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MINNESOTA DWARF TROUT LILY

AN ENDANGERED MINNESOTA
WILDFLOWER



Photo by Welby Smith

What is the Minnesota Dwarf Trout Lily?

The Minnesota dwarf trout lily (*Erythronium propullans*) is a federally endangered forest wildflower found in Rice, Goodhue, and Steele Counties, Minnesota. Because it is known only from this small area the dwarf trout lily is considered a Minnesota “endemic” – i.e. a species that grows in Minnesota and nowhere else on earth.

Populations range from one to over 100 colonies, with an average of around 30 colonies per population. Actual colony size ranges from a few plants to several hundred. The number of visible colonies and the number of plants visible within colonies is highly variable from year to year and does not appear to be easily associated with such factors as weather or snow depth.

What does the Minnesota Dwarf Trout Lily look like?

The Minnesota dwarf trout lily is distinguished from other trout lilies by its underground vegetative runner, from which the species takes its name “*propullans*” or “sprouting forth.” The blooming plant is readily identified by the very small size of its flowers. Flowers of the dwarf trout lily are about the size of a dime or less, pale pink, with a variable number of perianth parts (“petals”). Most members of the lily family have 6 “petals”, but dwarf trout lilies may have four, five or six.

There are three species of trout lily in Minnesota: the Minnesota dwarf trout lily (*Erythronium propullans*), the white trout lily (*Erythronium albidum*), and the yellow trout lily (*Erythronium americanum*). All are spring ephemerals. All have tapering green leaves lightly mottled with a greyish-white pattern. Huge patches of leaves with very few flowers are characteristic of all three species. The three species can not be told apart by looking at their leaves alone.



A. The tiny shell pink flowers of the Minnesota dwarf trout lily (*Erythronium propullans*) most often have 4 “petals,” but may have 5 or 6. The flowers are about the size of a dime or smaller when fully open. **(Photo by Welby Smith).**



B. The large white flowers of the white trout lily (*Erythronium albidum*) have 6 “petals” and are larger than a nickel when fully open. **(Photo by Welby Smith).**



C. The large yellow flowers of the yellow trout lily (*Erythronium americanum*) have 6 “petals” and are the size of a nickel. (Photo by Daniel Engstrom).

Where does the Minnesota Dwarf Trout Lily live?

The dwarf trout lily occurs on wooded slopes and floodplains in the drainages of the Straight , Cannon, Little Cannon, and the North Fork Zumbro Rivers and Prairie Creek Its hillside habitat is usually on rich north-northwest or northeast-facing slopes dominated by maple and basswood and adjoining floodplains dominated by elm and cottonwood. Like spring beauties and Dutchman’s breeches, trout lilies are “spring ephemerals,” adapted to flower and grow before the deciduous trees develop their leaves. When summer shade darkens the forest floor these plants have already bloomed, generated their food reserves for the coming year and lost their leaves. Associated herbaceous species include false rue anemone, white trout lily, Dutchman’s breeches, Virginia waterleaf, large-leaved trillium, snow trillium, bellwort and hepatica..

Why is the Dwarf Trout Lily rare?

The rarity of the dwarf trout lily is probably best explained by its unusual mode of reproduction. Unlike many flowering plants, the dwarf trout lily almost never produces seed. Instead it grows from an underground bulb that renews itself annually. Population size is only increased when the underground stem of a flowering plant produces a single offshoot runner bearing a new bulb. Because only a small proportion of all plants flower in any given year, only about one-tenth of all plants actually produce new offspring in a given season.

The origin of the Minnesota dwarf trout lily is not fully known, but genetic research suggests it evolved from the white trout lily shortly after the last glaciation. Because it does not produce seeds it is likely that the plants were spread by floodwaters uprooting them from an original location somewhere on the Cannon River. Torn loose from their original habitat, these plants would have been redeposited on slopes and floodplains downstream. Perhaps this mode of dispersion explains the plant’s limited geographic distribution at elevations of 960 to 1000 feet within the Cannon River watershed and tributaries.

How is the Dwarf Trout Lily endangered?

The dwarf trout lily was listed as a federally endangered species because it is jeopardized with the possibility of extinction. This is a plant that has probably always been rare, but today the expansion of urban development into the countryside is its greatest threat. A burgeoning threat is the increased recreational use of its forest habitat. The species' attractiveness and intrinsic interest could result in its being "loved to death" by photographers and other wildflower lovers who are sometimes tempted to leave signed trails despite warnings not to do so.

Soils in trout lily habitat are fragile and vulnerable to gully formation in areas where foot traffic is high. In addition logging and land use practices that increase compaction, erosion, and siltation escalate the chances that the few remaining populations could be destroyed. Forty two percent of known populations occur in floodplains that may be prone to flooding at least in some years. Another 37% of colonies occur on highly erodible slopes.

Why be concerned about the Minnesota Dwarf Trout Lily?

Like all native species, the Minnesota dwarf trout lily has its own specific niche in the ecosystem and relationships to other plants and animals with which it lives. As such, it is a part of the whole, a part whose unknown utility is best expressed in the words of Wisconsin conservationist Aldo Leopold: "The first rule of intelligent tinkering is to save all the parts."

The Minnesota dwarf trout lily possesses a genetic and chemical makeup unlike that of any other plant. It is known to be most genetically similar to the closely related white trout lily from which it is believed to have evolved no more than 9000 years ago.

The unique genetic information in each species is potentially valuable to all of us. Alkaloids from many wild plants are active ingredients in medicines and other useful products. Loss of the dwarf trout lily would eliminate forever the potential for such benefits.

What laws protect the Minnesota Dwarf Trout Lily?

The Minnesota Dwarf Trout Lily was listed as federally endangered in 1986. It is protected by the 1988 reauthorization of the 1973 Endangered Species Act (PL 100-478). Under the provisions of this act it is against federal statutes to remove or destroy Minnesota dwarf trout lilies by any federal action or on any area under federal jurisdiction, or to knowingly violate any state law protecting the species. Violation of this statute carries a penalty of \$25,000.

In addition to its federal status, the lily is protected by Minnesota's endangered species law (MS 840895). It is a violation of this law knowingly to take, import, transport or sell all or parts of any listed endangered plant.

As a general guideline, citizens should contact either the U.S. Fish and Wildlife Service or the Minnesota Department of Natural Resources before engaging in any activity that could alter a population of dwarf trout lilies. Transplanting of plants is not only illegal but likely to be

unsuccessful. A state permit is required for manipulation, removal or propagation of plants for research purposes. This restriction applies to populations on both public and private lands. Applications for permits can be obtained from the Department of Natural Resources at the address on the bottom of this web page..

Cutting trees that shade the forest floor, grazing, housing development, and herbicide use could all have a detrimental effect on dwarf trout lily populations. Herbicide users should always follow label directions and restrictions. Rice, Goodhue or Steele county residents who are uncertain about using herbicides in an area of forested hillsides or floodplains may want to contact the U.S. Fish and Wildlife Service or the Minnesota Department of Agriculture at the addresses on the back cover of this book.

Who knows the location of Dwarf Trout Lily?

Up-to-date information on the status and location of Minnesota dwarf trout lily is maintained in computerized databases of the Minnesota Natural Heritage and Nongame Research Program. These data are used for environmental review and conservation planning. Information from these databases is available to consulting firms and state agencies preparing environmental assessments of proposed projects. Specific information on locations of the Minnesota Dwarf Trout Lily in Minnesota is available to consultants and researchers by filling out a state **data request form** (available in Minnesota by contacting the Minnesota Department of Natural Resources Natural Heritage and Nongame Research Program at (651) 297-2276, or by downloading from http://www.dnr.state.mn.us/ecological_services/nhnrp/nhis.html#inforequest)

The U.S. Fish and Wildlife Service uses these locations to determine which federal projects might have a negative impact on the species.

Where is the Minnesota Dwarf Trout Lily protected?

The majority of dwarf trout lily sites are included in city nature areas, state or county parks, or private preserves such as those of The Nature Conservancy. A smaller number of populations occur on private land where farmers or other landowners have maintained the species by protecting its woodland habitat. Many of these families have entered into a voluntary private registry program that acknowledges their role in preserving the state's rarest plant species.

How are Minnesota Dwarf Trout Lily preserves managed?

The Minnesota dwarf trout lily's woodland habitat is a mature self-perpetuating forest ecosystem that requires little or no manipulation of the vegetation.

For this reason most management activities are directed toward protecting dwarf trout lily colonies from erosion caused by upstream activities or from direct damage caused by human traffic. Preserves are closed to motorized traffic to prevent soil compaction or disturbance.

The boardwalk at Nerstrand Woods State Park was constructed to allow visitors to observe and

photograph the Minnesota dwarf trout lily without disturbing colonies of this endangered plant.

A retaining wall was constructed to stabilize the bank of Prairie Creek at Nerstrand Woods State Park, where spring flood waters were undermining dwarf trout lily colonies.

Where can I see the Minnesota Dwarf Trout Lily?

There are opportunities to view the lily without harming its habitat from the boardwalk at Big Woods State Park and at the Riverbend Nature Center in Faribault. Copies of the brochure from which this web page was modified are available at both sites and the Nature Center has a special brochure about the lily at Riverbend. The only time of year to observe the lily is between the middle of April and the middle of May.

Is there a federal recovery plan for this species?

A federal recovery plan for the Minnesota Dwarf Trout Lily is available for purchase from:
Fish and Wildlife Service Reference Service
5430 Grosvenor Lane, Suite 110
Bethesda, Maryland 20814

WHOM DO I CONTACT?

STATE CONTACT:

Minnesota Natural Heritage and Nongame Research Program
Section of Ecological Services
Minnesota Department of Natural Resources
Box 25, 500 Lafayette Road
St. Paul, Minnesota 55155
(651) 296-2835

FEDERAL CONTACT:

Office of Endangered Species
U.S. Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111
(612) 725-3276

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