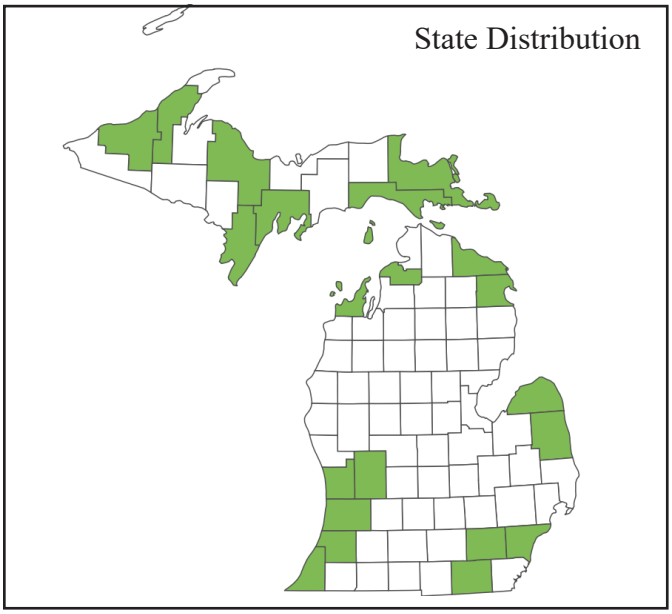
Adlumia fungosa (Aiton) Greene ex Britton, Sterns & Poggenb. Climbing fumitory


Photo by Tyler Bassett



Best Survey Period

Status: State threatened

Global and state rank: G4/S3

Other common names: Allegheny vine, mountain-fringe

Family: Papaveraceae (poppy family)

Sub-Family: Fumarioideae (fumitory sub-family)

Taxonomy: This is the only species of *Adlumia* native to North America. The genus name derives from Washington, D.C. agriculturalist John Adlum. The sub-family Fumarioideae has been recognized as a distinct family, but it is now considered part of the Papaveraceae (APG IV 2016).

Total range: Michigan is near the center of the native range of *A. fungosa*, which is found from Quebec and Nova Scotia, Canada, south to North Carolina and west to Iowa. It is listed as SX (Presumed Extirpated) from Delaware and Indiana; SH (Possibly Extirpated) in Manitoba and Kentucky; S1 (Critically Imperiled) in Maine, New Hampshire, Ohio, and Rhode Island; S2 (Imperiled) in Maryland, New Jersey, North Carolina, Tennessee, West Virginia, and Wisconsin; S3 (Vulnerable) in Massachusetts, Michigan, Minnesota, Vermont, Virginia, Ontario and Quebec, and secure or unranked in Connecticut, Iowa, New York, and Pennsylvania. In Illinois, New Brunswick, and Nova Scotia it is considered an exotic species with no status rank (NatureServe 2023).

State distribution: Climbing fumitory is known from 32 occurrences in 21 counties in Michigan, in both the Lower and Upper Peninsulas, with most sites along the shores and on islands within the Great Lakes (MNFI 2023). Recent collections are from Mackinac, Delta and Alpena counties, primarily from the Grand Traverse Islands (also known as the Potawatomi Islands), an archipelago stretching between the Door Peninsula in Wisconsin and the Garden Peninsula in Michigan (Reznicek et al. 2019).

Recognition: Climbing fumitory is a delicate biennial vine, with white to pale pink drooping flowers composed of fused petals. It is our only vine in this family and is distinctive in the spongy

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corolla which persists until fall. It has alternate, two to several times pinnately compound cauline leaves with deep, acutely-tipped and entire lobes. In its first year it is acaulescent with several ascending prehensile leaves. In its second year it is a climbing vine with elongate stems to 3 m long (Gleason and Cronquist 1991, Boufford 1997, Reznicek et al. 2011).

Best survey time/phenology: This species flowers from early June to late September, which is the optimal survey period.

Habitat: Climbing fumitory is normally associated with soil disturbance. It is often found on slopes and in association with limestone in upland habitats such as gravelly or rocky shores, rocky woods, thickets, and dune complexes (Reznicek et al. 2011, MNFI 2023).Within the MNFI natural community framework, it occurs in or likely occurs in dry-mesic southern forest, granite bedrock glade, limestone bedrock lakeshore, limestone cliff, limestone cobble shore, limestone lakeshore cliff, mesic northern forest, mesic southern forest, northern bald, northern hardwood swamp, open dunes, sand and gravel beach, and volcanic bedrock glade. A lack of disturbance such as fire and wind in these habitats may increase competition by other vegetation and may decrease the amount of habitat for this species.

Although this plant is rare in Michigan, it is known from a broad swath of the state and a diversity of habitats. Thus, a large number of associated plants has been documented, with few consistently co-occurring. The most frequent species with which it has been documented in Michigan are *Acer saccharum* (sugar maple), *Betula papyrifera* (paper birch), *Corydalis aurea* (golden corydalis), *Hackelia deflexa* (stickseed), *Rubus strigosus* (wild red raspberry), *Sambucus racemosa*, (red-berried elder), *Taraxacum officinale* (common dandelion), *Thuja occidentalis* (white-cedar), *Urtica dioica* (stinging nettle), and *Verbascum thapsus* (common mullein) (MNFI 2023).

Biology: Climbing fumitory is a taprooted, biennial herbaceous vine. It is a long-term seed-banker and appears after fire or other disturbance (Judziewicz 2001). The structure of its flowers suggests bee pollination, but the flowers do not produce nectar (Zomlefer 1994). Its fruit is a capsule approximately 10 mm long, containing lustrous, globose seeds (Boufford 1997). The seeds are often self-sown, and mechanisms for long-distance dispersal are unknown (Sonday and Burnham 2014).

Conservation/management: This species is threatened by habitat loss, modification, and fragmentation. It has frequently been found along and near Great Lakes shorelines, which are attractive areas for residential development. Limiting this threat will require permanent protection of known populations, connections between subpopulations, and suitable habitat.

This species appears to require soil disturbance. Protection of habitat and natural disturbances (fire, winter ice, storms, wind) is beneficial. For example, abstaining from the installation of jetties and fences will help protect natural wind and sand dynamics. Seeds may remain in the seed bank long term, germinating after fire or other local disturbance where the seed bank remains intact. As with other species associated with disturbance along Great Lakes shores, it is recommended to protect buffers of shoreline-adjacent habitat to act as a refuge during hydrological events such as flooding due to raised lake levels (MacKinnon et al. 2023). Habitats may also change over time due to vegetation dynamics and become more or less suitable for this species. Local extinctions due to both natural and anthropogenic causes can be offset by colonization of nearby suitable habitat (NatureServe 2023).

As a disturbance-associated species, climbing fumitory is frequently associated with non-natives and has even been documented with aggressive species such as tree-of-Heaven (*Ailanthus altissima*), bittersweet nightshade (*Solanum*

dulcamara), and wall lettuce (*Mycelis muralis*) (MNFI 2023). Site management should include monitoring and treatment of invasives.

The ephemeral nature of this species can complicate estimating population trends, as it can disappear from sites for years until disturbance stimulates germination from the seedbank. The viability of seven of 32 populations within Michigan are estimated as fair to poor (EO Rank C to D), six have been verified extant but lack sufficient data for a rank, 18 are designated as Historical, and one has excellent estimated viability. Nine of the 14 extant populations have not been surveyed since 1989 (MNFI 2023). These data suggest that climbing fumitory has been declining but the rate and extent of this decline is currently unknown and needs further research.

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Comments: Climbing fumitory seeds and plants can be purchased online from growers primarily in New York and Pennsylvania (Hayefield Seeds 2024, One Nature LLC 2024). It has been documented as a cultivated species in Ohio. Surveys of this species, especially new occurrences, should confirm whether it is a native stand or a potential escapee from cultivation (ODNR 2024). One extant EO in Michigan may even be from cultivation (MNFI 2023).

Research needs: There is very little published data on the ecology and life history of this species. Older records of extant populations should be re-surveyed to document population statuses and trends, specific location details, habitat requirements, and associated species. To better understand this species' relationship with disturbance, long-term monitoring of populations and adjacent unoccupied habitat is needed. The duration of viability within the seedbank is unknown.

Related abstracts: dry-mesic southern forest, granite bedrock glade, hardwood-conifer swamp, limestone bedrock glade, limestone bedrock lakeshore, limestone cliff, limestone cobble shore, limestone lakeshore cliff, mesic northern forest, mesic southern forest, northern bald, northern hardwood swamp, open dunes, sand and gravel beach, volcanic bedrock glade.

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