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**CYPERUS ECHINATUS AND CYPERUS CROCEUS, THE CORRECT NAMES
FOR NORTH AMERICAN CYPERUS OVULARIS AND
CYPERUS GLOBULOSUS (CYPERACEAE)**

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Summary

Cyperus ovularis (Michx.) Torr. and *C. globulosus* Aubl. are presently applied to common and widespread eastern North American sedges. Herein we lectotypify the names *Kyllinga ovularis* Michx. [basionym of *Cyperus ovularis* (Michx.) Torr.], *Scirpus echinatus* L. [basionym of *Cyperus echinatus* (L.) Wood], and *Cyperus globulosus* Aubl. We conclude that *Cyperus ovularis* (Michx.) Torr. is a synonym, *Cyperus globulosus* Aubl. has been misapplied, and propose that *Cyperus echinatus* (L.) Wood and *Cyperus croceus* Vahl be used instead.

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Cyperus echinatus (L.) Wood, the Correct Name for
Cyperus ovularis (Michx.) Torr.

Lectotypification of Kyllinga ovularis Michx. — There are two sheets in the Michaux Herbarium (P), which are annotated *Kyllinga ovularis*, the basionym of *C. ovularis* (Michx.) Torr. Specimens on these sheets are a mixture of three species. The identity of these specimens was determined by examination of photographs and matching of critical materials [*C. ovularis* (Michx.) Torr., *Carter* 3360. 3251; *C. croceus* Vahl, *Carter* 2740. 3507; *C. retrorsus* Chapm., *Carter* 2575, 2899].

Sheet one bears three specimens of three closely related species and the annotation:

Kyllinga ovularis
Basse Carol.
D.

The three specimens from left to right are: *Cyperus ovularis* (Michx.) Torr., *C. retrorsus* Chapm., and *C. croceus* Vahl. The specimen on the left side of this sheet, which has been determined to be *Cyperus ovularis* (Michx.) Torr., is herein designated lectotype of *Kyllinga ovularis* Michaux.

The second sheet bears four specimens and the following annotation:

Kyllinga ovularis
Duplicata
Jardin
Basse Carol.

All four specimens on this sheet are *Cyperus ovularis* (Michx.) Torr. Since this sheet was designated "Duplicata" by Michaux, its specimens become isolectotypes.

Citations under the basionym Scirpus echinatus L. — A particularly confusing nomenclatural situation involves the basionym of *Cyperus echinatus* (L.) Wood. *Scirpus echinatus* L. (1753: 50) unfortunately was based by Linnaeus upon two discordant elements, one from Asia and the other from the New World. The New World element later was identified as the widespread North American *Cyperus ovularis* (Michx.) Torr. and the Asian one as *Cyperus paniceus* (Rottb.) Boeck. It follows that the original specific epithet must be retained for one of these.

In the protologue of *Scirpus echinatus*, reproduced below, there are three citations, one of the Asian element and two of the North American one.

- echinatus*. 16. SCIRPUS culmo triquetro nudo, umbella
simplici, spicis ovatis. *Fl zeyl.* 38. *
Cyperus floribus capitatis erectis pedunculatis.
Gron. virg. 12.
Gramen Cyperoides americanum, spicis
grandioribus oblongo-rotundis,
sparganii in modum echinatis, ad summum
caulem pediculis longis innitentibus.
Pluk. alm. 179, t. 91, f. 4.
Habitat in India utraque.

Citation one. Number "38" in *Flora Zeylanica* (1747: 15), was based upon a Sri Lankan specimen of *C. paniceus* (Rottb.) Boeck., which is located in the Hermann Herbarium (1: 34) at BM. This specimen was annotated "38" by Linnaeus, thus designating it as a specimen upon which the description of the same number in *Flora Zeylanica*, in part, was based (Trimen, 1888). Furthermore, Linnaeus's phrase-name, except for the insertion of the word "nudo", was taken intact from his polynomial in *Flora Zeylanica*.

Citation two. The description in Gronovius's *Flora Virginica* (1739, 1: 12) is of nearly equal importance to the one in *Flora Zeylanica*, since Linnaeus worked closely with Gronovius in the winter of 1737–1738 helping him to arrange and describe species for *Flora Virginica* (Reveal, 1983). Although Linnaeus did not cite a specimen with reference to *Flora Virginica*, Gronovius's description leads to one, *Clayton* 173. Attempts to locate Clayton's specimen at BM have been futile (C. E. Jarvis, pers. comm.). Furthermore, the description is not so definitive as to allow for determination.

Citation three. Plukenet in *Almagestum Botanicum* (1696) clearly referred to an American plant ("Gramen Cyperoides americanum"), and the accompanying illustration (tab. 91, fig. 4) is with little doubt *C. ovularis* (Michx.) Torr. Furthermore, a photograph has been examined and critical material [*C. ovularis* (Michx.) Torr., *Carter 3251*] has been matched with a specimen (Herb. Sloane 96: 78) in Plukenet's herbarium, upon which this plate apparently was based. Interestingly, Linnaeus also cited this Plukenet description and illustration in *Flora Zeylanica* with the phrase-name that he later gave in *Species Plantarum* (1753) as *Scirpus echinatus*. Thus, Linnaeus had associated an American element with his phrase-name at its initial publication in 1747.

An authentic Linnaean specimen.—Finally, there is an authentic specimen (71.35) at LINN, annotated "echinatus 16" by Linnaeus (Clarke, 1895). This specimen has been identified as *C. ovularis* (Michx.) Torr. by examination of a photograph and matching of critical material [*C. ovularis* (Michx.) Torr., *Carter 3251*]. Unfortunately, it is without a collector's name, number, or locality. Furthermore, Linnaeus's "Habitat in India utraque" is of little help in pinpointing a locality, since it tells only that the species, as conceived by Linnaeus, was known from both Old and New Worlds (Stearn, 1957). However, since *C. ovularis* (Michx.) Torr. is known only from eastern North America, this specimen must have originated here. We wonder if it could possibly be the missing *Clayton 173* from Virginia.

Lectotypification of Scirpus echinatus L.—In 1821 Elliott described and illustrated *Mariscus echinatus* and, without question, cited "*Scirpus echinatus*, Sp. pl. 1. p. 304" in synonymy. *Scirpus echinatus* L. was initially described on page 50 of *Species Plantarum* (Linnaeus, 1753, ed. 1) but does not appear on page 304 until the fourth edition (Willdenow, 1797). Since Willdenow's description and citations under *S. echinatus* are essentially unchanged from those in the first edition of *Species Plantarum* (1753), Elliott, in referring to the former, clearly made indirect reference to the original description. This is permitted under Art. 32.1 (c) and Art. 32.4 of the *International Code of Botanical Nomenclature* (Greuter et al., 1988). Thus, Elliott transferred *Scirpus echinatus* L. to *Mariscus*, making the combination *Mariscus echinatus* (L.) Elliott. In doing so, he was the first to restrict usage in the sense of but one of the two elements cited by Linnaeus.

If all else were equal, the importance given to phrase-names in Linnaean typification (Stearn, 1957) makes it desirable to lectotypify *Scirpus echinatus* L. with the Sri Lankan specimen in Hermann's herbarium. However, since Elliott first established usage in the sense of the New World element, we believe the more reasonable solution is to follow his precedent. Thus, we lectotypify *Scirpus echinatus* L. by the LINN specimen no. 71.35.

Authorship of Mariscus echinatus and Cyperus echinatus.—Since Elliott's treatment, there has been confusion about application and authorship of *Mariscus echinatus*, attributable mainly to Elliott's concept of *M. echinatus*. Elliott's illustration is not the same as the American element of *Scirpus echinatus* L. but is of a related species that has been called variously *Cyperus echinatus* (Elliott) Wood, *C. baldwinii* Torrey, *C. globulosus* Aublet, and now, correctly, *C. croceus* Vahl.

There are no specimens in the Elliott Herbarium (CHARL), that match his illustration, incorrectly called *C. echinatus* (Elliott) Wood. However, according to Weatherby (1942), parts of the Elliott collections have been lost. The only *Cyperus* specimen labeled *echinatus* bears the annotation "*Scirpus echinatus* Lin:" with the locality "Pennsylv[ania]:". This specimen is probably from Henry Muhlenberg, an early Pennsylvania botanist with whom Elliott "for many years . . . compare[d] and collate[d] the plants of Carolina and Pennsylvania (Elliott 1824, p. v.)." It is *C. ovularis* (Michx.) Torr., which is rather common in Georgia and South Carolina but was not treated as a distinct species by Elliott. It is interesting to note that William Baldwin, who was a correspondent and advisor of both Elliott and Muhlenberg (Ewan, 1971a), as early as 1816 believed *C. ovularis* (Michx.) Torr. and *Scirpus echinatus* L. were the same species (Darlington, 1843: 330). Thus, we conclude that Elliott had a broad concept of *Mariscus echinatus*, which included the American element of *Scirpus echinatus* L. More recent authors (Torrey, 1836; Wood, 1861) have restricted it only to that element illustrated by Elliott but not intended by Linnaeus.

Torrey in 1836, undoubtedly suspicious that Elliott's illustration and Linnaeus's *S. echinatus* were not the same, cited "*Mariscus echinatus* Elliott excl[uding]. syn[onymy]." under his newly described *Cyperus baldwinii* Torr. and treated the American element of Linnaeus's *Scirpus echinatus* as *Cyperus ovularis* (Michx.) Torr., a name that has since persisted.

Subsequently, Wood in 1861 did not actually cite *Scirpus echinatus* L., the cited basionym of

Mariscus echinatus (L.) Elliott, but he did cite "*Mariscus* Ell." This is obviously an abbreviated reference, not uncommon at the time, to *Mariscus echinatus* of Elliott, and thus is an indirect reference to Elliott's cited basionym, *Scirpus echinatus* L. under Art. 32.1(c) and Art. 32.4. As for *Mariscus echinatus* of Elliott, *Cyperus echinatus* of Wood must be regarded as a new combination based on *Scirpus echinatus* L., even if misapplied to a different species (see Art. 55.2).

Following is the synonymy of this North American species:

Cyperus echinatus (L.) Wood, *Class-book* 734. 1861.

Scirpus echinatus L., *Sp. Pl.* 1: 50. 1753. TYPE: "*Habitat in India utraque*", locality unknown, although presumably from eastern North America, Linnaean Herbarium No. 71.35 (lectotype: LINN, IDC photograph!, critical specimen matched).

Mariscus echinatus (L.) Elliott, *Sketch Bot. S. Carolina.* 1: 75. 1821.

Kyllinga ovularis Michx., *Fl. Bor.-Amer.* 1: 29. 1803. TYPE: U.S.A. South Carolina, Michaux's garden near Charleston (lectotype: P, photograph!, critical specimens matched; isolectotypes: P, photograph!, critical specimens matched).

Cyperus ovularis (Michx.) Torr., *Ann. Lyceum Nat. Hist. New York* 3: 278. 1836.

Cyperus croceus Vahl, *the Correct Name for Cyperus globulosus Aublet*

Aublet described *Cyperus globulosus* in 1775 in *Histoire des Plantas de la Guiane Française*. In the protologue he cited only an illustration (tab. 79, fig. 1) from Sloane (1707). About all that can be determined from Aublet's brief description of this species is that it is characterized by tight, subglobose, yellowish spikes. This could apply to some material of what is presently called *C. globulosus* Aublet or, just as well, to several other unrelated *Cyperus*. Furthermore, the cited illustration in Sloane shows little detail and is not diagnostic. However, Lanjouw and Uittien (1940) report an authentic Aublet type specimen at P-Herb. J. J. Rousseau (2: 59) and identify it as *Cyperus luzulae* (L.) Retz. The identity of this specimen has been verified as *C. luzulae* (L.) Retz. by examination of microfiche and matching with critical material [*C. luzulae* (L.) Retz., McDaniel 23640, Rimachi, Carter, VDB]. Thus, *Cyperus globulosus* Aublet must be considered a synonym of *Cyperus luzulae* (L.) Retz.

The next available name for this taxon (which has been erroneously called *Cyperus echinatus* (Ell.) Wood, *C. baldwinii* Torr., and *C. globulosus* Aubl.) is *Cyperus croceus* Vahl. An authentic type in the Vahl Herbarium (C) marked *Cyperus croceus* in Vahl's handwriting has been examined and is of that taxon previously called *C. globulosus* Aubl.

Provenance of the type of Cyperus croceus Vahl.—The protologue of *Cyperus croceus* Vahl (1805) contains the following information: "*Habitat in Puertrico? Ex herbario Jussiaei.*" On the back of the type specimen Vahl has written "dedit LaMarck" but has drawn a line through Lamarck and above it added "Bosch". Based upon information in the protologue and Vahl's inscription on the back of the type specimen, it seems apparent that Vahl did receive the specimen from Jussieu and that there was some confusion about its origin. Furthermore, it seems probable that the specimen originated with "Bosch", was then passed to Lamarck, and then to Jussieu; or went directly from "Bosch" to Jussieu.

Who was "Bosch"?—No reference has been found to a "Bosch" who collected in the New World during the latter part of the 18th or the early years of the 19th century or who, otherwise, might have been the source of the Vahl type (Candolle, 1880; Lanjouw and Stafleu, 1954; Stafleu and Cowan, 1976). However, Louis Auguste Guillaume Bosc was the French consul located in South Carolina during the later years of the 18th century (Harper, 1940; Stafleu and Cowan, 1976). Although there is disagreement on the precise dates he was in South Carolina, he apparently was there at least two years between 1796–1800 (Wittrock, 1905; Harper, 1940; Stafleu and Cowan, 1976).

His general headquarters were in Charleston and vicinity, and he was even located part of this time at Michaux's garden about 10 miles north of Charleston (Harper, 1940). Bosc is an obscure figure who "amassed immense materials in natural history (Harper, 1940)." His collections included both plants (Lanjouw and Stafleu, 1954) and animals (Harper, 1940). The botanical specimens, which numbered in the hundreds, were scattered about Europe and many are located in the herbaria of Lamarck and Jussieu (P), Candolle (G), and at C (Candolle, 1880; Lanjouw and Stafleu, 1954; Stafleu and Cowan, 1976).

There is no record of Bosc having collected in Puerto Rico. However, he did collect specimens in

coastal South Carolina (Harper, 1940), where *Cyperus croceus* is a common weed. Thus, it is plausible that "Bosch" is an orthographic error for Bosc and that Vahl's type specimen originated from South Carolina, not Puerto Rico. It should be pointed out that Bosc published very little and that his name probably was not widely known in his day. Also, as was often the case then, his specimens were probably casually exchanged in some instances. Thus, it is not unreasonable to assume that Vahl misspelled his name. In fact, the orthographic variant "Bosk" has been noted by Ewan (1971b). It is also interesting to note that there are several specimens of *Cyperus* from "herb. Bosc" in the Lamarck and Jussieu herbaria (P), which are from "Caroline" and are dated 1797 to 1801 (Ewan Collection, MO). Furthermore, the type of *Cyperus croceus* Vahl is a good match for certain material of this species from southeastern United States.

In summary, we believe it best to weigh heavily Vahl's interrogative after the locality, Puerto Rico, and conclude in light of circumstantial evidence presented herein that the type of *Cyperus croceus* Vahl was collected by L. A. G. Bosc most probably in vicinity of Charleston, South Carolina, U.S.A.

Following are synonymies of *C. croceus* Vahl and *Cyperus luzulae* (L.) Retz. of which *C. globulosus* Aubl. is considered a synonym.

Cyperus croceus Vahl, *Enum. Pl.* 2: 357. 1806. TYPE: "Puertorico?" or more probably vicinity of Charleston, South Carolina, U.S.A., *Bosc* (holotype: C!).

Cyperus baldwinii Torrey, *Ann. Lyceum Nat. Hist. New York* 3: 270. 1836. TYPE: "Middle Florida", *Chapman s.n.* (holotype: NY!; paratypes: NY!, PH!).

Cyperus globulosus sensu auct. non Aubl.: *Small, Fl. S.E. U.S.* 1321. 1903; *Man. S.E. Fl.* 152. 1933; Kükenthal, *Pflanzenr.* 4(20): 510. 1936; Horvat, *Catholic Univ. Amer., Biol. Ser.* 33: 39. 1941; Fernald, *Gray's Manual* 247. 1950; Steyermark, *Fl. Missouri*, 270. 1963; Radford *et al.*, *Man. Vasc. Fl. Carol.* 180. 1968; Correll & Johnston, *Contrib. Tx. Res. Found.* 6: 299. 1970; Godfrey and Wooten, *Aquatic Wettl. Pl. S.E. U.S.* 1: 262. 1979; Correll and Correll, *Fl. Bah. Arch.* 218. 1982; Tucker, *Syst. Bot. Monog.* 2: 55. 1983.

Cyperus luzulae (L.) Retz., *Obs. Bot.* 4: 11. 1786. *Scirpus luzulae* L., *Sp. Pl.* 2: 75. 1762. TYPE: Linnæan Herbarium No. 71.45 (holotype: LINN, microfiche!).

Cyperus globulosus Aublet, *Hist. Pl. Guiane* 1: 47. 1775. TYPE: French Guiana, P-Herb. J. J. Rousseau 2: 59 (holotype: P, IDC microfiche!, critical material matched).

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