

## Maine's Lake and Stream Plants

The spreadsheet file that goes with this text file has the freshwater plants of Maine known to occur in lakes, ponds, rivers, and streams of Maine. This has no plants which are restricted to coastal brackish and estuary habitats, nor plants strictly of wetlands, bogs, marshes, vernal pools, not connected to open water. Open water means subject to the wave action of the lake, pond, river, or stream, not puddles separated from the lake, nor floating mats in lakes. But the list includes many wetland plants that may be in the water's fringe due to temporary high water, inundation, but that are normally rooted above the water's edge. The word "aquatic" is not in the title because many of the plants in the list are not true aquatic in the sense that they may be in the water, but they do not propagate or germinate in the water.

The spreadsheet file has two tables. One table has the vascular plants of open-water. The second table has the vascular plants at the edge of lakes and rivers, except mosses and ferns, listed below.

The plant list was consolidated from whole lake surveys (and limited river survey) of nearly 200 lakes by Don Cameron, Barre Hellquist, Arthur Haines, Craig Greene, Linda Gregory, Roberta Hill, Laurie Callahan, staff of the Maine Department of Environmental Protection, Pixie Williams, Ann Dieffenbacher-Krall, Keith Williams, email exchanges with Donald Les, and volunteers of the Maine Volunteer Lake Monitoring Program. Other lists I consulted were the book *Flora of Maine*, the website of the Maine Herbaria at the University of Maine, "National List of Plant Species That Occur in Wetlands: Maine" NERC-88/18.19, U. S. Department of the Interior (plants characterized as submerged, floating, or emergent, and known to be in freshwater habitats), and Maine Natural Areas Program rare plants list. The tables have 215 species, and 64 more are listed in this text.

The scientific plant names comply with *Flora Novae Angliae* (Arthur Haines, 2011), except for *Eloдея canadensis x nuttalli* and *Najas canadensis* which are included as a result of email exchange with Donald Les.

The column in the tables for *frequency* and *region* means:

- › South means DeLorme Atlas sheets 1 through 27, plus 31 through 37, and 44 through 46, approximately south of latitude N 45° 20', or approximately south of a line from Rangeley, through Dover-Foxcroft, to Danforth, which is a little over half the geographic area of Maine, and a little over half of the lakes and ponds in the Maine State Geographic Information System database (total over 6,000).
- › North means DeLorme sheets 28 through 30, 38 through 43, and 47 through 70.
- › *Frequency* means the probability of seeing the plant in open water anywhere in a given lake when circumnavigating the lake in a boat. It does include noodling into shallow coves in say a kayak or canoe, but not walking into bogs or marshes.
- › *Abundant* means the species has been documented in at least 70% of the lakes in the 200-lake surveys cited above, for the respective region.
- › *Common* means the species is reported in 46% to 70% of the lakes.

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- > *Occasional* means 20% to 46%.
- > *Uncommon* means 5% to 20%,.
- > *Rare* means less than 5%, in general.
- > *Very rare* in general means the species is listed in the Maine Natural Areas Program, or noted as very rare in *Flora of Maine*.

Bear in mind the frequency means frequency in lakes and rivers, thus some plants, such as many of the sedges here labeled as very rare, are common in wetlands. This conundrum is especially pertinent in the fringe plants category. For other species very unlikely to be seen in the open water of lakes and rivers, see the listing near the end of this text.

In assigning species to region and frequency, for the abundant, I relied mostly on statistical analysis of the data from the 200 lake surveys mentioned above. I also looked at distribution maps in the eight-part series "Aquatic Vascular Plants of New England" by Hellquist and Crow, the maps in Appendix 11.5.1 of "Freshwater Biodiversity in Maine" by Vaux, and records on the internet of some of the holdings at the University of Maine herbaria.

The tables have no bushes nor trees, though sometimes the following occur at the edges of lakes and streams overhanging the water: *Cephalanthus occidentalis* (buttonbush), *Myrica gale* (sweet gale), and *Nyssa sylvatica* (tupelo, in far southern Maine),

Ferns are very common in wetlands, but rare in open water at ordinary water level, but some that have been noted (usually shallow water in rivers and streams) are *Athyrium filix-femina* var *angustum* (lady fern), *Dryopteris carthusiana* (spinulose wood fern), *Marsilea quadrifolia* (water shamrock), *Onoclea sensibilis* (sensitive fern), *Osmunda cinnamomea* (cinnamon fern), *Osmunda regalis* (royal fern), and *Thelypteris palustris* var. *pubescens* (marsh fern).

Mosses (see Bruce Allen's book, *Maine Mosses*):

*Sphagnum inundatum*, *S. platyphyllum*, *S. cuspidatum*, *S. torreyanum*, *S. majus*.

*Fontinalis novae-angliae* apparently the most common that has been identified in Maine lakes.

*F. antipyretica*, *F. dalecarlica*, *F. sphagnifolia*.

*Warnstorfia* (*Drepanocadus*) *fluitans*, *W. exannulata*.

Following have been noted in streams: *Fissidens fontanus*, *Dichelyma falcatum*, *Hygropodium closteri*, *H. duriusculum*, *H. eugyrium*, *H. smithii*, *Bachytheceium plumosum*, *B. rivulare*, *Torrentaria riparioides*, *Sematophyllum marylandicum*.

Non-vascular plants, and other interests.

Macro-algae

Two genera are occasional in occurrence in lakes: *Chara* spp., *Nitella* spp. *Batrachospermum* spp. are rare.

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Freshwater sponges are uncommon, sometimes seen as bright green coating on submerged rocks. The most common species in phylum Porifera is *Spongilla lacustris*.

The black band above the normal water line in the splash zone on rocks of some lakes are lichen, usually *Verrucaria maura*, but there can be other species.

The following plants are unlikely but might be seen at ordinary water level in rivers and lakes: *Arisaema triphyllum* (Jack-in-the-pulpit), *Carex buxbaumii* (brown sedge), *C. canescens* (silvery sedge), *C. castanea* (chestnut sedge), *C. crawfordii* (Crawford's sedge) *C. haydenii* (cloud sedge), *C. limosa* (mud sedge), *C. longii* (greenish-white sedge), *C. lurida* (sallow sedge), *Crassula aquatica* (pygmyweed), *Cyperus dentatus* (toothed flatsedge), *C. erythrorhizos* (red-root flatsedge), *Eleocharis erythropoda* (red-footed spikerush), *Lipocarpha micrantha* (dwarf-bulrush), *Lycopus americanus* (American water-horehound), *Lysimachia thyrsiflora* (tufted yellow-loosestrife), *Marsilea quadrifolia* (river-clover), *Persicaria arifolia* (tearthumb), *Persicaria hydropiper* (marshpeper smartweed), *Persicaria pensylvanicum* (Pennsylvania smartweed), *Pogonia ophioglossoides* (rose pogonia), *Ranunculus gmelinii* (small yellow water crowfoot), *Rhynchospora macrostachya* (tall beak-rush), *Sagittaria filiformis* (Hudson arrowhead), *Schoenoplectus purshianus* (weak-stalk bulrush), *Scirpus atrocinctus* (black-girdled wool-grass), *Stuckenia filiformis ssp. occidentalis* (threadleaf pondweed), *Thalictrum pubescens* (meadow-rue), and *Xyris smalliana* (yellow-eyed-grass).

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