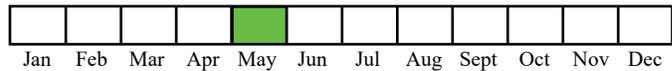


Best Survey Period



Status: State Threatened

Global & state rank: G5 (Globally Secure)/S1 (State Critically Endangered)

Other Common Names: Short's rock cress, stellate rock cress, toothed rock cress

Family: Brassicaceae (also known as Cruciferae, the mustard family)

Synonyms: *Arabis dentata* Torr. & A. Gray, *Arabis perstellata* var. *shortii* Fernald, *Arabis shortii* (Fernald) Gleason, *Boechera shortii* (Fernald) Al-Shebaz, *Borodinia dentata* (Raf.) P. J. Alexander & Windham, *Erysimum dentatum* (Raf.) Kuntze, *Iodanthus dentatus* (Raf.) GreeneE *Shortia dentata* Raf.

Taxonomy: Rock cress (*Boechera dentata*) has a complicated nomenclatural history. It

was formerly placed in the genus *Arabis* due to morphological characteristics (Rollins 1993), but cytological, molecular, and morphological evidence accumulated that those characteristics evolved independently multiple times within the Brassicaceae, meaning that *Arabis* in the broad sense was polyphyletic. This evidence was reviewed by Al-Shebaz (2003), who argued that many *Arabis* species should be placed within *Boechera*, *Turritis*, and other genera. Subsequently, Alexander et al. (2013) studied the phylogenetics of the tribe Boechereae using nuclear and chloroplast DNA. They argued that most eastern North American species of *Boechera* should be placed in the genus *Borodinia*, a finding supported by Hay et al. (2023) who examined more than 1000 nuclear genes from 81 species of tribe Boechereae.

Total Range: This rock cress inhabits much of eastern North America, stretching from South Dakota east to New York, south to Virginia and Alabama, and west to Oklahoma (NatureServe 2025). The species is secure globally (G5). It has no assigned conservation rank (SNR) in Alabama, Arkansas, Illinois, Minnesota, Missouri, Ohio, Pennsylvania, and South Dakota; is secure (S5)



in Indiana; apparently secure (S4) in Kentucky; vulnerable (S3) in Iowa, Kansas, and Maryland; imperiled (S2) in Nebraska; imperiled to critically imperiled (S1S2) in Tennessee and Wisconsin; critically imperiled (S1) in Michigan, Oklahoma, Virginia, West Virginia, and Ontario; and possibly extirpated (SH) in the District of Columbia and New York (NatureServe 2025).

State Distribution: Within Michigan, the range of this rock cress is restricted to the southern Lower Peninsula. It is associated with the St. Joseph and Grand River systems (Reznicek et al 2011). It has been documented in Berrien, Eaton, Ingham, Ionia, Kent, and Ottawa counties (MNFI 2025).

Recognition: This rock cress has 2-4 finely pubescent stems per plant. Basal leaves are obovate to oblanceolate, 10-45 mm wide, sparsely pubescent, and with dentate margins. The upper cauline leaves are lanceolate with dentate margins, have sparse pubescence, and are clasping with auriculate bases. Flowers have four glabrous petals that are white or cream colored and are smaller than those in similar species, ranging from 2-3.5 mm long and 0.7-1 mm wide. The petals also do not extend beyond the sepals. The fruits are classified as siliques. They are sickle-shaped, divaricate-ascending to slightly descending, less than 3 cm long, not appressed to the rachis, and typically with valves that are sparsely pubescent throughout (Hopkins 1937, Voss 1985, Gleason & Cronquist 1991, Al-Shehbaz & Windham 2010, Reznicek et al. 2011).

There are several floral and vegetative characteristics that are useful in distinguishing this rock cress from other species of *Boechera* in Michigan. Sickle-pod (*B. canadensis*) has non-clasping cauline leaves and pendent siliques. Drummond rock cress (*B. stricta*) has appressed fruits. Smooth bank cress (*B. laevigata*) has long, narrow cauline leaves that are usually entire. In Missouri rock cress (*B. missouriensis*), upper cauline leaves are glabrous and nearly to quite entire. The rock cress called *B. grahamii* has basal leaves with stellate pubescence on both sides and



Photo by John Hilty, Illinois Wildflowers

margins that are slightly toothed, if at all (Reznicek et al 2011).

Although *Boechera*, *Arabis*, and *Turritis*, are each in separate tribes of the Brassicaceae, the genera are morphologically similar. Tower mustard (*Turritis glabra*) is the only species of its genus in Michigan. Its strongly appressed fruits differentiate it from all Michigan *Boechera* species except Drummond rock cress. Hairy rock cress (*Arabis pycnocarpa*) is the only species of its genus in Michigan that overlaps in range with *B. dentata*. It can be distinguished from *B. dentata* by its erect and appressed fruits (Reznicek et al 2011).

Best Survey Time/Phenology: The best survey period is from the first week of May through the fourth week of May, when this rock cress is most likely to be found flowering in Michigan. However, it has also been documented in flower as early as the fourth week of April and in fruit as late as the second week of June (MNFI 2025). Young



Boechera species can be difficult to identify, so a population in early flower may have to be revisited at anthesis or in fruit to confirm identity.

Habitat: Within Michigan, this rock cress is consistently a species of floodplain forests and occasionally adjacent mesic to dry-mesic southern forests. Specifically, this rock cress is associated with banks, levees, bluffs, and terraces of major rivers in bare-soil microhabitats, across a variety of soil types, with limited competition from other herbaceous species. Although a plant of forested settings, excess leaf litter limits the availability of suitable microhabitats (MNFI 2025).

The most consistently documented associated species in Michigan include silver maple (*Acer saccharinum*), garlic mustard (*Alliaria petiolata*), wild ginger (*Asarum canadense*), hackberry (*Celtis occidentalis*), spring-beauty (*Claytonia virginica*), green ash (*Fraxinus pennsylvanica*), ground-ivy (*Glechoma hederacea*), dame's rocket (*Hesperis matronalis*), Virginia waterleaf (*Hydrophyllum virginianum*), moneywort (*Lysimachia nummularia*), moonseed (*Menispermum canadense*), jumpseed (*Persicaria virginiana*), bur oak (*Quercus macrocarpa*), multiflora rose (*Rosa multiflora*), bluestem goldenrod (*Solidago caesia*), basswood (*Tilia americana*), purple meadow rue (*Thalictrum dasycarpum*), poison ivy (*Toxicodendron radicans*), common blue violet (*Viola sororia*), and riverbank grape (*Vitis riparia*) (MNFI 2025).

Biology: This rock cress is mostly biennial (Gray 1950, Yatskievych 2006), but some sources suggest it can be a short-lived perennial (Reznicek et al 2011). This tap-rooted species reproduces sexually and spreads by seed (Al-Shehbaz and Windham 2010, Hilty n.d.). In Michigan populations, this plant is often most abundant in portions of habitat with bare soil and limited competition (MNFI 2025). It is pollinated by bees, flies, and other insects which eat the nectar or collect pollen (Hilty, n.d.).

Conservation/Management: Of 13 element



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occurrences (EOs), one is ranked historical, last observed 1886. Twelve are presumed extant, ten of which have been observed since 2016. The other two were last observed in 1986. Five EOs are ranked D, CD, or C (estimated viability poor, fair to poor, or fair). Six are ranked BC, B, or AB (fair to good, good, or excellent to good). The estimated viability of one recently observed EO has yet to be assessed.

One of 13 EOs occurs on private property at the edge of an interstate right-of-way. The remaining 12 EOs are partially or entirely on protected land. One is in a state game area. The remaining 11 are within parks maintained at the local level by universities, townships, cities, and counties. This offers protection from development and often includes beneficial habitat management, but it also leads to disturbance from foot traffic, ORVs, and trail maintenance. Some populations seem to benefit from the bare-soil microhabitats associated with foot trails (and even paved paths and roads), but trampling, excessive erosion, and dense



mulching are detrimental.

Floodplain forests are among the natural communities most susceptible to invasive species, particularly in the suburban and exurban landscapes in which many rock cress EOs are located. Garlic mustard, ground-ivy, dame's rocket, moneywort, multiflora rose, autumn olive (*Elaeagnus umbellata*), lesser celandine (*Ficaria verna*), and invasive honeysuckle (*Lonicera spp.*) have been documented as associated species at multiple EOs (MNFI 2025). Of particular concern are the vigorous mat-formers moneywort and lesser celandine which have each proliferated along rivers in southern Michigan (Reznicek et al. 2011). EO data that have not been updated this decade may fail to capture the effects of the recent proliferation of lesser celandine on this rock cress. Invasive species should be managed within and near rock cress EOs, and new introductions should be curtailed via public outreach, limiting the expansion of trail systems, and installing boot brushes,

Floodplain forests have also been disproportionately affected by tree-canopy die-off due to emerald ash borer and Dutch elm disease (Tepley et al. 2010). This often contributes to a proliferation of graminoids exploiting newly available light, which has encroached upon the habitat of at least one EO (MNFI 2025). Managing floodplain forests for biodiversity will generally be compatible with the conservation of this rock cress. This includes minimizing fragmentation, managing invasive species, conserving and restoring natural fluvial geomorphology to support seasonal flooding and deposition, buffering riparian areas with undeveloped upland zones, and allowing forests to continue to mature and natural processes to operate unhindered (Tepley et al. 2010).

Comments: Seven of the 13 EOs have been discovered in the past decade, which may in part indicate recent range expansion, but increased public access is a more likely explanation, as most of these recent observations occur in city, township, county, or university parks, some of them recently



established. Further acquisition and survey of land along the St. Joseph and Grand Rivers is warranted. Management guidance for parks which support this rock cress should include specific recommendations for the conservation of this species, such as invasive species control, routing trails to avoid populations, and avoiding intensive logging.

Research Needs: *Boechera* is becoming a model for many areas of study, such as hybrid speciation and genetic diversity (Alexander et al. 2013). However, information on the ecology and natural history of this rock cress should receive more attention.

Related Abstracts: floodplain forest, Missouri rock cress, Virginia snakeroot

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