

RE-EVALUATION AND LECTOTYPIIFICATION
OF *SCIRPUS RETROFRACTUS* L.

RICHARD CARTER¹ AND CHARLES E. JARVIS

ABSTRACT

The nomenclatural history of *Cyperus retrofractus* (L.) Torr. is discussed. An authentic Linnaean specimen is reinterpreted as the lectotype for the basionym *Scirpus retrofractus* L. and arguments are made for the reapplication of this name to a species which, since 1906, has been called *Cyperus dipsaciformis* Fernald.

Key Words: Cyperaceae, *Cyperus retrofractus*, *C. dipsaciformis*, *C. hystricinus*, *C. plukenetii*, nomenclature, typification

The *Cyperus retrofractus* complex consists of three North American species for which there are four names available. These species are widely distributed in xeric habitats throughout much of southeastern United States. Kükenthal (1936) in his comprehensive treatment of *Cyperus* placed this complex in section *Umbellati* which is composed of perennials with umbellate inflorescences of simple spikes and few-flowered subterete spikelets. Members of the *Cyperus retrofractus* complex are distinguished from other *Umbellati* by their uniformly retroflexed spikelets and relatively larger akenes and spikelet scales. This group has had a turbulent nomenclatural history (summarized in Table 1) that began with Linnaeus' description of *Scirpus retrofractus* in *Species Plantarum* (1753) p. 50:

retrofractus. 17. SCIRPUS culmo triquetro, umbella simplici: spicarum
flosculis retrofractis.
Cyperii genus indianum, panicula speciosa, spiculis pro-
pendentibus atris. *Pluk. phyt.* 415. f. 4.
Habitat in Virginia. 2

In 1805 (p. 375) Martin Vahl treated *Scirpus retrofractus* under *Mariscus* with *Scirpus retrofractus* L. as a synonym. This treatment was followed by Elliott in 1821 and again by Torrey in 1836. However, Torrey (*in Gray*, 1848) later transferred the species to *Cyperus*, thus making the currently accepted combination *Cyperus retrofractus* (L.) Torr. There were apparently few problems in applying this

¹Present address and that to which reprint requests should be sent: Department of Biology, Valdosta State College, Valdosta, Ga 31698

name until 1906, when Fernald segregated and described two additional species, thus making it necessary to determine exactly what Linnaeus meant by *Scirpus retrofractus*. The original diagnosis is brief and on its own is of little help. As was usual for his time, Linnaeus cited no specimens but did cite an illustration by Leonard Plukenet (tab. 415, fig. 4: 1742) in the synonymy of the species. Fernald (1906) used this illustration as his basis for application of the name *C. retrofractus* (L.) Torr. This interpretation was followed by Small (1933), by Kükenthal in 1936 (although he treated the species as varieties), and by Horvat (1941). In the meantime, however, Fernald learned that the Linnaean Herbarium (LINN) possessed a specimen labeled by Linnaeus "17 retrofractus" (no. 71.36; see Savage, 1945). From a photograph of the specimen, Fernald could tell it was not the same plant depicted by Plukenet but was instead, he thought, the related glabrous species he had described in 1906 as *C. hystricinus*. This left Plukenet's plant, which had been called *C. retrofractus*, without a name; so Fernald in 1945 rearranged his 1906 nomenclature and reduced *C. hystricinus* to a synonym of the newly interpreted *C. retrofractus* (L.) Torr. and described the plant illustrated by Plukenet as *C. plukenetii*. In doing so, Fernald named and described all three species in the complex.

Recently, the Linnaean specimen has been re-examined by us and determined to be neither the glabrous species that Fernald (1945) thought it was (previously described as *Cyperus hystricinus* in 1906) nor the plant in Plukenet's illustration cited by Linnaeus (1753). Instead, it is what since 1906 has been called *C. dipsaciformis* Fernald, and a member of the only species in the group to which the name "retrofractus" has not been applied. In light of this unsettling information, arguments can be made for taking either of two courses.

First, one could argue that it would be preferable to adopt the pre-1945 view of Fernald and others, and accept as the type Plukenet's illustration. This solution has two advantages: (1) since this approach has already been taken and the species have already been treated as varieties in this manner by Kükenthal (1936), it would prove nomenclaturally more conservative if they are treated as varieties again; (2) the plant in Plukenet's figure has been unequivocally attributed by Fernald (1906) to the most morphologically distinctive, central, and most abundant and widespread of the three species. By taking this course, the taxonomy would be in greater concordance with the nomenclature and hence more logical.

The other solution is to accept a Linnaean specimen as the lectotype of *Scirpus retrofractus* L. Clarke (1895) argued convincingly for the use of marked specimens of Cyperaceae at LINN instead of the sometimes vaguely rendered and often confusing illustrations cited by Linnaeus. However, each case must be judged on its merits and the sources of information used in the protologue carefully weighed. Further, Recommendation T4b of the ICBN (Voss, 1983) requires that when there is a choice, a specimen should be selected as lectotype over an illustration. Finally, Article 8.1 states that the author who first designates a lectotype must be followed. Fernald did not designate a type in 1906; he wrongly assumed the plate to be the basis of the name. However, in 1945 Fernald was aware of both elements and clearly referred to the specimen at LINN as "the type."

In addition to the previously cited authentic specimen at LINN, there is at the Linnaean Herbarium in Stockholm (S) a specimen (IDC Microfiche no. 21.1) bearing the number "17" and the annotation "retrofractus." However, these annotations are not in Linnaeus' hand and we therefore do not regard the specimen as a syntype. Moreover, a photograph of this specimen has been examined by us and determined definitely not to be in this complex.

Certain other information in Linnaeus' hand found on the reverse side of specimen 71.36 (LINN) and pertaining to its identity indicates that it was sent to Linnaeus by Gronovius ("Gron.") and is evidently number "457" of John Clayton. It was therefore collected in Virginia (Savage, 1945; Stearn, 1957; Reveal, 1983). It is interesting to note that Linnaeus did not cite this specimen indirectly in the protologue as he did in other instances of Clayton material acquired by Gronovius, presumably because it seems not to have been cited in Gronovius' *Flora Virginica* (1739).

Plukenet's illustration is rather questionably matched by a specimen in his herbarium, now found in the Sloane Herbarium at BM (HS 92: 79). However, if that specimen was the basis of the illustration, significant modifications were made in the form and arrangement of the heads. Linnaeus would not in any case have seen this specimen and he referred Plukenet's polynomial to *Scirpus retrofractus* on the basis of the information available in the illustration.

In light of the information presented here, we believe it best to follow Fernald (1945) in accepting the specimen no. 71.36 (LINN) as the lectotype of *Scirpus retrofractus* L. and to make the necessary nomenclatural adjustments (Table 1); that is, we apply the name

Table 1. Historical application by various authors of names in the *Cyperus retrofractus* complex.

Fernald Names ¹	Fernald (1906)		Fernald (1945)		Present Treatment
	Pre-1906	Horvat (1941)	Küenthall (1936)	Fernald (1945)	
" <i>plukenetii</i> "	<i>retrofractus</i>	<i>retrofractus</i>	var. <i>retrofractus</i>	<i>plukenetii</i>	<i>plukenetii</i>
" <i>hystricticus</i> "	"	<i>hystricticus</i>	var. <i>hystricticus</i>	<i>retrofractus</i>	<i>hystricticus</i>
" <i>dipsaciformis</i> "	"	<i>dipsaciformis</i>	var. <i>dipsaciformis</i>	<i>dipsaciformis</i>	<i>retrofractus</i>

¹Because Fernald used modern type-methods and his names can be unambiguously applied, they are used here as convenient reference points.

Scirpus retrofractus L. to what has been passing since 1906 as *C. dipsaciformis* Fernald, and relegate *C. dipsaciformis* to the synonymy of *C. retrofractus* (L.) Torr., and re-establish *C. hystricinus* Fernald. Below are currently accepted names with their synonyms:

1. **Cyperus retrofractus** (L.) Torr. in Gray, Man. Bot. North. U.S. 519. 1848.

Scirpus retrofractus L., Sp. Pl. 1:50. 1753. TYPE: U.S.A. Virginia, Clayton 457. (LECTOTYPE: no. 71.36 LINN!).

Mariscus retrofractus (L.) Vahl, Enum. Pl. 2:37. 1806.

C. dipsaciformis Fern., Rhodora 8:127. 1906. TYPE: U.S.A. District of Columbia, Washington, 22 July 1896, Steele s.n. (HOLOTYPE: GH!; ISOTYPE: US!).

C. retrofractus (L.) Torr. var. *dipsaciformis* (Fern.) Kükenthal in Engler, Pflanzenreich IV(20)101: 509. 1936.

2. **Cyperus hystricinus** Fern., Rhodora 8: 127. 1906. TYPE: U.S.A. New Jersey, near Haddenfield, 13 October 1867, C. F. Parker s.n. (HOLOTYPE: GH!).

C. retrofractus (L.) Torr. var. *hystricinus* (Fern.) Kükenthal in Engler, Pflanzenreich IV(20)101: 509. 1936.

3. **Cyperus plukenetii** Fern., Rhodora 47:110. 1945. TYPE: U.S.A. Virginia, Princess Anne County, Cape Henry, 28 and 29 July 1934, M. L. Fernald and B. Long (HOLOTYPE: GH!).

ACKNOWLEDGMENTS

Much of this paper is taken from a dissertation submitted by Carter to the Graduate School of Vanderbilt University. The authors extend thanks to Dr. Robert Kral for his counsel and advice while Carter was his student at Vanderbilt University, and to Dr. James Reveal for helping Jarvis in dealing with the Plukenet material. Also we wish to thank an anonymous reviewer for helpful comments and Miss M. J. Keene for carefully typing the manuscript. Publication costs were met by the Faculty Research Fund of Valdosta State College.

LITERATURE CITED

- CLARKE, C. B. 1895. On certain authentic *Cyperaceae* of Linnaeus. Journ. Linn. Soc., Bot. 30: 299-315.
- ELLIOTT, S. A. 1821. A Sketch of the Botany of South Carolina and Georgia. Vol. 1. Charleston, SC.
- FERNALD, M. L. 1906. Some new or little known *Cyperaceae* of eastern North America. *Rhodora* 8: 126-130.
- . 1945. Botanical specialities of Virginia. *Rhodora* 47: 93-142.
- GRAY, A. 1848. Manual of Botany of Northern United States. J. Munroe and Co. Boston & Cambridge, MA.
- GRONOVIVS, J. F. 1739. [repr. 1946]. *Flora Virginica*. Murray Printing Co. Cambridge.
- HORVAT, M. L. 1941. A revision of the subgenus *Mariscus* found in the United States. Catholic Univ. Amer. Biol. Ser. No. 33. The Catholic Press. Washington, D.C.
- KÜKENTHAL, G. 1936. *Cyperaceae—Scirpoideae -Cypereae*. In: Engler, A., *Pflanzenreich* IV(20)101: 1-671.1.
- LINNAEUS, C. 1753. *Species plantarum*, Vol. 1. Salvius. Stockholm.
- PLUKENET, L. 1742. *Amaltheum Botanicum*. Vol. IV. London.
- REVEAL, J. L. 1983. Significance of pre-1753 botanical explorations in temperate North America on Linnaeus' first edition of *Species Plantarum*. *Phytologia* 53: 1-96.
- SAVAGE, S. 1945. A Catalogue of the Linnaean Herbarium. Linnaean Society of London. London.
- SMALL, J. K. 1933. [repr. 1972]. *Manual of the Southeastern Flora*. Hafner. New York.
- STEARNS, W. T. 1957. An introduction to the *Species Plantarum* and cognate botanical works of Carl Linnaeus (introduction to the *Species Plantarum* facsimile of the Ray Society): 1-176. London.
- TORREY, J. 1836. Monograph of North American *Cyperaceae*. *Ann. Lyceum Nat. Hist. New York* 3: 249-288.
- VAHL, M. 1805. *Enumeratio plantarum*. Vol. 2. Mølleri et Filii. Copenhagen.
- VOSS, E. G., Ed. 1983. *International Code of Botanical Nomenclature*. W. Junk. Boston, MA.

R. C.

DEPARTMENT OF GENERAL BIOLOGY
VANDERBILT UNIVERSITY
NASHVILLE, TN 37235

C. E. J.

BRITISH MUSEUM (NATURAL HISTORY)
CROMWELL ROAD
LONDON SW7 5BD
UNITED KINGDOM