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BOTANY.—New species and new names of grasses from Texas.¹ A. S. Hitchcock, 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.


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

Annual; culms 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. Hiteheoeck (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.


**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.

**Chihiuahua:** Candelaria, *Stearns* 261.

**Durango:** Tlahualilo, *Pittier* 476.

**Nayarit:** Acaponeta, *Rose* 14321.

**Eragrostis intermedia** Hitchc., sp. nov.

Perennil; 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; panicula erecta, patula vel diffusa, 15–35 cm. longa, in axillis pilosa, ramis pilatis, 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; Lemon 338, 2906; Mearns 1166, 1910; Purpus 8280; Tourey 735, 736; Wilcox 159.

This species extends into northern Mexico.

**Eragrostis walleni** Hitchc., sp. nov.

Perennis; culmi dense caespitosi erecti, 20–50 cm. alti; infra nodo glandulosi-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 glandulosi-cinetis; lemmata imbricata, adpressa, 2 mm. longa; palea persistsens.

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-recurred, 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 eros a* Scribn., but is distinguished by the dense bunches, lower culm, smaller panicles, and especially the glandular band on the pedicels.

**Vaseyochloa** Hitch., gen. nov.

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

Spikelets suberete 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 coneavo-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.


**Triodia buckleyana** (L. H. Dewey) Vasey


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.

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

Spiculae 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.


Muhlenbergia utilis (Torr.) Hitchc.


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.


Muhlenbergia rigens (Benth.) Hitchc.


Sporobolus microspermus (Lag.) Hitchc.


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


Aristida ternipes var. minor (Vasey) Hitchc.


Bouteloua rigidiseta (Steud.) Hitchc.


The type of Aegopogon rigidisetus 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 \textit{B. texana} are Berlandier 1535, Drummond 340, 374, Lindheimer 732, Wright 752. Griffiths, in his revision of \textit{Bouteloua}, designates the first cited specimen (Berlandier 1535) as the type. This is in the Gray Herbarium. Watson states that his \textit{B. texana} "appears to be the \textit{Aegopogon rigidisetus} of Steudel."

\textbf{Bouteloua gracilis} var. \textit{stricta} (Vasey) Hitchc.

\textit{Bouteloua stricta} Vasey, Bull. Torrey Club \textbf{15}: 49. 1888.

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

\textbf{Zizania texana Hitchc.} \textit{sp. nov.}

Perennis; culmi a basi longe decumbentes; laminae elongatae, 3–13 mm. latae; panicula angusta, 20–30 cm. longa, ramis inferioribus ascendentibus, 5–10 cm. longis; spikeae masculae 7–8 mm. longae, 1.5 mm. latae; spikeae 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; stamine 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."

\textbf{Trichachne hitchcockii} (Chase) Chase.

Trichachne californica (Benth.) Chase.

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

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, sebrous; 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.


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.


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. hirsutor (Hack.) Hitchc.

Andropogon macrourus var. hirsutor 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 scaberulæ, inferiores dense pubescentes; laminae involutæ, maximæ 18 mm. longæ, scaberulæ vel glabrae, curvatae; panicula 7–8 cm. longa, densa, ramis appressis; glumæ subaequales, acuminatæ, 10 mm. longæ, 3-nervæs, marginibus hyalinis; lemma 5.5 mm. longum, fuscum, pilosum, callo punctenti dense piloso; arista 22–25 mm. longa, 1-genicularia, infra genicularium 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.