L., Syst. Nat., ed. 10, 2: 876. 1759, *nom. cons.* *prop.* *Diplachne fusca* (L.) P. Beauv. ex Stapf, Fl. Cap. 7:591. 1900, *nom. illeg. hom.* *Diplachne fusca* (L.) P. Beauv. ex Stuck., Anales Mus. Nac. Buenos Aires 11:128. 1904, *nom. illeg. hom.* *Diplachne fusca* (L.) P. Beauv. ex Roem. & Schult. *Uralapis fusca* (L.) Steud., Syn. Pl. Glumac. 1:247. 1855. TYPE: PALESTINE: *F. Hasselquist s.n.* (LECTOTYPE: LINN 92.211, designated by Phillips, Fl. Trop. East Afr. Gram. 2:281. 1974).

Annuals, ascending to erect, sometimes geniculate and rooting at lower nodes. Culms to 130 cm tall (when erect); 1–8 mm wide, branched or unbranched; nodes glabrous; internodes (0.5–)3–26 cm long, hollow, herbaceous or sometimes firm. Leaf sheaths longer or shorter than the internodes, glabrous on sides and margins; collars mostly light brown or green; ligules 5–8 mm long, hyaline, apically attenuate but often becoming lacerated due to mechanical damage; blades (3–)5–50 cm long, 2–6 mm wide, linear, flat glabrous to somewhat scabrous above and below. Panicles 15–150 cm long, mostly 2–30 cm wide, partially included at base to completely exerted; the branches (1.5–)3–20 cm long, (3–)5–35 per panicle, alternate, sometimes reflexed or steeply erect but mostly somewhat ascending, stiff, minutely scabrous, the branch axils glabrous. Spikelets 5–12(–14) mm long, short pedicellate, more or less secund, sometimes distant near base of branches but overlapping near branch tips; florets (3–)6–12; callus glabrous or hairy; lower glumes 1.0–3.5(–4.9) mm long, membranous, lanceolate to ovate, usually scabrous on the midvein, broadly acute to acute, awnless or infrequently shortly awned; upper glumes 1.8–5.5 mm long, elliptic, usually ovate or widely ovate, sometimes obovate, scabrous on midvein, obtuse (rarely) or acute at apex, rarely short-awned; lemmas 2.3–6.0 mm long, membranous, elliptic, ovate, or lanceolate, the lateral veins distinct and often slightly excurrent, more or less sericeous on lateral veins and the midvein; apex truncate, obtuse, to acute or acuminate and sometimes bifid, awnless, mucronate, or awned, the awn to 3.5 mm long; paleas subequal or slightly exceeding lemma, more or less sericeous on veins; apex acute or obtuse; stamens 1, 2 or mostly 3; anthers 0.2–2.7 mm long. Caryopses 1.0–2.4 mm long, 0.7–1.2 mm wide, elliptic, ovate, or obovate in hilar profile, transversely elliptic to depressed obovate in transverse section, hilar groove lacking, smooth or sometimes slightly rugose, brown; pericarp weakly adnate to the endosperm.

Distribution.—Widespread and common to abundant in warm-temperate and tropical areas, between approximately 49°N and 40°S in the New World and 40°N and 42°S in Old World; mostly below 2000 m.

Comments.—Populations of the *Leptochloa fusca* complex often appear morphologically distinct in lo-

cal areas, and dozens of names have been applied to regional forms throughout the Americas, Africa, and Australia. Since all morphological characters intergrade when considered globally most local variants do not merit taxonomic recognition (Snow 1997). However, herbarium work and multivariate statistical studies (Snow, unpubl.) based on eleven population samples ($n = 30$) from America, Africa, and Australia, support the recognition of four subspecies. The subspecies, which are usually easy to distinguish, are: *L. fusca* subsp. *fusca*, a polymorphic paleotropical taxon adventive in a few areas in the New World (Nicora 1995); *L. fusca* subsp. *muelleri* (Benth.) N. Snow, known from much of the interior of Australia (Sharp and Simon 2002); *L. fusca* subsp. *uninervia*, native to the neotropics but adventive elsewhere; and *L. fusca* subsp. *fascicularis*, native to the temperate and tropical regions of the New World.

KEY TO SUBSPECIES OF *LEPTOCHLOA FUSCA* IN COLOMBIA

1. Lowermost panicle branches often inserted in upper sheath; uppermost leaf blade length usually exceeding length of panicle; leaf sheaths sometimes mottled with anthocyanin pigments; lemmas often smoky white at maturity and with a dark spot in lower half _____ **2a. *L. fusca* subsp. *fascicularis***
1. Lowermost panicle branches generally exerted from sheath; uppermost leaf blade length generally not exceeding terminal panicle; leaf sheaths only rarely mottled with anthocyanin pigments; lemmas smoky white or not, sometimes dark green or plumbeous, but usually not as a distinct spot _____ **2b. *L. fusca* subsp. *uninervia***

2a. *Leptochloa fusca* subsp. *fascicularis* (Lam.) N. Snow, Novon 8:78. 1998b. (**Fig. 2, A–C**). *Festuca fascicularis* Lam., Tabl. Encycl. 1:189. 1791. *Diplachne fascicularis* (Lam.) P. Beauv., Ess. Agrostogr. 81, 160, pl. 16, f. 9. 1812. *Cynodon fascicularis* (Lam.) Raspail, Ann. Sci. Nat., Bot. 5:303. 1825. TYPE: South America. *D. Richard* s.n. (HOLOTYPE: P!; ISOTYPES: US-2875408!, US-2875408A fragm. ex P!).

Annuals, ascending to erect. Culms (3.5–)15–130 cm tall, 1–5(–8) mm wide, often branching, round; nodes glabrous; internodes 3–18 cm long, herbaceous, hollow. Leaf sheaths mostly longer than the internodes, glabrous on sides and margins; collar light green or brown; ligules 5–7 mm long, hyaline; blades 3–45 cm long, 2.5–7 mm wide, linear, usually sparsely scabrous above and below, flat but becoming involute when dry, midvein prominent. Panicles (1.5–)10–72 cm long, (1–)4–22 cm wide, generally partially included below; the branches 3–35, (0.5–)3–22 cm long, alternate, erect, ascending, or occasionally divergent, rigid or slightly flexuous, minutely scabrous, the axils glabrous. Spikelets 5–12 mm long, distant to mostly imbricate, pedicels less than 1 mm long; florets 6–12; callus glabrous; lower glumes 2–3 mm long, membranous, lanceolate or somewhat asymmetric, scabrous on midvein, acute to aristate and occasionally short-awned; upper glumes 2.5–5.0 mm long, membranous, elliptic to ovate, scabrous on midvein, obtuse, aristate, or short-awned; lemmas 2.5–5 mm long, membranous, lanceolate, light to dark green, light brown or smoky white, the lateral veins pronounced and extending to edges often as small teeth, sparsely sericeous along lateral veins and often midvein, glabrous between veins; apex acute to attenuate, often mucronate or with awns to 3.5 long; paleas generally subequal to lemma, elliptic, sericeous along veins; apex acute to obtuse; stamens 3; anthers 0.2–0.5 mm long, yellow. Caryopses 1–2 mm long, 0.8–1.0 mm wide, elliptic to obovate in hilar profile, transversely elliptic in transverse section, hilar groove lacking, smooth, brown; pericarp weakly adnate to the endosperm.

Distribution and habitat.—Massachusetts (USA) and southern Ontario (Canada) west to Washington (USA) and south to about latitude 40° S in Argentina; open mesic areas, brackish marshes along the eastern US seaboard, agricultural lands, ruderal sites along roads, and saline flats. Elevation from sea level to 1850 m.

Specimens examined. **COLOMBIA. La Guajira:** Costa del Caribe, llanura litoral arenosa y árida entre Mayapo y El Pájaro, 29 Jan 1964, A. Dugand 6667 (COL, US).

2b. *Leptochloa fusca* subsp. *uninervia* (J. Presl) N. Snow, Novon 8:79. 1998b. (**Fig. 2, D–F**). *Megastachya uninervia* J. Presl, Reliq. Haenk. 1:283. 1830. *Poa uninervia* (J. Presl) Kunth, Enum. Pl. 1:344. 1833. *Eragrostis uninervia* (J. Presl) Steud., Syn. Pl. Glumac. 1:278. 1854. *Brizopyrum uninervium* (J. Presl) E. Fourn., Mex. Pl. 2:121. 1886. *Leptochloa uninervia* (J. Presl) Hitchc. & Chase, Contr. U.S. Natl. Herb. 18(7):383. 1917. *Diplachne uninervia* (J. Presl) Parodi, Revista Centro Estud. Agron. 18:147. 1925. TYPE: MÉXICO: *Haenke 101* (LECTOTYPE: P!; designated by Snow, Novon 8:79. 1998b; DUPLICATES OF LECTOTYPE: LE-TRIN-2424.01!, US-78697 fragm.!, WI!).

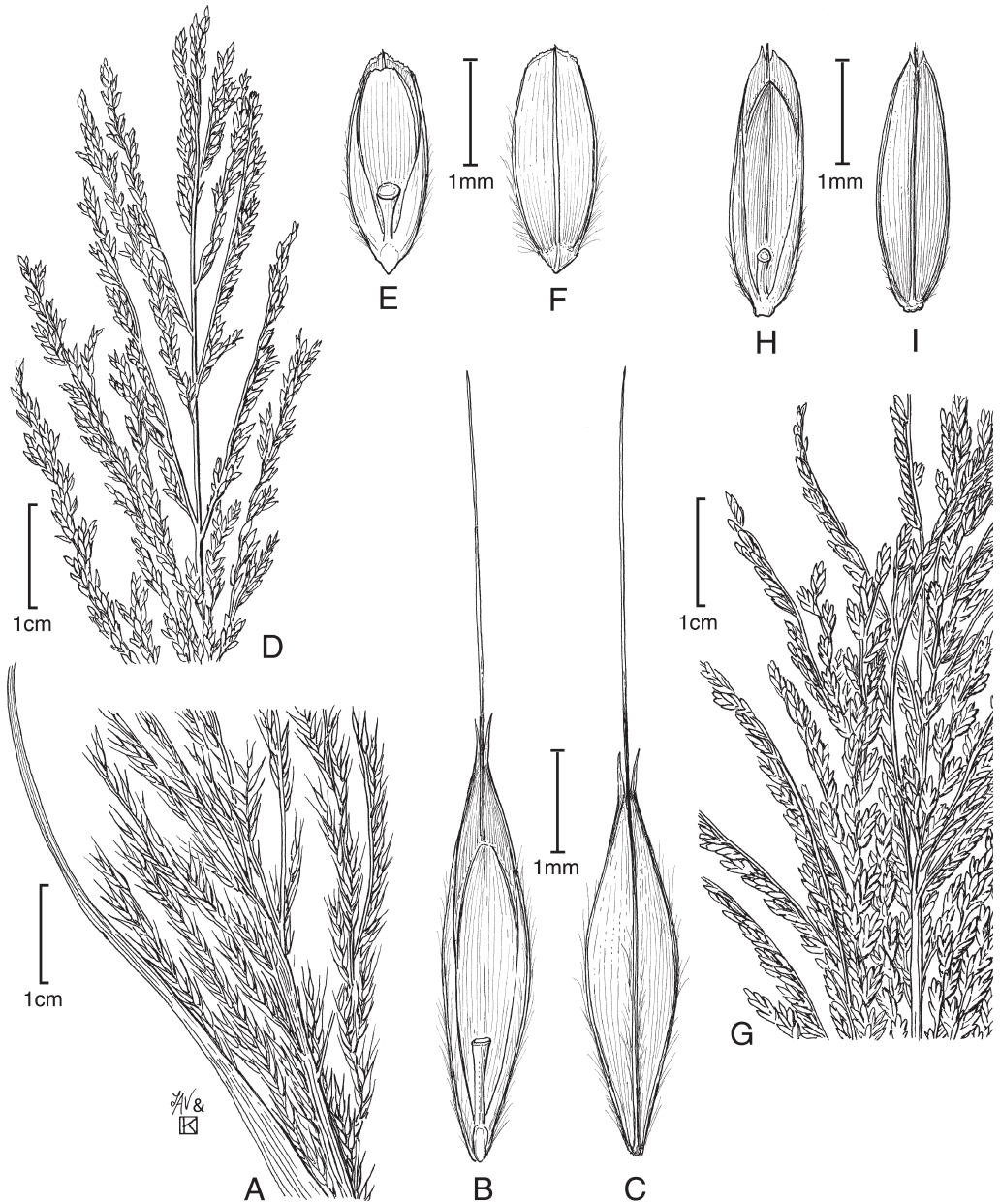


FIG. 2. *Leptochloa fusca* subsp. *fascicularis*. A. Inflorescence. B. Floret with rachilla (ventral view). C. Lemma. *Leptochloa fusca* subsp. *uninervia*. D. Inflorescence. E. Floret with rachilla (ventral view). F. Lemma. *Leptochloa panicoides*. G. Inflorescence. H. Floret with rachilla (ventral view). I. Lemma.

Annuals or occasionally weakly perennial in regions lacking frosts, erect or ascending. Culms (15–)25–110 cm tall, 2–5 mm wide, often branching, round; nodes glabrous; internodes 2–11 cm long, herbaceous, hollow. Leaf sheaths longer or shorter than the internodes, often flattened below, glabrous on sides and margins; collars mostly tan or green; ligules 5–8 mm long, hyaline; blades (2–)5–37 cm long, 2.0–5.5 mm wide, linear, usually densely scabrous above, sparsely to densely scabrous below, flat but becoming involute when dry,

midvein prominent. Panicles 10–57 cm long, (0.5–)3–18 cm wide, usually exserted; the branches (3–)10–60, (0.3–)2–11 cm long, the branches mostly alternate, ascending to erect, stiff or slightly flexuous, minutely scabrous, the axils glabrous. Spikelets 5–10 mm long, rarely distant to normally imbricate (sometimes tightly so), pedicels mostly less than 1 mm long; florets (3–)6–10; callus sparsely sericeous; lower glumes 1.0–2.6 mm long, membranous, narrowly triangular, lanceolate, or ovate, glabrous or scabrous on midvein, acute to aristate or mucronate; upper glumes 1.8–2.8 mm long, membranous, obovate to widely ovate, glabrous or scabrous on midvein, obtuse, acute, or rarely mucronate; lemmas 2.0–3.6 mm long, membranous, ovate or elliptic, light brown to very dark green or somewhat plumbeous, lateral veins more or less prominent and generally extending to edges, sparsely sericeous below on lateral veins and often midvein, glabrous between veins; apex broadly acute, more commonly obtuse to truncate, sometimes bifid or mucronate; paleas subequal or slightly longer than lemma, membranous, elliptic, sericeous along veins; apex obtuse; stamens 3; anthers 0.4–1.0 mm long, yellow. Caryopses 1.0–1.5 mm long, 0.7–0.8 mm wide, elliptic, ovate, or obovate in hilar profile, transversely elliptic in transverse section, hilar groove lacking, smooth or slightly rugose, brown; pericarp weakly adnate to endosperm.

Distribution and habitat.—In the New World mostly south of latitude 37°N, south to Argentina, occasionally adventive in Old World (Snow and Simon 1999); open mesic areas, agricultural lands, saline flats, mangrove swamps. Elevation is from sea level to 1200 m.

Specimens examined. **COLOMBIA. Atlántico:** Entre Palmar de Varela y Ponedera, bosques xerofíticos, 10 m, 27 Ago 1960, A. Dugand 5304 (COL, US). **Magdalena:** Ciénaga, alrededores de Aguacoca, 20 m, 21 Feb 1959, R. Romero-Castañeda 7268 (COL, US).

3. *Leptochloa panicea* subsp. *brachiata* (Steud.) N. Snow, Novon 8:79. 1998b. (**Fig. 3, A–E**). *Leptochloa brachiata* Steud., Syn. Pl. Glumac., 209. 1854. TYPE: GUADALOUPE [French Republic]: *Duchassaing s.n.* (HOLOTYPE: P!; US fragm.!).

Eleusine filiformis Pers., Syn. Pl. 1: 87. 1805. *Leptochloa filiformis* (Pers.) P. Beauv., Ess. Agrostogr.: 71, 163, 166. 1812. TYPE: SOUTH AMERICA: *Richard s.n.* (HOLOTYPE: P!).

Annuals, ascending to erect. Culms (10–)30–150 cm tall, mostly less than 5 mm wide, frequently branched; nodes glabrous; internodes mostly 5–30 cm long, hollow, herbaceous or sometimes firm. Leaf sheaths longer or shorter than the internodes, sparsely to moderately pilose (hairs with papillose bases); collars often magenta; ligules 1.0–3.2 mm long, membranous but erose apically; blades 6–25 cm long, 2–21 mm wide, linear, flat, glabrous to sparsely pilose on both surfaces. Panicles 8–30 cm long, usually 5–35 cm wide, occasionally partially included at base; the branches (1–)3–19 cm long, (3–)10–100 per panicle, alternate, ascending (mostly) to somewhat reflexed apically (but otherwise firm), minutely scabrous, the branch axils glabrous. Spikelets 2–4 mm long, short pedicellate, more or less secund, sometimes distant near base of branches but overlapping near branch tips; florets 2–5(–6); callus glabrous; lower glumes 1.6–4 mm long, membranous, lanceolate, usually scabrous on the midvein, acute, awnless; upper glumes 1.6–3.6 mm long, lanceolate, awnless; lemmas 1.3–1.7 mm long, membranous, lanceolate, more or less sericeous on lateral veins and the midvein; apex acute, awnless; paleas subequal to lemma; apex acute or obtuse; stamens 3; anthers 0.2–0.3 mm long. Caryopses 0.9–1.2 mm long, 0.5–0.6 mm wide, more or less rounded in hilar profile, widely depressed obovate to obdeltoid in transverse section, hilar groove narrow and shallow, smooth or sometimes slightly rugose, brown to reddish; pericarp adnate to the endosperm.

Distribution and habitat.—Southern third of United States through Mesoamerica and the West Indies to southern Brazil and Argentina; disturbed, mesic, and agricultural sites, to ca. 2800 m.

Comments.—*Leptochloa panicea* is a polymorphic species occurring throughout much of the warm temperate and tropical regions, and is comprised of three subspecies (Snow 1997, 1998a). Snow and Davidse (1993) reported that the name then in use for the widespread New World taxon, *L. filiformis* (Lam.) P. Beauv., was an illegitimate later homonym that should be replaced by *L. mucronata* (Michx.) Kunth. Although not the first to do so, Nowack (1994, 1995) recently placed New World specimens as a subspecies of the otherwise Old World species *L. panicea*, and made the new combination *L. panicea* subsp. *mucronata*. Included in Nowack's concept of *L. panicea* subsp. *mucronata* were two taxa formerly recognized as *L. filiformis* vars. *filiformis* and *attenuata*, which Snow (1997, 1998b) treated (respectively) as *L. panicea* subsp. *brachiata* (Steud.)

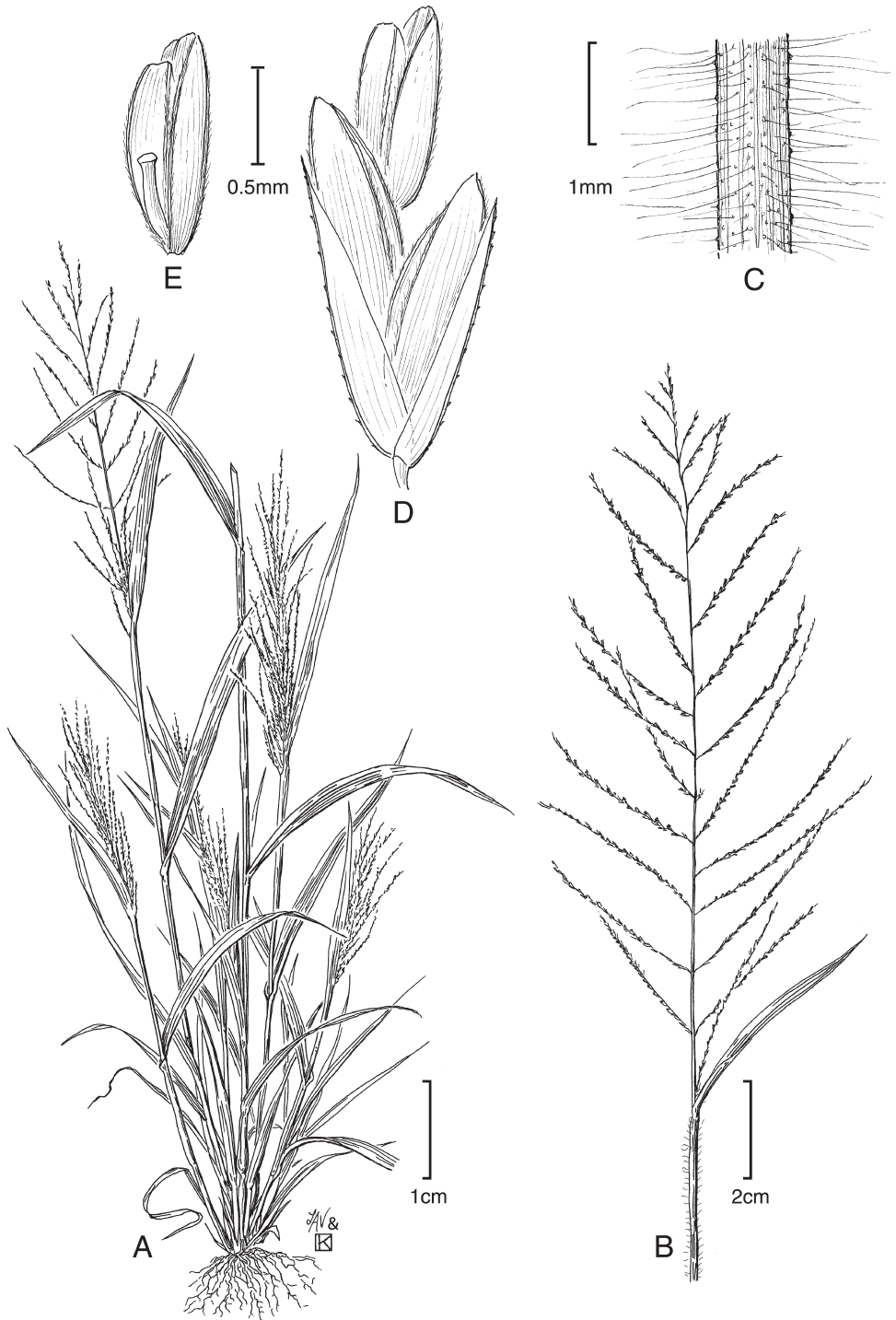


FIG. 3. *Leptochloa panicea* subsp. *brachiata*. A. Habit. B. Inflorescence. C. Portion of the leaf sheath with a covering of papillose-based hairs. D. Spikelet. E. Floret with rachilla (lateral view).

N. Snow and *L. panicea* subsp. *mucronata* (Michx.) N. Snow. The much more widespread taxon, referred to earlier as *L. filiformis* or *L. mucronata* (Snow & Davidse, 1993), was given the new name *L. panicea* subsp. *brachiata* (Snow 1998b).

Drawing on field experience and examination of over 4,000 herbarium specimens, Snow (1997) concluded that the phenetic variation is sufficiently consistent to warrant recognition of three subspecies. Only *L. panicea* subsp. *brachiata* is present in Colombia.

Vernacular name.—Pasto paja-mona (Valle del Cauca).

Specimens examined. **COLOMBIA. Antioquia:** Mun. Necoclí, 42 km carretera Necoclí-Arboletes, en barranco muy seco, 160 m, 29 Sep 1986, *J. Betancur et al.* 298 (COL, HUA, MO). Mun. Arboletes, en playa, 30 Sep 1986, *J. Betancur et al.* 316 (COL, HUA, MO). La Pintada, grassland at Hacienda Montenegro near La Pintada, 600 m, 20 Oct 1947, *C. Blackman, J. Mejía & F. Barkley* 17-C284 (COL). Mun. Bolívar, carretera Bolívar-Caramanta, km 5 arriba de Ricaurte, margen izquierda del Río Cauca, *Cabrera* 647 (MO). Vicinity of Medellín, 30 Jul 1927, *R. Toro* 327 (US). **Atlántico:** Entre Palmar de Varela y Ponedera, hacienda El Paraíso, orillas del Río Magdalena, 10 m, 28 Jan/8 Feb 1950, *A. Dugand* 4435 (COL). Barranquilla, El Prado, 60 m, 30 Dec 1958, *A. Dugand* 5074 (COL). Cerca de Barranquilla, carretera a Juanmina, 20 m, 10 Jul 1960, *A. Dugand* 5267 (COL, US). Puerto Colombia, Sabanilla, 21 Nov 1912, *A. Hitchcock* 9932 (US). Al sur de Barranquilla, cerca de Martillo, 5–10 m, 29 Abr 1960, *L. Mora* 1344 (COL). Barranquilla, year 1926, *B. Paul* C-17 (US). **Bolívar:** Mun. Turbaco, jardín botánico “Guillermo Piñeres,” 6 Ago 1980, *J. Espina* 499 (COL). Cartagena, 20 Nov 1912, *A. Hitchcock* 9919 (US). Mun. San Martín de Loba, corregimiento La Ribona, reserva natural El Garcero, finca La Buenaventura, *Ramírez & Villa* 4664 (MO). **Cauca:** Between Río Mayo and Galindez, 800 m, 26 Oct 1983, *J. Wood* 4060 (COL, US). **Cundinamarca:** 14 km WNW of Melgar, 330 m, 8 Jan 1974, *G. Davidse, A. Gentry & F. Llanos* 5573 (COL, MO). Poblado de Nariño, zonas ruderales, 340 m, 15 Feb 1986, *J. Fernández & R. Jaramillo* 5230 (COL). Montañuela, San Bernardo, 1400 m, 19 Mar 1961, *J. Idrobo & Dumont* 4438 (COL). Mun. Tocaima, ca. 500 m, Dec 1934, *E. Pérez-Arbeldéz* 2419 (COL), 2424 (COL). Mun. Útica, en granja experimental, 467 m, 13 Oct 1962, *C. Saravia* 1373 (COL). 5 km of El Nilo, 16 Jun 1985, *J. Wood* 4927 (US). **Huila:** Mun. El Agrado, quebrada La Yaguilga, campos de cacao y zonas de matorral circundantes, ca. 700 m, Sep 1986, *J. Fernández & G. Morales* 6839 (COL). **Magdalena:** Santa Marta, 1898–1899, *H. Smith* 213 (US), 2163 (US). **Santander:** Bajo Magdalena, Isla de Venado, inter Billete Blanco et El Presidio, 7 May 1926, *S. Juzepczuk* 4770 (US). San Gil, 1250 m, year 1983, *J. Wood* 3885 (COL). Bajo Magdalena, Barrancabermeja, 6 Abr 1926, *G. Woronow & S. Juzepczuk* 4428 (US). **Tolima:** Mun. Espinal, 500 m, Sep 1859, *M. Lindig* 1033-P33. **Valle del Cauca:** Río Cauca, alrededores de Palmira, 1000 m, 3 Dec 1947, *R. Cardenosa et al.* 17-C937 (COL, US), *R. Murguieitio et al.* 17-C929 (US). Hacienda El Trejo, entre El Cerrito y Palmira, 1050 m, 28 Dec 1938/5 Jan 1939, *H. García-Barriga* 6339 (COL, US). Mun. Palmira, Ingenio La Manuelita, 1000 m, 29 Jul 1966, *J. Páez* 23 (COL). Mun. Palmira, granja agrícola experimental, 5 Jan 1957, *A. Ramírez* 14 (COL). Loboguerrero, 1050 m, 12–14 Nov 1962, *C. Saravia* 1483 (COL). Mun. Palmira, 1100 m, no date, *A. Villamizar s.n.* (COL: 82436). **Unknown department:** Río Frio, 23 Jun 1906, *H. Pittier* 1584 (US).

4. *Leptochloa panicoides* (J. Presl) Hitchc., Amer. J. Bot. 21:137: 1934. (**Fig. 2, G–I**). *Megastachya panicoides* J. Presl, Reliq. Haenk. 1(4–5):283. 1830. *Poa panicoides* (J. Presl) Kunth, Enum. Pl. 1:343. 1833. *Eragrostis panicoides* (J. Presl) Steud., Syn. Pl. Glumac. 1:278. 1854. *Diplachne panicoides* (J. Presl) McNeill, Brittonia 31:402. 1979. TYPE: MÉXICO: Habitat in México ad Acapulco, verosimiliter inlutosus, *Haenke s.n.* (HOLOTYPE: PR; ISOTYPES: IT: LE-TRIN-2121.02!, MO-2109566!, MO-2109567 line drawing!, US-78688 fragm.!).

Annuals, often geniculate below but generally erect. Culms (7–)45–110 cm tall, 1–7 mm wide, branching (sometimes profusely), round; nodes glabrous; internodes (1–)4–10 cm long, herbaceous, hollow. Leaf sheaths generally longer than the corresponding internodes, somewhat flattened below, glabrous, the margins sometimes very sparsely ciliate along the lower half; collars sometimes magenta; ligules 2.2–3.8 mm long, membranous, truncate, somewhat erose apically; blades 4–20 cm long, mostly 4–8 mm wide, linear or the shorter ones lanceolate, glabrous to minutely scabrous above and below. Panicles (1–)20–35 cm long, (3–)4–12 cm wide, generally exserted; the branches (20–)40–90, 2.5–7 cm long, alternate, mostly ascending, stiff to weakly flexuous, minutely scabrous, the axils glabrous. Spikelets 4–5 mm long, generally somewhat imbricate, pedicles 1–2 mm long; florets (4–)5 or 6(–7); callus glabrous; lower glumes 0.9–1.9 mm long, membranous, narrowly lanceolate to lanceolate or sometimes falcate, minutely scabrous on the midvein, acute; upper glumes 1.8–2.3 mm long, membranous, ovate, minutely scabrous on the midvein, acute to obtuse; lemmas 2.4–3.0 mm long, membranous, narrowly elliptic to ovate, tan, maroon, or green, lateral veins pronounced, projecting abaxially, and usually bright green, sericeous (sometimes scarcely so) at base of lateral veins and/or midvein; apex acute to broadly acute, awnless or mucronate; paleas subequal to ca. 2/3 as long as the lemma, membranous, ovate to elliptic, glabrous throughout; apex obtuse; stamens 3; anthers 0.6–0.8 mm long, maroon or yellow. Caryopses 1.1–1.4 mm long, 0.7 mm wide, elliptic in hilar

profile, depressed obovate in transverse section, hilar groove lacking, smooth or somewhat rugose, brown; pericarp tightly adnate to the endosperm.

Distribution and habitat.—From central Mississippi and Ohio River drainages in the United States south through Mesoamerica to Brazil; generally in mesic sites. Elevation: sea level to 500 meters.

Specimens examined. **COLOMBIA. Amazonas:** Beira Río Loretoyacu, perto da fazenda Wandurraga, 28 Sep 1946, *G. Black & R. Schultes* 46-158 (COL); Río Loretoyacu, Oct 1946, *G. Black & R. Schultes* 46-169 (COL, GH, US), 46-184 (COL, US); Trapecio Amazónico, Loretoyacu River, ca. 100 m, Oct 1946, *R. Schultes & G. Black* 8503 (COL, GH, US). **Casanare:** Mun. El Yopal, sabanas alteradas no inundables, finca La Armonía, en inmediaciones de un cultivo de arroz, ca. 400 m, 3 Nov 2007, *D. Giraldo-Cañas et al.* 4156 (CAUP, COAH, COL).

5. *Leptochloa scabra* Nees, *Agrostogr. Bras.* 2: 435. 1829. (**Fig. 1, D–F**). *Diplachne scabra* (Nees) Nicora, *Hickenia* 2(19):91. 1993. TYPE: BRAZIL: Pará, in ripa fluminum Amazonum, Tagipuris, *K.F.P. von Martius* s.n. (HOLOTYPE: M!; ISOTYPES: BAA-1514 fragm ex M, US-88699 fragm.ex M!).

Vigorous annuals mostly erect, rarely geniculate at the base. Culms (12–)20–125 cm tall, (0.6–)1–6.2 mm wide, branching, keeled and compressed; nodes glabrous; internodes 6–9 cm long, herbaceous or hard, hollow. Leaf sheaths usually shorter than or equal to internodes, often flattened below, glabrous to scabrous, the margins glabrous; collars magenta to dark maroon; ligules (0.5–)1.5–2.5 mm long, thinly membranous with numerous hairs arising from base of the blade, truncate, fimbriate to erose apically; blades (4–)25–35(–50) cm long, (3–)8–16 mm wide, linear to lanceolate, scabrous above and below, flat, midvein prominent. Panicles (10–)15–35 cm long, (2–)7–12 cm wide, usually partially included; the branches 50–150, (2–)5–12 cm long, alternate, ascending to erect, flexuous to prominently arcuate, minutely scabrous, the axils glabrous. Spikelets 3.0–4.5 mm long, mostly imbricate, short-pedicellate; florets 4–6; callus glabrous; lower glumes 0.8–1.6 mm long, membranous, narrowly triangular, triangular, or trullate, minutely scabrous on the midvein, acute to mucronate; upper glumes 1.1–2.1 mm long, membranous, ovate, glabrous or scabrous, obtuse, acute, or mucronate; lemmas 2.1–2.4 mm long, membranous, lanceolate to narrowly ovate, light green becoming tan, the lateral veins extending to near edge of lemma but less distinct apically, sparsely sericeous along lower 1/2 of veins; apex acute, awnless or mucronate; paleas subequal to lemma, membranous, lanceolate, sparsely sericeous along lower part of lateral veins, bifid apically; stamens 3; anthers 0.2–0.4 mm long, yellow or light brown. Caryopses 0.8–1.3 mm long, 0.3–0.5 mm wide, elliptic to obovate in hilar profile, depressed obovate in transverse section, hilar groove lacking, smooth to slightly rugulose; pericarp weakly adnate to endosperm.

Distribution and habitat.—Native distribution from the United States of America (Alabama and Louisiana) to the West Indies, Mesoamerica to Paraguay and Brazil. Its introduced range includes Africa (Angola and Mali) and Papua New Guinea; creek banks, disturbed alluvial areas, river margins, agricultural fields. Elevation 0–750 m.

Comments.—*Leptochloa scabra* can be confused with *L. panicoides*. The former is distinguished by its shorter and more tightly imbricate spikelets, the keeled lemmas, its distinctly flexuous to arcuate panicle branches, and culms that are somewhat flattened near the base.

Specimens examined. **COLOMBIA. Amazonas:** Leticia, 17 Ago 1946, *G. Black & R. Schultes* 46-2 (US). Río Loretoyacu, Oct 1946, *G. Black & R. Schultes* 46-185 (COL, GH, US). Río Caquetá, *J. Duivenvoorden et al.* 71 (MO). **Antioquia:** Mun. Chigorodó, hacienda Montecristo, 25 km después de Apartadó, cultivo de chontaduro (*Bactris gasipaes*), 40 m, 2 Oct 1986, *J. Betancur et al.* 345 (COL, HUA, MO). **Atlántico:** al sur de Barranquilla, Río Magdalena, en la isla frente a Puerto Giraldo, 5–10 m, 29 Abr 1960, *L. Mora* 1455 (COL). **Bolívar:** Río Sinú, 10–100 m, 11 Feb 1918, *F. Pennell* 4195 (US). Boca Esmeralda, on Río Sinú, 200–400 m, 1 Mar 1918, *F. Pennell* 4554 (GH, NY, US). **Cauca:** Mun. Patía, a 2 km de Mojarras, granja Universidad de Nariño, 700 m, 23 Abr 1988, *B. Ramírez* 1127 (COL, PSO). **Chocó:** alrededores de la confluencia de los Ríos Chintadó y Truandó, 25 Mar 1958, *P. Bernal* 52 (COL, MO). Río Truandó, gallery between the boom and Río Salado, *Duke 11100* (NY). Río Juradó, *Sneider A-202* (A, MICH). **Guainía:** Bacco de Minas, 400 m, Dec 1976, *C. Domínguez* 18 (COL), 21 (COL). **Guaviare:** Mun. San José del Guaviare, desde el puerto hasta la desembocadura del caño La Fuga, margen izquierda del río Guaviare, aguas arriba en bordes de Río, en suelos de areniscas, 200 m, 17 Feb 1996, *R. López* 997 (COAH, COL). Angostura Nro. 2, margen derecha del Río Guayabero, 23 Feb 1969, *P. Pinto & C. Sastre* 1012 (COL). **Huila:** 3 km W of Palermo towards Santa María, 500 m, 16 Mar 1985, *J. Wood* 4749 (COL). **Magdalena:** isla de Salamanca, entre caño Calrín y la carretera, del km 10 al 15, 20 Jun 1970, *N. de López* 472 (COL). Región de Santa Marta, en Ciénaga, El Arsenal, alrededores de la ciudad, 17 Feb 1950, *R. Romero-Castañeda* 1979 (COL). **Meta:** Reserva Nacional La Macarena, margen izquierda del Río Guayabero, al pie de las mesetas del sur, frente a la confluencia

del caño Losada, 300 m, 3 Mar 1959, R. Jaramillo & J. Hernández 2079 (COL). Margen derecha del Río Guayabero, raudal de La Macarena (Angostura Nro. 1), 350 m, 24 Jan 1959, P. Pinto & Bischler 343 (COL, US). Margen izquierda del Río Guayabero, 10 km abajo del caño Losada, 350 m, 30 Jan 1959, P. Pinto & Bischler 368 (COL, US). **Sucre:** Mun. Tolú, ciénaga La Caimanera, 17 km Tolú-Coveñas, golfo de Morrosquillo, transición entre manglar y una ciénaga cultivada con arroz, que conduce a la tierra firme, 0–5 m, 20 Sep 1990, J. Betancur & M. Berrio 1994 (COL, HUA, MO, US). **Valle del Cauca:** Mun. Yotoco, Ingenio La Carmelita, sección San Martín, Ramos et al. 2828 (MO). Mun. Yumbo, Finca Río Grande, pasture around the houses, 1200 m, 13 Jun 1998, D. Stancik 793 (COL). **Unknown department:** J.C. Mutis 5428 (US).

6. *Leptochloa virgata* (L.) P. Beauv., Ess. Agrostogr. 71, 161, 166, pl. 15, f. 1. 1812. (Fig. 1, G & H). *Cynosurus virgatus* L. Syst. Nat. (ed. 10):876. 1759. *Festuca virgata* (L.) Lam., Tabl. Encycl. 1:189. 1791. *Eleusine virgata* Pers., Syn. Pl. 1:87. 1805. *Leptostachys virgata* (L.) G. Mey., Prim. Fl. Esseq., 74. 1818. *Cynodon virgatus* (L.) Raspail, Ann. Sci. Nat., Bot. 5:302. 1825. TYPE: JAMAICA: *P. Browne* s.n. (LECTOTYPE: LINN-91.181 designated by Hitchcock, Contr. U.S. Natl. Herb. 12:122. 1908).

Perennials, ascending to erect or infrequently geniculate and rooting at nodes. Culms 30–100 cm tall, (1–)3–5 mm wide, branched, round or occasionally flat; nodes glabrous; internodes 4–35 cm long, herbaceous or firm, solid. Leaf sheaths longer or shorter than internodes, round, glabrous, or shortly sericeous to sometimes pilose, particularly near the collar, the margins similar; collar green or tan; ligules 0.2–1.0 mm long, firmly membranous or cartilaginous, truncate, somewhat fimbriate or erose apically; blades (2.5–)10–44 cm long, 4–16 mm wide, lanceolate, glabrous, scabrous, or sparsely pilose from small papilla above and below, flat, midvein prominent or reduced. Panicles (5–)12–60 cm long, (2–)3–20 cm wide, exserted; the branches 9–60, (1.5–)3–18 cm long, alternate or rarely subdigitate, ascending to nearly erect, flexuous, scabrous, the axils usually pilose. Spikelets (1.7–)3–4 mm long, mostly imbricate or somewhat distant at base of panicle branches, sessile or nearly so; florets (2–)4 or 5(–6); callus glabrous, scabrous, to velutinous or pilose; lower glumes (1.0–)1.7–2.9 mm long, membranous, lanceolate, minutely scabrous on midvein, acute, attenuate, or rarely obtuse; upper glumes (1.4–)1.7–2.5(–3.8) mm long, membranous, ovate to lanceolate, minutely scabrous on midvein, obtuse, acute, acuminate, or rarely mucronate; lemmas (1.5–)2.3–3.6 mm long, chartaceous, ovate, light brown to maroon but apparently never deep green, lateral veins faint and not extending to the edges, nearly glabrous to sericeous on veins, glabrous or sparsely sericeous on sides; apex acute or rarely obtuse, awnless or awned (awns up to 11 mm long in other parts of South America); paleas subequal to lemma, firmly membranous or chartaceous, lanceolate to narrowly elliptic, glabrous or sparsely sericeous between veins; apex acute; stamens 2; anthers ca. 0.5 mm long, light purple. Caryopses (1.0–)1.3–1.8 mm long, ca. 0.5 mm wide, narrowly elliptic to ovate in hilar profile, rounded shallowly obdeltate to widely obovate in transverse section, hilar groove lacking or fairly pronounced but shallow or relatively broad and shallow, smooth, mostly light reddish brown; pericarp tightly adnate to the endosperm.

Distribution and habitat.—From southern Texas, southern Florida, and the West Indies through Mesoamerica and South America (excluding Chile) and locally in Papua New Guinea and Papua Province, Indonesia (formerly Iryan Jaya); occurring in numerous vegetation and soil types, but mostly in more mesic climates. Elevation: sea level to 1300 m.

Vernacular names.—Painoo (Casanare), Rabo de zorro (Tolima).

Specimens examined. **COLOMBIA. Antioquia:** Vuelta de Acuña, Río Magdalena, 125–130 m, 14 Jan 1918, F. Pennell 3803 (NY, US). Mun. Santa Fe de Antioquia, finca Cotové, 580 m, 24 Sep 1986, R. Pohl 15594 (HUA, MO, US). Vicinity of Medellín, 30 Jul 1927, R. Toro 332 (US). Mun. Santa Fe de Antioquia, along road Santa Fe de Antioquia-Anzá, ca. 1 km W of crossing of Río Tonuzco at its confluence with Río Cauca, near Finca Cotové, 615 m, 19 Sep 1987, J. Zaruchi et al. 5486 (COL, MO, NY). **Atlántico:** Entre Juanmina y Cuatrococas, finca Bajoebula, bosques áridos, 80–100 m, 15–16 Jan 1946, A. Dugand & R. Jaramillo 4037 (COL, US). Entre Palmar de Varela y Ponedera, hacienda El Paraíso, orillas del Río Magdalena, 10 m, 8–10 Jan 1954, A. Dugand 4704 (COL, US). **Bolívar:** Along the Caño Chacagua, N to Los Piñones, Island of Mompós, Lands of Loba, Abr–May 1916, H. Curran 260 (US). Cartagena, 20 Nov 1912, A. Hitchcock 9923 (US). Río Magdalena, boca de bosque, 50 m, 18 Dec 1969, J. Idrobo 6309 (COL). Soplaviento and vicinity, 5–10 m, 16 Nov 1926, E. Killip & A. Smith 14606 (GH, MO, NY, US). Cañabetal, Río Magdalena, 90–100 m, 15 Jan 1918, F. Pennell 3883 (GH, MO, NY, US). **Casanare:** Mochuelo y Tsamani, margen derecha del bajo Casanare, 3 Jul–6 Ago 1984, F. Ortiz 525 (COL). **Chocó:** Río Truandó, gallery between the boom and Río Salado, Duke 11079 (NY). **Cundinamarca:** poblado de Nariño, zonas ruderales, 340 m, 15 Feb 1986, J. Fernández & R. Jaramillo 5206 (COL). Mun. Caparrapi, hacienda Saldaña, 1280 m, 10–13 Jun 1939, H. García-Barriga 7742 (COL). La Mesa, camino de herradura de La Mesa a San Javier, 950–1320 m, 2–20 Jan 1947, H. García-Barriga 12135 (COL). Montañuela, San Bernardo, 1400 m, 19 Mar 1961, J. Idrobo & Dumont 4440 (COL). Cune, 1200 m, Jul 1860, M. Lindig 1121-P122 (COL). Nariño, ca. 500 m, Jul 1930, E. Pérez-Arbeláez 460

(COL). Nilo, Jul 1930, E. Pérez-Arbeláez 504 (COL). Near La Mesa on the road El Colegio, 1000 m, year 1983, R. Wood 3588 (COL). **Huila:** Mun. Villavieja, Fortalecillas, km 2 via a Villavieja, 450 m, B. Ramírez 13169 (CAUP, COL). Río Saldaña to Natagaima, Rusby & F. Pennell 240 (NY). **Magdalena:** Santa Marta, 1898–1899, H. Smith 188 (GH, US). Santa Marta, 1898–1899, H. Smith 2160 (US). **Meta:** Los Llanos, Río Meta, El Porvenir, 16 Oct 1938, J. Cuatrecasas 3692 (COL, NY, US). Los Llanos, río Meta, isla de arenal en Vuelta Mala, 17 Oct 1938, J. Cuatrecasas 3790 (US). Margen izquierda del Río Guayabero, 10 km abajo del caño Lozada, 350 m, 30 Jan 1959, P. Pinto & Bischler 366 (COL). **Nariño:** Carretera Panamericana, debajo del puente de Mojarras, 800 m, en bosque seco tropical, 15 Jan 1989, J. Ortiz 1316 (COL). **San Andrés, Providencia y Santa Catalina:** Isla de San Andrés, ca. 5 m, no date, R. Toro 38 (COL). **Santander:** Bajo Magdalena, Isla de Venado, inter Billete Blanco et El Presidio, 7 May 1926, S. Juzepczuk 4744 (US), 4750 (US). 6 km al sur de Palyón, 800 m, 2 Ago 1966, A. Robinson & C. Beltrán 3023-A (US). San Gil, 1250 m, year 1983, R. Wood 3868 (COL). Chicamocha Valley, Pescadero Piedecuesta, in stable sand along the margins of the Río Manco, 700 m, 3 Jul 1984, J. Wood 4490 (COL). **Tolima:** Mun. Espinal, en Calicheros frente al molino San Martín, no date, R. Echeverry 1080 (COL). Mun. Espinal, 500 m, Dec 1859, M. Lindig 1107-P106 (COL). Between Guamo and Saldaña, 300 m, 11 Nov 1983, R. Wood 4096 (COL). **Valle del Cauca:** Plana del Valle, entre Gorgona y Cabuyal, 1000 m, 2 Jun 1943, J. Cuatrecasas 14495 (US). Plana del Valle, extremo norte, Cartago, en San Jerónimo, 980 m, 15 Nov 1946, J. Cuatrecasas 22841 (US). La Manuelita, near Palmira, eastern side of Cauca Valley, 1100–1302 m, Dec 1905–Jan 1906, H. Pittier 832 (US). Hacienda Vidal, ca. 3 km delante de Vijes, via Vijes-Yotoco, Ramos & Ramos 2278 (MO). Corregimiento de Mulaló, en la vía Yumbo-Vijes, Ramos & Ramos 3151 (MO). Entre Loboguerrero y Yumbo, 1000–1100 m, 14–18 Nov 1962, C. Saravia 1620 (COL). Mun. Cali, Universidad del Valle, Silverstone-Sopkin 1996 (MO). **Unknown departamento:** J.C. Mutis 5427 (US), 5429 (US).

EXCLUDED NAME

Tridens virens Nees, Fl. Bras. Enum. Pl. 2:476. 1829. *Uralespis virens* (Nees) Kunth, Enum. Pl. 1:319. 1833. *Diplachne virens* (Nees) Parodi, Rev. Fac. Agron. Vetrin. 6:14. 1927. TYPE: BRAZIL: “Habitat in graminosis ad fluvium S. Francisci in provincia Bahiensi et Permambucana, ad Joazeiro et alibi.” We do not know where the type is housed and have not seen it. Chase and Niles (1962) indicate that the “type is *Leptochloa fascicularis* [=*L. fusca* subsp. *fascicularis*] or affine.”

ACKNOWLEDGMENTS

We wish to thank the curators at BAA, COAH, CAUP, COL, HUA, LE, MO, SI, and US for their valuable help; the Smithsonian Institution and Universidad Nacional de Colombia for supporting research visits by NS and DGC to the United States National Herbarium; Utah State University for permission to use illustrations that appeared in *Flora of North America*, Volume 25, prepared by Linda A. Vorobik and Karen Klitz; Victor L. Finot and Stephan L. Hatch for providing helpful comments on the manuscript; and Alice Tangerini for preparing all electronic plates. This article will contribute to projects “monograph of *Leptochloa* (Poaceae: Chloridoideae)” of NS and PMP (in prep.), and “Estudios sistemáticos en gramíneas de Colombia: Parte II,” of the Universidad Nacional de Colombia (Bogotá) of DGC.

REFERENCES

- CHASE, A. AND C.D. NILES. 1962. Index to grass species. Three vols. G.K. Hall and Co., Boston.
- CLAYTON, W.D. AND S.A. RENOIZE. 1986. Genera Graminum: grasses of the World. Kew Bull., Addit. Ser. 13:1–389.
- COLUMBUS, J.T., R. CERROS-TLALIPA, M.S. KINNEY, M.E. SIQUEIROS-DELGADO, H.L. BELL, M.P. GRIFFITH, AND N.F. REFULIO-RODRÍGUEZ. 2007. Phylogenetics of Chloridoideae (Gramineae): A preliminary study based on nuclear ribosomal internal transcriber spacer and chloroplast *trnL-F* sequences. *Aliso* 23:565–579.
- DUVALL, M.R., P.M. PETERSON, AND A.H. CHRISTENSEN. 1994. Alliances of *Muhlenbergia* (Poaceae) within New World Eragrostideae are identified by phylogenetic analysis of mapped restriction sites from plastid DNAs. *Amer. J. Bot.* 81:622–629.
- HILL, K.W. AND L.A. ALICE. 2001. A phylogeny of Chloridoideae (Poaceae) based on *matK* sequences. *Syst. Bot.* 26:386–405.
- INGRAM, A.L. AND J.J. DOYLE. 2007. *Eragrostis* (Poaceae): Monophyly and infrageneric classification. *Aliso* 23:595–604.
- MCNEILL, J. 1979. *Diplachne* and *Leptochloa* (Poaceae) in North America. *Brittonia* 31:399–404.
- MCVAUGH, R. 1983. *Flora Novo Galiciana: A descriptive account of vascular plants of western Mexico*. *Flora Novo Galiciana* 14:1–436.
- NASH, G.V. 1913. Gramineae Juss. In: N.L. Britton and A. Brown, eds. *Illustrated flora of the Northern States and Canada*, ed. 2, 1. New York. Pp. 107–295.

- NICORA, E.G. 1995. Los géneros *Diplachne* y *Leptochloa* (Gramineae, Eragrosteeae) de la Argentina y países limítrofes. *Darwiniana* 33:233–256.
- NICORA, E.G. AND Z.E. RÚGOLO DE AGRASAR. 1987. *Los géneros de gramíneas de América austral*. Ed. Hemisferio Sur, Buenos Aires.
- NOWACK, R. 1994. Revision of *Leptochloa* Beauv. (incl. *Diplachne* Beauv.) (Poaceae) in Malesia. *Rheedea* 4:79–92.
- NOWACK, R. 1995. A new combination in Malesian *Leptochloa* Beauv. *Rheedea* 5:93.
- PALISOT DE BEAUVOIS, A. M. F. J. 1812. *Essai d'une nouvelle agrostographie ou nouveaux genres des graminees*. Imprimerie de fain, Paris.
- PARODI, L. 1927. Revisión de las gramíneas argentinas del género *Diplachne*. *Revista Fac. Agron. Veterin.* 6:21–43.
- PEÑALOZA-JIMÉNEZ, G., P.M. PETERSON, AND D. GIRALDO-Cañas. 2002. Los Géneros *Eragrostis* y *Leptochloa* (Poaceae: Cynodonteae) en Colombia. *Hickenia* 3(35):133–141.
- PETERSON, P.M., J.T. COLUMBUS, AND S.J. PENNINGTON. 2007. Classification and biogeography of New World grasses: Chloridoideae. *Aliso* 23:580–594.
- PETERSON, P.M., R.J. SORENG, G. DAVIDSE, T.S. FILGUEIRAS, F.O. ZULOAGA, AND E.J. JUDZIEWICZ. 2001. Catalogue of New World grasses (Poaceae): II. Subfamily Chloridoideae. *Contr. U.S. Natl. Herb.* 41:1–255.
- PETERSON, P., R. WEBSTER, AND J. VALDÉS-REYNA. 1997. Genera of New World Eragrostideae (Poaceae: Chloridoideae). *Smithsonian Contr. Bot.* 87:1–50.
- PHILLIPS, S.M. 1982. A numerical analysis of the Eragrostideae (Gramineae). *Kew Bull.* 37:133–162.
- RENOUZE, S.A. 1998. Gramíneas de Bolivia. The Royal Botanic Gardens, Kew.
- SHARP, D. AND B.K. SIMON. 2002. *AusGrass: Grasses of Australia*. CD-ROM plus Users Guide. CSIRO Publishing, Collingwood, Victoria.
- SNOW, N. 1996. The phylogenetic utility of lemmatal micromorphology in *Leptochloa* s.l. and related genera in subtribe Eleusininae (Poaceae, Chloridoideae, Eragrostideae). *Ann. Missouri Bot. Gard.* 83:504–529.
- SNOW, N. 1997. Phylogeny and systematics of *Leptochloa* P. Beauv. sensu lato (Poaceae: Chloridoideae). Ph.D. dissertation, Washington University, St. Louis, Missouri.
- SNOW, N. 1998a. Caryopsis morphology of *Leptochloa* (Poaceae, Chloridoideae). *Sida* 18:271–282.
- SNOW, N. 1998b. Nomenclatural changes in *Leptochloa* P. Beauvois sensu lato (Poaceae, Chloridoideae). *Novon* 8:77–80.
- SNOW, N. 2004. A first report of *Leptochloa panicea* subsp. *brachiata* (Poaceae) from Western Australia. *Nuytsia* 15:169–170.
- SNOW, N. AND G. DAVIDSE. 1993. *Leptochloa mucronata* (Michx.) Kunth is the correct name for *Leptochloa filiformis* (Poaceae). *Taxon* 42:413–417.
- SNOW, N. AND B.K. SIMON. 1999. Taxonomic status and Australian distribution of the weedy neotropical grass *Leptochloa fusca* subsp. *uninervia*, with an updated key to Australian *Leptochloa* (Poaceae, Chloridoideae). *Austrobaileya* 5:299–305.
- SOEONG, R.J., G. DAVIDSE, P.M. PETERSON, F.O. ZULOAGA, E.J. JUDZIEWICZ, T.S. FILGUEIRAS, AND O. MORRONE. 2008. CATALOGUE OF NEW WORLD GRASSES. (UPDATED CONTINUOUSLY). [HTTP://MOBOT.MOBOT.ORG/W3T/SEARCH/NWGC.HTML](http://MOBOT.MOBOT.ORG/W3T/SEARCH/NWGC.HTML)