Long-Term Variable Milfoil Management Plan: Pearly Pond Rindge New Hampshire

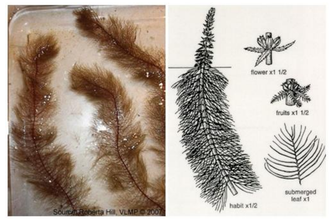
NH Department of Environmental Service (Jan. 2013), PowerPoint by Eric Harries (May 2013)
ES 243 Sustainable Communities- Catherine Owen Koning, Ph.D

What is Variable Milfoil, Biologically Speaking?

Myriophyllum (Genus: water milfoil) heterophyllum (two leaf water milfoil) is a aquatic plant species known as **Variable Milfoil** (www.usda.gov). Variable Milfoil is often confused with the native Coontail (Ceratophyllum), Low Water Milfoil (Myriophyllum humile), and the endangered Farwell's Milfoil (Myriophyllum farwellii). Variable Milfoil is an aquatic rooted, submerged **non-native** plant with a "raccoon-tail" or pipe cleaner appearance. Variable Milfoil can form dense mats at the water surface and **grows in the photic zone (≤10ft).** The delicate green underwater leaves are feather-like and average .5-2 inches across, leaves are arranged around the stem in whorls of 4-6 leafs and each leaf has 6-12 segments. During the late summer a 4-6 inch bract develops, protruding above the water surface. The small bright green leaves on the bract are oval and are both serrated (female section) and non-serrated (male section). The stems are thick, robust and usually red (www.mass.gov).

Variable Milfoil is a hardy species that has established itself in a wide range of aquatic habitats. **Can survive over-winter** in the frozen lakes of northern climates and can thrive in warm southern water bodies. It can grow under a wide range of water chemistry conditions as it can be found in acidic and calcium-rich lakes. Variable Milfoil prefers slow moving waters, including lakes and ponds, but can occasionally be found in rivers. Variable Milfoil tends to **prefer acidic waters** (www.mass.gov).

Variable Milfoil **reproduce by vegetative and sexual methods**. Vegetatively, Variable Milfoil reproduces by fragmentation, rhizome division and asexually by budding. Although it is not as common, Variable **Milfoil can also re-grow from seeds remaining in a lake or pond sediment** (www.mass.gov).



Roberta Hill (2007), www.maine.gov

"Variable Milfoil Doesn't Sound that Bad"←WRONG!!!

Variable Milfoil is a highly competitive plant that is capable of rapid growth and spread. **Variable Milfoil often reduces real estate values** because it displaces native species, reduces biodiversity, hampers recreational uses, diminishes aesthetic values, and decrease water quality! **Milfoil can be spread from site to site via small fragments on boats**, fishing equipment, etc. (www.mass.gov).

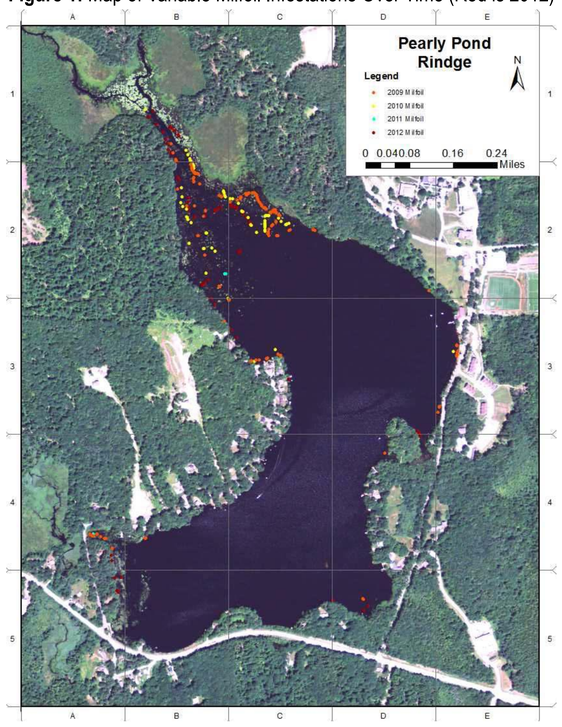
Decreases in dissolved oxygen (O_2) are a serious watershed issue. When Variable Milfoil dies it is decomposed by microorganisms that require O_2 for their respiration. This **causes low O_2 levels in the water and results in the loss of game fishing species in addition to other native species** (www.mass.gov).

www.outdooralabama.com

Lake Dunmore Fern Lake Association

Variable Milfoil Infestation at Pearly Pond

Figure 1: Map of Variable Milfoil Infestations Over Time (Red is 2012)



DES, Jan 2013

Pearly Pond Characteristics

142.1 total acres
Shoreline is used for college campus, residents, and forest
Max Depth is 17.82 ft.
Mean Depth is 5.61 ft.
Trophic status is Eutrophic
Clarity is 3.3 ft.

Infected Areas (2012)

Northern End of Lake (B1, B2, C2, C3): 45% coverage*
Eastern Shoreline (D2, D3, E3): 10% coverage
Southeastern Cove (D5): 5% coverage
Southwest Cove (A4, A5): 40% coverage*

*Increase from 2011

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How Can Variable Milfoil Being Managed?

Past Management (DES, Jan 2013)

- June 10, 2008→Herbicide 2,4-D used on 42.5 acres
- June 10, 2010→Herbicide 2,4-D used on 24 acres
- Summer 2010→Hand Pull by Local Diver (small patches in small cove)

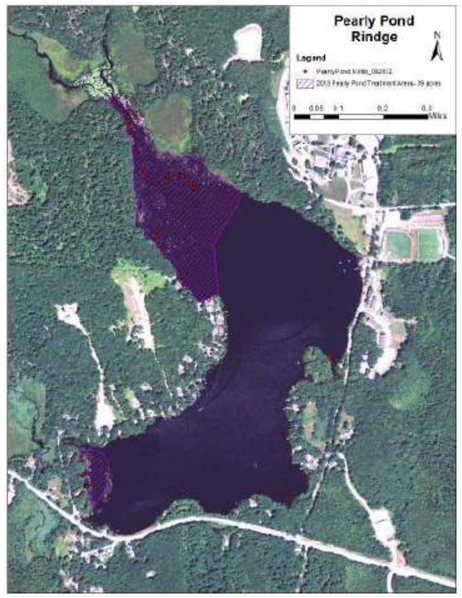
Proposed Management 2013-2018 (DES, Jan 2013)

- Weed Watching→2013-2017 locals marking/reporting growth (once a month from (May-Sep)
- Herbicide Treatment→2013 by Aquatic Control Technology Inc. in areas proposed on map (May-Jun), 2014 if needed (June or September)
- Survey Waterbody, Plan Next Season→2013 by DES (Sep), 2014-2017 (Annually: May/Jun, Sep)
- Diver/DASH work→2013-2017 by Contract Diver (Jun-Sep as needed)
- Update, Revise Long-Term Control Plan→2018 by DES, Interested Parties (Fall/Winter)

Curious about Herbicide 2,4-D?

- 2,4-D stands for 2,4-Dichlorophenoxyacetic Acid
- Broad Leaf Herbicide (weed killer)
- Broken down by Microbes in soil, half-life 0f 3-28 days in water and has low human toxicity within the first 24 hours of implementation
- Don't swim or leave infants toys in water during first 24 hours
- EPA Maximum Contaminant Level for Drinking Water: 0.07mg/l
- For more information visit Environmental Protection Agency on 2,4-D at: http://www.epa.gov/teach/chem_summ/24D_summary.pdf

Figure 2: Proposed Management 2013 (Herbicides via Aquatic Control Technology Inc.)



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