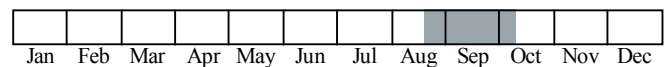


Best Survey Period



**Status:** State endangered

**Global and state rank:** G4/S1

**Other common names:** Gattinger's purple false foxglove, round-stem or round-stemmed false foxglove, purple gerardia

**Synonym:** *Gerardia gattereri* Small

**Family:** Scrophulariaceae (snapdragon family)

**Taxonomy:** The genus *Gerardia*, to which Michigan's *Agalinis* species were referred prior to 1959, was found to be an illegitimate generic name for any taxon placed under its concept and thus can only be used as a common name (Voss 1996).

**Total range:** Gattinger's gerardia occurs from southwest Ontario to Nebraska, ranging southward to Texas, Louisiana, Mississippi, and Alabama. Its frequency is greatest in the Ozark-Ouachita upland of Missouri and Arkansas. It is considered rare in Ontario, Minnesota, Wisconsin, Illinois, Indiana, Iowa, Kansas, Kentucky, Tennessee, and Texas (NatureServe 2003). It is also considered rare in Ohio, where it is known only from a single historical record but thought to be potentially overlooked owing to its resemblance to other *Agalinis* species.

**State distribution:** This species has been documented from four counties in southern Lower Michigan, occurring principally in southeast Michigan. The sites consist of single historical collections from Oakland (1914), Monroe (1915), and Kalamazoo (1935) counties, and a locality in St. Clair County where a small but vigorous colony discovered in 1988 persists and is protected within a state park. Status surveys by MNFI staff in Kalamazoo County and Oakland County in 1983 and 1981, respectively, did not result in the observation of extant populations, although potential habitat was identified.

**Recognition:** *Agalinis gattereri* is a slender, fibrous-rooted annual with **very narrow (1 mm or less), opposite leaves** ca. 1-2 cm in length and **much branched shoots**. The foliage, stem, and branches tend to be **yellowish-green, remaining yellowish-green to green and not blackening when dried**. Long-stalked flowers with pedicels ranging from ca. 7-30 mm in length are **produced primarily from the branches and not the main stem, these often arising terminally from opposite leaves or bracts**. The pinkish, tubular flowers have **numerous red spots and two yellow lines on the lower lip, and the three lower corolla lobes are hairy externally**. This species could possibly be confused with the widespread, superficially similar *A. tenuifolia* (common gerardia) or



more likely *A. skinneriana* (though the latter is very rare). *A. tenuifolia* has similarly long-stalked flowers but can be distinguished by its darker green foliage, the characteristic of **becoming blackened when dried, markedly wider leaves, and the calyx tube that has at best visible longitudinal nerves versus the conspicuous reticulate (net-like) venation** present in *A. gattingeri*. In addition, the seeds of *A. tenuifolia* are **dark brown** versus the pale to **light brown seeds** in *A. gattingeri*. *A. skinneriana*, a rare species known from only one locality in Michigan, where *A. gattingeri* also occurs, can be distinguished by its **narrower, strict, less branching habit, strongly ascending branches, and the very pale pink to whitish flowers borne primarily from the main stem**. Also, the flowers in *A. skinneriana* are at best **faintly spotted and lined, and have hairless external corolla lobes** (these may be ciliate on the margin). Lastly, the stem of *A. skinneriana* is **strongly angled or ridged versus the nearly round stems** in *A. gattingeri*. Detailed descriptions of these taxa and other characters are provided by Brodowicz (1990) and Canne-Hilliker (1987).

**Best survey time/phenology:** Gattinger's gerardia is most easily identified during its blooming period, which in Michigan has been documented as occurring from late August to early October (Brodowicz 1990). A combination of several characters, such as leaf width, branching pattern, and the other recognition characteristics noted above enable this species to be identified in fruit, though careful examination is required.

**Habitat:** The limited herbarium collection data for Michigan's historical records note that this species has been collected from "open sandy ground" in Monroe County, from "dry, sandy cliffs" in Oakland County, and on the "border of a marsh and higher ground" in Kalamazoo County. These sites were likely prairies or oak barrens/oak savanna habitats. In St. Clair County, Michigan's only known extant population occurs principally in and around moist, sandy, borrow pit depressions within a complex of lakeplain wet-mesic prairie remnants, where it occurs with rare prairie species as well as several of Michigan's well known coastal plain disjuncts. Associates include *Agalinis skinneriana* (Skinner's gerardia), *Aletris farinosa* (colic-root), *Aristida longespica* (three-awned grass), *Aristida necopina* (three-awned grass), *Asclepias*

*tuberosa* (butterfly-weed), *Baptisia tinctoria* (wild indigo), *Coreopsis tripteris* (tall coreopsis), *Hemicarpha micrantha* (dwarf bulrush), *Hypericum gentianoides* (gentian-leaved St. John's-wort), *Juncus brachycarpus* (short-fruited rush), *Juncus biflorus* (two-flowered rush), *Liatris spicata* (marsh blazing star), *Ludwigia alternifolia* (seedbox), *Lycopodiella inundata* (bog clubmoss), *Lycopodiella margueritae* (northern prostrate clubmoss), *Panicum virgatum* (switch grass), *Salix humilis* (prairie willow), *Schizachyrium scoparius* (little bluestem), *Scleria triglomerata* (tall nut-rush), *Sorghastrum nutans* (Indian grass), and *Spartina pectinata* (prairie cordgrass).

It is likely that the local disturbances, such as sand borrowing and scraping, have maintained the St. Clair occurrence through stimulation of the soil seed bank, as well as by perpetuating openings and providing a moist, sandy substrate conducive to germination and growth. Elsewhere within its broad range, Gattinger's gerardia is typically a plant of sandy, rocky, or clayey slopes, open woods, prairies, and oak barrens. In Indiana (Deam 1940) and Illinois it grows on sandy wooded slopes and ridges. In the Chicago region, this species is known from savanna bluffs and black oak savanna, where it occurs with such associates as *Danthonia spicata* (poverty grass), *Lespedeza capitata* (prairie bush clover), *Polygala sanguinea* (field milkwort), *Quercus alba* (white oak), and *Q. velutina* (black oak) (Swink and Wilhelm 1994).

**Biology:** Gattinger's gerardia is an annual forb, and although commonly cited as fibrous rooted, Voss (1996) notes that all Michigan species of *Agalinis* produce a small tap root. As are many plants in the snapdragon family (Scrophulariaceae), *Agalinis* is hemiparasitic (partially parasitic), producing specialized roots that attach to the roots of host species to obtain nutrients. According to Voss, this genus has a diverse number of host species, including several graminoids (grasses and grass-like plants). Pollination is accomplished by bees, although self-pollination may occur if this species is similar to the closely related *A. skinneriana* (Dieringer 1999).

**Conservation/management:** The primary need for *Agalinis gattingeri* at present is its continued protection in St. Clair County, where park managers and state stewardship staff are aware of this colony and its



significance. Potential habitat probably exists throughout much of southern Lower Michigan, and thus status surveys for this species are warranted, especially within and around the localities where it has been previously documented. The conservation of this species in Michigan will require experimental management, such as prescribed burning, and the necessary monitoring to determine the most suitable restoration strategies for perpetuating occurrences. Conservation is probably best achieved by working with this species *in situ*, as propagation is reported to be difficult with this group, and introductions are far less suitable as a strategy.

**Comments:** In St. Clair County, Gattinger's gerardia occurs with Skinner's gerardia, a former federal candidate species (and Canadian species of concern) known solely from this locality in the state. Both species should be sought during inventories of lakeplain wet prairies and oak barrens in southern Lower Michigan.

**Research needs:** In addition to experimental restoration management and monitoring, life history studies focusing on population demography, genetic diversity, and breeding system biology would assist in conservation.

**Related abstracts:** Lakeplain wet prairie, lakeplain wet-mesic prairie, oak barrens, Skinner's gerardia, three-awned grass, chestnut sedge, Leiberg's panic grass, smooth beard tongue, few-flowered nut-rush, purple milkweed, Sullivant's milkweed, Hill's thistle, northern appressed clubmoss, eastern prairie fringed orchid, Allegany plum, meadow-beauty, blazing star borer, culver's root borer, eastern box turtle, red-legged spittlebug, Silphium borer

### Selected references:

- Brodowicz, W.W. 1990. Noteworthy collections. Mich. Bot. Vol. 29: 28-30. [*A. gattingeri* & *A. skinneriana*]
- Canne-Hilliker, J.M. 1987. Status report on Skinner's purple false foxglove *Agalinis skinneriana* (Wood) Britton, an endangered species in Canada. Dept. of Botany, Univ. of Guelph. Guelph, Ontario, Canada. 25 pp.

Deam, C. C. 1940. Flora of Indiana. Indiana Dept. of Conservation, Indianapolis. 1236 pp.

Dieringer G. 1999. Reproductive biology of *Agalinis skinneriana* (Scrophulariaceae), a threatened species. Journal of the Torrey Botanical Society 126(4): 289-295.

NatureServe. 2003. NatureServe Explorer: An Online encyclopedia of life [web application]. Version 1.8. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: November 11, 2003).

Pennell, F. W. 1935. The *Scrophulariaceae* of eastern temperate North America. 41. *Gerardia*. Acad. Nat. Sci. Philadelphia Monogr. 1: 419-476.

Pennell, F.W. 1929. *Agalinis* and allies in North America. II. Proc. Acad. Nat. Sci. Philadelphia 1: 11-249.

Swink, F. and G. Wilhelm. 1994. Plants of the Chicago region, 4th edition. Indianapolis: Indiana Academy of Science. 921 pp.

Voss, E.G. 1996. Michigan Flora. Part III. Dicots (Pyrolaceae-Compositae). Bull. Cranbrook Inst. Sci. 61 & Univ. of Michigan Herbarium. xix + 622 pp.

### Abstract citation:

Penskar, M.R. 2004. Special plant abstract for *Agalinis gattingeri* (Gattinger's gerardia). Michigan Natural Features Inventory. Lansing, MI. 3 pp.

Copyright 2004 Michigan State University Board of Trustees.

Michigan State University Extension is an affirmative-action, equal-opportunity organization.

Funding for abstract provided by the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center via the Great Lakes Commission.

