The identity of Pennisetum longistylum (Poaceae)

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The identity of *Pennisetum longistylum* (*Poaceae*)

Abstract

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Pennisetum longistylum, recently stated to be an older name for the well-known *P. clandestinum* (*Cenchrus clandestinus*), is shown to be a hybrid between *P. clandestinum* and *P. villosum* (*C. longisetus*). This is a rare hybrid only known from a few gatherings from the highlands of Ethiopia and Eritrea, the most recent one made in 1916. The new combination *Cenchrus* ×*longistylus* is proposed, and the names *P. clandestinum* and *P. villosum* are lectotypified.

Additional key words: *Cenchrus clandestinus*, *Cenchrus longisetus*, *Cenchrus* ×*longistylus*, kikuyu grass, lectotypification, *Pennisetum clandestinum*, *Pennisetum villosum*

Introduction

A proposal was recently made to conserve the name *Pennisetum clandestinum* Hochst. ex Chiov. against *P. longistylum* Hochst. ex A. Rich. (Gutiérrez 2014). *Pennisetum clandestinum* was described from Ethiopia (Chiovenda 1903). It is a native of central-eastern tropical Africa and is widely introduced in tropical to warm-temperate areas all over the world. It is grown for forage and lawns, commonly as "kikuyu grass", but it has also become a troublesome weed in many areas (Gutiérrez 2014).

Pennisetum longistylum was published over 50 years before *P. clandestinum* (Richard 1850), also on the basis of material from Ethiopia, and apart from the type only a few gatherings from Eritrea have subsequently been associated with the name. According to Gutiérrez (2014) the names *P. clandestinum* and *P. longistylum* are synonyms, the types of both having "inflorescences partially hidden within the upper leaf sheaths, with only stamens and stigmatic branches exserted". As *P. clandestinum* is by far the most well-known name of the two, it was proposed for conservation.

However, the proposal was not recommended by the Nomenclature Committee for Vascular Plants (Applequist 2014) after one of us (MT) "examined material including an isotype of *Pennisetum longistylum* and reported that these two taxa looked much more different than the proposal suggested". SP, author of the account of *Poaceae* in Flora of Ethiopia and Eritrea (Phillips 1995), was consulted and agreed on this. Also, two other Committee members "separately examined type material and other specimens and agreed that *P. clandestinum* and *P. longistylum* did not appear to be conspecific". During the discussion in the Committee (Applequist 2014), MT suggested that *P. longistylum* is a hybrid between *P. clandestinum* and *P. villosum* R. Br. ex Fresen., another species native to the highlands of Ethiopia and Eritrea. In this paper we want to further examine this hypothesis.

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Pennisetum longistylum versus *P. clandestinum* and *P. villosum*

Already Chiovenda (1903: 41), when describing *Pennisetum clandestinum*, discussed the intermediate position of *P. longistylum* that was said to serve as a link between his new species and *P. villosum*. However, Chiovenda (1923) later made the combination *P. polygamum* (Forssk.) Chiov., based on *Panicum polygamum* Forssk. (Forsskål 1775) from Yemen, and treated this as an earlier name for *P. longistylum*. We have proposed *Panicum polygamum* for rejection (Thulin & Phillips 2015), not because it might be an older name for *P. longistylum*, but as it threatens the well-known *P. villosum*, "feathertop grass" or "white foxtail". In fact, *P. longistylum* has never been recorded from Yemen

Phillips (1995) also pointed out that the rare *Pennisetum longistylum* "forms a link between the anomalous *P. clandestinum* and the more typical *Pennisetum* species *P. villosum*". She writes "the short, few-spiculate inflorescence of *P. longistylum* is intermediate between the much-reduced enclosed spikelet cluster of *P. clandestinum* and the densely spiculate head of *P. villosum*", and "its relatively short, sparsely ciliate involucral bristles are intermediate between the few short scaberulous bristles of *P. clandestinum* and the long, conspicuously plumose bristles of *P. villosum*".

However, *Pennisetum longistylum* differs from *P. clandestinum* and *P. villosum* in another important, not previously mentioned aspect. Whereas the anthers are readily dehiscent and long-exserted in *P. clandestinum* and *P. villosum* (in *P. clandestinum* on thread-like filaments up to 5 cm long), they are closed and retained in the spikelets in *P. longistylum*. Furthermore, an anther removed from the isolectotype of *P. longistylum* in UPS contained malformed pollen only. This strongly indicates that *P. longistylum* is a sterile hybrid. Its intermediate position between *P. clandestinum* and *P. villosum* identifies these two species as the obvious parents, both of which are common in the highlands of Ethiopia and Eritrea, whereas *P. longistylum* is known from a few scattered localities only, indicating that the formation of the hybrid is rare. Actually, only three gatherings of *P. longistylum* are known to us, made in 1837, 1902 and 1916. However, once formed, the hybrid, which is a mat-forming, rhizomatous perennial like its parents, may apparently grow vigorously by vegetative propagation. This is well illustrated by the numerous duplicates of the type gathering of *P. longistylum*.

Taxonomic and nomenclatural implications

Recent phylogenetic work (Chemisquy & al. 2010) indicates that *Pennisetum* Rich. is paraphyletic in relation to *Cenchrus* L., and, as the latter name has priority, many species of *Pennisetum* have now been transferred to *Cenchrus*. The correct name for *P. villosum* in *Cenchrus* is *C. longisetus* M. C. Johnst., due to the existence of *C. villosus* (Spreng.) Spreng., whereas *P. clandestinum* becomes *C. clandestinus* (Hochst. ex Chiov.) Morrone. A new combination in *Cenchrus* for the hybrid *P.* ×*longistylum* is needed, and this is proposed below along with a summary of the nomenclature of its parent species, including lectotypifications of the names *P. clandestinum* and *P. villosum*. An identification key to these and other species, full descriptions and notes on ecology and geographic distribution are provided by Phillips (1995).

Cenchrus* ×*longistylus (Hochst. ex A. Rich.) Thulin & S. M. Phillips, **comb. nov.** ≡ *Pennisetum* ×*longistylum* Hochst. ex A. Rich., Tent. Fl. Abyss. 2: 388. 1850, pro sp.
Lectotype (designated by Gutiérrez 2014): Ethiopia, "ad ripas depressas prope Adoua", 30 Sep 1837, *Schimper 65* (P [P00442926]; isolectotypes: B, BM, BR, GOET, HAL, HOH, K, L, LG, M, MO, MPU, P, STU, TUB, UPS, US, W).

Additional specimens seen – Eritrea: Scimenzana, Altipiano di Gheleba, 22 Sep 1902, *Pappi 873* (FT); Addiche, 11 Oct 1916, *Baldrati 31* (FT). A third gathering from Eritrea cited by Chiovenda (1903), *Forte* in herb. Micheletti, is apparently no longer extant.

Cenchrus clandestinus (Hochst. ex Chiov.) Morrone in Ann. Bot. 106: 127 (2010) ≡ *Pennisetum clandestinum* Hochst. ex Chiov. in Ann. Ist. Bot. Roma 8: 41. 1903 ≡ *Kikuyuochloa clandestina* (Hochst. ex Chiov.) H. Scholz in Feddes Repert. 117: 513. 2006.
Lectotype (designated here): Ethiopia, Semien, Debr Eski, 27 Oct 1852, *Schimper 2084* (G [G00022569]; isolectotype: S [S-G-4663]).

Chemisquy & al. (2010: 127) stated that the holotype of *Pennisetum clandestinum* is in FI and isotypes were said to be housed in G, K and TUB. Type material has, at our request, been searched for in vain in FI, FT and TUB, and there is no isotype in K either. However, an isotype is indeed present in G and this is here designated as the lectotype. Another isotype (now an isolectotype) is present in S.

Cenchrus longisetus M. C. Johnst. in Sida 1: 182. 1963 ≡ *Pennisetum villosum* R. Br. ex Fresen. in Mus. Senckenberg. 2: 134. 1837 ≡ *Cenchrus villosus* (R. Br. ex Fresen.) Kuntze, Revis. Gen. Pl. 3: 347. 1898, nom. illeg. [non (Spreng.) Spreng., Syst. Veg., ed. 16, 1: 301. 1824].
Lectotype (designated here): Ethiopia, Semien, *Rüppell s.n.* (FR [FR0030074]).

Two *Rüppell* specimens are present in FR, FR0030074 and FR0030075. The former, marked as holotype, is here designated as the lectotype.

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References

Applequist W. L. 2014: Report of the Nomenclature Committee for Vascular Plants: 66. – Taxon **63:** 1358–1371.

Chemisquy M. A., Giussani L. M., Scataglini M. A., Kellogg E. A. & Morrone O. 2010: Phylogenetic studies favour the unification of *Pennisetum*, *Cenchrus* and *Odontelytrum* (*Poaceae*): a combined nuclear, plastid and morphological analysis, and nomenclatural combinations in *Cenchrus*. – Ann. Bot. (Oxford) **106:** 107–130.

Chiovenda E. 1903: Flora della Colonia Eritrea, *Graminaceae* (2). – Ann. Ist. Bot. Roma **8:** 21–70.

Chiovenda E. 1923: Note sulla Flora Aegyptiaco-Arabica di Pietro Forskal, pubblicata nel 1775. – Bull. Soc. Bot. Ital. **[1923]:** 112–117.

Forsskål P. 1775: Flora aegyptiaco-arabica. – Hauniae: Møller.

Gutiérrez, H. F. 2014: (2259) Proposal to conserve the name *Pennisetum clandestinum* (*Cenchrus clandestinus*) against *P. longistylum* (*Poaceae*). – Taxon **63:** 189–190.

Phillips S. M. 1995: *Poaceae* (*Gramineae*). – Pp. 1–420 in: Hedberg I. & Edwards S. (ed.), Flora of Ethiopia and Eritrea **7.** – Addis Ababa: Addis Ababa University; Uppsala: Uppsala University.

Richard A. 1850: Tentamen florae abyssinicae **2.** – Parisiis: Arthus Bertrand.

Thulin M. & Phillips S. M. 2015: (2350) Proposal to reject the name *Panicum polygamum* Forssk. (*Poaceae*). – Taxon **64:** 384.