(2332) Proposal to conserve the name Sporobolus against Spartina, Crypsis, Ponceletia, and Helecholea (Poaceae: Chloridoideae: Sporobolinae)

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Typus: S. indicus (L.) R. Br. (Agrostis indica L.).


Typus: C. aculeata (L.) Aiton (Schoenus aculeatus L.).

Typus: Ponceletia arundinae Thouars.

(=) Helecholea Host ex Roem., Collectanea: 233. 1809, nom. rej. prop.


Although Spartina (as well as Ponceletia (1808), a name placed in its synonymy by Carmichael in Trans. Linn. Soc. London 12: 504. 1819) and Crypsis (as well as Helecholea (1809), a name placed in its synonymy and not widely used since Hackel in Lamson-Scribner & Southworth, The True Grasses: 105. 1896) have nomenclatural priority, we are proposing that Sporobolus be conserved against these names. Sporobolus is much more widely distributed, has 11–20 times more species than either Crypsis or Spartina, and has a significantly more complex nomenclatural history, i.e., 10 generic synonyms versus 7 each in Crypsis and Spartina, many names originally published in other genera, and 578 synonyms versus 107 and 56 for Spartina and Crypsis, respectively (Clayton & al. in GrassBase – The Online World Grass Flora [http://www.kew.org/data/grasses-db.html, accessed 15 Sep 2014]. 2006). Within Tropicos.org (Missouri Botanical Garden, http://www.tropicos.org/Home.aspx, accessed 15 Sep 2014) there are 657 names listed in Sporobolus, 115 for Spartina, and 37 for Crypsis. Changing all Sporobolinae species to Spartina would require 203–216 nomenclatural changes (186–199 Sporobolus species + 17 species in Calamovilfa, Crypsis, and Thellungia = 203–216). In addition to the large number of new combinations required, another major obstacle in shifting all names to Crypsis or Spartina would be sorting out the synonymy for individual species that have heterotypic names with epithets blocked in Sporobolus that would be acceptable in Crypsis or Spartina.

Comparisons of literature databases for Crypsis/Spartina/Sporobolus indicate that the name Crypsis is much less commonly used than Spartina or Sporobolus, whereas the frequency of usage of the names Spartina and Sporobolus is very similar: Google Scholar (http://scholar.google.com/sch?p=hl=en&tab=ws, accessed 15 Sep 2014) returns 532/5010/5030 results when searching “Crypsis Poaceae”, “Spartina Poaceae”, or “Sporobolus Poaceae” each as a separate search, whereas the Biodiversity Heritage Library (http://www.biodiversitylibrary.org/, accessed 15 Sep 2014) returns 1898/6712/6712 recorded instances of these scientific names in publications. Comparisons of exemplar specimen databases indicate there are 6–7 times more Sporobolus than Spartina herbarium specimens, and 14–67 times fewer herbarium specimens of Crypsis than Sporobolus. The Missouri Botanical Garden (Tropicos, accessed 15 Sep 2014) returns 92/1006/6180 herbarium specimens housed at MO. In the Global Biodiversity Information Facility (http://www.gbf.org/, accessed 16 Sep 2014) searches of “Scientific Name=Spartina Schreber, 1789” and “Basis of record=Specimen” returns 5690 results, “Scientific Name=Sporobolus R. Br., 1810” and “Basis of Record=Specimen” returns 40,740 results, and “Scientific Name=Crypsis W. Aiton, 1789” and “Basis of Record=Specimen” returns 2819 results. Although only about one tenth the size of Sporobolus in terms of species diversity, it is apparent that Spartina dominates the literature while there is a much greater number of collection records for Sporobolus, a function of its higher species diversity and broad geographic distribution worldwide compared to Spartina.

Sporobolus (dropseed), lectotypified by Pfeiffer (Nomencl. Bot. 2: 1247. 1847) on S. indicus (L.) R. Br., is a genus of at least 186 (Clayton & al., i.e.) or 199 species (Simon & al. in GrassWorld [http://grassworld.myspecies.info/, accessed 30 Jan 2014]), and is characterized in having single-flowered spikelets, (3)-veined lemmas, fruits with flat pericarps or “modified Caryopses”, and ligules a ciliate membrane or line of hairs (Peterson & al. in Smithsonian Contr. Bot. 87: 1–50. 1997; Peterson & al. in Barkworth & al., Fl. N. Amer. 25: 115–139. 2003; Peterson & al. in Sida 21: 553–589. 2004; Giraldo-Cañas & Peterson

Spartina (cordgrass) is a small genus of 17 species characterized in having panicles with spikelet-like branches that bear two rows of spikelets on two sides of a somewhat flattened, triangular rachis (that superficially appears to be one-sided or plectate); spikelets that are 1-flowered with unawned, 1-veined lemmas, and without lodicules, and carpoxes with loosely adherent (free) pericarps (Watson & Dallwitz in Grass Gen. World: 852–853. 1992). The cordgrasses have been used for studying allopolyploid speciation, hybridization, polyplody, and invasion, and there is a broad body of ecological knowledge on this genus (Ainouche in Biol. Invas. 11: 1159–1173. 2009; Chelaifa & al. in Molec. Ecol. 19: 2050–2063. 2010; Saarela in PhytoKeys 10: 25–82. 2012).

Crypsis (pricklegrass) is also a small genus of 9 species characterized in having a line of hairs for ligules, narrow spikelet-like panicles with 1-flowered spikelets, 1-veined lemmas with acute to mucronate apices, no lodicules, and carpoxes with free pericarps (Watson & Dallwitz, l.c.: 256, 257; Peterson & al., l.c. 2014). Crypsis was originally conserved over Pallasia Scopoli (Harms in Notizbl. Königl. Bot. Gart. Berlin Append. 13: 9. 1904) but this conservation was later determined to be superfluous since it was concluded that Pallasia should be treated as a later homonym of Pallasia Houtt. (Rickett & Stafleu in Taxon 8: 225. 1959).

In a deeply nested, strongly supported clade within Sporobolus, all species of Spartina are sister to the Calamovilfa–Sporobolus floridanus Chapm. clade (Peterson & al., l.c. 2014). In their new classification of Sporobolus, including all species previously recognized in Calamovilfa, Crypsis, Thellungia, and Spartina, the authors of this study place 161 species in 11 sections (including 11 subsections), and 13 species in incertae sedis. Spartina is placed in Sporobolus sect. Spartina. Thus far 64%–68% [127/186–199] of the species traditionally included in Sporobolus have been placed in one of the 11 sections. Expansion of the circumscription of Sporobolus to include Calamovilfa, Crypsis, Spartina, and Thellungia required only 34 nomenclatural changes (see Peterson & al., l.c. 2014) while still allowing the recognition of a monophyletic and morphologically cohesive unit. Nearly all species included in this expanded circumscription have the salient morphological features that delimit Sporobolus such as: 1-flowered spikelets (Thellungia is an exception with 1–5-flowered spikelets with long-curved rachillas, each floret readily disarticulating with a persistent rachilla joint), l(3)-veined lemmas, and caryoxes with free pericarps (Palmer & al. in Mallet, Fl. Australia 44B: 346–409. 2005; Peterson & al., l.c. 2014). Spartina only differs in having panicles arranged into spikes; Calamovilfa differs in having long hairless hairs 1/4 to 7/8 as long as the lemma and disarticulation of the entire spikelet with intact carpoxes; and Crypsis differs in having spiciform or capitulate panicles that are often enclosed in the sheath and strongly laterally compressed spikelets (Peterson & al. in Aliso 23: 580–594. 2007; Peterson & al., l.c. 2014).

Alternatively, if Spartina, as well as Calamovilfa, Crypsis, and Thellungia were to be retained as separate genera, a minimum of six or seven new genera would need to be erected to accommodate the 160–173 remaining species apart from the 26 species currently placed in Sporobolus sect. Sporobolus (186–199 – 26 = 160–173). These alternative name changes would destabilize the taxonomy of this group, since there are very few morphological characters to circumscribe the six or seven new genera.

Sporobolus is a worldwide genus, nearly equally distributed between the Western and Eastern Hemispheres, and is found in tropical, subtropical to temperate regions throughout the world (43 of 81 geographic regions in GrassBase, Clayton & al., l.c.). Sporobolus is a firmly founded, long-established name well known to many biologists, conservationists, and land managers. Spartina is of North American origin where it is most speciose, and has colonized coastal intertidal mud flats, estuaries, salt marshes, and inland marshes in South America and the Atlantic coasts of Europe and Africa (27 regions in GrassBase, Clayton & al., l.c.; Saarela & al., l.c.; Peterson & al., l.c. 2014). Crypsis is of Mediterranean and SW Asian origins where it is commonly found on periodically flooded or saline soils (28 regions in GrassBase, Clayton & al., l.c.; Clayton in Polhill, Gramineae, part 2, Fl. Trop. E. Africa: 353. 1974). Even though Spartina is ecologically important in salt marsh and estuary ecosystems with a large and broad body of biological, genetic, and ecological knowledge, we believe conservation of Sporobolus R. Br. (1810) over Spartina Schreb. (1789) and Crypsis Aiton (1789) and their two synonyms Ponceletia Thouars (1808) and Helecholea Host ex Roem. (1809) is the most parsimonious and least disruptive nomenclatural solution for recognizing species of the Sporobolinae in a single natural genus.

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