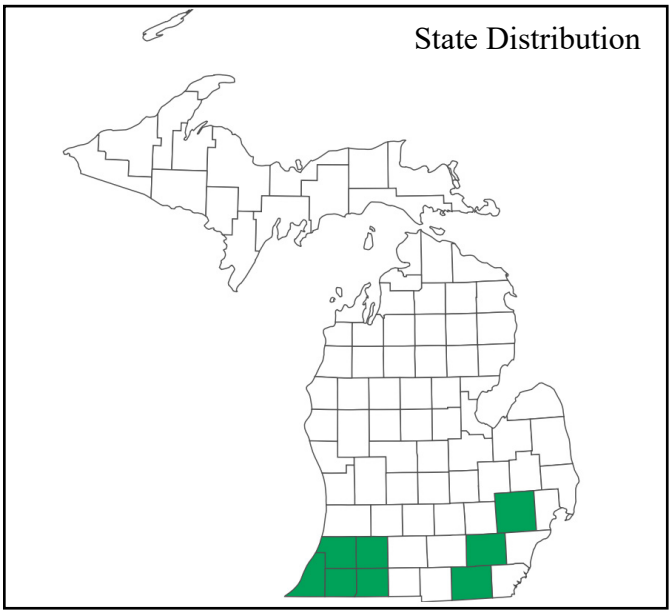
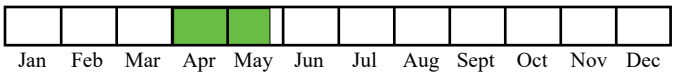
Trillium sessile L. Toadshade



Best Survey Period



Status: State Threatened

Global and state rank: G5 (Globally Secure) / S2S3 (State Imperiled to Vulnerable NatureServe 2025)

Other common names: sessile trillium, toad trillium, wake robin

Synonyms: Historically, many names at both the specific and infraspecific level were applied to *Trillium sessile* and its close relatives (Rafinesque 1830, Freeman 1975); however, no synonyms are in common usage today.

Family: Trilliaceae (trillium family) or Melanthiaceae (bunchflower family)

Taxonomy: *Trillium* is a genus of monocots placed within the order Liliales (Stevens 2025). While Trillium was previously placed in the Liliaceae (Voss 1972) and subsequently in the Trilliaceae (Reznicek et al. 2025), most authors now place it within Melanthiaceae (Stevens 2025). *Trillium* contains two subgenera. Subgenus *Trillium* consists of the pedicellate-flowered (stalked) species while subgenus *Phyllantherum*, containing *T. sessile*, comprises the sessile-flowered (stalkless) species. Two forms of *T. sessile* have been recognized. *Trillium sessile* f. *sessile* has maroon petals. The less common *T. sessile* f. *viridiflorum* has yellow petals (Freeman 1975).

Total Range: The range of *Trillium sessile* extends from Oklahoma and Kansas northeast to Michigan east to New York south to South Carolina, and southwest to Alabama. *Trillium sessile* is ranked N5 (Secure) across the United States (Kartesz 2025, NatureServe 2025). It is listed as S1 (Critically Imperiled) in Oklahoma, the District of Columbia, New York and North Carolina, S2 (Imperiled) in Alabama, S2S3 (Imperiled to Vulnerable) in Michigan, S3 (Vulnerable) in Kansas, S3S4 (Vulnerable to Apparently Secure) in Illinois, S4 (Apparently Secure) in Virginia and West Virginia, S5 (Secure) in Ohio and Kentucky, and SNR (Unranked) in Arkansas, Indiana, Maryland, Missouri, Pennsylvania and Tennessee (NatureServe 2025).

State Distribution: Twenty occurrences of *Trillium*

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sessile are known across eight counties in two distinct regions within Michigan's southern lower peninsula. Eleven occurrences are known from Berrien, Cass, Van Buren, Kalamazoo and St. Joseph Counties in the southwest, seven of these in Berrien County alone. Nine occurrences are known from Lenawee, Washtenaw and Oakland Counties in the southeast, six of these in Lenawee County alone. A population has been documented in Ingham County, but it is believed to have been planted (MNFI 2025).

Recognition: *Trillium sessile* is a small to medium sized (0.8-2.5 dm tall) forb. The simple and erect scape (stem) is glabrous and derived from a stout horizontal rhizome. The three whorled leaves (technically bracts) are sessile, 4-10 cm long, 2-8 cm wide, broadly elliptic to subrotund with acute to short-acuminate apices, green to bluish-green, and **sparsely to strongly mottled**, especially when young but less so with age. **Flowers are sessile** (attached directly above the leaves). The three **spreading** green sepals are 9-35 mm long and 4-8 mm wide. The three erect petals are more-or-less connivent (touching but unfused), **17-35 mm long**, 7-20 mm wide, more-or-less concealing the stamens and pistil, **lacking a basal claw**, and **typically maroon** but green or yellowish-green in the uncommon form. The stamens consist of a red-purple filament 2-5 mm long, purple anthers 10-23 mm long, and a purplish-brown connective appendage projecting 2-5 mm or more beyond the anther sacs (a connective is the tissue between anther sacs, and it is inconspicuous in most flowers). The pistil consists of a greenish-white and purple six-angled ovary tapering into three purple stigmas which are 4-8.5 mm long. The fruit is a deep purple to green subglobose berry. The six angles on the fruit are winglike, separating into fragments from the basal attachment where it meets the receptacle (Freeman 1975, Gleason and Cronquist 1991, Case and Case 1997, Case 2002, Wilhelm and Rericha 2017, Reznicek et al. 2025).

In Michigan, *T. sessile* is most likely to be confused with other sessile-flowered trilliums, particularly *T. recurvatum* (prairie trillium), which has reflexed sepals, petals with a slender basal claw, and leaves with petioles. *Trillium sessile* could also be confused with two non-native species that occasionally escape cultivation: *T. cuneatum* (sweet

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Betsy) and *T. luteum* (yellow trillium). Both have petals more than 4 cm long and more or less lack a prolonged connective appendage (Reznicek et al. 2025).

Best survey time/phenology: *Trillium sessile* is easiest to observe and identify during its flowering period from early April to late May (MNFI 2025).

Habitat: In Michigan, *Trillium sessile* is found in floodplain forest and mesic southern forest, including floodplains, riparian bluffs and terraces, moist ravines, and riverbanks. It is particularly associated with rich sites and calcareous limestone-derived soils (Gleason and Cronquist 1991, Case and Case 1997, Wilhelm and Rericha 2017, MNFI 2025). It has also been reported to persist at the edges of pasture lands, fence rows and in brushy areas after logging (Case and Case 1997).

Common woody associates of *Trillium sessile* include *Acer saccharum* (sugar maple), *Carpinus caroliniana* (blue-beech), *Celtis occidentalis* (hackberry), *Dirca palustris* (leatherwood), *Fagus grandifolia* (American beech), *Lindera benzoin* (spicebush), *Liriodendron tulipifera* (tulip tree), *Ostrya virginiana* (hop-hornbeam) *Staphylea trifolia* (bladdernut), and *Tilia americana* (basswood) (MNFI 2025).

Common herbaceous associates of *Trillium sessile* include *Allium tricoccum* (ramps), *Anemone quinquefolia* (wood anemone), *Arisaema. dracontium* (green dragon), *A. triphyllum* (Jack-in-the-pulpit), *Asarum canadense* (wild-ginger), *Cardamine concatenata* (cut-leaved toothwort), *Dicentra cucullaria* (Dutchman's-breeches), *Erythronium albidum* (white trout-lily), *E.*

americanum (yellow trout-lily), *Hydrophyllum appendiculatum* (great waterleaf), *H. canadense* (broadleaved waterleaf), *Impatiens capensis* (spotted touch-me-not), *Persicaria virginiana* (jumpseed), *Phlox divaricata* (woodland phlox), and *Trillium grandiflorum* (common trillium) (MNFI 2025).

Biology: The seeds of *Trillium* species, including *T. sessile*, are myrmecochorous (ant-dispersed). All species of this genus possess a white-fleshy, lipid rich elaiosome that attracts ants that drag seeds underground into their nests. Ants of the genus *Formica, Aphaenogaster* and *Camponotus* are known to disperse these seeds. After consuming the fleshy elaisosome the seed is discarded (Zettler *et al* 2001, Wilhelm and Rericha 2017). *Trillium* seeds are also known to be dispersed by yellow jackets of the genus *Vespula.* This type of dispersal is known as vespicochory (Zettler *et al* 2001). The fatty acid component of the elaiosome is chemically similar to insect prey, which is a likely mechanism behind seed dispersal by carnivorous insects like ants and vespid wasps (Hughes et al. 1994). *Trillium* do not germinate until the second spring after dispersal, or a period of "double dormancy" (Barton 1944). Upon the final warming of the double dormancy cycle, aboveground growth is activated, and a cotyledon (seed leaf) will emerge from the underground rhizome, initiating seedling growth and maturation (Case and Case 1997). Flowering and seed set of an individual plant in nature is achieved after four or five years, depending on availability of light and nutrients (Deno 1991).

Conservation/management: *Trillium sessile* is a conservative species of mesic southern forest and floodplain forest and would benefit from the conservation and management of large sections of these forest types to minimize habitat loss and fragmentation, especially old growth and late-successional stands (Cohen et al. 2020). Conservation and restoration of natural hydrological regimes would also be beneficial. Invasive species co-occur with many Michigan occurrences of *T. sessile*. We recommend management and monitoring of species such as *Alliaria petiolata* (garlic mustard), *Hesperis matronalis* (dame's rocket), *Lysimachia nummularia* (moneywort), *Berberis thunbergii* (Japanese barberry), *Elaeagnus umbellata*

(autumn olive), *Lonicera* spp. (honeysuckles), *Rhamnus cathartica* (common buckthorn), and *Rosa multiflora* (multiflora rose). Deer density should be minimized to reduce herbivory (Cohen et al. 2020). Knight et al. (2009) and Kalisz et al. (2014) showed that maintaining low deer density has a positive interactive effect of increasing *Trillium* spp. densities and lowering the density of *Alliaria petiolata*. Several occurrences of *T. sessile* are within small publicly accessible woodlots in fragmented landscapes. Acquisition of adjacent woodlots in private ownership, avoidance of expansion of trail networks toward known occurrences, and installation and maintainence of boot brushes as well as signage regarding plant-harvest regulations at trailheads would be beneficial. Several occurrences are in small privately owned woodlots in agricultural landscapes. Options to incentivize management for plant biodiversity should be explored.

Comments: *Trillium sessile* and all native trillium species in Michigan are protected under the Natural Resources and Environmental Protection Act, Act 451 of 1994. Harvesting of any part of the plant is prohibited, except under specific conditions (Michigan Legislature 1994). *Trillium* comes from the Latin *trilix*, a reference to the flower parts being in multiples of three (Case 2002).

Research needs: Consistent regular monitoring of this species' occurrences across the state would help scientists and conservationists better understand the management needs required to secure this species in the present and the future.

Related abstracts: mesic southern forest,

floodplain forest, prairie trillium, snow trillium

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