Protocols for Conducting Surveys for Plant Species of Special Concern

Part 4 of 4 – Voucher Specimens

Introduction

The Department of Conservation and Natural Resources (DNCR) may request a botanical survey or habitat assessment be performed to investigate proposed project sites for PA Plant Species of Special Concern. This will be used to help DCNR determine whether or not a proposed project will remove or impact a Species of Special Concern (SOSC), evaluate the level of impact to the species of special concern habitat, and identify approaches to avoiding or minimizing project-related impacts to Species of Special Concern and their habitats.

The following protocols have been provided by DCNR as a means to enhance the quality of botanical surveys conducted, as well as to standardize the way in which project areas are surveyed and findings are documented and reported to DCNR for further review. DCNR has issued that the following protocols so they may be used to guide surveyors in the field and clearly indicate the expectations of DCNR in relation to survey result reporting. The following protocols are split into four sections: 1) recommended preparation in advance of a Survey, 2) field protocols for conducting a Survey, 3) guidelines for documenting field results and report writing, and 4) Voucher specimen collection protocols.

Please also note that as of January 2011, DCNR is recommending that a Wild Plant Management Permit be obtained before conducting botanical surveys for PA Plant Species of Special Concern. Permit information and application can be found on the PA Natural Heritage Program Conservation Explorer Website at https://conservationexplorer.dcnr.pa.gov/content/resources .

Policy on Voucher Specimens

Voucher specimens should be collected for all biological studies involving plants in Pennsylvania. The preferred voucher specimen is a pressed and dried plant specimen with reproductive parts (flowers, fruits, spores) prepared using standard botanical collecting methods. For smaller herbaceous plants the entire plant, including the roots, should be collected. Representative portions of large herbaceous plants should be pressed as well as a piece that includes the lower stem and roots. Twigs or small branches with fruits or flowers comprise a standard specimen for woody plants, such as trees and shrubs.

These guidelines apply to populations for approximately 20 or more herbaceous plants and to well-established single trees or shrubs. Although discretion should be used in the case of frequently visited populations of rare, threatened or endangered plants as it may not be necessary to document each observation with a specimen. In situations where collecting a standard voucher specimen may be detrimental to the reproductive success of that population or may be difficult to obtain, the following will serve as the required voucher (listed in decreasing order of preference):

1. Portion of fertile plant without the root.
2. Photograph of plant in conjunction with piece of fertile plant or plant parts (leaves and flowers or fruits). Photographs should be black and white and printed on archival paper.
3. Photograph of fertile plant in conjunction with sterile plant specimen.
4. Sterile plant specimen only, or photograph only.

Regardless of what type of voucher is collected, all vouchers must include the following collection data:

1. Collector(s) – At minimum, first initial and last name spelled out; full name is preferred.
2. Collector number – A unique number associated with a specific collection and usually given as a sequential number in a series made during a collector's lifetime. Numbers which apply to more than one plant collection (e.g. survey numbers) should not be used.
3. Date of collection – This should include day, month and year with month spelled out to avoid confusion.

4. Locality – At minimum, county and approximate mileage from some specific landmark readily found on available maps. Distance is given in compass directions (N, NNE, ESE, etc.). Additional more specific locality may be included after the basic mileage. Example: Fayette County, 2 km NE of Chalk Hill, road crossing Deer Lake.

We strongly recommend that additional information such as, but not limited to, the following be included:

5. Altitude – Approximate altitude either measured in the field or taken from map, expressed in feet or meters.
6. Latitude and longitude – Expressed to the nearest second.
7. Name of the USGS Quad map on which the site is located.
8. Habitat – Brief description of habitat.
9. Field notes on the plant – any feature of the plant which will be lost upon pressing and drying such as flower color, fruit color and shape, height of the plant (if entire plant was not collected), and plant habit.

Voucher specimens should be deposited in a herbarium in Pennsylvania.

Policy approved by the Vascular Plant Technical Committee of the Pennsylvania Biological Survey, March 21, 1992.

PA Herbaria that will accept voucher specimens:
Updated February 2019

(Please contact the Herbarium of your choice before sending the voucher specimens)

The John F. Lewis Herbarium at the
California University of Pennsylvania

Robert S. Whyte, Ph.D.
Dept. Chair and Professor, Biological & Environmental Sciences
California, PA 15419
(724) 938-4200
whyte@calu.edu

Carnegie Museum of Natural History Herbarium

Bonnie L. Isaac
Collection Manager, Section of Botany
4400 Forbes Avenue
Pittsburgh, PA 15213
(412) 622-3253
isaacb@carnegiemnh.org

Shippensburg University Herbarium

Larry Klotz
Department of Biology
1871 Old Main Drive
Shippensburg, PA 17257
(717) 477-1402
lhklot@ship.edu

Morris Arboretum Herbarium

Timothy A. Block
Morris Arboretum, Univ. of Pennsylvania
100 East Northwestern Avenue
Philadelphia, PA 19118
(215) 247-5777 ext. 130
block@exchange.upenn.edu

Academy of Natural Sciences of Philadelphia

Dr. Jordan K. Teisher
Collection Manager of Botany
1900 Benjamin Franklin Parkway
Philadelphia, PA 19103
(215) 299-1157
Jkt56@drexel.edu
For inquiries about the herbarium:
Ans_ph_herbarium@drexel.edu

James C. Parks Herbarium at Millersville University

Chris Hardy
Biology Department
50 E. Frederick Street
Millersville, PA 17551
http://herbarium.millersville.edu
Christopher.hardy@millersville.edu

Additional requests for submitting specimens to Millersville University Herbarium:

1. Pressed and completely dry, either simply loose between a single folded newspaper sheet or mounted onto herbarium paper.

2. Each specimen must be accompanied by an approximately 3x5 inch paper label (preferably on acid-free paper) that includes the following: (1) Name of Species; (2) Locality; state, county, township, precise description of the locality and habitat, GPS coordinates are optional; (3) Date Collected; (4) Collector name and collector's number of collection (e.g. "Jane Smith 103" is Jane Smith's 103rd collection); (5) Name of project for which plant was collected; (6) Description of plant such as height, flower color, abundance, etc.

3. Shipping is usually done via "library rate" via standard postal service. The specimen package is supported by two sheets of 11 x 16 inch corrugated cardboard, and then this is wrapped in brown postal paper. Alternatively, many specimens can be sent in a box.

4. Finally, the specimen(s) should be accompanied by a signed letter detailing the contents of the package.

Tips on Plant Collecting and Drying

Collecting, labeling, mounting and curating plant specimens is a time-consuming and expensive process, and collections should be prepared in the field with the later effort in mind. Specimens which are prepared correctly in the field vastly increase the efficiency of processing those specimens. Obviously, there are times when a "perfect" specimen is impossible, but the goal should be to produce the best specimens possible.

Top Snatching

The ideal herbaceous plant specimen is the entire plant, including the roots. Clipping off the tops of plants may be easier, but does not produce quality specimens. If the plant is too large to fit on one sheet, possible options include:

- Section and press plant to be mounted on more than one sheet
- Trim plant to fit on one sheet, but be sure to include representative basal, middle and upper portions. Remember to include the total height of any plant cut into pieces in your field notes.

Size of Specimens

A common mistake is pressing a specimen which is too large to fit on standard herbarium paper. Pressing specimens which are too big to be mounted may be easier for the collector in the field, but it only produces problems for mounters, who may not know which parts of the plant are expendable. Remember that in addition to the plant, room must be left for a label in the lower right-hand corner and also for the herbarium logo and sheet number in the upper right-hand corner.

In addition to pressing specimens which exceed the dimension of a standard herbarium sheet, many collectors also try to put too much plant material on a single sheet. Take time in the field to trim and arrange plant specimens, checking especially for overlapping leaves and thick stems or fruits. Don't try to fit more on a herbarium sheet than it can hold; this practice only obscures the plant and reduces the scientific value of the specimen.

Quantity is not Quality

Many snippets of a plant don't replace one quality specimen and, in fact, create more work for plant mounters who must handle each piece individually. The end result is a low-quality specimen, which has taken more time to prepare, and thus ends up costing more than a top-quality specimen. Attempt to collect one piece which includes leaves, fruits and/or flowers. Include extra pieces only when it adds scientific value to the specimen.

Dirty Specimens

Dirt left in specimens, especially in the roots, causes problems both during the mounting process and also in later handling of mounted specimens. Excessive dirt left in specimens contaminates the glue tray being used, and thus forces mounters to wash that glue tray and start anew. Excessive dirt on mounted specimens continually falls off, potentially causing damage both to the culprit specimen as well as its near neighbors. It is much easier and less damaging to the plants to remove dirt from roots before the specimen is dried.

Drying

Dry the specimens as quickly as possible. Specimens left in the press without being dried tend to either mold or form abscission layers which allow the leaves to fall off in the mounting process. Small heater fans are widely available and when used in conjunction with a box can dry most specimens within a 24 hour span. Place plants in the press in a manner that the plant is not several layers thick and with as little overlap as possible. Place all specimens so that the open end of the newspapers will point toward the ceiling when the press is on the dryer. This reduces the possibility of plant parts falling into the dryer. Make sure that the press straps are tight before placing the press on the dryer, remembering that the press will loosen as dries. A loose press allows for plants to wrinkle as they dry.