

HOW TO PRESS AND MOUNT AQUATIC PLANTS

Adapted with permission from Washington State Department of Ecology

<http://www.ecy.wa.gov/index.html>

Materials Needed:

Plant Press * - may be purchased or built. It consists of alternate layers of corrugated cardboard, absorbent (blotting) paper or newspaper, and equal-sized pieces of plywood with straps or some other method of applying even pressure.

Pencil and Waterproof Paper - for making notes on site.

Herbarium Paper * - The standard herbarium sheet is 11.5 inches by 16.5 inches. Acid-free, 100 percent cotton rag paper is best, at least 90-weight. Poster paper, 100 percent cotton, cut to the proper size, can work.

Packets * - for extra plant structures (like seeds), use small envelopes or a piece of folded paper (2 x 3 inches).

Herbarium Paste * - available from biological supply companies. White glue can also be used (should have a polyvinyl acetate base).

Linen Tape - book binders tape is best. Cellophane tapes should be avoided.

Labels * - See the sample label at the end of the article for an example of a completed label. They should be sized to fit in the lower right corner of the herbarium paper.

* These items are available from biological supply companies.

Collect the Plant

1. Collect as much of the plant as possible: include roots, stems, leaves, flowers, and fruits. Plants may be collected by hand pulling, or using a weighted rake to gather plants in deeper water.
2. Write as much information about the plant as possible on the notepaper (the information will be used later for aid in plant identification and for labeling the plant). Include the date; collector's name and address; name of waterbody; location of the collection site in the waterbody (ideally, by providing longitude and latitude in decimal degrees, including at least four decimal places) depth of water; flow rate of water; substrate (sediment) description; whether leaves and/or flowers are submersed (below the water surface), floating, or emergent (above the water surface); color and odor of flowers; and names of the plant species associated with the collected plant.
3. Wash the plant in clean water to remove algae, debris, and sediment. Keep the plants moist until they can be pressed.

Press the Plant:

Note: It is easiest to identify aquatic plants before pressing. If this is not possible, press the plant while it is fresh, then send it to an aquatic plant expert as instructed below.

1. Prepare the plants for pressing:
 - For delicate submersed plants, the best method is to float the plant onto a sheet of paper (newspaper or a heavy stock paper will work, or you can float the plant directly onto the herbarium paper). This is accomplished by placing the plant in a pan of water with the paper below it. Position the plant on the paper and hold it in place with a finger. Slowly lift the paper and plant from the water. The water flowing from the paper should separate the leaves while the plant adheres to the wet paper. Cover the plant with newspaper or absorbent paper. (If the plants tend to stick to the paper, they can be covered on one side with wax paper, or, better still, parchment paper). You may wish to test this process with a small sample first.
 - When pressing plants with whorled or finely divided leaves, it is useful to separate one node (the stem section where the leaves are attached) and float that onto a small portion of the paper. This yields a cross section showing the leaf pattern.
 - For plants with large bulky stems, roots, or leaves, the bulky portion can be split before pressing to facilitate drying and to prevent uneven pressure in the press.
 - If extra flowers, fruits, or vegetative parts are collected, these should be pressed, dried, and later placed in the packets and glued to the herbarium paper.
2. Press the plant material by placing the plant between two sheets of newspaper or absorbent paper then sandwiching this between two sheets of corrugated cardboard. (For finer samples, add a layer of parchment paper—directly above and below the plant specimen—to prevent sticking to the more absorbent sheets.) Several prepared specimens can be stacked in this manner (label or number each layer so you know which plant matches which field note). Then, stack the layers into a plant press (see below) or between two firm pieces of wood. Apply an even pressure to the pile using straps, bolts, or a heavy weight. Place in a warm, dry area. To avoid mildew, change the newspaper periodically until the plants are dry. The plants will dry faster if placed over a heat register, fan, or incandescent light bulbs.

Mount the Plant:

Note: If identification of the specimen needs to be verified, send a duplicate pressed, but unmounted specimen with a complete label to an authority on aquatic plants. They will keep this specimen for their collection and notify you of the plant's name. Be sure the two specimens are of the same species.

1. Once the plant has dried and is identified, it is mounted and kept for future reference:
 - Arrange the plants on a piece of herbarium paper. If the plant is too long, it may be cut into several sections and placed lengthwise on the paper.
 - Either herbarium-grade glue and/or tape to firmly adhere the specimen to the paper. (Herbarium supply stores sell products that are intended for this purpose.) Glue or

paste will sometimes tend to cause delicate submersed plants to curl; tape may be preferable in such cases.

- Complete a label with the plant's Latin (scientific) name, location (including latitude and longitude), site description, name of collector, and the date collected. Attach the label to the lower right corner of the paper.
 - If additional reproductive parts (seeds, fruits, flowers) or vegetative parts have been collected, these are placed in the packet. This is glued to the top of the herbarium paper so the contents may be accessed.
2. Care should be taken to ensure that the specimens are not damaged by insects. Mounted plants should be stored with an insecticide or repellent (moth balls) to prevent colonization by insects.

Sample Label:

LAKE STEWARDS OF MAINE	
Plant Name & Family	<i>Sparganium fluctuans</i> SPARGANIACEA
Collection Location and Site Description	Latitude: 44.1585 N.; Longitude: -70.2412 W. U.S.A., Maine, Androscoggin County, Auburn Lake Auburn, along the northern shore of the lake adjacent public parking area off of Lake Shore Drive. Growing in water approximately 1-2 meters in depth, with <i>Elodea canadensis</i> and <i>Bidens beckii</i>
Plant Information	FLOATING BUR-REED Common in Maine Flowers white
Collector's Name and Date collected	Collector: Jane Doe Collection number: 27 July 20, 2019

HOW TO BUILD YOUR OWN PLANT PRESS

By Fred Cummings, Invasive Plant Patroller for Casco and Otisfield

Sources for materials:

- Hardwood suppliers; buy short board ends and then rip them down on a table saw. (Get boards as wide as you can.)
- Foster and Company (on the internet for rivets)
- Herbarium Supply Co. (www.herbariumsupply.com for straps)
- Hardware store

Materials List:

- 8 hardwood strips 1/2" x 1" x 18"
- 12 hardwood strips 1/2" x 1" x 12"
- 32+ 3/16" x 1 1/8" aluminum rivets (either single end or double end rivets)
- 16 small size wood screws 3/4" long
- Carpenters wood glue
- Sand paper
- Polyurethane
- 2 straps
- Blotters and cardboard



Steps to Construct:

- Cut wood strips from boards at least 18" long. Rip 20 strips to the dimensions given above. Be as precise as possible.
- Sand the strips.
- Drill holes. The size depends on size of rivets. Check with vendor when you order rivets. Drill all holes on centerline of 1/2" width.
 - For four of the 18" strips: Measure from each end, 1/2" then drill 4 holes spaced 3 3/8" apart.
 - For the other four 18" strips: Measure in 1/2" from each end and drill holes.
 - For four of the 12" strips: Measure in 1/2" from each end then drill 2 holes 3 3/8".
 - For the other eight 12" strips: Measure in 1/2" from each end and drill holes.
- To keep the frames square as you rivet them together, you might want to make a jig.
- Put a dab of glue where each rivet will be, then start to put rivets in. I did the four corners first to make sure it was square.
- Finish putting all the strips together then drill holes at cross-sections of rest of frames. Do not drill all the way thru, just slightly into bottom piece, and then countersink the top to fit screw flush with top when tightened.
- When construction is complete, put a couple of coats of polyurethane or varnish to finish. Quite a lot of work goes into making the press, but if you like to work with wood it is a lot of fun. Hope to see you out on the water, collecting plants!