

CAREX BICKNELLII (CYPERACEAE) NEW TO ARKANSAS

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ABSTRACT

We report the first record of *Carex bicknellii* Britt. for Arkansas. The species was collected by the authors in 2003 and 2005 from Baker Prairie Natural Area, an unplowed tallgrass prairie remnant in Boone County, Arkansas.

RESUMEN

Se realiza la primera cita de *Carex bicknellii* Britt. para Arkansas. La especie se colectó por los autores en 2003 y 2005 en Baker Prairie Natural Area, una pradera de hierba alta remanente en Boone County, Arkansas.

The range of *Carex bicknellii* Britt. extends from Maine and Manitoba south to Kansas and South Carolina, with the bulk of the distribution extending from Missouri and southeastern Kansas northward to southeastern Manitoba and the western end of Lake Erie (Rothrock & Reznicek 2001; Mastrogiuseppe et al. 2002). Disjunct populations occur in Maine, western Kansas, South Carolina, and the eastern Lake Ontario Region (Rothrock & Reznicek 2001). Habitat for the species includes dry to mesic prairies, rock, sand or serpentine barrens, open woodlands, openings in mesic to dry upland forests and bluff ledges, dry sandy or rocky fields, thickets, and less commonly along margins of ponds and fens (Yatskievych 1999; Rothrock & Reznicek 2001; Mastrogiuseppe et al. 2002). Orzell and Bridges (1987) and Smith (1988) reported *C. bicknellii* (as *C. bicknellii* var. *bicknellii*) for Franklin County, Arkansas but the specimen (Barber 861, UARK), which was the basis for the reports, was subsequently annotated by A.A. Reznicek as *Carex bicknellii* Britt. var. *opaca* F.J. Herm. (J. Gentry, UARK, in litt. 21 October 2005). Hyatt (1988), Rothrock and Reznicek (2001), and Mastrogiuseppe et al. (2002) did not include Arkansas within the range of *Carex bicknellii* (either as *C. bicknellii* or as *C. bicknellii* var. *bicknellii*). Rothrock and

Reznicek (2001) referenced all specimens within the *C. bicknellii* group collected in Arkansas through 2000 and determined that all prior reports of *C. bicknellii* (as *C. bicknellii* var. *bicknellii*) in Arkansas were based on other species.

On 9 May 2005, the senior author discovered this species scattered in irregular colonies on dry mounds of Baker Prairie Natural Area, a 28 ha remnant of native tallgrass prairie in Boone County in north central Arkansas located near the western edge of the town of Harrison. On 10 May 2005, McKenzie and Witsell returned to the site to assess the overall distribution and abundance of the species on the area and to record plant associates. *Carex bicknellii* was associated with *Baptisia bracteata* Muhl. ex Elliott, *Berlandiera texana* DC., *Carex bushii* Mack., *Ceanothus americanus* L., *Commandra umbellata* (L.) Nutt., *Dodecatheon meadii* L., *Euphorbia corollata* L., *Hypoxis hirsuta* (L.) Cov., *Luzula bulbosa* (Alph. Wood) Rydb., *Physalis* sp., *Schizachyrium scoparium* (Michx.) Nash, *Silphium integrifolium* Michaux, *S. laciniatum* L., and *Tradescantia ohiensis* Raf. Plants were irregularly scattered over much of the drier portions of the prairie and extended to a few of the swales that drain the site. *Carex bicknellii* was initially collected on Baker Prairie in a wet swale by Witsell on 1 June 2003 but the specimen was incorrectly identified as the closely related *C. opaca* (F.J. Herm.) P.E. Rothrock & Reznicek.

With the exception of a small (approximately 4 ha) former pasture along its eastern edge, Baker Prairie Natural Area is a high quality unplowed prairie remnant, and is jointly owned by the Arkansas Natural Heritage Commission and the Arkansas Field Office of The Nature Conservancy. It is the only remnant of what was once an approximately 2000 ha tallgrass prairie located west and south of present day downtown Harrison and is the largest known remnant of Ozark prairie that occurs on a chert substrate in Arkansas (Arkansas Natural Heritage Commission 2004). Baker Prairie Natural Area occurs on the Boone Formation of the Springfield Plateau which is characterized by limestone with embedded chert (Harper et al. 1981, Arkansas Natural Heritage Commission 2004). The Natural Area is underlain by Nixa and Noark very cherty silt loams which are deep, well-drained, moderately permeable soils that formed in residuum from cherty limestone (Harper et al. 1981; Arkansas Natural Heritage Commission 2004). Elevation on the natural area ranges from 354 to 378 m above mean sea level on slopes of 3 to 20 % (Arkansas Natural Heritage Commission 2004). Much of the natural area is gently rolling with scattered "pimple" mounds (Arkansas Natural Heritage Commission 2004). Baker Prairie includes dry-mesic chert prairie, mesic chert prairie (restricted to swales that bisect the area), and non-native grassland (Arkansas Natural Heritage Commission 2004). Major threats to the prairie prior to state ownership and restoration included lack of prescribed fire, excessive haying, the introduction of tall fescue (*Festuca arundinacea* Schreber) for grazing livestock, development pressure from adja-

cent communities, and the encroachment of woody vegetation (Arkansas Natural Heritage Commission 2004). Due to the prairie's secure ownership and such current management practices as regular use of prescribed fire and the control of exotics, most historical threats have been eliminated. One possible threat to plant species inhabiting Baker Prairie, however, is the potential for reduced genetic fitness due to the geographic isolation of this prairie from other high quality prairies in Arkansas and adjacent states.

Following European settlement and prior to state ownership, haying and grazing were apparently the main management tools used to maintain the prairie (Arkansas Natural Heritage Commission 2004). Beginning in 1992, Baker Prairie Natural Area has been the site of aggressive management efforts that include the removal of encroaching woody vegetation and exotic species; seed collection and planting; brush hogging; herbicide treatment of *Festuca arundinacea*, *Lespedeza cuneata* (Dum.-Cours.) Don, *Lonicera japonica* Thunb., *Carduus nutans* L., *Albizia julibrissin* Durazz, *Daucus carota* L., woody sprouts and stumps; and the use of prescribed fire (Arkansas Natural Heritage Commission 2004). These intensive management efforts have been successful in maintaining the rich botanical diversity of the area and restoring the ecological integrity of the prairie. In addition to *Carex bicknellii*, Baker Prairie provides habitat for other rare plant species tracked as elements of conservation concern by the Arkansas Natural Heritage Commission. These include *Antennaria neglecta* E. Greene, *Aster sericeus* Vent., *Calopogon oklahomensis* D.H. Goldman, *Carex gravida* L. Bailey, *Gentiana puberulenta* J. Pringle, *Nemastylis nuttallii* Picker ex R. Foster, *Silene regia* Sims, *Trillium pusillum* Michaux var. *ozarkanum* (E.J. Palmer & Steyerem.) Steyerem., *Viola pedatifida* G. Don, and *Zizia aptera* (A. Gray) Fern.. Rare animals of conservation concern at the site include ornate box turtle [*Terrapene ornata ornata* (Agassiz)], grasshopper sparrow [*Ammodramus savannarum* (Gmelin)], willow flycatcher [*Empidonax traillii* (Audubon)], and prairie mole cricket (*Gryllotapa major* Saussure).

Voucher Specimens. **U.S.A. ARKANSAS. Boone Co.:** Arkansas Natural Heritage Commission and TNC's Baker Prairie Natural Area in western Harrison, ca. 0.4 km S of the inter. of Industrial Dr. and Goblin Dr.; T18N,R20W55 SW1/4NE1/4NW1/4; Gaither 7.5' Quad.; N 36° 14'40.2", W 93° 08'01.6" (Datum = NAD83 Zone 15); infrequent in scattered colonies on dry mounds of native prairie; in association with *Baptisia bracteata*, *Berlandiera texana*, *Carex bushii*, *Ceanothus americanus*, *Commandra umbellata*, *Euphorbia corollata*, *Hypoxis hirsuta*, *Luzula bulbosa*, *Physalis* sp., *Schizachyrium scoparium*, *Silphium integrifolium*, *S. laciniatum*, and *Tradescantia ohioensis*; 9 May 2005 Paul M. McKenzie 2187 (MO, MICH, UMO); 10 May 2005 Theo Witsell 05-0330 (anhc-Arkansas Natural Heritage Commission, UARK, peh-pers. herb. of Philip E. Hyatt); 1 Jun 2003 Theo Witsell 03-0437 (anhc).

Botanical nomenclature listed herein follows Yatskievych and Turner (1990) except for *Calypogon oklahomensis* that follows Yatskievych (1999), and *Carex bicknellii* and *C. opaca* that follow Rothrock and Reznicek (2001).

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REFERENCES

- ARKANSAS NATURAL HERITAGE COMMISSION. 2004. Baker Prairie Natural Area management plan. Arkansas Natural Heritage Commission. Little Rock.
- HARPER, M.D., D.H. FOWLKES, and D.A. HOWARD. 1981. Soil survey of Boone County, Arkansas. U.S. Dept. of Agric. Soil Conservation Service, in cooperation with the Arkansas Agricultural Experiment Station.
- HYATT, P.E. 1998. Arkansas *Carex* (Cyperaceae): a briefly annotated list. Sida 18:535–554.
- MASTROGIUSEPPE, J., P.E. ROTHROCK, A.C. DIBBLE, and A.A. REZNICEK. 2002. *Carex* Linnaeus sect. *Ovales* Kunth, Enum. Pl. 2:394. 1837. In: P.W. Ball, K. Gandhi, R.W. Kiger, D. Murray, J.L. Zarucchi, A.A. Reznicek, J.L. Strother, eds. Flora of North America North of Mexico, vol. 23 *Magnoliophyta: Commelinidae: Cyperaceae*. Oxford Univ. Press, NY. Pp. 332–378.
- ORZELL, S.L. and E.L. BRIDGES. 1987. Further additions and noteworthy collections in the flora of Arkansas, with historical, ecological, and phytogeographical notes. Phytologia 64: 81–144.
- ROTHROCK, P.E. and A.A. REZNICEK. 2001. The taxonomy of the *Carex bicknellii* group (Cyperaceae) and new species for Central North America. Novon 11:205–228.
- SMITH, E.B. 1988. An atlas and annotated list of the vascular plants of Arkansas. Second Ed. Published by the author. Fayetteville, AR.
- YATSKIEVYCH, G. 1999. Steyermark's flora of Missouri- Vol. 1- Revised Ed. Missouri Department of Conservation, Jefferson City, MO.
- YATSKIEVYCH, G. and J. TURNER. 1990. Catalogue of the flora of Missouri. Missouri Bot. Gard. Monogr. Syst. Bot. No. 37. Braun-Brumfield, Inc., Ann Arbor, MI.