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JOURNAL
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BOTANY.—*New species and new names of grasses from Texas.*¹ A. S. HITCHECOCK, Bureau of Plant Industry.

In the course of the preparation of a manual of grasses of the United States it has been found necessary to describe several new species and to transfer a few names. The following descriptions and transfers concern grasses found in Texas.

***Bromus anomalus* var. *lanatipes* (Shear) Hitchc.**

Bromus porteri lanatipes Shear, U. S. Dept. Agr. Div. Agrost. Bull. 23: 37. 1900.

***Eragrostis arida* Hitchc., sp. nov.**

Annual; culmi tenerae, basi ramosi, 20-40 cm. alti; laminae planae, longe acuminatae, 4-8 cm. longae, 1-2 mm. latae; panícula erecta, patula, 8-15 cm. longa, ramis in axillis glabris vel paullum pilosis, solitariis vel inferioribus binis; spiculae oblongae vel lineares, stramineae, 8-15-flores, 5-10 mm. longae, 1.5-2 mm. latae, pedicellis patulis flexuosis lateralibus 2-3 mm. longis; glumae acutae, prima angusta 1 mm. longa, secunda paullum longior et latior; lemmata 1.6-1.8 mm. longa, acutiusecula; palea persistens.

Annual; culms branching at base, slender, erect or somewhat decumbent at base, 20 to 40 cm. tall; sheaths glabrous, pilose at the summit, the hairs in a dense line part way along the collar; ligule a dense line of hairs about 0.5 mm. long; blades flat or sometimes folded or loosely involute, glabrous, tapering to a fine point, mostly 4 to 8 cm. long, 1 to 2 mm. wide; panicle one-third to half the entire height of the plant, erect, open, the branches, branchlets, and pedicels spreading, the axils glabrous or the lower sparsely pilose, the branches solitary, rather distant or the lower in pairs; spikelets oblong to linear, stramineous or drab, mostly 8 to 15-flowered, 5 to 10 mm. long, 1.5 to 2 mm. wide, somewhat compressed, the pedicels flexuous, the lateral 2 to 3 mm. long; glumes acute, the first narrow, scarcely 1 mm. long, the second a little longer and wider; lemmas 1.6 to 1.8 mm. long, acutish; palea scarcely as long as the lemma, persistent; grain 1 mm. long.

Type in the U. S. National Herbarium, no. 905937, collected on prairie at Del Rio, Texas, September 14, 1915, by A. S. Hitchcock (no. 13650).

This species has been confused with *Eragrostis suaveolens* Becker, *E.*

¹ Received August 10, 1933.

mexicana (Lag.) Link, *E. pilosa* (L.) Beauv., and *E. limbata* Fourn. It differs from *E. suaveolens* in the smaller size, the lack of glands on the sheaths, and the slightly smaller spikelets; from *E. mexicana* in the smaller and more slender stramineous spikelets; from *E. pilosa* in the larger spikelets; from *E. limbata*, which is confined to Mexico, in its larger panicles, longer stramineous spikelets, and more acute lemmas.

Dry soil, Texas to Arizona and central Mexico.

TEXAS: Lubbock, *Whitehouse* 7509; Amarillo, *Hitchcock* 16205; Edinburg, *Swallen* 1081; Del Rio, *Hitchcock* 13650; Lyford, *Hitchcock* in 1904; New Braunfels, *Hitchcock* 5196.

ARIZONA: South of Bisbee, *Mearns* 1028, 1071; Baboquivari Mountains, *Gilman* A 20.

NEW MEXICO: Carlsbad, *Hitchcock* 13487.

SONORA: South of Nogales, *Griffiths* 6793. Hermosillo, *Hitchcock* 3593.

CHIHUAHUA: Candelaria, *Stearns* 261.

DURANGO: Tlahualilo, *Pittier* 476.

NAYARIT: Acaponeta, *Rose* 14321.

Eragrostis intermedia Hitchc., sp. nov.

Perennis; culmi erecti, caespitosi, 40–80 cm. alti; vaginae glabrae, apice valde pilosae; laminae planae vel plus minusve involutae, plerumque glabrae; 10–20 (–30) cm. longae, 1–3 mm. latae; panícula erecta, patula vel diffusa, 15–35 cm. longa, in axillis pilosa, ramis patulis, tenuibus, solitariis, inferioribus duobus vel tribus; spiculae 3–9-flores, 3–10 mm. longae, pedicellis flexuosis, 5–15 mm. longis; glumae acutae, prima 1–1.2 mm. longa, secunda 1.2–1.4 mm. longa; lemmata turgida, obscure nervata, 1.8–2 mm. longa; palea persistens.

Perennial; culms erect, tufted, mostly 40–80 cm. tall; sometimes taller; sheaths glabrous or the lowermost sparsely pilose, conspicuously pilose at the throat, the hairs extending in a line across the collar; ligule a dense line of hairs less than 0.5 mm. long; blades flat or more or less involute, especially those of the innovations, pilose on the upper surface near the base, otherwise glabrous or sometimes with a few scattering hairs, scabrous toward the fine involute point, 10 to 25 cm. long, sometimes as much as 30 cm., 1 to 4 mm. wide; panicle erect, open, often diffuse, 15 to 35 cm. long, at maturity usually about two-thirds as wide, pilose in the axils, sometimes sparsely so, rarely glabrous, the branches slender but rather stiff, solitary and somewhat distant or the lower in pairs or verticils, all spreading, often widely or horizontally, the branchlets and pedicels ascending or spreading; spikelets 3 to 8, rarely 9-flowered, 3 to 9, rarely 10 mm. long, 1 to 1.5 mm. wide, grayish or brownish green, the pedicels somewhat flexuous, minutely scabrous, 1 to 3 times as long as the spikelet; glumes acute, the first 1 to 1.2 mm. long, the second 1.2 to 1.4 mm. long; lemmas turgid, obscurely nerved, 1.8 to 2 mm. long, usually bronze-tipped, not hyaline-margined; palea about as long as the lemma, persistent, minutely scabrous on the keels; caryopsis oblong, about 0.7 mm. long.

Type in the U. S. National Herbarium, no. 1535749 collected in moist place in gravel pit near San Antonio, Texas, July 3, 1910, by A. S. Hitchcock (no. 5491).

The following specimens, previously referred to *Eragrostis lugens* Nees, are representative of the species:

MISSOURI: Sheffield, *Bush* 9222; Redings Mill, *Bush* 5064.

GEORGIA: Athens, *Harper* 32, *Weatherwax* 11; Camelle, *Tracy* 3729.

LOUISIANA: Lake Charles, *Chase* 6113; Avery Island, *Hitchcock* 19863; Natchitoches, *Ball* 152.

ARKANSAS: Fayetteville, *Hitchcock* 16076.

OKLAHOMA: Wichita Mountains, *Swallen* 1004, 1025, *Rose* 112; Sapulpa, *Bush* 810; Stillwater, *Hitchcock* 16156.

TEXAS: *Bailey* 742; *Bogush* 1318; *Bush* 304; *Drummond* 328; *Fisher* 2059; *Griffiths* 6290; *Hall* 788; *Havard* 33; *Heller* 1745; *Hitchcock* 5167, 5219, 5268, 5287, 5294, 5371, 5491, 13611, 13645, 13646; *Moore & Steyermark* 3176; *Mulford* 99; *Nealley* 499; *E. J. Palmer* 31857, 32138a; *Plank* 93, 95; *Reverchon* 1125, 1125A; *Silveus* 81, 141, 368; *Standley* 40553; *Swallen* 976, 1103, 1540, 1799, 1863; *Tharp* 5024, 5163; *Tracy* 7918, 7926, 7928, 8235, 8876.

NEW MEXICO: *Blumer* 184; *Greene* 402; *Hitchcock* 3800, 13535; *Mearns* 680, 2097; *Metcalfe* 1329; *Rose & Fitch* 1764, 17,670; *Wright* 2048, 2050.

ARIZONA: *Griffiths* 1843, 1853, 3433, 4857, 5948, 6067, 6969, 7141; *Griffiths & Thornber* 58; *Hitchcock* 3688, 3709, 3725, 3726, 13271; *Jones* 4226; *Lemmon* 338, 2906; *Mearns* 1166, 1910; *Purpus* 8280; *Toumey* 735, 736; *Wilcox* 159.

This species extends into northern Mexico.

Eragrostis swalleni Hitchc., sp. nov.

Perennis; culmi dense caespitosi erecti, 20–50 cm. alti; infra nodo glanduloso-cincti; vaginae glabrae, apice paullum pilosae; laminae involutae, glabrae, 10–30 cm. longae; panicula erecta, patula, 10–20 cm. longa, in axillis glabra, ramis ascendentibus vel patulis, glabris, flexuosis; spiculae oblongo-lineares, stramineae vel cano-virides, 7–10 mm. longae, 8–14-flores, pedicellis supra medium glanduloso-cinctis; lemmata imbricata, adpressa, 2 mm. longa; palea persistens.

Perennial; culms in dense tufts, erect, 20 to 50 cm. tall, an obscure glandular band below the nodes; sheaths glabrous, sparingly pilose at the throat; ligule a dense line of hairs about 0.5 mm. long; blades firm, arching-recurved, mostly involute, glabrous, the lower sometimes with a few long hairs, 1 to 1.5 mm. thick when rolled (1 to 2 mm. wide when flat), 10 to 30 cm. long, the uppermost not greatly reduced; panicle erect, open, 10 to 20 cm. long, mostly short-exserted, the axis and branches glabrous, the branches ascending to spreading, stiffly flexuous, rather few-flowered, glabrous in the axils; spikelets oblong to linear, stramineous or grayish green, 7 to 10 mm. (rarely to 12 mm.) long, about 2 mm. wide, mostly 8 to 14-flowered, the stiff slender pedicels bearing a glandular band or spot above the middle; glumes acutish, rather broad, the first 1.2 mm. long, the second 1.5 to 1.8 mm. long; lemmas rather closely imbricate, appressed, acutish about 2 mm. long; palea about as long as the lemma, persistent, minutely scabrous on the keels; grain nearly smooth, somewhat narrowed toward the summit, 1 mm. long.

Type in the U. S. National Herbarium, no. 1,535,332, collected on sandy prairie at Riviera, Texas, June 8, 1931, by Jason R. Swallen (no. 1847).

Four other specimens were collected on sandy prairie at Sarita, *Hitchcock* in 1904 (August 7), *Hitchcock* 5449 and 5489 (June 27, 1910), and *Swallen* 1517 (April 17, 1931).

The species is allied to *Eragrostis erosa* Scribn., but is distinguished by the dense bunches, lower culm, smaller panicles, and especially the glandular band on the pedicels.

Vaseyochloa Hitchc., gen. nov.

Spiculae subteretes, multiflorae; lemmata imbricata 7-9-nervia, apice integra, dorso inferiore marginibusque pubescentia; panicula angusta; planta perennis, foliis elongatis.

Spikelets subterete or slightly compressed, several-flowered, the rachilla disarticulating above the glumes and between the florets, the joints very short; glumes rather firm, unequal, much shorter than the lemmas, the first 3 to 5-nerved, the second 7 to 9-nerved; lemmas rounded on the back, firm, closely imbricate, 7 to 9-nerved, broad, narrowed to an obtuse entire apex, and with a stipelike hairy callus, pubescent on the lower part of the back and margins; palea shorter than the lemma, splitting at maturity, the arcuate keels strongly wing-margined; caryopsis concavo-convex, oval, black, the base of the styles persistent as a 2-toothed crown. Slender perennial with elongate blades and narrow panicles.

Type species, *Melica multinervosa* Vasey.

Vaseyochloa multinervosa (Vasey) Hitchc.

Melica multinervosa Vasey, Bot. Gaz. 16: 235. 1891.

Distichlis multinervosa (Vasey) Piper, Proc. Biol. Soc. Washington 18: 147. 1905.

Triodia multinervosa (Vasey) Hitchc. Proc. Biol. Soc. Washington 41: 159. 1928.

Triodia buckleyana (L. H. Dewey) Vasey

Sieglingia buckleyana L. H. Dewey, Contr. U. S. Nat. Herb. 2: 540. 1894.

Triodia buckleyana Vasey; Dewey, Contr. U. S. Nat. Herb. 2: 540. 1894, as synonym of *Sieglingia buckleyana* L. H. Dewey.

The nomenclature here illustrates several cases in which names first recorded as synonyms are later accepted as valid. The original specific name *buckleyana* (under *Sieglingia*) must be used under *Triodia*, but since citation as a synonym is not valid publication I publish the name here in order to validate it. I have chosen to give Vasey as the author of the combination, but the date of effective publication is that of the present paper. Had I chosen to omit Vasey as the author, in making the transfer, the combination as credited to me would have been legitimate.

Elymus virginicus var. *australis* (Scribn. & Ball) Hitchc.

Elymus australis Scribn. & Ball, U. S. Dept. Agr. Div. Agrost. Bull. 24: 46. f. 20. 1901.

Hordeum pusillum var. *pubens* Hitchc., var. nov.

Spiculæ pubescentes.

Glumes and lemmas pubescent; spikes usually somewhat broader; dilated glumes wider. In some cases the pubescence is rather scant.

Type in the U. S. National Herbarium, no. 270730, collected at La Verkin, Utah, by Marcus E. Jones (5196W.). The following specimens belong to this variety:

TEXAS: Arlington, *Allen* 20; San Antonio, *Havard* 5.

UTAH: Springdale, *Jones* 5253.

ARIZONA: Santa Rosa to Casa Grande, *Griffiths* 4043.

Sphenopholis longiflora (Vasey) Hitchc.

Eatonia pennsylvanica var. *longiflora* Vasey; L. H. Dewey, Contr. U. S. Nat. Herb. 2: 544. 1894.

Muhlenbergia utilis (Torr.) Hitchc.

Vilfa utilis Torr. U. S. Rep. Expl. Miss. Pacif. 5²: 365. 1857.

Allied to *M. repens* (Presl) Hitchc., to which it has been referred as a synonym. It is a more delicate species with finer leaves and smaller spikelets, and is confined to moist places.

Muhlenbergia fournieriana Hitchc.

Epicampes berlandieri Fourn. Mex. Pl. 2: 89. 1886. Not *Muhlenbergia berlandieri* Trin. 1841.

Muhlenbergia rigens (Benth.) Hitchc.

Epicampes rigens Benth. Journ. Linn. Soc. Bot. 19: 88. 1881.

Sporobolus microspermus (Lag.) Hitchc.

Milium microspermum Lag. Gen. & Sp. Nov. 2. 1816.

Sporobolus confusus Vasey, Bull. Torrey Club 15: 293. 1888.

Piptochaetium fimbriatum (H.B.K.) Hitchc.

Stipa fimbriata H.B.K. Nov. Gen. & Sp. 1: 126. 1815.

Oryzopsis fimbriata Hemsl. Biol. Centr. Amer. Bot. 3: 538. 1885.

Aristida ternipes var. *minor* (Vasey) Hitchc.

Aristida schiediana var. *minor* Vasey, Bull. Torrey Club 13: 28. 1886.

Aristida divergens Vasey, Contr. U. S. Nat. Herb. 3: 48. 1892.

Bouteloua rigidisetata (Steud.) Hitchc.

Aegopogon rigidisetatus Steud. Syn. Pl. Glum. 1: 146. 1854.

Bouteloua texana S. Wats. Proc. Amer. Acad. 18: 196. 1883.

The type of *Aegopogon rigidisetatus* was collected in Texas by Drummond. Steudel gives no number, but it may be no. 340 or no. 374. Both numbers

are in the Edinburgh Herbarium and no. 340 is in the Trinius Herbarium. The specimens cited by Watson under *B. texana* are *Berlandier* 1535, *Drummond* 340, 374, *Lindheimer* 732, *Wright* 752. Griffiths, in his revision of *Bouteloua*, designates the first cited specimen (*Berlandier* 1535) as the type. This is in the Gray Herbarium. Watson states that his *B. texana* "appears to be the *Aegopogon rigidisetus* of Steudel."

***Bouteloua gracilis* var. *stricta* (Vasey) Hitchc.**

Bouteloua stricta Vasey, Bull. Torrey Club 15: 49. 1888.

The type was collected in western Texas by Nealley. The spikes are 4 to 6, usually ascending or appressed.

***Zizania texana* Hitchc., sp. nov.**

Perennis; culmi a basi longe decumbentes; laminae elongatae, 3–13 mm. latae; panícula angusta, 20–30 cm. longa, ramis inferioribus ascendentibus, 5–10 cm. longis; spiculae masculae 7–8 mm. longae, 1.5 mm. latae; spiculae foeminae circa 1 cm. longae, 1 mm. latae, arista 1–2 cm. longa.

Plant perennial; culms comparatively slender, long-decumbent and rooting at base, 1 to 1.5 meters long (or even as much as 3 meters), the lower part with leaves often floating on the water, the upper part erect; sheaths striate; ligule membranaceous, acute, 5–10 mm. long; blades elongate, flat, glabrous, slightly scabrous on the margins, 3 to 13 mm. wide (mostly less than 1 cm.), the uppermost blade 15 to 20 cm. long; panicle erect, narrow, mostly 20 to 30 cm. long, the lower (staminate) branches ascending or somewhat spreading, slender, 5 to 10 cm. long in about 3 whorls, woolly-villous at the base; upper branches (pistillate) appressed; staminate spikelets 7 to 8 mm. long, about 1.5 mm. wide, abruptly acute; pistillate spikelets about 1 cm. long, 1 mm. wide, terete, sulcate, scabrous on the ridges, gradually narrowed into a very scabrous, somewhat flexuous awn 1 to 2 cm. long.

Type specimen in the U. S. National Herbarium, no. 1,537,174, collected at San Marcos, Texas, in running water, April 1932, by W. A. Silveus (no. 518).

This species was also collected at San Marcos by Nealley in August 1892.

Mr. Silveus writes concerning this grass:

"I found in the San Marcos River at San Marcos, Texas, a great amount of this grass growing in water 1–6 feet deep, often in swiftly flowing currents, the culms and long blades mostly floating on or some distance under the surface of the water. The culms, sometimes 10 feet long, finally bend upwards at or near the surface of the water, the erect or ascending portion bearing an unusual and beautiful panicle 1–3 feet above the water. The branching culms, often geniculate at the base, root at the nodes, especially those near the base and at the bend near the surface of the water. It is claimed that cattle have been seen sticking their heads deep in the water to get this grass. Did not find any of it growing away from the water."

***Trichachne hitchcockii* (Chase) Chase.**

Valota hitchcockii Chase, Proc. Biol. Soc. Washington 19: 188. 1906.

Trichachne californica (Benth.) Chase.

Panicum californicum Benth. Bot. Voy. Sulph. 55. 1840.

Panicum saccharatum Buckl. Prel. Rep. Geol. Agr. Surv. Tex. App. 2. 1866.

Trichachne saccharata (Buckl.) Nash in Small, Fl. Southeast. U. S. 83. 1903.

Valota saccharata (Buckl.) Chase, Proc. Biol. Soc. Washington 19: 188. 1906.

The type specimen of *Panicum californicum* from Magdalena Bay, Lower California, was examined in the Kew Herbarium. Under the International Rules *Valota* was not effectively published by Adanson, the few characters in his table being inadequate. *Trichachne* Nees thus becomes the valid name.

Digitaria runyoni Hitchc., sp. nov.

Perennis; culmi ascendentes a basi longe decumbentes, 40–70 cm. alti; vaginae superiores glabrae, inferiores villosae; laminae planae, 3–6 mm. latae, superiores glabrae, inferiores dense villosae; racemi 5–10, suberecti, 7–12 cm. longi, rachi trigona; spiculae pallidae, imbricatae, anguste lanceolatae, acutae, 3.5–4 mm. longae; gluma prima minuta vel obsoleta; gluma secunda et lemma sterile aequalia, dense villosae; lemma fertile acuminatum quam spicula paullo brevius, maturitate pallidum.

Perennial; culms spreading at base, sometimes long-decumbent and rooting, 40 to 70 cm. tall, leafy at base; upper sheaths glabrous, the lower pilose, the lowermost densely villous; ligule 1 to 2 mm. long; blades flat, the lower densely velvety-villous, the upper sparingly pilose or glabrous, mostly less than 10 cm. long, 3 to 6 mm. wide, the uppermost reduced; racemes 5 to 10 on an axis 1 to 4 cm. long, mostly suberect, 7 to 12 cm. long, pale, the rachis flat-triangular, the margin very narrow, scabrous; spikelets in pairs, imbricate, narrowly lanceolate, acute, 3.5 to 4 mm. long, the longer pedicel 2 to 3 mm. long; first glume minute or obsolete; second glume and sterile lemma equal, from sparsely to densely villous on the internerves, the hairs purplish, sometimes nearly 1 mm. long, the lemma glabrous on the middle internerves, 5-nerved, the glume 3-nerved; fertile lemma acuminate, usually a little shorter than the spikelet, pale at maturity.

Type in the U. S. National Herbarium, no. 1,468,080, collected on sand flats near the coast at the mouth of the Rio Grande, near Brownsville, Texas, April 21, 1929, by Robert Runyon (no. 188).

Collected also on sand dunes 15 miles south of Corpus Christi by W. A. Silveus (no. 356), on sandy prairie, 10 miles south of Corpus Christi by J. R. Swallen (no. 1829½), and in sand at Copano Bay (east side) by B. C. Tharp (no. 7908).

Eriochloa gracilis (Fourn.) Hitchc.

Helopus gracilis Fourn. Mex. Pl. 2: 13. 1886.

This species has been referred to *Eriochloa acuminata* (Presl) Kunth of Mexico. A weed in fields, western Texas to southern California, south through the highlands of Mexico. Originally described from Oaxaca, Mexico.

Eriochloa gracilis var. **minor** (Vasey) Hitchc.

Eriochloa punctata var. *minor* Vasey, Contr. U. S. Nat. Herb. 3: 21. 1892.
Texas to Arizona.

Andropogon divergens (Hack.) Anderss.; Hitchc.

Andropogon scoparius subsp. *maritimus* var. *divergens* Hack. in DC. Monogr. Phan. 6: 385. 1889.

Andropogon divergens Anderss.; Hack. loc. cit. as synonym of *A. scoparius* subsp. *maritimus* var. *divergens*, "*A. divergens* Anderss. in sched. h. berol."

The locality given by Hackel is, "Texas (leg. ?; vidi in h. berol.)." The type in the Berlin Herbarium is labeled "*Andropogon divergens* Anderss. [in Andersson's script]. Texas. dd. Lindley."

This case is like that of *Triodia buckleyana*, discussed above.

Andropogon virginicus var. **hirsutior** (Hack.) Hitchc.

Andropogon macrourus var. *hirsutior* Hack. in DC. Monogr. Phan. 6: 409. 1889.

BOTANY.—*New grasses from the United States, Mexico, and Central America*.¹ JASON R. SWALLEN, Bureau of Plant Industry.

In the course of identifying several collections of grasses, eight species were found to be new. The first is a *Stipa* collected by Hans Wilkens in the Guadalupe Mountains, New Mexico. Two species, one of which is a very distinct *Echinolaena*, the second of this genus, were found by Paul Weatherwax in Guatemala. A new *Axonopus* and a new *Mesosetum* were discovered by H. H. Bartlett in British Honduras.² The *Mesosetum* was originally described as *Peniculus angustifolius* Swallen. In earlier collections, there were three other new species of *Axonopus*, one found at Vera Cruz, Mexico, by A. S. Hitchcock, one at Morelia, Mexico, by Brother G. Arsène, and the last at Izabal, Guatemala, by S. F. Blake.

Stipa curvifolia Swallen, sp. nov.

Culmi dense caespitosi, erecti, 33 cm. alti; folia basi aggregata; vaginae scaberulae, inferiores dense pubescentes; laminae involutae, maximae 18 mm. longae, scaberulae vel glabrae, curvatae; panícula 7–8 cm. longa, densa, ramis appressis; glumae subaequales, acuminatae, 10 mm. longae, 3-nerves, marginibus hyalinis; lemma 5.5 mm. longum, fuscum, pilosum, callo pungenti dense piloso; arista 22–25 mm. longa, 1-geniculata, infra geniculum plumosa.

¹ Received August 14, 1933.

² These two grasses were collected on an expedition of the Herbarium and the Museum of Zoology, University of Michigan, collaborating with the Department of Historical Research, Carnegie Institution of Washington, in a biological survey of the Maya area.