



Status: State Threatened

Global and state rank: G5T3 (Species Globally Secure, Subspecies Globally Vulnerable / S2 (State Imperiled))

Other common names: tobacco root, prairie valerian, hairy valerian, common valerian

Synonyms: *Valeriana edulis* subsp. *ciliata* (Torr. & A. Gray) F. G. Mey., *Valeriana ciliata* Torr. & A. Gray

Family: Caprifoliaceae (formerly within Valerianaceae)

Sub-family: Valerianoideae

Taxonomy: *Valeriana* was formerly placed within the Valerianaceae, but this family is now generally recognized as the Valerianoideae subfamily of the Caprifoliaceae (Stevens 2017). There are about 15 native species of *Valeriana* found within the United States, two of which can be found in Michigan — edible valerian (*Valeriana edulis* var. *ciliata*) and swamp valerian (*V. uliginosa*) (Reznicek et al. 2011, Kartesz 2015). The non-native common valerian (*V. officinalis*) also occurs spontaneously in numerous Michigan counties (Reznicek et al.

2011).

Two varieties of *V. edulis* are recognized. The variety *ciliata* is found in the eastern United States, primarily around the Great Lakes region. The other variety, *edulis*, is primarily found in the western half of the United States. These two varieties are separated both geographically and ecologically, as var. *ciliata* occurs in far wetter conditions than var. *edulis* (Faivre and Windus 2002).

Total range: Edible valerian can be found within swamps, meadows, marshes, and most commonly prairie fens (Meyer 1951, Reznicek et al. 2011). Its range extends west to Minnesota and Iowa; south to Illinois and Indiana, east to Ohio, and north to Ontario. It is ranked as Vulnerable (S3) in Wisconsin; Imperiled (S2) in Illinois, Michigan, and Minnesota; and as Critically Imperiled (S1) in Indiana, Ohio, and Ontario.

State distribution: Edible valerian is restricted to the southern third of the Lower Peninsula where it is found within prairie fens. More specifically, both edible valerian and prairie fens are found within the glacial interlobate regions of Michigan (Spieles 2010). There are a total of 32 recorded element



occurrences (EOs) of edible valerian within 10 counties. The most recently discovered occurrence was in 2006 and the most recently updated was in 2014, both in Lenawee County. Most occurrences are considered to have fair estimated viability (EO rank C) to excellent estimated viability (EO rank A). One is estimated to have poor viability (EO rank D), five are historical (EO rank H), and one is considered extirpated (EO rank X). Six occurrences are verified as extant (EO rank E), but those populations require more intensive assessments to determine viability. Overall, populations are doing relatively well for a Threatened species, which is likely due to many prairie fens being managed by the Nature Conservancy or other similar organizations (MNFI 2024a,b).

Recognition: Edible valerian is a stout, herbaceous perennial growing anywhere from 1 to 12 dm in height. Plants have a semi-woody, conical taproot that is often forked at the tip. Leaves range from 1-3 dm in length with parallel venation. Basal leaves grow in a rosette which arises from an imbricate caudex (short ground-level stem) formed from the persistent leaf bases from previous seasons. Rosette leaves are oblanceolate to spatulate and either simple or with a few lateral lobes. Cauline leaves can be found in two to six pairs along the stem, and are opposite, sessile, and pinnate to pinnatifid. The rachises of cauline leaves are broader than the lateral lobes. All leaves have a ciliate margin that gives the plant a silvery sheen along leaf edges. The inflorescence is a many-flowered panicle with several smaller, lateral branches that become increasingly diffuse with age. Plants are polygamo-dioecious (some plants bearing both perfect and staminate flowers, other plants bearing both perfect and pistillate flowers) or subdioecious (plants bearing flowers that are sexually ambiguous within an otherwise dioecious population) (Meyer 1951, Faivre and Windus 2002). Flowers are a creamy white with five petals that reflex as they mature. Bisexual and staminate flowers are larger (2.5-3.5 mm) than the diminutive pistillate flowers (0.5-1 mm). The calyx consists of several curled, modified sepals that



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unfurl into pappus-like plumose bristles at the time of fruit maturation. The fruit is an achene that lacks endosperm (Meyer 1951, Voss 1985, Reznicek et al. 2011, Wilhem and Rericha 2017).

Edible valerian can be distinguished from its two other Michigan congeners (common valerian and swamp valerian) based on its cauline leaf shape, root structure, and leaf margin. Only edible valerian has **cauline leaves where the rachis is broader than the lateral leaf lobes**. Also, the other two species are rhizomatous and lack the **thick taproot** of edible valerian. Lastly, only edible valerian has **ciliate leaf margins** (Reznicek et al. 2011).

Best survey time/phenology: Surveys are best conducted from the first week of May to the fourth week of June when the plant is flowering (MNFI 2024a,b). Plants typically set fruit starting in late June and release seeds by July. Reproductive structures are not necessary for the identification of the plant based on its other distinctive vegetative structures; therefore, surveys can be conducted later



in the year, but efforts may be more challenging.

Habitat: Edible valerian is almost exclusively found in the prairie fens distributed in the southern portion of Michigan's Lower Peninsula, but it can also occasionally be found in marly or wet prairies, meadows, and near tamarack swamps, particularly in other states. Edible valerian occurs in full sun or partial shade and is susceptible to being crowded by shrubs, trees, or invasive species (MNFI 2024a,b).

Associated species include those commonly found in fens, namely *Larix laricina* (tamarack), *Betula pumila* (bog birch), *Cornus* spp. (dogwoods), *Dasiphora fruticosa* (shrubby cinquefoil), *Salix* spp. (willows), *Spiraea alba* (meadowsweet), *Toxicodendron vernix* (poison sumac), *Andropogon gerardii* (big bluestem), *Calamagrostis canadensis* (blue-joint), *Schizachyrium scoparium* (little bluestem), *Sorghastrum nutans* (Indian grass), *Sporobolus heterolepis* (prairie dropseed), *Carex interior* (inland sedge), *C. sterilis* (sterile sedge), *C. stricta* (tussock sedge), *C. tetanica* (rigid sedge), *Cladium mariscoides* (twig-rush), *Eleocharis elliptica* (golden-seeded spike-rush), *Juncus* spp. (rushes), *Schoenoplectus acutus* (hardstem bulrush), *S. pungens* (three-square), *Campanula aparinoides* (marsh bellflower), *Cicuta maculata* (water hemlock), *Eupatorium perfoliatum* (common boneset), *Eutrochium maculatum* (Joe-Pye-weed), *Hypoxis hirsuta* (star-grass), *Lysimachia quadriflora* (whorled loosestrife), *Parnassia glauca* (grass-of-Parnassus), *Pilea fontana* (bog clearweed), *Pycnanthemum virginianum* (Virginia mountain mint), *Rudbeckia hirta* (black-eyed Susan), *Solidago ohioensis* (Ohio goldenrod), *S. riddellii* (Riddell's goldenrod), *Thalictrum dasycarpum* (purple meadow-rue), and *Thelypteris palustris* (marsh fern). It is associated with many other rare species found in fens and/or southern Michigan including *Arnoglossum plantagineum* (prairie Indian-plantain), *Platanthera leucophaea* (prairie fringed-orchid), *Cypripedium candidum* (white lady-slipper), and *Polemonium reptans* (Jacob's-ladder). It is also commonly



associated with *Frangula alnus* (glossy buckthorn) which is the most common nonnative shrub to invade fens (Spieles et al. 2010, MNFI 2024a,b).

Biology: The reproductive strategy of edible valerian is interesting and somewhat rare in angiosperms. The species is dioecious (bearing male and female flowers on separate plants), which is a reproductive strategy only an estimated 3-4% of angiosperms follow, although this percentage is likely an underestimate (Bawa 2016). More specifically, edible valerian is described as polygamo-dioecious or subdioecious (Meyer 1951, Faivre and Windus 2002, Hannan 2005, COSEWIC 2018). Dioecy is less common in temperate regions than tropical, likely due to a close association between dioecy and a perennial or woody habit, and there is a greater prevalence of woody species in the tropics (Bawa 2016).

The dioecy of edible valerian also plays a role in population structure and reproductive dynamics. Stable populations of the western variety of edible valerian will typically skew toward a female bias (Soule 1981). Male plants, however, will parent two to four times more offspring than female plants due to the higher number of gametes produced by male plants versus the few produced by females (Soule 1981). Only about 25% of plants in Michigan will flower each year (Hannan 2005). Seeds are light-weight due to the lack of endosperm and are frequently carried away from the mother plant via gravity, wind, or water (Faivre and Windus 2002,



COSEWIC 2018).

Little is known about other non-botanical species that associate with edible valerian. There is scant information regarding pollinators, but plants in Ohio have been observed being visited by small bees, flies, and ants that could act as effective pollinators (Faivre and Windus 2002). Edible valerian does not reproduce vegetatively (COSEWIC 2018). In Illinois, leaves exhibiting pale discoloration along leaf margins are caused by the leaf spot fungus *Septoria valerianae* (Wilhelm and Rericha 2017).

Conservation/management: To conserve and manage edible valerian, its primary habitat type — the prairie fen — must be conserved and managed. The hydrology, natural disturbance regimes, and surrounding landscapes of prairie fens must remain intact. The destruction or development of the surrounding landscape can negatively affect the aquifer below prairie fens and inhibit the proper calcareous seepage that is required to maintain the prairie fen natural community (Spiels et al. 2010).

Invasive species, such as glossy buckthorn and purple loosestrife (*Lythrum salicaria*), as well as encroachment from native shrubs and other woody species also pose a threat to edible valerian. Mechanical removal or prescribed burns are useful tools for controlling these species (Spiels et al. 2010). It is suggested that prescribed burns be implemented in early spring before edible valerian's leaves emerge (Hannan 2015). Late-season burns should be avoided because they have proven to be harmful to flowers and fruits (Lovell et al. 1983). Since edible valerian often occurs with other rare species, prescribed burns should be planned with these species in mind. Like edible valerian, burn timing can affect other plants both positively and negatively (Higman and Penskar 1998).

Improving the quality of existing habitat may also help improve extant populations on a genetic level. There may be a link between habitat quality (intact, undisturbed fens and lack of invasive species)



and genetic variation. When fens are overrun by invasive species, there is less habitat for valerian seeds to germinate, creating a genetic bottleneck that can further harm the species over time (Faivre and Windus 2002).

Comments: The genus name is likely derived from the name of the Roman Emperor Publius Aurelius Licinius Valerianus who was known for being captured in battle and preserved as a trophy by the Persian king Shapur after the Battle of Edessa (Wilhem and Rerircha 2017). The name could also have been derived from the Latin word *valere* which translates to “strong” (Meyer 1951). The specific epithet *edulis* is also Latin and translates to “edible,” in reference to edible valerian being one of the few species of *Valeriana* to be used as a culinary herb (Meyer 1951), although it is not recommended to eat the plant unless certain of



identity, nor should any rare plant be harvested from the wild. Like other valerians, edible valerian has a uniquely pungent taste and smell (Reznicek et al. 2011, MW 2024). Many other species of valerian, especially *Valeriana officinalis*, have been used medicinally as a relaxing agent or sedative (Das et al. 2021).

Research needs: Extant populations should be resurveyed since existing EOs have not been revisited since 2014. Surveys should also be conducted to find new populations or suitable habitat. Additionally, there is some ambiguity surrounding the life history, reproductive biology, important pollinators, and sex ratio dynamics of Michigan populations. This species' primary habitat, prairie fen, normally needs significant management to persist. Monitoring the association between management activities (e.g., prescribed fire, invasive species treatment) and population trends would be beneficial.

Related abstracts: Prairie fen, prairie Indian-plantain, prairie fringed-orchid, Indian-plantain, and white lady-slipper.

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