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MINNESOTA

DWARF
TROUT
LILY



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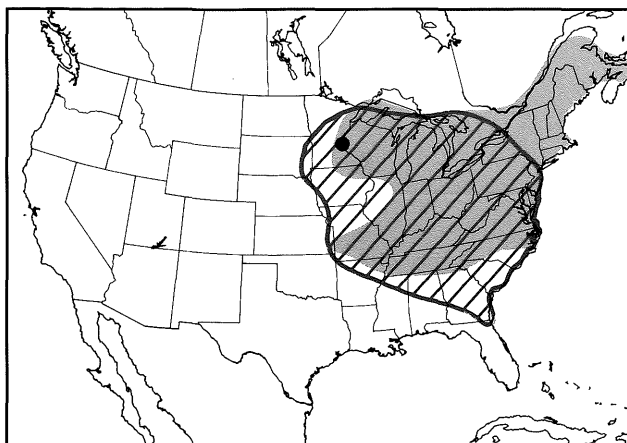
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What is the Minnesota Dwarf Trout Lily?

The dwarf trout lily (Erythronium propullans) is known from only two counties of Minnesota, whereas the more common white trout lily (Erythronium albidum) and the yellow trout lily (Erythronium americanum) are widespread throughout eastern North America.

The Minnesota dwarf trout lily (*Erythronium propullans*) is a federally endangered forest wildflower found only within a 275 square mile area in Rice and Goodhue 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.

The dwarf trout lily occurs on fewer than 600 acres of woodland habitat, rich 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.



- **Erythronium americanum**
- ▨ **Erythronium albidum**
- **Erythronium propullans**

Why is the Dwarf Trout Lily rare?



Welby Smith

The dwarf trout lily's only successful mode of reproduction is a single offshoot produced by flowering plants.

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.

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How is the Dwarf Trout Lily endangered?

*Habitat
destruction is
the single
greatest threat
to the dwarf
trout lily at the
present time.*

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 housing developments, logging, and expanded agricultural operations increase the chances that the few remaining populations could be destroyed.

In addition to direct destruction of plants by human activities, increased conversion of floodplains to cropland reduces the probability that plants dislodged by upstream floodwaters will find suitable downstream habitat. Disturbance of uphill areas can cause erosion and siltation in areas where the lilies occur.



Welby Smith

Why be concerned about the Minnesota Dwarf Trout Lily?

Welby Smith



The dwarf trout lily has a unique place of its own in the southern Minnesota forest ecosystem.

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.

A. The tiny shell pink flowers of the Minnesota dwarf trout lily (*Erythronium propullans*) have 4, 5, or 6 "petals" and are about the size of a dime or smaller when fully open.

B. The large white flowers of the white trout lily (*Erythronium albidum*) have 6 "petals" and are larger than a nickel when fully open.

C. The large yellow flowers of the yellow trout lily (*Erythronium americanum*) have 6 "petals" and are the size of a nickel.



A. McCutcheon

A.



Welby Smith

B.



Daniel Engstrom

C.

What does the Minnesota Dwarf Trout Lily look like?

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 trout lilies and are common in all three species.

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.

Welby Smith



Dwarf trout lilies and white trout lilies often occur together in mixed patches.

What laws protect the Dwarf Trout Lily?

Federal recovery efforts for the dwarf trout lily include mapping and long term monitoring to determine population stability and possible effects of environmental changes.

The 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.

DNR



Welby Smith

In addition to its federal status, the Minnesota dwarf trout lily is protected by Minnesota's endangered species law (MS 84 0895). 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 US 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 back cover of this book.



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 or Goodhue 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?

*The boardwalk
at Nerstrand
Woods State Park
allows visitors to
observe and
photograph the
state's rarest
wildflower with-
out actually
disturbing the
colonies of dwarf
trout lilies.*

Wayby Smith



Up-to-date information on the status and location of rare plant and animal populations and high quality natural communities is maintained in the computerized database of the Minnesota Natural Heritage Program in the Division of Wildlife at the Minnesota Department of Natural Resources. This program learns the locations of rare plants, animals and natural communities from amateur naturalists, highschool and college teachers, local natural resource managers, and from a systematic DNR county-by-county inventory. The County Biological Survey was underway in Rice and Goodhue Counties at the time this book went to press in 1990.

Information from the Heritage database is available to resource managers, local units of government, consulting firms and state agencies preparing plans or environmental assessments of proposed projects. Database information is also used by a federally appointed recovery team that plans for the protection of the species and its recovery from the verge of extinction.

DNR



Where is
the Dwarf
Trout Lily
protected?

How are
Dwarf Trout
Lily preserves
managed?



Approximately half of the known dwarf trout lily sites are included in state Scientific and Natural Areas, state or county parks or private preserves such as those of The Nature Conservancy.

A large number of dwarf trout lily 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.

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.

**WHOM DO
I CONTACT?**

STATE CONTACT:

Minnesota Natural Heritage Program
Section of Wildlife
MN Department of Natural Resources
Box 7
500 Lafayette Road
St. Paul, Minnesota 55155
(612) 296-3344

Regional Resource Specialist
Division of Parks - MN DNR
P.O. Box 6247
Rochester, Minnesota 55903

Nerstrand Woods State Park
Nerstrand Minnesota 55053
(612) 334-8848

Minnesota Department of Agriculture
Agronomy Services Division
90 West Plato Blvd.
St. Paul, Minnesota 55107
(612) 297-4981

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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Text- Nancy Sather, botanist
MN Heritage Program
Section of Wildlife, MN DNR
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Office of Endangered Species
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Federal Building, Fort Snelling
Twin Cities, Minnesota 55111
(612) 725-3276*

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