

DISTRIBUTION AND STATUS OF *POLYTAENIA NUTTALLII* DC., PRAIRIE-PARSLEY, IN TENNESSEE AND KENTUCKY

EDWARD W. CHESTER AND B. EUGENE WOFFORD

Department of Biology, Austin Peay State University, Clarksville, TN 37044
Department of Botany, University of Tennessee, Knoxville, TN 37996

ABSTRACT--*Polytaenia nuttallii* DC. (prairie-parsley), an umbellifer distributed primarily in the central and midwestern United States, has been collected from five sites in Tennessee since the late 1800s. Presently, plants are known from only two of these sites (Davidson County near the Robertson County line and McNairy County), and populations appear to be declining at both of these. The species is first reported here from Kentucky (Trigg County), based on a 1966 collection, but it now appears to have been extirpated from that site. Descriptions and status reports for all historical and currently known sites are given.

Polytaenia nuttallii DC. (prairie-parsley: Apiaceae) is a wide-ranging species found primarily in the central and midwestern United States, ranging from Michigan and Wisconsin to Nebraska and Illinois south to Alabama, Texas, and New Mexico. It typically occurs in prairies but may also be found in other disturbed, dry, prairie-like habitats such as glades, open woodlands, clearings, fields, and roadsides (Gleason and Cronquist, 1963; Steyermark, 1963; The Great Plains Flora Association, 1986).

The plant is an erect, perennial herb 6 to 10 dm tall from a thickened taproot up to 2 dm long. Stems are mostly puberulent throughout, especially above, but are sometimes glabrous below. Leaves are bipinnate or ternate-pinnate, the basal ones long petiolate, up to 2.5 dm long and 2 dm wide, and with persistent sheaths. Cauline leaves become reduced in both size and division upward; the uppermost ones are ternate with dilated sheaths. Leaflets are sessile, ovate to oblong, and 3 to 5 dm long; the ultimate segments are linear oblong, each with a few conspicuous teeth. The compound umbels are on peduncles 3 to 10 cm long and are both terminal and axillary. An involucre is absent, the 10 to 15 rays are up to 5 cm long, and bractlets of each involucre are narrowly linear and up to 5 mm long. Pedicels are numerous and 3 to 5 mm long. Flowers are yellow with ovate sepals and without a stylopodium. Fruits are elliptic to oblong, 6 to 9 mm long, 4 to 8 mm wide, flattened in the center over the filiform to obscure dorsal ribs, and the lateral ribs are corky-winged; oil tubes are usually indistinct.

The purpose of this report is to summarize known information on the distribution of *P. nuttallii* in Tennessee and Kentucky, including a status report for all reported sites. The included material will provide an updated account for Tennessee, where it is a threatened species (Somers and Tennessee Department of Conservation's Rare Plant Scientific Advisory Committee, 1989), and will document the first report of it from Kentucky.

MATERIALS AND METHODS

The botanical literature for Kentucky and Tennessee was consulted, major herbaria in each state perused, and numerous botanists contacted for information. In addition, records were sought in the databases of the Tennessee Natural Heritage Program and the Kentucky State Nature Preserves Commission. Visits were made to the histori-

cally-known sites with verifiable vouchers in both states and qualitative reports compiled.

RESULTS AND DISCUSSION

Distribution and Status in Tennessee--The botanical literature for Tennessee, herbarium records, and our fieldwork (along with that of numerous others) indicate that *Polytaenia nuttallii* has a limited distribution in the State. Gattinger (1901) first reported it from "Baker's Station, Paradise Ridge, Robertson County." However, Baker's Station is in Davidson County, and the Gattinger collections we have examined are labelled Davidson County. Frick (1939) also reported a site in Davidson County, but vouchers are apparently lacking. The report from Sumner County by Rucker (1938) was based upon inaccurate location data. Sharp et al. (1960), and Sharp and Baker (1964) reported only Davidson County, based on the Gattinger collections. Later, collections were made by others from Robertson and McNairy counties (see following specimen citations), and the Committee for Tennessee Rare Plants (1978) listed the species as threatened, based on records from those three counties. More recent accounts of Tennessee rare elements (Tennessee Natural Heritage Program, 1986; Somers and Tennessee Department of Conservation's Rare Plant Scientific Advisory Committee, 1989) also list the species as threatened, but without county distributions.

To this point, *P. nuttallii* has been found at five locations in three (or possibly only two) counties in Tennessee (Fig. 1), but it may be extant at only two locations in two counties. In the following paragraphs, we cite the herbarium specimens examined, give a description and status, and provide observations on the present population for each of the reported locations.

Location One--Specimens Examined--Davidson Co.: vic. of Nashville, Tennessee, April (no year given), *Gattinger 1006* (TENN); same but without month of collection (TENN).

These collections, probably made before 1900, have such limited information that it is impossible to determine the specific location. It is quite possible that the specimens were taken from one of the locations discussed in subsequent paragraphs.

Location Two--Specimens Examined--Davidson Co.: 12.3 miles from Nashville along Little Marrowbone Creek near jct. with Eaton

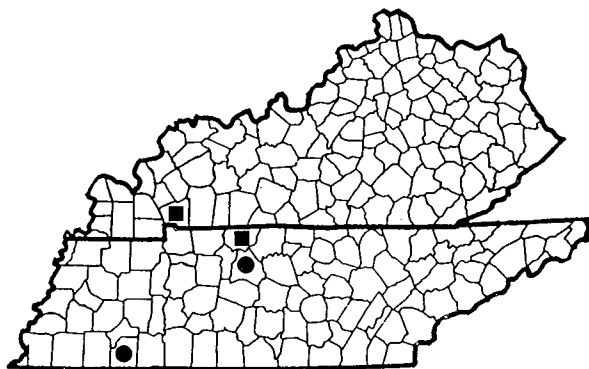


FIG. 1. Documented distribution of *Polytaenia nuttallii* in Tennessee and Kentucky; solid circles represent counties with extant populations; squares represent counties with historic records (not seen there for at least 25 years).

Creek Road on a north facing slope, 19 June 1937, *Woodruff s.n.* (TENN).

Attempts to locate plants at this site were made on 6 June, 26 June, and 27 July 1979, but all were unsuccessful (Chester, in Scott et al., 1980). Other, more recent attempts also have been unsuccessful (Paul Somers, Tennessee Natural Heritage Program, pers. comm.).

Location Three--Thomas A. Frick studied plant communities on slopes near Nashville as part of a doctoral program at Peabody College, and, according to Rucker (1938), Frick noted (in reference to *Polytaenia*): "This species was collected on May 19, 1936, in flower, in rocky woods near Bull Run, Davidson County" (Frick, 1938, cited by Rucker, 1938). Significant parts of the dissertation were soon published (Frick, 1939), and *Pleioaenia nuttallii* (DC.) C. & R. (an older name for *Polytaenia*) was given in the "list of plants collected in 1936." Apparently no voucher exists, but we consider this a creditable historic report. While several botanists seeking other species in that general area did not observe *Polytaenia* (Chester, in Scott et al., 1980), this region of xeric slopes and bluffs and Frick's mapped site deserve more careful attention.

Location Four--*Specimens Examined*--Davidson Co.: Bakers Station, 30 May 1882, *Gattinger s.n.* (TENN); dry, burned-over slopes on N side of L & N tunnel at Ridgetop on Robertson-Davidson County line, 6 July 1984, *Chester 84-242* (APSC); same site, 22 May 1990, *Chester 90-177* (APSC, TENN). Robertson Co.: Dry hillside near tunnel, Ridgetop, 6 June 1939, *Shaver 8713* (TENN); rocky bluff on road to tunnel near Ridgetop, 20 June 1938, *Rucker 8714* (TENN).

This area, south of United State Highway 41 between Bakers Station in Davidson County and Ridgetop in Robertson County, harbors the largest known population(s) in the two states. When rediscovered by Paul Somers in 1983, the population was estimated at 200 plants in three to four main colonies (Tennessee Department of Conservation, 1983). The site consists of xeric slopes east of the Louisville and Nashville Railroad near the southern end of the Ridgetop tunnel and is within the physiographic transition from the Central Basin and the Northwestern Highland Rim. The community lies on shaley siltstone outcroppings of the Fort Payne Formation (Tennessee Department of Conservation, 1983); soils are mostly Baxter-Bodine cherty silt loams (United States Department of Agriculture, 1968).

Polytaenia plants are concentrated in open barrens but also occur along margins and in thin woods dominated by *Carya glabra* (pignut hickory), *Quercus stellata* (post oak), and *Ulmus alata* (winged elm). Conspicuous smaller trees and shrubs are *Bumelia lycoides* (buckthorn),

Crataegus sp. (hawthorn), *Juniperus virginiana* (red cedar), *Hypericum frondosum* (golden St. John's-Wort), *Rosa carolina* (wild rose), and *Viburnum rufidulum* (blackhaw). Abundant herbs are *Agalinis tenuifolia* (slender gerardia), *Allium cernuum* (nodding onion), *Andropogon virginicus* (broomsedge), *Asclepias tuberosa* (butterfly weed), *Cheilanthes lanosa* (hairy lip-fern), *Erigeron strigosus* (fleabane daisy), *Dodecatheon meadia* (shooting star), *Euphorbia corollata* (flowering spurge), *Helianthus divaricatus* (small sunflower), *Manfreda virginica* (agave), *Panicum* spp. (panic grasses), and *Solidago* spp. (goldenrods).

Fewer than 100 flowering and juvenile *Polytaenia* plants were observed on 22 May 1990. The forest openings appear to have closed, and the parsley population may have declined slightly since a visit in 1984. Also, there is no evidence of recent fires, which may be important in maintaining the required open habitat.

Separate attempts by P. Somers and L. Smith, and the first author, to locate plants in the area of historic Bakers Station have been unsuccessful. Also, the exact location of the cited specimens from Robertson County is questionable. The Davidson-Robertson County line passes through the tunnel area, and, if the collectors did not consult topographic maps, the collections may well have (in fact probably did) come from Davidson County. Under any circumstance, extant plants are not known from Robertson County.

The Ridgetop site also is just south of the Sumner County line, and Rucker (1938), in his treatment of the umbellifers of Middle Tennessee, incorrectly gives Sumner County as the location for his collection of 20 June 1938. However, the specimen, as cited previously, is labelled Robertson County, which is probably incorrect also.

Location Five--*Specimens Examined*--McNairy Co.: Barrens near New Hope Church south of East View, 2 May 1959, *DeSelm 2001* (TENN); Weedy thickets by roadside at New Hope Barren, 9 June 1990, *Chester 90-211* (APSC, TENN).

The New Hope Barren is one of several such sites sampled by H. R. DeSelm during his research on barrens in West Tennessee (DeSelm, 1989). He visited this site four times from 1958 to 1988 but only saw *Polytaenia* once, at the time of collection in 1959 (H. R. DeSelm, pers. comm.).

As described by DeSelm (1989), the New Hope Barren is at the northern extension of the historic Black Belt of Alabama and Mississippi on the clayey Demopolis Formation. The barren is on a gentle north-facing slope with Sumter silty clay loam. DeSelm (1989) speculates that this barren may have been kept open by periodic drought; however, the area seems to be closing and becoming an open forest dominated by red cedar and xerophytic oaks.

H. R. DeSelm kindly supplied precise directions, and the site was visited on 9 June 1990. Three fruiting *Polytaenia* plants were located in roadside thickets under powerlines directly across from the barren. Woody plants (mostly stump sprouts and all <2 m in height) included *Cercis canadensis* (redbud), *Fraxinus americana* (white ash), *Juniperus virginiana* (red cedar), *Rhus glabra* (smooth sumac), *Symphoricarpos orbiculatus* (buckbush), and *Toxicodendron radicans* (poison ivy). Herbs, some overtopping the *Polytaenia*, included *Erigeron strigosus* (fleabane daisy), *Lespedeza cuneata* (sericea lespedeza), *Melilotus alba* (white sweet clover), *Monarda fistulosa* (wild bergamot), *Prunella vulgaris* (heal-all), *Ratibida pinnata* (prairie conflower), *Silphium integrifolium* (rosinweed), *Solidago* spp. (goldenrods), and *Verbesina* spp. (wingstems). A complete floristic inventory of the New Hope Barren was presented by DeSelm (1989).

Based on the absence (and apparent extirpation) of plants from the barren proper, the speculated closing of the barren, and the tenuous nature of the present habitat (roadside thickets under powerlines, weedy, with aggressive native and introduced taxa), *Polytaenia* must be considered threatened if not endangered at this site. The fact that it has survived there for at least 31 years is encouraging.

Distribution and Status in Kentucky--*Polytaenia nuttallii* was not listed in the catalogue of vascular plants of Kentucky by McFarland (1942) nor in the annotated catalogue by Braun (1943). It has not been found in the Big Barrens, a region known for a number of prairie and midwestern United States elements (Baskin and Baskin, 1978, 1981; Chester, 1988). Likewise, Heineke (1987) did not report it from far western Kentucky, nor is it mentioned in the numerous papers adding to the state's upland flora, e.g., Browne (1965, 1967, 1974), Browne and Athey (1976, 1978), Cranfill and Medley (1981), Cranfill and Thieret (1981), Cusick (1989), Davies (1955), Ellis et al. (1971), Gunn (1959, 1968), Medley et al. (1983), Mohlenbrock et al. (1966), and Woods and Fuller (1988). It is not included as a rare element for the state (Kentucky Endangered Species Committee, 1986), nor is it listed by the Kentucky State Nature Preserves Commission (Tom Bloom, KSNPC Data Manager/Botanist, pers. comm.). We must, therefore, conclude that the species has not been reported heretofore from Kentucky.

In 1966, while conducting a preliminary survey of flowering plants in Land Between The Lakes, Trigg County (Fig. 1), William Ellis collected an umbellifer that was identified as *Thaspium pinnatifidum*. The specimen was deposited in the Austin Peay State University Herbarium (APSC), and records there indicate that duplicates were later distributed to Northeast Louisiana University (NLU), the University of Tennessee (TENN), the University of North Carolina-Chapel Hill (NCU), the University of Southern Mississippi (UNSMS), and Southern Methodist University (SMU). Abbreviations for herbaria are from Holmgren et al. (1990) except for UNSMS which is our designation.

While reviewing specimens of *Thaspium* in 1990, the incorrect identification was detected, and the importance of the collection for floristic studies of Kentucky became apparent. This prompted attempts to locate the Ellis site, which was specifically designated on the herbarium sheet and on field labels. However, several man-days of careful searching from April to July 1990 failed to locate new specimens. It, thus, appears that the specimens cited here represent a first report for Kentucky, but the species may be extirpated from the state as well.

The site is on a dry upland in Trigg County near Kentucky Highway 453, now designated as the Trace. The area was part of the Kentucky Woodlands National Wildlife Refuge from 1938 until 1964 when it became part of Land Between The Lakes, a public Conservation, Education, and Recreation Area managed by the Tennessee Valley Authority. Few land-use or landscape changes have occurred in the collection area during this period of federal ownership (1938 to present). However, most regional forests were harvested for lumber and charcoal in the 1800s to supply several iron furnaces operating in the vicinity (Wallace, 1988).

The area is characterized by thin, well-drained soils of the Baxter Series that were formed in Quaternary loess and gravelly chert of the Tuscaloosa (Cretaceous) Formation (Humphrey, 1981; Harris, 1988). The collections were from barren-like areas along the edge of a mixed hardwoods forest dominated by such xeric species as *Carya glabra* (pignut hickory), *Nyssa sylvatica* (black gum), *Quercus alba* (white oak), *Q. marilandica* (blackjack oak), *Q. stellata* (post oak), and *Q. velutina* (black oak). Common herbs at the site are *Andropogon virginicus*, *A. ternarius*, and *A. elliotii* (broomsedges), *Asclepias amplexicaulis* and *A. variegata* (milkweeds), *Baptisia leucophaea* (cream indigo), *Chrysanthemum leucanthemum* (oxeye daisy), *Coreopsis major* and *C. tripteris* (tickseeds), *Danthonia spicata* (poverty grass), *Erigeron strigosus* (fleabane daisy), *Eryngium yuccifolium* (rattlesnake master), *Euphorbia corollata* (flowering spurge), *Helianthus divaricatus* (sunflower), *Liatris scabra* and *L. squarrosa* (blazing star), *Oenothera fruticosa* (sundrops), *Panicum* spp. (panic grasses), *Parthenium integrifolium* (wild quinine), *Rudbeckia hirta* (blackeyed Susan), *Sabatia angularis* (rose-pink), *Solidago juncea* and *S. nemoralis*

(goldenrods), *Stylosanthes biflora* (pencil flower), and *Tephrosia virginiana* (goat's rue).

Specimens Examined--Trigg Co.: One mile south of (TVA marker) 5F3 on Kentucky 453; between oak-hickory woodlands and road, 28 May 1966, Ellis 1300 (APSC, TENN).

Status of Duplicate Sheets--Information on duplicates of the preceding collection (i.e., Ellis 1300) sent from APSC as exchange sheets was obtained from the respective curators in the acknowledgments. Sheets at NCU, NLU, and UNSMS are definitely *P. nuttallii* but were filed as misidentified, with *T. pinnatifidum* material, prior to June 1990. The SMU sheet could not be located by the curator.

SUMMARY

Polytaenia nuttallii Michx. (prairie-parsley), an umbellifer distributed predominantly in the central and midwestern United States, has been collected from five sites in three (possibly only two) counties in Tennessee since the 1800s. One site, represented by two undated Gattinger collections (circa 1890) from Davidson County, cannot be located because of inadequate label data. A second site in Davidson County is vouched by *exsiccatae* collected in 1937 and with good location data, but no specimens have been seen in that area since. A third site in Davidson County is creditably reported in the literature from 1938, and, while *Polytaenia* was not observed in some recent studies in the reported area, further searching is needed. A report for Sumner County was based on inaccurate location data. Populations are extant but are apparently declining at two sites, i.e., at the Davidson-Robertson County line (first collected in 1882) and in McNairy County (first collected in 1959).

In Kentucky, *P. nuttallii* has not been otherwise reported to our knowledge. Our report is based on specimens collected in 1966 (Trigg County) and previously identified as *Thaspium pinnatifidum*. Although the site is rather precisely reported, extensive field efforts from April to July 1990 did not locate extant plant.

Thus, and until other populations are located, *P. nuttallii* should be considered threatened in Tennessee. Also, it should be considered endangered (or possibly extirpated) in Kentucky.

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