



The holotype of *Atheropogon stolonifer* (= *Bouteloua reederorum*) and totypification of the name *Triathera juncea* (= *B. juncea*) (Poaceae, Chloridoideae)

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Abstract

We confirm the location of the holotype of *Atheropogon stolonifer* E. Fourn., and the name *Triathera juncea* Desv. ex P. Beauv. is lectotypified.

Keywords: Distribution, grasses, Mexico

Introduction

Bouteloua Lagasca (1805: 134), a monophyletic group with 60 species *sensu* Peterson *et al.* (2015), is native to the New World and one of the most important genera in the grasslands of North America, primarily Mexico where 92% (55/60) of the species are found (Sanchez-Ken 2018).

In the present note we report confirmation of the identity of the holotype of *Atheropogon stolonifera* Fournier (1886: 140), now *Bouteloua reederorum* Columbus (1999: 63), and propose lectotypification of the name *Triathera juncea* Desvaux ex P. Beauvois (1812: 40), now *Bouteloua juncea* (Desvaux ex P. Beauvois) Hitchcock (1913: 343).

Bouteloua reederorum Columbus (1999: 63) ≡ *Pringleochloa stolonifera* (Fournier) Scribner (1896: 138). ≡ *Atheropogon stolonifer* Fournier (1886: 140). Holotype:—La Parada, Sierra de Oaxaca, 8500 ft, April 1842, Liebmann 588 (C barcode C10022902 [digital image!], Figure 1; isotype: US, fragment, barcode 00156937 [digital image!]).

Notes:—In the protologue of *Atheropogon stolonifera* Fournier (1886: 140), Fournier cited a specimen collected in the state of Oaxaca, Mexico (Liebmann no. 588) and indicated the grass is hermaphroditic. Years later, Scribner (1896) described the monotypic genus *Pringleochloa* Scribner (1896: 137) and proposed *Pringleochloa stolonifera* (E.Fourn.) Scribner (1896: 138) as a new combination for *A. stolonifera* mentioning: “I have very little doubt of the identity of the species here described with *Atheropogon stolonifera*, the characters of which, as given by Fournier would apply to specimens bearing only female spikes. He described the spikelets as hermaphrodite, but he may have too hastily assumed this, and overlooked their strictly unisexual character. Fournier’s specimen (Liebmann no. 588) were collected in the same region, a fact which renders the identity still more probable”. More recently, Columbus (1999) proposed *Bouteloua reederorum* Columbus (1999: 63) as a new name for *Atheropogon stolonifera* because there is an earlier name, *Bouteloua stolonifera* Scribner (1891: 302), blocking the use of the epithet.

Griffiths (1912) proposed *Cathestecum stoloniferum* (E.Fourn.) Griffiths (1912: 362) as a new combination for *Atheropogon stolonifera*; however, the type (Liebmann no. 588) was not examined by Griffiths and his description and illustration do not correspond to the characteristics that Scribner described for *Pringleochloa stolonifera*. Swallen (1937) mentioned that the specimen collected by Liebmann is a pistillate plant of *Pringleochloa stolonifera*, as Scribner supposed, although Fournier described the lower florets as hermaphrodite. *Cathestecum stoloniferum* corresponds to

Bouteloua varia (Swallen) Columbus (1999: 63) (= *Cathestecum varium* Swallen (1937: 498)). Swallen (1937) also mentioned that the type of *Atheropogon stolonifer* (Liebmann no. 588) was found among specimens lent to him by the Copenhagen herbarium (C) in 1915. This specimen (Liebmann no. 588) was recently found in C, and we confirm that Liebmann's collection corresponds to a pistillate specimen of *Bouteloua reederorum* (= *Pringleochloa stolonifera*).



FIGURE 1. Holotype of *Atheropogon stolonifer* E. Fournier (C).

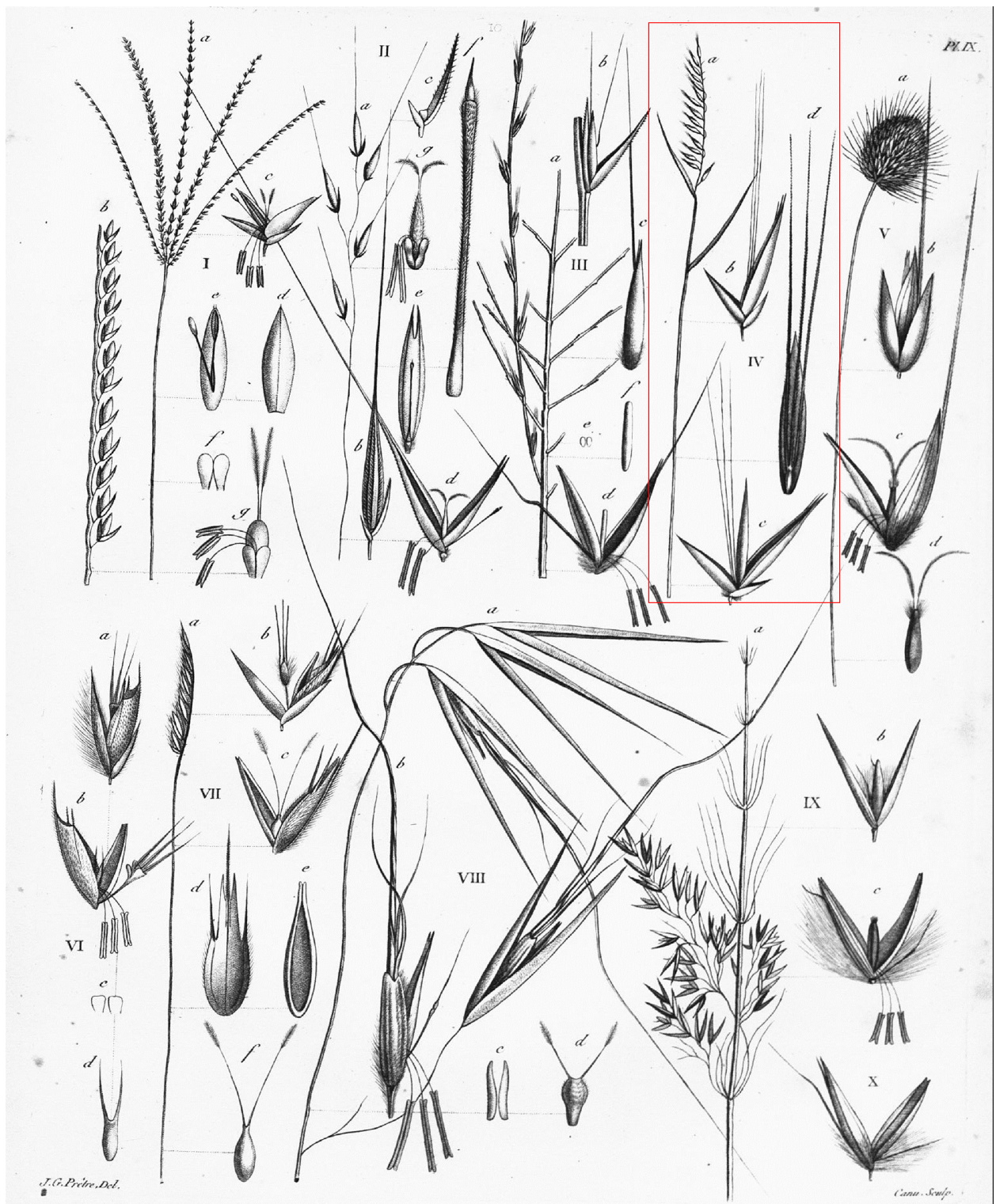


FIGURE 2. Lectotype of *Triathera juncea* Desvaux ex P. Beauvois; Illustration of *Essai d'une Nouvelle Agrostographie*, (Plate IX, figure IV). IVa: spike, IVb: spikelet, IVc: spikelet more open, IVd: upper bract attached to the sterile floret.

At the herbarium of the Smithsonian Institution (US) there is a fragment of Liebmann's specimen (US-00156937), and according to TROPICOS (2018) the holotype of *Atheropogon stolonifer* is deposited at the herbarium of the Muséum National d'Histoire Naturelle (P). However, there is no original material at P and in his description, Fournier (1886) cited the locality, collector, and collection number, but did not specify any herbarium. We conclude the specimen deposited in C is the holotype, and, being the only complete specimen known, is likely the source of the fragment deposited in US, which is an isotype. This species is endemic to Mexico and has been reported from Aguascalientes, Durango, Oaxaca, Puebla, San Luis Potosí, and Zacatecas (Dávila *et al.* 2018; Sánchez-Ken 2018).



FIGURE 3. Epitype of *Triathera juncea* Desvauz ex P. Beauvois (HUA 30899).

Bouteloua juncea (Desvaux ex P. Beauvois) Hitchcock (1913: 343) ≡ *Cynodon junceus* (Desvaux ex P. Beauvois) Raspail (1825: 303) ≡ *Eutriana juncea* (Desvaux. ex P. Beauvois) Trinius (1824: 238) ≡ *Triathera juncea* Desvaux ex P. Beauvois (1812: 40). Lectotype (**designated here**):—Plate IX, figure IVa–d in *Essai d'une Nouvelle Agrostographie* 1812. Epitype (**designated here**):—REPÚBLICA DOMINICANA: Barahona, Quita Coraza: Entrada a Pueblo Quita Coraza, orilla de carretera, 18°28'16.7"N 71° 3'37.7"W, 126 m., 19 June 2018, *Sandoval-Ortega 1006* (HUAA 30899!).

Notes:—In the protologue of *Triathera juncea* Desvaux ex P. Beauvois (1812: 40) there is no mention of a location, collector or collection number. Desvaux (1813) later emended the generic description, accepting the specific name “*juncea*,” as published under his authorship by Beauvois, and added “Habitat in Hispaniola”. In P there is a specimen of *Bouteloua juncea* collected by Poiteau (MNHN-P-P00665402) in Hispaniola (St Domingue). Poiteau was on the island from 1796 to 1800 (Hérinq 1872), collecting thousands of specimens, many of which he took back to France, so this specimen may be the original material of *Triathera juncea*; however, there is no way, given the scarce information in the protologue, to be sure that Desvaux’s new species was based on this specimen.

The description published under the authorship of Desvaux by Beauvois was accompanied by an illustration. Since Desvaux does not mention a specimen, the protologue illustration is selected here as the lectotype, because of the lack of other original material. This species has been reported in Cuba, Hispaniola and Puerto Rico (Herrera-Arrieta *et al.* 2004; Gould 1979).

However, the original illustration is schematic and does not clearly show the diagnostic characteristics of the species, which has caused errors. Griffiths (1912), based on Beauvois’ illustration erroneously applies the name *Triathera juncea* as the basionym for what he called *Triaena juncea* (Desv. ex P. Beauv.) Griffiths (1912: 354). But, the description, distribution and illustration given by Griffiths for *Triaena juncea* correspond to *Bouteloua triaena* (Trinius 1824: 239) Scribner (1891: 307) and not to *Bouteloua juncea* (= *Triathera juncea*). *Bouteloua triaena* is distributed from Mexico to Guatemala (Herrera-Arrieta *et al.* 2004; Gould 1979) and is a different species than *Bouteloua juncea* (Peterson *et al.* 2015).

Because Beauvois’ illustration is ambiguous in terms of diagnostic characters for the species, it was necessary to assign an epitype. The specimen designated here as epitype (Sandoval-Ortega no. 1006) was collected in Hispaniola (Dominican Republic), and shows the characters mentioned by Beauvois (1812), Gould (1979) and Herrera-Arrieta *et al.* (2004) for this species: lemma 3-nerved, the nerves prolonged as short and stout awns, the inflorescence up to 5 cm long, and the small erect spreading spikelets. Duplicates of the epitype have been sent to US, JBSD and MEXU.

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References

- Beauvois, P. (1812) *Essai d'une Nouvelle Agrostographie*. Imprimerie de Fain, Paris, 198 pp.
<https://doi.org/10.5962/bhl.title.474>
- Columbus, J.T. (1999) An expanded circumscription of *Bouteloua* (Gramineae: Chloridoideae): new combinations and names. *Aliso* 18 (1): 61–65.
<https://doi.org/10.5642/aliso.19991801.16>
- Dávila, P., Mejía-Saulés, M.T., Soriano-Martínez, A.M. & Herrera-Arrieta, Y. (2018) Conocimiento taxonómico de la familia Poaceae en México. *Botanical Sciences* 96: 462–514.
<https://doi.org/10.17129/botsci.1894>
- Desvaux, N.A. (1813) Mémoire sur les graminées, et sur quelques genres et especes nouvelles de cette famille. *Journal de botanique appliquée à l'agriculture, à la pharmacie, à la médecine et aux arts* 1: 63–77.
- Fournier, E. (1886) *Mexicanas plantas pars secunda: Gramineae*. Typographeo Reipublicae, Paris, 160 pp.
<https://doi.org/10.5962/bhl.title.475>
- Gould, F.W. (1979) The genus *Bouteloua* (Poaceae). *Annals of the Missouri Botanical Garden* 66 (3): 348–416.
<https://doi.org/10.2307/2398834>

- Griffiths, D. (1912) The grama grasses: *Bouteloua* and related genera. *Contributions from the United States National Herbarium* 14 (3): 343–428.
<https://doi.org/10.5962/bhl.title.53625>
- Herrera Arrieta, Y., Peterson, P.M. & Cerda Lemus, M. (2004) *Revisión de Bouteloua Lag. (Poaceae)*. Instituto Politecnico Nacional, CIIDIR y Comisión Nacional Conocimiento y Uso Biodiversidad, Durango, Mexico, 187 pp.
- Hérinq, F. (1872) Notice historique sur Poiteau. *L'Horticulteur français* 21 (4): 103–116.
- Hitchcock, A.S. (1913) Mexican grasses in the United States National Herbarium. *Contributions from the United States National Herbarium* 17 (3): 181–389.
- Peterson, P.M., Romaschenko, K. & Herrera-Arrieta, Y. (2015) Phylogeny and subgeneric classification of *Bouteloua* with a new species, *B. herrera-arrietae* (Poaceae: Chloridoideae: Cynodonteae: Boutelouinae). *Journal of Systematics and Evolution* 53 (4): 351–366.
<https://doi.org/10.1111/jse.12159>
- Raspail, F.V. (1825) Classification générale des Graminées, fondée sur l'étude physiologique des caractères de cette famille. Seconde partie. *Annales des Sciences Naturelles (Paris)* 5: 287–311.
- Sánchez-Ken, J.G. (2018) Riqueza de especies, clasificación y listado de las gramíneas (Poaceae) de México. *Acta Botanica Mexicana* 126: 1–115.
<https://doi.org/10.1086/327314>
- Scribner, F.L. (1891) Mexican grasses. *Proceedings of the Academy of Natural Sciences of Philadelphia* 43 (2): 292–309.
- Scribner, F.L. (1896) New North American grasses. *Botanical Gazette* 21 (3): 133–139.
- Swallen, J.R. (1937) The grass genus *Cathastecum*. *Journal of the Washington Academy of Sciences* 27 (12): 495–501.
- Trinius, C.B. (1824) *De Graminibus Unifloris et Sesquifloris*. Impensis Academiae Imperialis scientiarum, Petropoli, 314 pp.
<https://doi.org/10.5962/bhl.title.15650>
- TROPICOS (2018) Tropicos.org. Available from: <http://www.tropicos.org/> (accessed 25 December 2018)