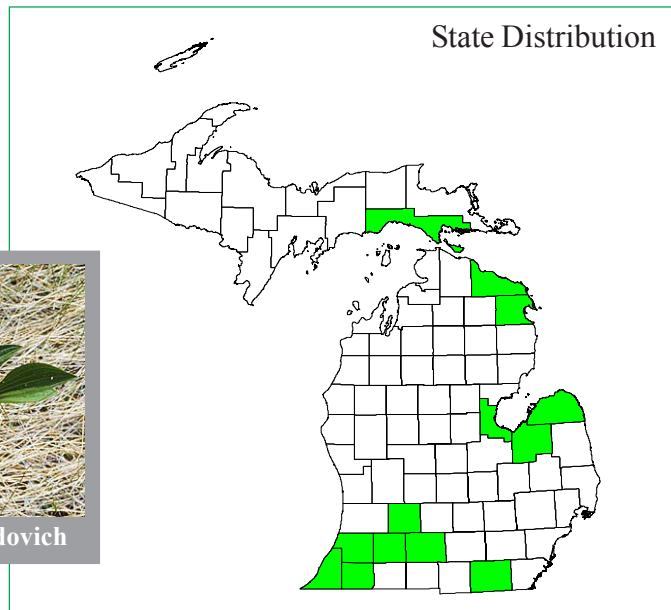


Photo by Susan R. Crispin

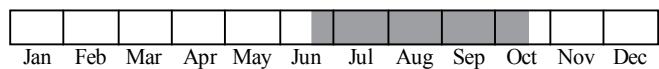


Photo by William Brodovich



State Distribution

Best Survey Period



**Legal status:** Special concern

**Global and state rank:** G4G5/S2

**Family:** Asteraceae (aster family)

**Other common names:** tuberous Indian plantain

**Synonyms:** *Cacalia tuberosa* Nutt.

**Total range:** The prairie Indian plantain ranges from Alabama and eastern Texas north to Nebraska, Minnesota, and southern Ontario. It is considered rare in Wisconsin, Minnesota, South Dakota, and Ontario.

**State distribution:** This species is confined primarily to a few counties of southwestern Michigan, where it has been found at more than 30 localities of the nearly 50 sites known for the state, most still extant. Several populations are known in Lenawee County as well. In the remnant lakeplain prairies of Saginaw Bay, it has been reduced to just two known populations, both comprised of rather small and localized colonies. Vigorous local populations are disjunct on the shores of Lake Huron in Presque Isle County and Alpena County as well as on Bois Blanc Island (Mackinac County). A Macomb County records dates from 1843, the vicinity of its collection having been long since converted to agriculture.

**Recognition:** Stems of *Cacalia plantaginea*, which may range from 6-18 dm in height, are stout, smooth,

and finely but **distinctly grooved**, arising from **short, tuberous-like, fleshy roots**. The thick, elliptical, **alternate leaves are smooth-margined and long-stalked** toward the stem base, with **conspicuous longitudinal nerves that converge at the leaf tip**. (The common name of this genus derives its name, in part, from the similarity to leaves of the true plantain family.) Upward the leaves become much reduced and stalkless. **Whitish flowers** are borne terminally in relatively **flat-topped, branched clusters** of perhaps 20 or more narrowly cylindrical heads, each with five tubular disk flowers and no ray flowers, the flower heads subtended by **strongly keeled phyllaries (bracts)**.

*Cacalia plantaginea* is superficially similar to the related *C. atriplicifolia* (pale Indian-plantain), a somewhat uncommon and localized species associated with oak woodlands, old dunes, prairie communities, creek banks, and floodplain forests (Voss 1996). It bears a very similar inflorescence but is easily distinguished by its **broadly ovate, coarsely toothed leaves with pale undersurfaces and palmate venation, stems that lack grooves, and phyllaries that are not prominently keeled**. Leaves of tuberous Indian-plantain are somewhat like those of the common weedy plantains, *Plantago rugelii* and *P. major*; however, these taxa, which are members of the plantain family (Plantaginaceae), are much smaller plants that occur throughout the state in many disturbed habitats and thus are very unlikely to be confused with *Cacalia*.



**Best survey time/phenology:** Owing to the distinctive habitats of this species in Michigan, tuberous Indian-plantain can be reliably sought during much of the growing season, as its leaves are distinctive and it is unlikely to be confused with any other species.

Experienced botanists and other surveyors may even seek this plant at other times of the year, owing to the rather distinctive curled appearance of the withered, spent leaves.

**Habitat:** This plant occurs in three similar types of habitats in the state. Southern Michigan populations inhabit high quality prairie fens on the margins of major morainal areas with rich organic soils saturated by seepage of calcareous groundwater. Predominant and common species in these fens include such typical plants as *Carex stricta* (strict sedge), *Carex lasiocarpa* (sedge), *Andropogon gerardii* (big bluestem), *Sorghastrum nutans* (Indian grass), *Potentilla fruticosa* (shrubby cinquefoil), *Larix laricina* (tamarack), *Toxicodendron vernix* (poison sumac), *Eleocharis rostellata* (beaked spike-rush), *Parnassia glauca* (grass-of-Parnassus), *Liatris spicata* (blazing star), *Sarracenia purpurpea* (pitcher-plant), *Calamagrostis canadensis* (bluejoint), *Solidago ohioensis* (Ohio goldenrod), *Solidago riddellii* (Riddell's goldenrod), *Lobelia kalmii* (Kalm's lobelia), *Hierchloe odorata*, (sweet grass), and numerous other fen species. The wet and wet-mesic prairies of the Saginaw Bay lakeplain provided significant habitat for this species prior to European settlement; however, now only two small populations are now known to remain. At these localities, moist, calcareous loamy sands support diverse communities dominated by *Spartina pectinata* (prairie cordgrass), *Carex stricta* (strict sedge), *C. lasiocarpa* (sedge), *Scirpus acutus* (bulrush), *Eupatorium maculatum* (Joe-pye-weed), and *Calamagrostis canadensis* (bluejoint) in wetter areas, and such species as *Sorghastrum nutans* (Indian grass), big bluestem, blazing star, *Silphium terebinthinaceum* (prairie dock), *Asclepias hirtella* (tall green milkweed), *Platanthera leucophaea* (Eastern prairie fringed orchid), *Veronicastrum virginicum* (Culver's root), shrubby cinquefoil, *Linum medium* (flax), *Pycnanthemum virginianum* (mountain-mint), *Tofieldia glutinosa* (false asphodel), and several other fen and prairie species in mesic portions of this lakeplain tallgrass prairie landscape.

Prairie Indian-plantain also grows in marly swales along the shores of Lake Huron, where it occurs in a natural community type known as northern fen. In addition to many of the aforementioned fen species, the associates include several typical northern and boreal species such as *Carex buxbaumii* (Buxbaum's sedge), *C. castanea* (sedge), *Thuja occidentalis* (Northern white cedar), and

*Vaccinium oxycoccos* (cranberry), in addition to a number of rare plant associates that may be present, including *Solidago houghtonii* (Houghton's goldenrod), *Iris lacustris* (dwarf lake iris), *Carex concinna* (beauty sedge), and *Pinguicula vulgaris* (butterwort). This species exists in similar habitats on the Bruce Peninsula of Ontario (Stebbins, 1935). Throughout its range, prairie Indian-plantain primarily inhabits wet prairies, preferring fens only toward the northern and eastern portions of its distribution.

**Biology:** This perennial has fleshy roots that are technically not, contrary to one of its names, tuberous (Shinners 1950). This species flowers in early to mid-July and fruits mature during August.

**Conservation/management:** Two southwestern Michigan populations of prairie Indian plantain—one large and one very small—lie in specially designated tracts within State Game Areas, and another is within a State Recreation Area. Both northern disjunct localities are also on state land, one occurring within a state dedicated natural area on Bois Blanc Island known as Snake Island. At least three large southern populations are in fens owned and managed by The Nature Conservancy (TNC), and one is partly owned by the Michigan Nature Association (MNA). Several large populations lie on private lands. The fen habitat of this plant is highly vulnerable to hydrologic disturbances, and requires fire to prevent encroachment of shrubs, which shade out this and other herbaceous species. Maintenance of the hydrological regime as well as carefully employed prescribed burns are perhaps the two most critical factors in perpetuating viable populations.

**Research needs:** Life history studies, including investigations of population dynamics, demography, reproduction, and related research would assist in the management of the unique communities that contain this and many other rare plants and animals, several of which are globally rare.

**Related Abstracts:** Prairie fen, mat muhly, pitcher plant, prairie dropseed, small white lady's-slipper, Blanchard's cricket frog, blazing star borer moth, Culver's root borer, eastern massasauga, Mitchell's satyr, red legged spittlebug.

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