

Rare Sedges Discovered and Rediscovered in Delaware¹

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Throughout the history of Delaware field botany, lack of study and undercollection have characterized members of the sedge family (Cyperaceae). An example of the neglected study and current lack of knowledge of Delaware Cyperaceae is the fact that Tucker et al. (1979) list the status of all but 2 of the 67 considered sedge taxa as "undertermined." To help remedy this neglect, notes on 20 rare sedge species found in 1983 are given below. Included are 3 new state records and 5 new county records. Unless mentioned otherwise, all localities are new stations for each species. Voucher specimens of all species except numbers 19, 20, and the second locality listed under number 5 are deposited in the Claude E. Phillips Herbarium at Delaware State College. Duplicate vouchers of numbers 4, 9, 11, 13, 15, 16, and 17 are deposited at the Academy of Natural Sciences of Philadelphia. The nomenclature follows Fernald (1950) for the most part; if a different name is used, the one from Fernald follows in parentheses.

1. *Carex amphibola*

New Castle Co.: N of Rockland, rocky woods above Brandywine Creek, 7 Jun 1983, *Naczi* 215.

Only a few plants were seen of this sedge which Tatnall (1946) lists as "rare" with the last collection in 1927.

2. *Carex collinsii*

Sussex Co.: N of Milton, sphagnum *Chamaecyparis* swamp, 29 Jun 1983, *Naczi* 263.

Last collected in 1937, this species was quite abundant at this site and grew with two other Delaware rare plants, *Sarracenia purpurea* and *Drosera rotundifolia*. One factor contributing to the rarity of the sedge is the fact that its preferred habitat, Atlantic White Cedar swamps, is uncommon in Delaware.

3. *Cyperus amuricus* (*microiria*)

Sussex Co.: E of Georgetown, wet sandy soil, 25 Aug 1983, *Naczi* 342.

A small population of this plant was growing at the base of a sand mound in a sand and gravel storage yard. Tatnall (1946) does not list this species which is adventive from Asia and Fernald (1950) records it no farther south than eastern Pennsylvania. Thus this specimen is apparently a new Delaware record extending the species' known United States range south to Delaware.

4. *Cyperus brevifolioides* (*brevifolius*)

New Castle Co.: S of Claymont along the Delaware River, gravelly mud in intertidal zone near high tide limit, 4 Sep 1983, *Naczi* 343.

In the Philadelphia area, *C. brevifolioides* Thier. & Delahous. is nearly restricted to intertidal zones (Ferren and Schuyler 1980). In the Delaware River intertidal zone just south of Claymont, I found it growing abundantly with *Panicum virgatum* within a

¹ Contribution No. 3 from the Claude E. Phillips Herbarium.

small area. This site is probably at or near the southern limit of the species in the Delaware's immediate tidal marshes because the river becomes more saline downstream.

Although Gleason (1952) includes Delaware in the range of this sedge (under the name *C. brevifolius*), efforts to locate a Delaware specimen which Gleason may have seen in the New York Botanical Garden's herbarium were unsuccessful. Tatnall does not list this plant nor do Delahoussaye and Thieret (1967) cite any Delaware specimens among the New World specimens they examined. Ferren and Schuyler (1980) record this species no farther south in the Delaware River system than South Philadelphia. Thus this record apparently extends the known range of *C. brevifolioides* south in the Delaware River system to Delaware. This sedge is probably an introduction from eastern Asia (Ferren and Schuyler 1980) and may be spreading.

5. *Cyperus retrofractus*

Kent Co.: N of Houston, dry woods, 10 Aug 1983, *Naczi and Seyfried*; Choptank Mills, sandy clearing in pine woods, 5 Sep 1983.

North of Houston, Nancy E. Seyfried and I collected this species from a small population of scattered plants in barren woods. At Choptank Mills one plant was observed. Tatnall records this species as rare, with the last Delaware collection in 1945 at Choptank Mills, his only Delaware station.

6. *Eleocharis brittonii*

Sussex Co.: Ellendale, moist sandy soil at edge of shallow ditch, 8 Oct 1983, *Naczi 370A*.

A single plant of this spike rush was first detected growing with *Eleocharis microcarpa* and *E. tuberculosa* on 25 August. On 8 October, Drs. Dill, Schuyler, Tucker, and I scoured the habitat for more plants of *E. brittonii*, but to no avail.

Tatnall does not record *E. brittonii*. This species apparently reaches the northern limit of its range in southeastern North Carolina except for one disjunct population in southern Cape May County, New Jersey (Snyder and Vivian 1981). The Delaware locality is just south of the New Jersey one. There is an earlier collection of this species from Ellendale (dried-up ditches, 27 Sep 1895, *Commons*) in the herbarium of the Academy of Natural Sciences.

7. *Eleocharis engelmannii*

Sussex Co.: Ellendale, mud of moist shallow ditch, 1 Aug 1983, *Naczi 291A*.

Most plants in the Ellendale population of this sedge were the typical form, but a few plants of f. *detonsa* were among them. Tatnall does not record forms. He regards *E. engelmannii* as "infrequent" and f. *detonsa* is certainly more so.

8. *Eleocharis equisetoides*

Kent Co.: S of Frederica, shallow water of pond, 13 Jul 1983, *Naczi 265*.

This tall spike rush grew abundantly with *E. palustris*, *E. quadrangulata*, and *Utricularia gibba*. This collection is the first Kent County record and only the third Delaware collection. Tatnall cites an 1874 collection from southern Sussex and Hirst (1983) cites a 1961 collection from the same region.

9. *Eleocharis melanocarpa*

Sussex Co.: Ellendale, moist sandy peaty acid soil at edge of meadow, 13 Jul 1983, *Naczi 275*.

Associated with a large population of this species are *Rhynchospora* spp. and *Lobelia canbyi*. The second of two collections of *E. melanocarpa* in Delaware was in 1908 from Ellendale (Tatnall 1946).

10. *Eleocharis palustris* (smallii)

Kent Co.: S of Frederica, shallow water of pond, 13 Jul 1983, *Naczi 267*.

Plant associates of this spike rush are *E. equisetoides* and *E. quadrangulata*. In this southern Kent County pond, *E. palustris* is the least common of the three spike rushes whereas *E. quadrangulata* is the most common. This specimen constitutes the first Kent County record and the third Delaware collection (Tatnall 1946).

11. *Eleocharis robbinsii*

Sussex Co.: NE of Millsboro, shallow water of pond, 1 Aug 1983, *Naczi 302*; N of Ellendale, shallow water at pond edge, 8 Oct 1983, *Naczi 368*.

At each pond, only small populations of this species were observed, but the plant may be more abundant because neither site was thoroughly explored. This plant, by no means common in Delaware, is at least more common than Tatnall's "rare" label indicates. Including the above-cited specimens, *E. robbinsii* has been collected from at least 7 localities in Delaware (Williamson 1909; Tatnall 1946; Hirst 1983).

12. *Fuirena pumila*

Kent Co.: S of Frederica, wet sandy soil of roadside ditch, 8 Oct 1983, *Naczi 361*.

Growing with *Cyperus flavescens* and *Fimbristylis autumnalis* were a few plants of this sedge which Tatnall lists as infrequent from Sussex County. This collection is apparently the first from Kent County.

13. *Psilocarya nitens*

Sussex Co.: E of Ellendale, moist sandy soil, 25 Aug 1983, *Naczi 330*.

Many depauperate plants (the tallest were only 5 cm high) of this species grew at this site. Although this is the fourth Delaware station (Tatnall 1946; Hirst 1983), collections from two of them were made over 60 years ago.

14. *Psilocarya scirpoides*

Sussex Co.: N of Ellendale, moist sandy clearing, 25 Aug 1983, *Naczi 316*.

Several plants of this bald rush were growing with *Panicum verrucosum*, *Eleocharis tuberculosa*, *Rhynchospora* spp., and *Xyris difformis* (*caroliniana*) at the same station where Tatnall had collected it in 1938. Tatnall's collection is the second of two cited Delaware collections.

15. *Rhynchospora cephalantha*

Sussex Co.: Ellendale, acid soil meadow, 1 Aug 1983, *Naczi 294*.

Several plants of this species grew with other beak rushes in a locality from which it has been collected several times, though not recently. Every plant examined was f. *antrorsa*. Apparently this is the more common form since 3 of the 4 Delaware specimens Gale (1944) cites are this form.

16. *Rhynchospora chalarocephala*

Kent Co.: S of Frederica, wet sunny hummocks in a pond, 25 Aug 1983, *Naczi 314*; Sussex Co.: E of Ellendale, moist sandy clearing, 1 Aug 1983, *Naczi 301*; N of Ellendale, moist sandy clearing, 25 Aug 1983, *Naczi 318*; Ellendale, moist sandy soil, 25 Aug 1983, *Naczi 327*.

In each of the above localities, *R. chalarocephala* was growing in moist to wet, acid soil, often with other *Rhynchospora* spp. Tatnall cites one Delaware collection, while Gale (1944) adds another. The Kent County specimen is the first from the county. This beak rush is probably more common in Delaware than previously reported—it may be overlooked because of its superficial resemblance to *R. capitellata*, a much more common species.

17. *Rhynchospora fusca*

Sussex Co.: Ellendale, moist sandy soil, 13 Jul 1983, *Naczi 279*.

A small population of this primarily northern beak rush was growing with *Lycopodium alopecuroides* and other beak rushes. Tatnall cites 3 collections, with the last at Ellendale in 1890. Since Delaware is the southern limit of this species (Fernald 1950) and it has not been collected farther south than Ellendale in over 100 years (Tatnall 1946), this apparently is the southernmost extant population of *R. fusca* in the United States.

18. *Rhynchospora glomerata*

Sussex Co.: SE of Laurel, moist soil of pond margin, 1 Aug 1983, *Naczi 307*.

Associated with *Paspalum floridanum* and *Cyperus pseudovegetus* was a small colony of this tall beak rush. Previously, it has been collected three times in Delaware (last in 1897), which is near its northern limit.

19. *Scirpus subterminalis*

Kent Co.: S of Frederica, shallow water of pond, 25 Aug 1983; Sussex Co.: E. of Ellendale, shallow water of pond, 13 Jul 1983; NE of Millsboro, shallow water of pond, 1 Aug 1983.

Many plants of this aquatic bulrush grew in these ponds of acidic water. Tatnall does not list this plant from Kent County and he states that it has not been collected recently.

20. *Scleria reticularis*

Sussex Co.: Ellendale, moist sandy soil, 1 Aug 1983.

Many plants of this nut rush grew scattered throughout one of the Ellendale meadows. It has been collected at Ellendale, though probably not since 1899 (Tatnall 1946).

CONCLUDING REMARKS

As a result of the 1983 field work in Delaware, two conclusions become evident. First, more field work is necessary to update the knowledge of the distributions and abundance of Delaware's sedge flora. Second, Delaware possesses a diverse sedge flora, of which many species are rare.

The habitats of rare sedges are vulnerable to man's activity, and conservation is vital if the plants are to continue to exist in Delaware. For example, the Ellendale meadows are currently being altered by agriculture and the shoreline of the pond north of Ellendale is being turned into a housing development. If these and other habitats like them vanish, so will many rare plant species, even species having a sole Delmarva Peninsula occurrence.

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