

A new record for *Carex fissa* var. *fissa* in Missouri and notes on its ecology and identification

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ABSTRACT. — *Carex fissa* var. *fissa* is reported from a new site in Taney County, Missouri; this is the seventh record for the state. Identifying characteristics and suggested origin of these populations are discussed.

Carex fissa Mackenzie var. *fissa* [section *Multiflorae* (Kunth) Mack.] is endemic to Arkansas, Illinois, Kansas, Mississippi, Missouri, Oklahoma, and Texas and is listed as a critically imperiled (S1) species of conservation concern in Arkansas, Kansas, Mississippi, and Missouri (NatureServe 2022). A second variety, var. *aristata* F.J. Hermann, extends from North Carolina south to Florida and west to Mississippi (Bryson et al. 1996, Kartesz 1999, Standley 2002).

Surprisingly, the species is also introduced in Alexandria County, Virginia (Simmons et al. 2008; duplicate: MICH 1370160), Talbot County, Maryland (Knapp et al. 2011; duplicates MICH 1370147 & 1399126), and even Japan (Katsuyama 2003); these introductions are likely via imported hay for stream bank stabilization. Images of the MICH specimens are available online through <https://lsa.umich.edu/herbarium/databases.html>.

Rangewide, NatureServe (2022) lists the taxon at < 60 occurrences/counties and projects a population estimate between 2,500 and 1 million individuals. Habitats for *Carex fissa* var. *fissa* includes prairie swales, open roadside ditches, and railroad rights-of-way, and mesic to hydric lakesides (Jones et al. 1990, Yatskievych 1999, Standley 2002).

In Missouri, *C. fissa* var. *fissa* is scattered across the Ozark Highlands, Osage Plains, and Mississippi Lowlands Alluvial Plains Sections (Yatskievych 1999, Nigh & Schroeder 2002), and has been documented in Barton, Jasper, Laclede, Ozark, Phelps, and Ripley counties (Yatskievych 1999, Tropicos 2022). Habitats for the Missouri specimens of *C. fissa* var. *fissa* listed in Tropicos (2022) include ditches, open disturbed roadsides and rights-of-ways, prairie swales, and wet marshy meadows with spring fed pools. The species has a wetness rating of facultative in Ladd & Thomas (2015). Such plants often occur in hydric soils, often in geomorphic settings where water saturates the soils or floods the soil surface at least seasonally.

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While conducting a plant inventory for the Ozark Underground Laboratory (OUL) in Taney County, Missouri on 8 June 2022, we discovered a large population of *Carex fissa* var. *fissa* lining the edges of two adjacent ponds on the property (**Figure 1**). We estimated several hundred flowering culms occurred at each pond. Associates with *C. fissa* var. *fissa* included *C. annectens* var. *xanthocarpa*, *Carex granularis*, *Carex vulpinoidea*, *Festuca arundinacea*, *Rumex crispus*, *Schoenoplectus mucronatus*, and *Eleocharis quadrangulata* (nomenclature and authorities follow Yatskievych 1999, 2013).



Figure 1. Paul Nelson with 1-meter-tall culms of *Carex fissa* var. *fissa*. Photo by Paul McKenzie.

As noted by Yatskievych (1999), the habit of *Carex fissa* var. *fissa* superficially resembles a robust member of section *Phaestoglochin*, especially those species in the section lacking spongy or corky tissue at the base of the perigynia, but differs in its compound inflorescences and its firm, bluntly triangular stems. Within section *Multiflorae*, *Carex fissa* var. *fissa* differs from *Carex vulpinoidea* and *Carex annectens* var. *xanthocarpa* by its thicker, more robust culms; and its thicker, more compact, and wider spikes (Yatskievych 1999). *Carex fissa* var. *fissa* also differs from *C. vulpinoidea* by its leaves being shorter than the flowering culms, and its less pointed and shorter spikes (Standley 2002, Mohlenbrock 2011). Compared to *C. annectens* var. *xanthocarpa*, *Carex fissa* var. *fissa* has a noticeably more compact inflorescence with larger perigynia that are yellow green to pale brown vs. golden brown to yellow brown (Standley 2002) [see **Figures 2 & 3**].

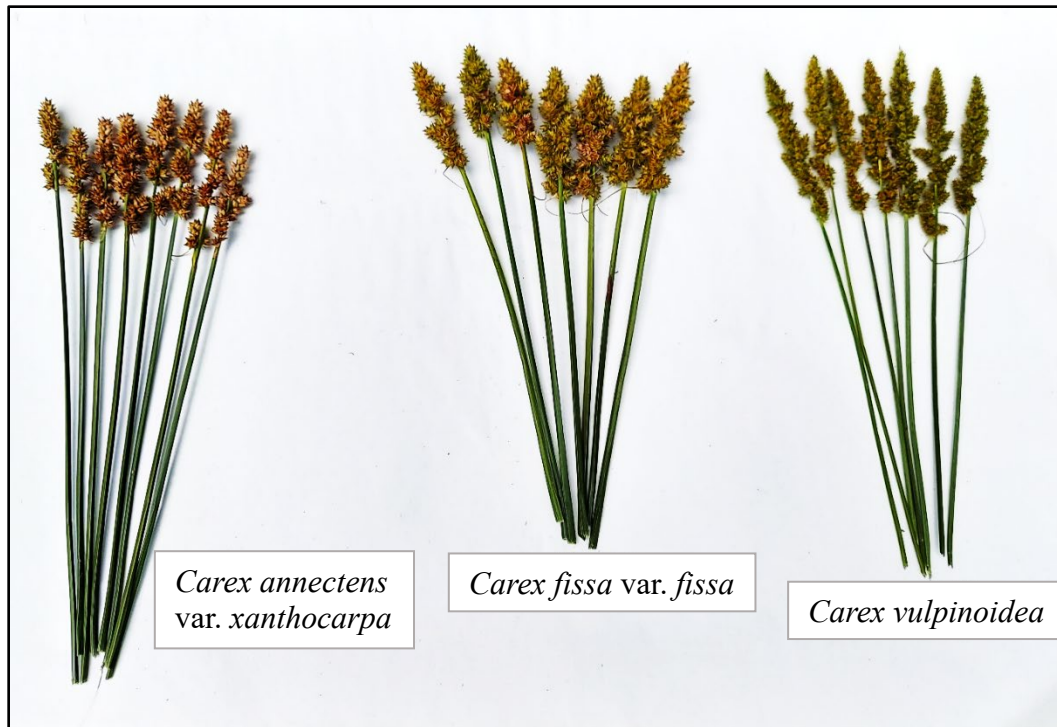


Figure 2. Comparison of inflorescences of *Carex annectens* var. *xanthocarpa*, *C. fissa* var. *fissa*, and *Carex vulpinoidea*. Photo by Paul Nelson.



Figure 3. Compact inflorescence of *Carex fissa* var. *fissa* with yellow-green perigynia. Photo by Paul Nelson.

The origin of *Carex fissa* var. *fissa* at the OUL sites is unknown. It is possible that perigynia were brought in on the feet of migrating waterfowl or were part of nearby prairie swales that existed prior to livestock grazing and pond construction. Ozark Underground Laboratory's only record of *Carex aureolensis* Steudel is from a swale within six hundred meters of one of the ponds inhabited by *Carex fissa* var. *fissa*, and it is possible that the current populations of this species at OUL originated from such habitats.

It is likely that botanical inventories of ponds, prairie swales, and roadside ditches throughout southern Missouri will yield additional records of this taxon.

Voucher specimen: U.S.A. MISSOURI: TANEY CO.: Ozark Underground Laboratory, edge of pond number 32, ca. 1,170 meters WNW of intersection of Rt. 125 and Rozell Rd, 36.575671 -92.855621, 9 Jun 2022, *Nelson 3030* (MO).

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LITERATURE CITED

- Bryson, C.T., J.R. MacDonald, R. Carter & S.D. Jones. 1996. Noteworthy *Carex*, *Cyperus*, *Eleocharis*, *Kyllinga*, and *Oxycaryum* (Cyperaceae) from Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, Tennessee, and Texas. *Sida* 17(2): 501-518.
- Kartesz, J.T. 1999. A synonymized checklist and atlas with biological attributes for the vascular flora of the United States, Canada, and Greenland. First edition. *In*: Kartesz, J.T., & C.A. Meacham. *Synthesis of the North American Flora*, version 1.0. Chapel Hill: North Carolina Botanical Garden.
- Katsuyama, T. 2003. Three new plants of *Carex* (Cyperaceae) in Japan. *Bulletin of the Kanagawa Prefectural Museum, Natural Science* 32: 1-6.
- Knapp, W.M., R.F.C. Naczi, W.D. Longbottom, C.A. Davis, W.A. McAvoy, C.T. Frye, J.W. Harrison & P. Stango III. 2011. Floristic discoveries in Delaware, Maryland, and Virginia. *Phytoneuron* 2011-64: 1-26.
- Ladd, D. & J.R. Thomas. 2015. Ecological checklist of the Missouri flora for Floristic Quality Assessment. *Phytoneuron* 2015-12: 1-274.
- Mohlenbrock, R.H. 2011. *Sedges: Carex*. *Illustrated Flora of Illinois*. 8. Carbondale and Edwardsville: Southern Illinois University Press.
- NatureServe. 2022. NatureServe Network Biodiversity Data accessed through NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. explorer.natureserve.org/. Accessed 25 October 2022.
- Nigh, T.A. & W.A. Schroeder. 2002. *Atlas of Missouri ecoregions*. Missouri Department of Conservation, Jefferson City, Missouri.

Missouriensis, **40**: 1-5. 2022.

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Tropicos. 2022. Tropicos online botanical database specimen list for *Carex fissa* var. *fissa*. www.tropicos.org/name/50090944. Accessed 13 December 2022.

Simmons, R.H., M.T. Strong & J.M. Parrish. 2008. Noteworthy Collections: Virginia. *Castanea* 73(4): 328-332.

Standley, L. 2002. *Carex* sect. *Multiflorae*. In: Flora of North America Editorial Committee, eds. Flora of North America north of Mexico. Vol. 23. Magnoliophyta: Commelinidae (in part): Cyperaceae. New York and Oxford: Oxford University Press.

Yatskievych, G. 1999. Steyermark's Flora of Missouri, revised edition, volume 1. Jefferson City: Missouri Department of Conservation.

Yatskievych, G. 2013. Steyermark's Flora of Missouri, revised edition, volume 3. St. Louis: Missouri Botanical Garden Press.