

***Trepocarpus aethusae* Nutt. (Apiaceae) in Illinois**

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ABSTRACT

The first known occurrence in Illinois of *Trepocarpus aethusae* Nutt. is documented. *Trepocarpus aethusae*, an annual species (family Apiaceae) that is uncommon throughout much of its southeastern United States range, was discovered in July 1994 at the edge of a floodplain forest near the Ohio River in Massac County, Illinois. Several colonies were observed in degraded and undegraded habitats during 1994 and 1996. This taxon appears to be a native species adapted to periodic disturbances in floodplain habitats.

INTRODUCTION

Trepocarpus aethusae Nutt., a plant species previously unreported in Illinois, was discovered near the town of Metropolis in Massac County, Illinois in 1994. Several distinct colonies occurred at the edge of a young to sub-mature (estimated age from 40 to 60 years) floodplain forest. Specimens (Taft #1205, 1315-1318) are preserved in the herbarium collection of the Illinois Natural History Survey, Champaign, Illinois (ILLS).

METHODS

Trepocarpus aethusae was discovered in July 1994 by the senior author during a biological survey and wetland delineation for the Illinois Department of Transportation (IDOT) related to proposed improvements to U.S. Route 45 (Keene and Wilm 1995). The junior author made population estimates and described the habitat and associate species of *T. aethusae* in August 1994 and May and August 1996, during a botanical survey emphasizing threatened and endangered species and natural areas for the same IDOT project (Taft 1995, 1997). Botanical nomenclature for this report follows Mohlenbrock (1986) and Gleason and Croquist (1991).

RESULTS AND DISCUSSION

Trepocarpus aethusae is a monotypic herb that ranges across the southeastern United States, from Texas and Oklahoma to South Carolina (Small 1972, Radford et al. 1968). The previous northern range limit known for this species is in western Kentucky (Gleason and Cronquist 1991, Medley 1993). This species is considered rare throughout

its range (Gleason and Cronquist 1991) and it is listed as endangered in at least one state (Kentucky State Nature Preserves Commission 1996).

Trepocarpus aethusae is a glabrous, tap-rooted, annual species with an erect growth form to 0.6 m tall. Leaves are pinnately decomposed; the ultimate leaf segments are linear with mucronulate tips. The plants have a distinctive and somewhat pleasant turpentine-like odor. The inflorescence is a compound umbel subtended by a few foliaceous involucre bracts. The fruit is an oblong, sharply ribbed schizocarp 8-10 mm long containing two thick-walled mericarps. Mericarps containing one seed each remain attached near the stylopodium at the top of the fruit at least until late August in southern Illinois. Mericarps of *T. aethusae* float in water for at least one week (pers. obs.), suggesting that water may be an important dispersal mechanism for this species.

Trepocarpus aethusae blooms in the primary portions of its range from May to June (Gleason and Cronquist 1991). However, in Illinois it blooms until early August and plants observed and collected on 30 May 1996 had not begun to flower. This suggests that plants in the northern portion of this species' range may bloom later, perhaps from late June to early August. Most plants in southern Illinois had fruits on 7 August 1996 and fruits were still attached on more senescent plants observed on 23 August 1994.

Trepocarpus aethusae is known to occur on both dry and moist soils and is classified as a facultative wetland species by the U.S. Fish and Wildlife Service (Reed 1988). Similarly, it has been reported from a variety of mostly wetland habitats, including moist low ground, margins of swamp forests, margins of streams, sandy river bottoms, floodplain forests, lake margins, marshy meadows, moist-to-wet clearings, and various roadside habitats (Radford et al. 1968, Godfrey and Wooten 1981, Gleason and Cronquist 1991, Medley 1993). A total of five colonies, numbering 500 to 1,000 plants each, have been found in and adjacent to Fort Massac State Park, in a local area adjacent to the floodplain of Massac Creek and near U.S. Route 45. One colony on private land was nearly destroyed recently; only three plants remained in 1996. *Trepocarpus aethusae* tolerates full sun, but is most abundant in the partial shade of forest openings. Colonies consistently occurred in a narrow contour interval just above a zone of frequent flooding. The nearby highway embankment provides this contour interval and numerous plants were established on this disturbed habitat in 1994 and 1996. Within the park, *T. aethusae* occurs on undisturbed soils at the edge of floodplain forest habitat.

Associate tree species in the floodplain forest habitat include *Quercus pagoda* and *Quercus palustris* as canopy dominants. Occasional forest canopy species include *Acer saccharinum*, *Fraxinus pennsylvanica*, *Platanus occidentalis*, *Robinia pseudoacacia*, and *Ulmus americana*. Subcanopy species include *Crataegus mollis*, *Diospyros virginiana*, *Prunus serotina*, and *Ulmus alata*. Shrubs and vines present include *Amorpha fruticosa*, *Aristolochia tomentosa*, *Campsis radicans*, *Lonicera japonica*, *Parthenocissus quinquefolia*, *Rhus copallina*, *Rosa multiflora*, *Rubus allegheniensis*, *Symphoricarpos orbiculatus*, and *Toxicodendron radicans*. Herbaceous associates include *Carex caroliniana*, *C. muskingumensis*, *C. typhina*, *Chaerophyllum procumbens*, *Cicuta maculata*, *Elymus virginicus*, *Galactia mohlenbrockii* (listed by the Illinois Endangered Species Protection Board as an endangered species (Herkert 1991)), *Geranium carolinianum*, *Helianthus tuberosus*, *Solidago gigantea*, and *Valeriana radiata*. Some colonies extend into old field

habitat. Associate species include *Allium vineale*, *Andropogon virginicus*, *Danthonia spicata*, *Daucus carota*, *Festuca pratensis*, *Kummerowia striata*, *Lespedeza stuevei*, *Lonicera japonica*, *Parthenocissus quinquefolia*, *Rubus allegheniensis*, *Solidago canadensis*, *S. nemoralis*, and *Tridens flavus*.

These habitat descriptions suggest that *Trepocarpus aethusae* is native to Illinois and, like many annuals, has some tolerance for disturbance. The autecology of this taxon may be somewhat similar to that of *Boltonia decurrens* (Asteraceae), a federal and Illinois-listed threatened species (Herkert 1991), in that both are rare taxa that appear dependent on flooding dynamics for dispersal to open habitats where they can sort into sites free, at least temporarily, from intense competition. The association with natural communities in Illinois and very local occurrence indicate that *Trepocarpus aethusae* should be considered for listing as an endangered species by the Illinois Endangered Species Protection Board. Highway construction activities may result in destruction of portions of most Illinois colonies. Attempts at population restoration are tentatively planned for any colonies of *Trepocarpus aethusae* destroyed at this site.

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LITERATURE CITED

- Gleason, H. A. and A. Cronquist. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. 2nd ed. The New York Botanical Garden, Bronx, New York. 910 p.
- Godfrey, R. K. and J. W. Wooten. 1981. Aquatic and wetland plants of southeastern United States - dicotyledons. Univ. of Georgia Press, Athens. 933 p.
- Herkert, J. R. (ed). 1991. Endangered and threatened species of Illinois: status and distribution, volume 1 - plants. Illinois Endangered Species Protection Board, Springfield. 158 p.
- Keene, D. J. and B. W. Wilm. 1995. Biological survey for FA 889 (U.S. Route 45), Massac County, Illinois. Illinois Natural History Survey, Center for Wildlife Ecology. Technical report submitted to the Illinois Department of Transportation. 17 p.
- Kentucky State Nature Preserves Commission. 1996. Rare and extirpated plants and animals of Kentucky. Trans. Ky. Acad. Sci. 57(2):69-91.
- Medley, M. E. 1993. An annotated catalog of the known or reported vascular flora of Kentucky. Ph.D. Diss., Univ. of Louisville, KY. 375 p.
- Mohlenbrock, R. H. 1986. Guide to the vascular flora of Illinois. Revised and enlarged edition. Southern Illinois Univ. Press, Carbondale. 507 p.
- Radford, A. E., H. E. Ahles, and C. R. Bell. 1968. Manual of the vascular flora of the Carolinas. Univ. of North Carolina Press, Chapel Hill. 1183 p.
- Reed, P. B., Jr. 1988. 1988 wetland plant list: southeast region. National Wetlands Inventory, U.S. Fish and Wildlife Service, St. Petersburg, FL. WELUT-86/W13.02. 62 p.
- Small, J. K. 1972. Manual of southeastern flora. 2 vols. Reprint of 1933 ed. Hafner Pub., New York. 1554 p.

- Taft, J. B. 1995. Botanical survey with emphasis on threatened and endangered species and natural areas at the Illinois Department of Transportation-proposed FA 889 (U.S. Route 45), Metropolis to I-24, in Massac County. Memorandum dated 3 April 1995 to the Illinois Department of Transportation, Springfield. Reports the results of 1994 field work. 6 p.
- Taft, J. B. 1997. Botanical survey with emphasis on *Trepocarpus aethusae* and other findings during 1996 field work at the Illinois Department of Transportation-proposed FA 889 (U.S. Route 45), Metropolis to I-24, in Massac County. Memorandum dated 17 March 1997 to the Illinois Department of Transportation, Springfield. 7 p.