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NEW COMBINATION IN *POA*

Poa saltuensis Fern. & Wieg. and its allied species are found over much of eastern North America, with a center of distribution in the Appalachian region. Members of this group occur in a variety of low-elevation plant communities, though they are frequent in forests and forest openings and at forest edges. They are considered to belong to section *Sylvestres* V.L. Marsh *ex* Soreng (Soreng 1998). Within section *Sylvestres* is the *Poa saltuensis* complex, a group recognized by the combination of cespitose habit, glabrous lemmas (except for the tuft of arachnoid hairs on the callus), and nodes of the panicle usually producing 1 or 2 branches (Figure 1). This complex is usually treated as containing two species—*P. saltuensis s.s* and *P. languida* A.S. Hitchc. (Fernald 1950; Voss 1972, Gleason and Cronquist 1991, etc.). Overlapping character states have prompted some researchers to consider *P. saltuensis* as a morphologically variable species that includes *P. languida* (Elizabeth Kellogg, University of Missouri St. Louis, personal communication). Differing opinions of its taxonomic status prompted a range wide examination of herbarium specimens. This paper briefly discusses morphological characters useful in separating these two taxa and makes a new combination.

Figure 1. Inflorescence of *Poa saltuensis*.

Review of literature reveals that lemma shape, texture, and length, anther size, and ligule length are most often used to separate *Poa saltuensis* and *P. languida* (Fernald 1950, Voss 1972, Gleason and Cronquist 1991). Examination of specimens range wide reveals that several of these morphological characters are unreliable and overlap considerably. For example, length of the upper ligules is stated by Fernald (1950) as 0.3–1.5 mm and 2–3 mm for *P. saltuensis* and *P. languida*, respectively (note: no overlap reported). Gleason and Cronquist (1991) state lengths of 0.6–1.5(–3) mm and

(2–)2.4–4 mm, respectively (note: some overlap reported). Although the latter measurements are more accurate, they still do not capture the full range of variability that can be seen in each taxon. I have seen specimens of *P. saltuensis* with upper ligules exceeding 4 mm in length, demonstrating that this character has little taxonomic merit. Similarly, lemma length is too variable and shows too much overlap to be useful, especially when northern forms of *P. saltuensis* are considered (these forms often with smaller spikelet dimensions).

Some morphological characters that have been used to separate these two grasses are diagnostic but suffer from ambiguity of descriptions. For example, lemma texture is often reported as a taxonomically informative character—thin and membranaceous in *Poa saltuensis*, firm and coriaceous in *P. languida*). Determining the texture on dried, herbarium specimens proves to be very difficult. Further, this character is relative and requires the user to be familiar with one of the character states in order to make an informed decision about the specimen in hand. By eliminating non-diagnostic characters from identification keys and quantifying some of the ambiguous characters, separation of *P. saltuensis* and *P. languida* can be accomplished throughout their ranges, including areas of sympatry. However, because of their close morphological similarity, an infraspecific rank is more appropriate. Subspecies is here used in order to make the ranking system consistent with that in use by Robert Soreng (United States National Herbarium; co-contributor of *Poa* for the Flora of North America).

***Poa saltuensis* Fern. & Wieg. ssp. *languida* (A.S. Hitchc.) A. Haines**, comb. et stat. nov.

Basionym: *Poa languida* A.S. Hitchc. Proceedings of the Biological Society of Washington 41: 158. 1928.

Synonym: *Poa debilis* Torr. A Flora of the State of New York. 2: 459. 1843.

Lectotype (here designated): United States, New York, Ontario County. Gorham, 1831, *unknown collector s.n.* (NY; image seen).

Poa saltuensis ssp. *languida* was first named by John Torrey as *P. debilis* (1843). Unfortunately, this name was published earlier for a different grass (*P. debilis* Thuill., 1799). Therefore, Torrey's name is an illegitimate homonym (Article 53.1; Greuter *et al.* 2000). Hitchcock (1928) rectified the matter by producing a *nomen novum* for this grass: *P. languida* A.S. Hitchc. However, Torrey (1843) never designated a type specimen for this taxon. Therefore, a lectotype is needed for this grass (Article 9.9; Greuter *et al.* 2000). Given that no specimens were cited in the diagnosis, there isn't any obvious guidance for which specimen to select as a lectotype. Torrey (1843) alludes to an earlier report of 1840 (State of New York, Assembly Number 50, page 192) where *P. debilis* is first mentioned as "an undetermined species, probably new." Torrey states that the grass "occurs in woods, [in] the northern and western counties." The New York Botanical Garden Herbarium has a specimen from Torrey's herbarium with his handwriting (but collector unspecified) on the label. The specimen is from Gorham, Ontario County, which lies in the western part of the state. This specimen has been chosen as the lectotype (see above for designation; Figure 2).

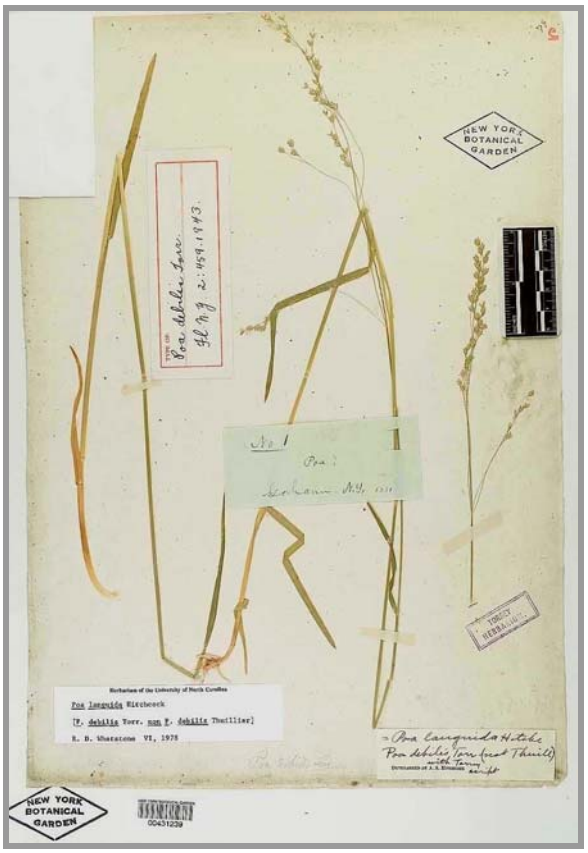

Figure 2. Lectotype of *Poa saltuensis* ssp. *languida* from Gorham, New York, housed at the New York Botanical Garden Herbarium (image from the Virtual Herbarium of the New York Botanical Garden; URL: http://www.nybg.org/bsci/hcol/).

Poa saltuensis ssp. *saltuensis* is an infrequent grass occurring over much of northeastern North America, ranging as far north as Newfoundland and Quebec. It has a relatively wide ecological amplitude, growing under forest canopies, at forest borders, and in openings of varied hydrology (predominantly dry-mesic to wet-mesic). It also occurs on substrate of variable pH. *Poa saltuensis* ssp. *saltuensis* is marked by lemmas tapering to a weak, acute to acuminate apex (Figures 3, 4, and 5; see identification key for details). The weak texture of the lemma apex is the result of a prominent scarious tip (visible at 10× magnification and higher). Subspecies

saltuensis also has relatively long anthers (0.9–1.5 mm) compared with ssp. *languida* (0.6–0.9 mm, rarely to 1 mm). Even in the northern part of the range of ssp. *saltuensis*, where small-spikelet forms are known (segregated as var. *microlepis* by Fernald), lemma apex and anther measurements hold to the description above.

Figure 3. Spikelets of *Poa saltuensis* ssp. *saltuensis*.

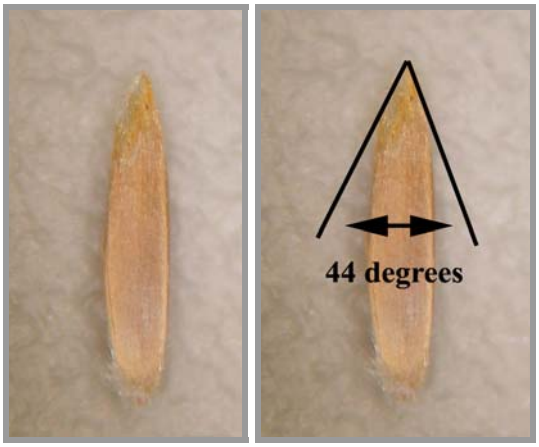

Figure 4 (left) and 5 (right). Floret of *Poa saltuensis* ssp. *saltuensis*. Note the narrow apical angle of the lemma.

Poa saltuensis ssp. *languida* shows a somewhat restricted range compared with ssp. *saltuensis*. Subspecies *languida* is found only as far north as Massachusetts and Vermont in northeastern North America. It also shows a reduced ecological amplitude in the northeast. It is more often found on dry-mesic soils overlying high pH bedrock (e.g., limestone, marble), such as the rich, dry woodlands of western New England. It is marked morphologically by lemmas that taper to an often firm, broad-acute to narrow-truncate apex (Figures 7, 8, and 9; see identification key for details). The apex is of firm texture to the tip or has a very narrow, scarious apex. Further, it has shorter anthers than ssp. *saltuensis*.

Figure 6. Habit of *Poa saltuensis* ssp. *languida*.

Figure 7. Spikelets of *Poa saltuensis* ssp. *languida*.

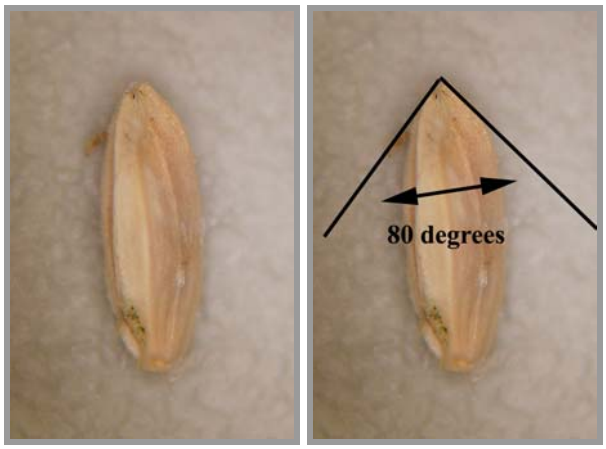

Figure 8 (left) and 9 (right). Floret of *Poa saltuensis* ssp. *languida*. Note the broad apical angle of the lemma.

Both subspecies have a long history of recognition in regional floras and manuals (Torrey 1843; Fernald 1950; Voss 1972; Seymour 1982; Weatherbee 1996, Sorrie and Somers 1999, etc.). Despite the fact that measurements of critical morphological characters show a narrow range of overlap, these two taxa are separate entities. Even on rare difficult specimens, the majority of morphological structures fall within the range of one or the other species (i.e., overlapping measurements are the result of specific florets on a limited number of specimens and are not the result of wide-spread and frequent intermediate plants). It can be further demonstrated that these are separate taxa by examining regional collections. Frequent misidentified material would be expected if character states showed significant overlap. However, this is not the case. Examining specimens from throughout the range of both subspecies, I have seen very few collections determined incorrectly. The subtle differences in ecology between the two subspecies further support their recognition.

Key to the subspecies of *Poa saltuensis*

1a. Anthers 0.9–1.5 mm long; lemmas acute to acuminate at the apex, the keel and lateral margins of lemma forming an apical angle of 10–47 degrees, pliable at the apex, with a prominent scarious tip 0.25–0.5 mm long ..... ***P. saltuensis* ssp. *saltuensis***

1b. Anthers 0.6–0.9(–1) mm long; lemmas broad-acute to narrow-truncate at apex, the keel and lateral margins of lemma forming an apical angle of 42–82 degrees, firm at the apex, the scarious tip absent or up to 0.25 mm long ..... ***P. saltuenis* ssp. *languida***

Representative New England Specimens of *Poa saltuensis* ssp. *languida*

CONNECTICUT. Litchfield County. North Canaan, wooded hillside, 22 Jun 1909, *Blewitt s.n.* (VT). New Haven County. New Haven City, meadow at Westville, 3 Jun 1903, *Woodward s.n.* (MASS). New Haven City, meadow at Westville, 3 Jun 1904, *Woodward s.n.* (NEBC). Tolland County. Union, moist rocky pasture, 12 Jun 1908, 12 Jun 1906, *Bissell s.n.* (NEBC).
MASSACHUSETTS. Berkshire County. Sheffield, dry rich open woodland, oak-hickory-hop-hornbeam woodland, 21 Jun 1991, *Weatherbee & Sorrie 3542* (NHA). Egremont, Vossburg Hill, NW slope, uncommon in fairly open woods with little understory, *Carya ovalis*, *Ostrya virginiana*, *Quercus muhlenbergii*, *Pinus strobus*, 21 Jun 1991, *Sorrie & Weatherbee 5709* (GH). Franklin County. Sunderland, Mt. Toby, lower west slope of Middle Mtn. Rd., ca. 200 culms, most with fruit now dropping, other freshly flowering, 10 Jul 1986, *Sorrie & Ruhfel 3497* (MASS). Sunderland, Mt. Toby, 3 Jun 1931, *Weatherby 3702* (MASS). Sunderland, Mt. Toby, clearing, 15 Jun 1932, *Pease s.n.* (MASS). Wilbraham, deep, rich, deciduous woods, Wilbraham Mt., 5 Jun 1928, *Seymour & Clark 637* (MASS, NEBC). Hampshire County. Granby, S side Long Mt., about 220 m S of Metacomet Monadnock Trail, ½ way between peaks 906 and 920, and Long Mt., wooded midslope, *Fraxinus americana*, *Quercus prinus*, *Oryzopsis racemosa*, *Sphenopholis nitida*, Lat. 4686400 Long. 707593, elev. 850 m, 8 Jun 2000, *Searcy 125* (MASS). Granby, dry woods, Mt. Norwottuck, 2 Jun 1929, *Pease 21221* (MASS). Mt. Holyoke, rich rocky woods, Holyoke Diabase, valley of Connecticut River, 17 May 1913, *Hubbard & Torrey 540* (NEBC).
RHODE ISLAND. Providence County. North Providence, *Olney s.n.* (NEBC).
VERMONT. Addison County. Addison, Snake Mt., 12 Jun 1879, *Brainerd s.n.* (VT). Bristol, Cobble Hill, 9 Jun 1879, *Brainerd s.n.* (MASS, VT). Bristol, Cobble Hill, 27 May 1878, *Brainerd s.n.* (VT). Bristol, 9 Jun 1879, *Brainerd s.n.* (NEBC). Monkton, a hill swamp, 6 Jun 1879, *Pringle s.n.* (MASS, VT). Caledonia County. Barnet, abundant on dry, forested outcrops above Route 18, East Barnet, with *Oryzopsis pungens*, *Schizachne purpurascens*, *Amelanchier sanguinea*, 22 Jun 1990, *Gilman 90029* (VT). Chittenden County. Charlotte, rocky woodlands, 2 Jun 1877, *Pringle s.n.* (VT). Charlotte, dry wooded hills, 1 Jun 1878, *Pringle s.n.* (MASS). Orange County. Fairlee, 30 clumps along trails and in logging clearings, just west of the Palisades, 19 Jun 1985, *Zika 9069* (VT). Fairlee, cliffs near decidous woods, near Connecticut River, 23 Jun 1959, *Hodgdon & Steele 15574* (NHA).

Acknowledgments

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