

## Guidance on Documenting and Collecting Rare Plants

### DNR Division of Ecological and Water Resources

April 2022

Please refer to the following guidance if you will be submitting records for entry into the DNR's Natural Heritage Information System (NHIS). All botanical surveys conducted for environmental review or permitting purposes should follow this guidance.

#### Before Going in the Field

- Review the [current list of state-listed species](#) so you will know which species are rare.
- Check the Rare Features Database (see [How to Obtain Natural Heritage Data](#)) and, if applicable, the records of other public land managers to see if there are known occurrences of rare plants within your work or study area.
- Familiarize yourself with critical identifying features of species likely to be collected. This might include a visit to a herbarium to review previous collections of a plant species.
- Obtain the plant spreadsheet template for data entry purposes. Review this spreadsheet to familiarize yourself with the type of information that should be collected. The Rare Plant Observations spreadsheet template is available under "Submitting Data" on the [NHIS Website](#).
- Obtain a permit if you plan to collect specimen vouchers of state-listed endangered or threatened species. Minnesota's endangered species law (*Minnesota Statutes*, section 84.0895) and associated rules (*Minnesota Rules*, part 6212.1800 to 6212.2300 and 6134) prohibit the taking of threatened or endangered species without a permit. Please contact Bridget Henning-Randa, Endangered Species Coordinator, at [Bridget.Henning-Randa@state.mn.us](mailto:Bridget.Henning-Randa@state.mn.us) to request a permit.
- When required, obtain permits for collecting on public lands such as Scientific and Natural Areas, State Parks, and National Forests.
- Respect property owners' rights. Obtain permission from the private landowner or public land manager to 1) go on the land and 2) to collect plants.
- **Any surveys required through the DNR environmental review process must follow the standards contained in this Guidance.** Before initiating any such survey, the surveyor must receive approval of a project-specific survey plan from Lisa Joyal, Endangered Species Review Coordinator. Any proposed departure from the standards in the *Guidance* must be identified in the project-specific plan.

#### Specimen Collection

Most rare plant records in the DNR's Rare Features Database are documented with collected specimens deposited in credible herbaria. Records documented by standard herbarium collections in museums are strongly preferred over all other forms of documentation. A specimen of a rare plant often is sufficient if it includes a portion of the plant that allows positive identification of the species.

#### *Under what circumstances should I collect a herbarium specimen?*

- Collect state-listed endangered or threatened plants only if you have a permit. If you have unintentionally collected an endangered or threatened plant without a permit, the specimen should be submitted to the DNR as soon as is practical following the procedures described below, with a brief note attached that explains the circumstances.
- For new locations of a species, collect a specimen; in general, make no more than one collection of a particular species per 40 acres of habitat.
- For previously known populations of an endangered or threatened plant, consider collecting a new voucher if the DNR's Rare Features Database indicates that it has been more than thirty years since the last voucher was collected from the population.
- For any given species, collect only when distinguishing characters are present (usually flowers and/or fruits are necessary); if key characters are not present, mark the location and return at the appropriate time for collecting a specimen with distinguishing characteristics.
- For endangered or threatened vascular plants, collect a complete specimen (which includes roots) only when the population has more than 100 individuals.

- For populations of endangered or threatened vascular plants with fewer than 100 individuals, collect only the distinguishing portion of the plant (e.g., a portion of the inflorescence that has one or more flowers or a portion of the stem that has one or more leaves). A partial specimen might be inadequate to confirm the identification. In this case, supplement the partial collection with a close-up photograph that clearly shows the diagnostic features. Please note that in many cases photographs are not sufficient to confirm identification.
- For aquatic plants, collect a portion of the stem with leaves and fruits or flowers. Do not collect the roots. If you suspect that you have found a state-listed species, collect several specimens. Please note that in most cases photographs are not sufficient to confirm the identification of aquatic species. If your target search area is aquatic, please contact Welby Smith, DNR Botanist, at [Welby.Smith@state.mn.us](mailto:Welby.Smith@state.mn.us) for additional guidance. Also see Specimen Annotation below.
- For *Botrychium* spp., always collect a specimen of the above-ground portion of the plant, regardless of the apparent population size or the state status of the species.
- For mosses, liverworts, fungi and lichens, collect such that the viability of the population is maintained.

**How do I make a proper collection?** See General Guidelines for Collecting Vascular Plant Specimens on page 3.

## Specimen Submission

- For quality control purposes, the identification of the specimen must be confirmed by a qualified second party before a record can be entered into the Rare Features Database.
- Send specimen(s) of state-listed species or suspected state-listed species directly to Welby Smith, DNR Botanist, for verification. Each specimen must have a label that meets the Bell Museum standards (see page 3). Do not submit unknown specimens unless you suspect that it is a state-listed species. If you are unsure of the species' identification, you can leave the space for the scientific name blank. Send specimens to:

Welby Smith  
Minnesota Department of Natural Resources  
Division of Ecological Resources  
500 Lafayette Road, Box 25  
St. Paul, MN 55155

- DNR staff will complete verification or submit the specimen to an outside expert for annotation. Following verification, the DNR will donate specimens to the University of Minnesota Herbarium, a division of the [Bell Museum of Natural History](#). Save response from the DNR and submit with data.

## Specimen Annotation

The following rare species require annotation by an authority in order to confirm their identity. As it is customary for the authority to keep one of the specimens, at least two specimens must be collected if you suspect you have found one of these species. Specimens should be sent to Welby Smith no later than November 1 of each year so that he can forward them to the appropriate authority.

*Didiplis diandra* (Water Purslane; this species has not been recorded in the state since 1861)  
*Elodea bifoliata* (Two Leaf Waterweed)  
*Potamogeton bicupulatus* (Snailseed Pondweed)  
*Potamogeton diversifolius* (Diverse-leaved Pondweed)  
*Potamogeton oakesianus* (Oakes' Pondweed)  
*Potamogeton pulcher* (Spotted Pondweed)  
*Stuckenia vaginata* (Sheathed Pondweed)

## Data Submission

- Follow the directions and templates under "Submitting Data" on the [NHIS Website](#).
- Document *all* state-listed endangered, threatened, or special concern species encountered. Include type of documentation for each record (e.g., photograph or specimen).
- Submit data electronically as a spreadsheet with an accompanying shapefile. Use the Rare Plant Observations spreadsheet template available under "Submitting Data" at [NHIS Website](#).
- **Important!** Ensure that the unique identifier for each record is the same in the shapefile, the spreadsheet, the report's tables and figures, and the information submitted with the specimens.
- Submit cover sheet, survey report, GIS shapefile, spreadsheet, and email verifying specimen identification to [Reports.NHIS@state.mn.us](mailto:Reports.NHIS@state.mn.us).

## How will my records be used to protect rare plants?

- Conservation planning at local, state and regional levels.
- Environmental review of development projects.
- Research about life history.
- Revisions to the state list of endangered, threatened and special concern species.
- Legal challenges related to protected species locations are possible. Properly vouchered specimens are often critical in the protection of rare plant populations in these cases.

## Questions?

- **Regarding permits:** Contact Bridget Henning-Randa at [Bridget.Henning-Randa@state.mn.us](mailto:Bridget.Henning-Randa@state.mn.us) or 651-259-5073.
- **Regarding specimens:** Contact Welby Smith at [Welby.Smith@state.mn.us](mailto:Welby.Smith@state.mn.us) or 651-259-5142.  
or Holly Bernardo at [Holly.Bernardo@state.mn.us](mailto:Holly.Bernardo@state.mn.us) or 651-259-5043.
- **Regarding data submittal:** Contact Karen Cieminski at [Karen.Cieminski@state.mn.us](mailto:Karen.Cieminski@state.mn.us) or 651-259-5081.
- **Regarding environmental review process:** Contact Lisa Joyal at [Lisa.Joyal@state.mn.us](mailto:Lisa.Joyal@state.mn.us) or 651-259-5109.
- **Regarding updating this document:** Contact Lisa Joyal at [Lisa.Joyal@state.mn.us](mailto:Lisa.Joyal@state.mn.us) or 651-259-5109.

## General Guidelines for Collecting Vascular Plant Specimens\*

\*For mosses, liverworts, algae, fungi and lichens, please contact the [University of Minnesota Herbarium](#) for collection guidelines.

- 1. Equipment:** Plant press, straps (2), felt blotters, ventilators (corrugated boards), and newspaper. Also, a knife or other tool for cutting and digging and a notebook of standardized form for recording field data. The press can be made from  $\frac{3}{4}$ " plywood cut 12" x 18" (2 pieces); the ventilators can be cut from discarded "cardboard" boxes, also 12" x 18" (the corrugations should run the short direction). The blotters can be obtained from a stationery store.
- 2. Preparation:** Once the specimen is found, it is necessary to determine what portion of the plant will be collected. A complete collection includes the entire plant with roots, but for purposes of conservation, the roots of rare species should not be collected if the population consists of fewer than 100 individuals. For most species, such as orchids, a single flower is enough for purposes of identification. Other species, e.g., sedges, usually require the complete aboveground stem with mature fruit. Specimens of trees and shrubs should include a twig with mature leaves and flowers and/or fruit. Specimens that do not show diagnostic features cannot be identified and are worthless. If only a portion of the plant is collected, it is important to record a description of the entire plant.

Before collecting plants, it is a good idea to check with the curator of the herbarium where the specimen will be deposited. Some herbaria may not accept a partial specimen unless it has special significance (e.g., a new location for an endangered species).

- 3. Pressing and processing specimens:** The freshly collected specimen is placed within the sheet of folded newspaper with the leaves, flowers, etc. in a natural position, but clearly showing the diagnostic features. Aquatic plants may need to be placed in a shallow tray of water and floated directly onto herbarium paper to achieve the proper positioning. Parchment or wax paper can then be placed on top of the aquatic plant to prevent it from adhering to the newspaper. The paper is placed between two sheets of felt blotters, which are themselves placed between two corrugated ventilators. It is then put within the press, which is tightened with the straps (or ropes). Several specimens can be put in a single press by layering the blotters and ventilators. Commercial plant presses are slightly larger than herbarium paper so the specimens should not fill the plant press side to side. Also, be sure to leave room for a label in the lower right portion. The press must then be put in a warm dry place until the plants are dry. A simple plant drier that uses heat rising from a light bulb works well, but is not essential. The blotters should be changed every day until the specimen is dry. If a specimen does not dry within 4-5 days, it will likely begin to decompose. When the specimen is dry, it should be taken from the press, but kept within the folded newspaper for protection.

A label (see example below) must be prepared before the specimen can be sent to a herbarium. The label should be on acid-free, archival quality paper. We suggest that you use labels that are 2  $\frac{3}{4}$  x 4  $\frac{1}{4}$  inches in size, but other labels not to exceed 3 x 5 inches will be acceptable. At a bare minimum, the label must contain the name of the species, location of collection, description of habitat, name of collector, and date of collection. The label should also include latitude and longitude coordinates and/or UTM coordinates, and, if a permit was required, the permit number. Providing a label is the responsibility of the collector, not the herbarium or the DNR. A specimen without a label will not be accepted by a herbarium.

After the label is prepared, it should be put with the specimen inside the folded newspaper, which may be held between two corrugated ventilators for rigidity. The herbarium will mount the specimen and label on a stiff sheet of paper and accession it into their collection.

The University of Minnesota Herbarium, a division of the Bell Museum of Natural History, houses the largest collection documenting Minnesota's plant diversity and is the primary repository for the DNR's Minnesota Biological Survey. Additional [guidance on collecting rare plants for museum specimens](#) can be found on the University of Minnesota Herbarium website.

### Plants of Scott County, Minnesota, USA

*Silphium integrifolium* Michx. var. *integrifolium*

3 miles west of Jordan in north half of quarter-quarter section. Approximately 100 plants in wet to wet-mesic prairie on terrace within the Minnesota River Valley. In heavily grazed pasture dominated mostly by *Spartina pectinata* and *Agrostis stolonifera*. Soils range from black muck with marl concretions to silt loam. Site has been compacted by grazing. Glacial erratics common. Associated with *Carex stricta*, *Pycnanthemum virginianum*, *Lobelia siphilitica*, *Lysimachia quadriflora*, *Aster puniceus*.

T 114N R 24W NW  $\frac{1}{4}$  of SE  $\frac{1}{4}$  of Sec 27

Fred S. Harris 96235

MNDNR Permit # 1996

September 3, 1996

MINNESOTA BIOLOGICAL SURVEY  
MINNESOTA DEPARTMENT OF NATURAL RESOURCES