

***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.

Culms densely tufted, erect, 33 cm. tall; leaves clustered toward the base, the sheaths scaberulous, the lowermost densely pubescent, the blades firm, involute, as much as 18 mm. long, becoming curled with age, scaberulous or nearly smooth; panicles 7–8 cm. long, dense, the branches short and appressed; glumes subequal, acuminate, 3-nerved, 10 mm. long, the first broader than the second, the tips and margins hyaline; lemma 5.5 mm. long, light brown, evenly pilose with white hairs, the callus sharp-pointed, densely hairy; awn once or obscurely twice-geniculate, 22–25 mm. long, twisted and densely plumose below the bend, the terminal segment straight, scabrous.

Type in the U. S. National Herbarium, no. 1,538,063, collected in crevices of limestone cliff near mouth of North Fork of Rocky Arroyo, Eddy Co., Guadalupe Mountains, New Mexico, April 29, 1932, by Hans Wilkens (no. 1660).

This species is probably most closely allied to *S. occidentalis* Thurb., which differs in having straight blades, panicles 10–20 cm. long, lemmas 7 mm. long, and twice-geniculate awns, 3–4 cm. long.

Echinolaena gracilis Swallen, sp. nov.

Culmi graciles, ramosi, pilosi, 75–90 cm. longi; vaginae papilloso-hispidae vel glabrae, marginibus ciliatis; laminae maximae 3.8 cm. longae, 5 mm. latae, planae, firmae, marginibus cartilaginosis basi papilloso-ciliatis; ligula pilosa 1 mm. longa; racemi maximi 1.8 cm. longi; spiculae 8–11 mm. longae; gluma prima acuminata, 8–11 mm. longa, tuberculata vel tuberculato-hispida, marginibus ciliatis; gluma secunda 6 mm. longa, acuta, supra papilloso-hispida; lemma sterile 5 mm. longum glumae secundae simile; lemma fertile 3.5 mm. longum, pallidum, nitidum.

Culms very slender, wiry, branching, 75–90 cm. long, appressed-pilose; sheaths of the main culm much shorter than the internodes, papillose-hispid, the margins ciliate; blades as much as 3.8 cm. long, 5 mm. wide, some of those on the secondary branches much reduced, flat, firm, pubescent or pilose above, glabrous beneath, the margins white-cartilaginous, more or less papillose-ciliate toward the base; ligule hairy, not more than 1 mm. long, sometimes scarcely evident; racemes somewhat exserted, not more than 1.8 cm. long, subtended by an acute ciliate bract about 3 mm. long, the rachis terminating in a spikelet; spikelets 8–11 mm. long; first glume 8–11 mm. long, that of the terminal spikelet much longer than the others, acuminate, strongly nerved, tuberculate or tuberculate-hispid, the margins ciliate; second glume 6 mm. long, acute, papillose-hispid at the summit; sterile lemma 5 mm. long, similar to the second glume, inclosing a well developed palea; fruit 3.5 mm. long, smooth, shining, narrowly winged below, the base fashioned into a conspicuous circular crown.

Type in the U. S. National Herbarium, no. 1,538,066, collected on open marshy prairie, near Los Amates, Guatemala, March 3, 1932, by Paul Weatherwax (no. 1601).

Echinolaena inflexa (Poir.) Chase,³ the only other species of this genus in the American tropics, differs from *E. gracile* in having much more robust

³Proc. Biol. Soc. Wash. 24: 117. 1911.

glabrous culms, exserted racemes as much as 4 cm. long, and slightly larger fruits, 3.5–4.5 mm. long.

***Axonopus ciliatifolius* Swallen, sp. nov.**

Culmi dense caespitosi, e rhizomatibus erecti, 50–70 cm. alti; folia basi aggregata; vaginae carinatae, sparse pubescentes; laminae planae, 7–16 cm. longae, 1–2 mm. latae, pilosae, marginibus ciliatis; ligula 0.1 mm. longa; racemi 2–5, subdigitati, adscendentes vel appressi, 3–11.5 cm. longi; spiculae 2–2.3 mm. longae, glabrae vel sparse pubescentes; gluma secunda obtusa lemma sterile aequans; lemma fertile fuscum, nitidum.

Culms densely tufted, erect from short scaly rhizomes, 50–70 cm. tall, with terminal and axillary inflorescences; leaves mostly crowded toward the base, the sheaths keeled, sparsely pubescent, the blades flat, 7–16 cm. long (or those on the innovations sometimes longer), 1–2 mm. wide, pilose on both surfaces, the margins papillose-ciliate, especially toward the base; ligule 0.1 mm. long; racemes 2–5, racemose, ascending or appressed, 3–11.5 cm. long; spikelets 2–2.3 mm. long, glabrous or sparsely pubescent, the second glume and sterile lemma subequal, obtuse, scarcely covering the fruit; fruit dark brown, smooth and shining.

Type in the U. S. National Herbarium, no. 1,503,594, collected at Mountain Pine Ridge, El Cayo District, British Honduras, February 25, 1931, by H. H. Bartlett (no. 11746).

This species is distinguished from *A. purpusii* (Mez) Chase, to which it is closely related, by the presence of the well developed scaly rhizomes.

***Axonopus rhizomatosus* Swallen, sp. nov.**

Culmi caespitosi, e rhizomatibus erecti, 45–85 cm. alti, nodis dense pubescentibus; vaginae carinatae, glabrae vel pilosae; laminae planae, maximae 25 cm. longae, 1–4 mm. latae, scaberulae, basi pilosae, marginibus papilloso-ciliatis, inferiores reductae; ligula 0.1–0.2 mm. longa; racemi 2–4, patentes, subdigitati, 5–13 cm. longi; spiculae 2.5–3 mm. longae pilosae; gluma secunda acuta, quam spicula longior; lemma sterile acutum glumam secundam aequans; lemma fertile pallidum.

Culms, caespitose, erect from short scaly rhizomes, 45–85 cm. tall, the nodes densely pubescent; sheaths keeled, rather densely pilose, especially on the collar, or nearly glabrous; blades flat, as much as 25 cm. long, 1–4 mm. wide, the uppermost reduced, not over 2 cm. long, sometimes nearly wanting, smooth or scaberulous, more or less pilose toward the base, the margins papillose-ciliate for a short distance at the base; ligule 0.1–0.2 mm. long, racemes 2–4, appressed, 5–13 cm. long, subdigitate with one a short distance below the others; spikelets 2.5–3 mm. long; second glume and sterile lemma equal, acute, slightly exceeding the pale or lead-colored fruit, the margins densely pilose, especially toward the summit.

Type in the U. S. National Herbarium, no. 1,013,859, collected on open hillsides wooded with pine, along trail from Los Amates to Izabal, Department of Izabal, Guatemala, May 13, 1919, by S. F. Blake (no. 7766).

Open pine woods, Guatemala, Honduras, and British Honduras.

GUATEMALA: Los Amates to Izabal, *Blake* 7748, 7766, 7767; Secanquim, *Pittier* 214.

BRITISH HONDURAS: Without locality, *Dunlap* in 1920.

HONDURAS: La Florida, *Blake* 7424; Siguatepeque, *Standley* 53611.

Closely allied to the preceding species, but differing in having densely pubescent nodes, larger spikelets with acute rather than obtuse second glume and sterile lemma, and pale instead of brown fruit.

***Axonopus multipes* Swallen, sp. nov.**

Stoloniferus; culmi geniculato-adscedentes, 15–25 cm. alti, glabri, nodiis pubescentibus; vaginae carinatae, compressae, glabrae, superiores elongatae; laminae planae, obtusae, 3–6 cm. longae, 4–8 mm. latae (superiores reductae, 1 cm. longae), glabrae, marginibus basi papilloso-ciliatis; ligula brevis erosa; racemi 2, 3–5 cm. longi, conjugati; spiculae acutae, 3 mm. longae; gluma secunda lemma sterile aequans, quam lemma fertile longior, marginibus pilosis; lemma fertile 2.2–2.3 mm. longum, apice dense pubescens.

Culms geniculate, ascending from stolons, 15–25 cm. tall, glabrous or the nodes pubescent; sheaths compressed, keeled, glabrous, the upper ones elongated, inclosing some of the racemes bearing cleistogamous spikelets; prophyllum 3.5 cm. long; blades flat, obtuse, 3–6 cm. long, 4–8 mm. wide, the uppermost reduced, scarcely more than 1 cm. long, glabrous on both surfaces, the margins papillose-ciliate toward the base; ligule very short, minutely erose; racemes 3–5 cm. long, in pairs, conjugate at the summit of slender peduncles, these 3–10 cm. long, 3–5 of them arising from just above the uppermost node; spikelets acute, 3 mm. long, just reaching the one above in the same row; second glume and sterile lemma equal, exceeding the fruit, the margins and often the internerves silky-pilose; fertile lemma 2.2–2.3 mm. long, minutely cross-wrinkled, densely pubescent at the apex.

Type in the U. S. National Herbarium, no. 928824, collected on sandy prairie, Veracruz, Mexico, Aug. 31, 1910, by A. S. Hitchcock (no. 6578). Also collected at Veracruz by Gouin (no. 25).

Axonopus obtusifolius (Raddi) Chase is allied to this species, but differs in having fewer, racemose racemes and acuminate spikelets 5 mm. long, the second glume and sterile lemma much exceeding the fruit.

***Axonopus arsenei* Swallen, sp. nov.**

Culmi caespitosi, erecti, 40–90 cm. alti, nodis dense hispidis; folia basi aggregata, 1 vel 2 caulinis exceptis; vaginae compressae, carinatae, basi papilloso-hispidae, glandulosae, marginibus ciliatis; laminae planae, 10–18 cm. longae, 5–10 mm. latae (superiores reductae), papilloso-hispidae, marginibus ciliatis; ligula brevis erosa; racemi 2–4, 5–10 cm. longi, racemosi; spiculae acutae, 3.4–3.8 mm. longae; gluma secunda acuta, pilosa, lemma sterile aequans, quam lemma fertile longior; lemma fertile 2.8 mm. longum, apice sparse pubescens.

Culms tufted, erect, 40–90 cm. tall, the nodes densely appressed-hispid with ascending hairs, otherwise glabrous; leaves crowded toward the base, the culms with only one or two above the basal ones; sheaths strongly compressed, keeled, those of the culm leaves shorter than the internodes, papillose-hispid and glandular at the base, the margins more or less ciliate toward the summit, otherwise glabrous or sparsely pilose; blades flat, 10–18 cm. long, 5–10 mm. wide, the uppermost reduced, sometimes only 3 cm. long, more or less papillose-hispid on both surfaces, the margins papillose-ciliate, especially toward the base; ligule very short, erose; peduncles 1–3 from the uppermost sheath (rarely from the lower) the terminal one elongate, the

others mostly inclosed in the sheath; racemes 2-4, 5-10 cm. long, the upper two conjugate, the others 10-20 mm. distant; spikelets acute, 3.4-3.8 mm. long, 5-7 mm. distant in each row of the raceme; second glume and sterile lemma acute, equal, exceeding the fruit, rather densely pilose between the nerves; fruit 2.8 mm. long, minutely roughened, with a few short hairs at the summit.

Type in the U. S. National Herbarium, no. 1,000,427, collected at Loma Santa María, vicinity of Morelia, Michoacán, Mexico, alt. 2,050 meters, Sept. 17, 1910, by Brother G. Arsène (no. 6952). *Arsène* 2919 and 7016, from the same locality, also belong to this species.

Allied to *A. multipes*, but differing in being a much larger plant with long-exserted primary peduncles and only 1 or 2 secondary ones, short-exserted or inclosed in the sheath, and larger spikelets and fruit.

***Panicum guatemalense* Swallen, sp. nov.**

Culmi 75 cm. alti, scaberuli, sparse papilloso-pilosi, ramosi; vaginae glabrae vel sparse papilloso-pilosae, collo dense pubescente; laminae planae, 7-12 cm. longae, 4-10 mm. latae, scaberulae, sparse papilloso-pilosae, marginibus cartilaginosis scabris; ligula membranacea, 0.2 mm. longa; panicula 10 cm. longa, ramis adscendentibus vel appressis e basi floriferis; spiculae 2.2-2.4 mm. longae, appressae, pedicellis quam spiculis brevioribus; gluma prima obtusa, 0.5-1 mm. longa; gluma secunda lemma sterile aequans; lemma fertile 2 mm. longum, nitidum, apice pilosum.

Culms more than 75 cm. tall, scaberulous, sparsely papillose-pilose, much branched above; sheaths glabrous, papillose or papillose-pilose, those of the main culm much shorter than the internodes, those of the branches overlapping, the collar densely pubescent; blades flat, 7-12 cm. long, 4-10 mm. wide, scaberulous, more or less papillose or papillose-pilose, densely pilose on the upper surface at the very base, the white-cartilaginous margins distinctly scabrous; ligule membranaceous, about 0.2 mm. long; panicle 10 cm. long, the branches ascending or appressed, spikelet-bearing from the very base or nearly so; spikelets glabrous, 2.2-2.4 mm. long, appressed, the pedicels shorter than the spikelets; first glume obtuse, 0.5-1 mm. long; second glume and sterile lemma equal, inclosing the fruit; fertile lemma 2 mm. long, shining, sparsely hairy toward the summit.

Type in the U. S. National Herbarium, no. 1,538,064, collected in mountains near Santa María, just south of Quezaltenango, Guatemala, March 25, 1932, by Paul Weatherwax (no. 1689).

This species is related to *Panicum arundinariae* Trin., which differs in the more densely flowered panicle branches, which are usually naked for a short distance at the base, smaller spikelets 1.6 mm. long, and thinner, mostly shorter blades.

Peniculus angustifolius Swallen,⁴ was recently described as a new genus and species, based on a collection of H. H. Bartlett (no. 11748) collected on Mountain Pine Ridge, El Cayo District, British Honduras. Mr. C. E. Hubbard of the Herbarium of the Royal Botanic Gardens, Kew, England, has suggested that it belongs in *Mesosetum*. This disposition of the species is correct and it accordingly becomes ***Mesosetum angustifolium* Swallen.**

⁴ Amer. Journ. Bot. 19: 581. fig. 1. 1932.



Swallen, Jason R. 1933. "New grasses from the United States, Mexico, and Central America." *Journal of the Washington Academy of Sciences* 23, 456–460.

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