

Scott County Lakes (from Google Maps)

Curlyleaf and Eurasian Watermilfoil Growth Potential Based on Lake Sediment Characteristics for Fish, Spring, Upper Prior, and Lower Prior Lakes, Scott County, Minnesota

Lake Sediments Collected	
Fish Lake:	September 1, 2006
Spring Lake:	August 13, 2008
Upper Prior Lake:	October 16, 1997
Lower Prior Lake:	September 18, 1997

Prepared for:
Prior Lake/Spring Lake
Watershed District
Prior Lake, Minnesota

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December 2008

Summary

Lake sediments are known to influence aquatic plant growth. It appears there are specific sediment characteristics that influence growth of curlyleaf pondweed and Eurasian watermilfoil. The key sediment parameters that influence curlyleaf and milfoil growth are shown in Table 1.

Table 1. Lake sediment characteristics that influence the abundance of curlyleaf pondweed and Eurasian watermilfoil.

Parameter	Curlyleaf Pondweed		Eurasian Watermilfoil	
	Light or Moderate Growth	Heavy Growth	Light or Moderate Growth	Heavy Growth
pH	< (less than) 7.7	> (greater than) 7.7	--	--
Bulk Density	>0.51	<0.51	--	--
Fe:Mn Ratio	>1.6	<1.6	--	--
Organic Matter	<20%	>20%	<0.6% or >20%	0.6% - 20%
NH ₄	--	--	<10	>10

Lake sediment results represent an index of fertility, and are broad indicators of the growth potential of aquatic plants. Therefore, there is some subjectivity in interpreting sediment results. In addition, there are many variables that influence plant growth on a year-to-year basis. Climatic factors and nutrient availability are two examples.

Curlyleaf Pondweed Growth Categories



Light growth (left) refers to non-nuisance growth that is mostly below the surface and is not a recreational or ecological problem. Heavy growth (right) refers to nuisance matting curlyleaf pondweed. This is the kind of nuisance growth predicted by high sediment pH and a sediment bulk density less than 0.51.

Eurasian Watermilfoil Growth Categories

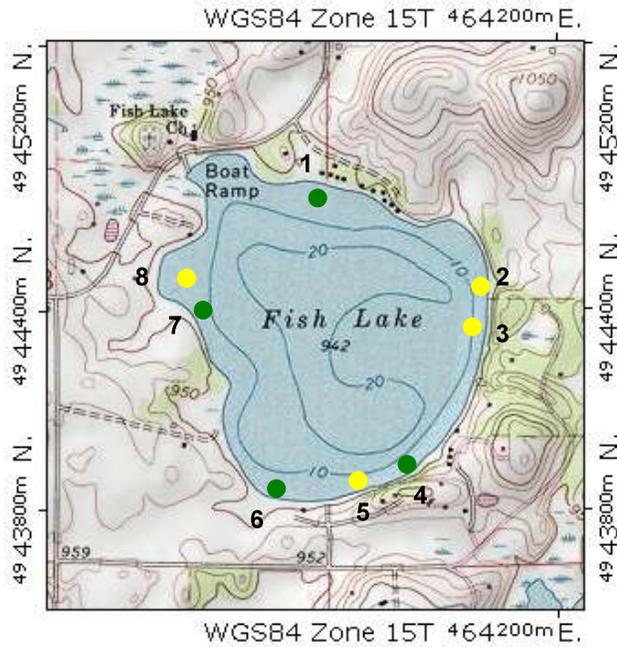


Light growth (left) refers to non-nuisance growth that is mostly below the surface and is not a recreational or ecological problem. Heavy growth (right) refers to nuisance matting Eurasian watermilfoil. This is the kind of nuisance growth predicted by high sediment nitrogen values and a sediment organic matter content less than 20%.

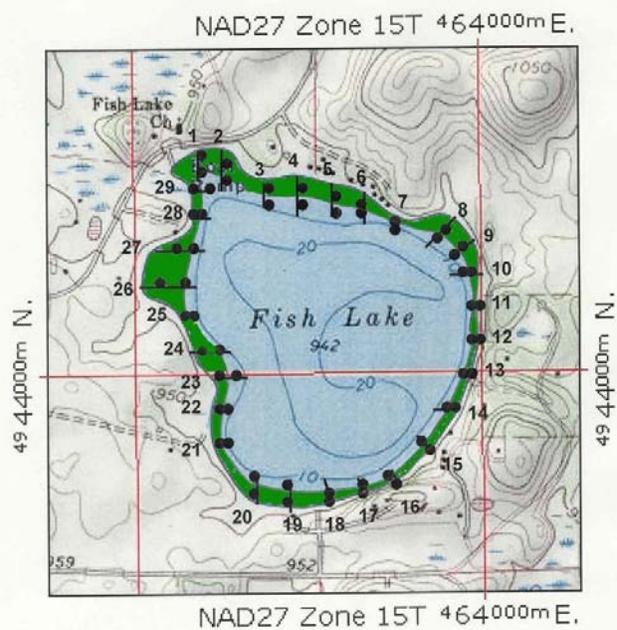
Summaries of Growth Potential of Curlyleaf Pondweed and Eurasian Watermilfoil Based on Lake Sediment Characteristics for Fish, Spring, Upper Prior, and Lower Prior Lakes

Fish Lake

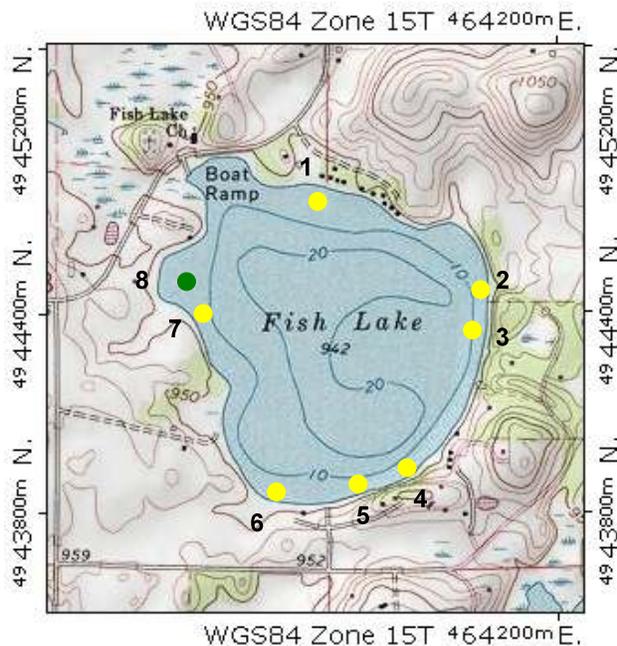
Predicted - Curlyleaf Growth



Actual - Curlyleaf Pondweed (June 2005)



Predicted - Watermilfoil Growth

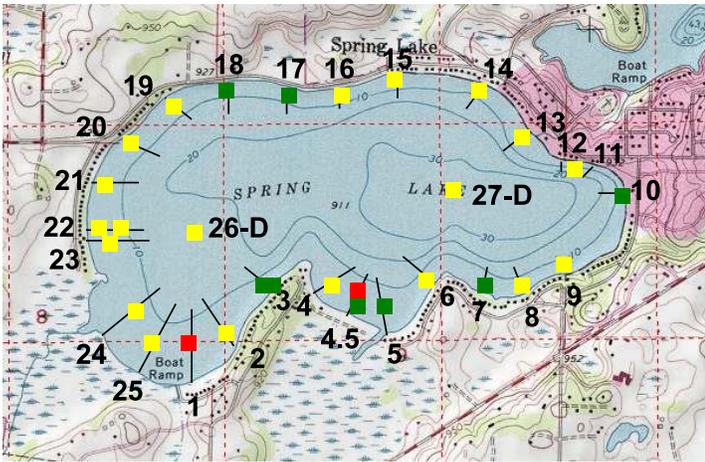


No Eurasian watermilfoil observed in Fish Lake as of 2008.

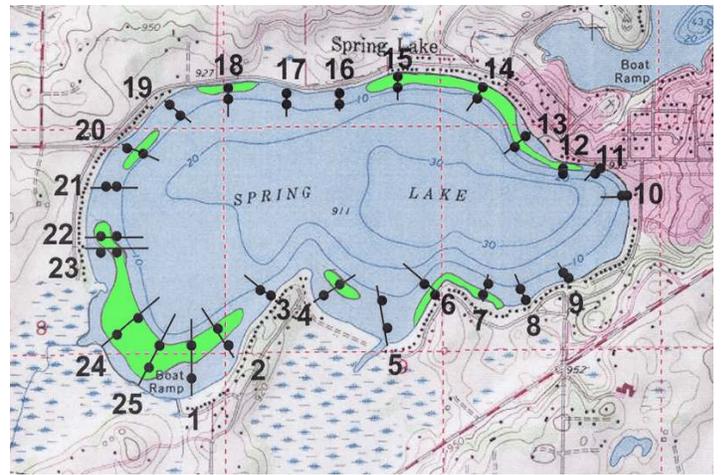
Figure 1. Sediment sample locations are shown with a circle. The circle color indicates the potential for heavy growth of curlyleaf pondweed or Eurasian watermilfoil to occur at that site. Key: green = low; yellow = medium; red = high potential.

Spring Lake

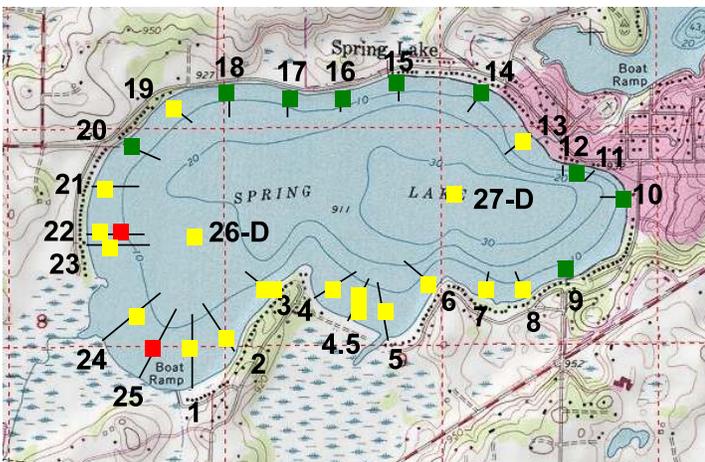
Predicted - Curlyleaf Growth



Actual - Curlyleaf Pondweed (June 2008)



Predicted - Watermilfoil Growth

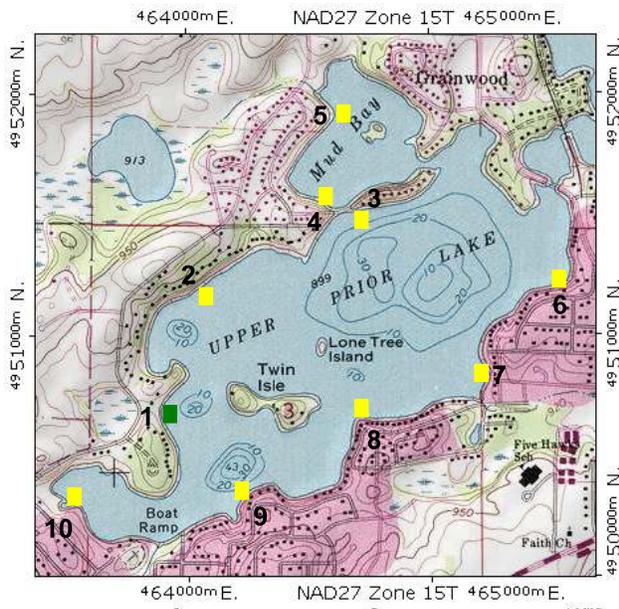


No Eurasian watermilfoil observed in Spring Lake as of 2008.

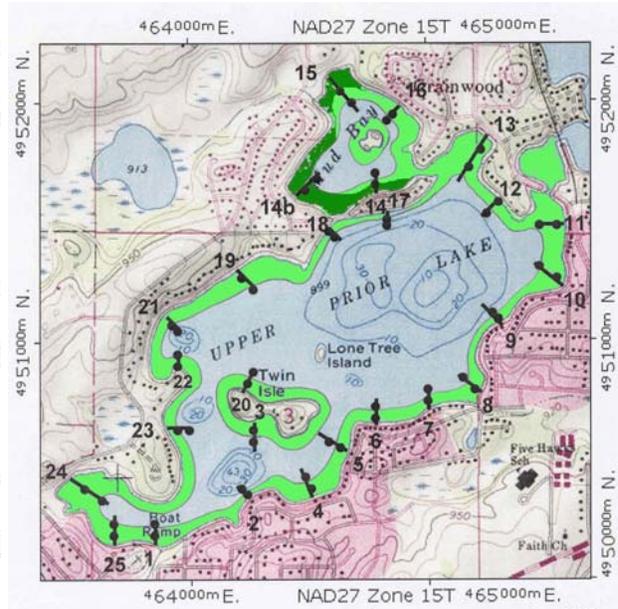
Figure 2. Sediment sample locations are shown with a square. The square color indicates the potential for heavy curlyleaf pondweed or Eurasian watermilfoil growth to occur at that site. Key: green = low; yellow = medium; red = high potential.

Upper Prior Lake

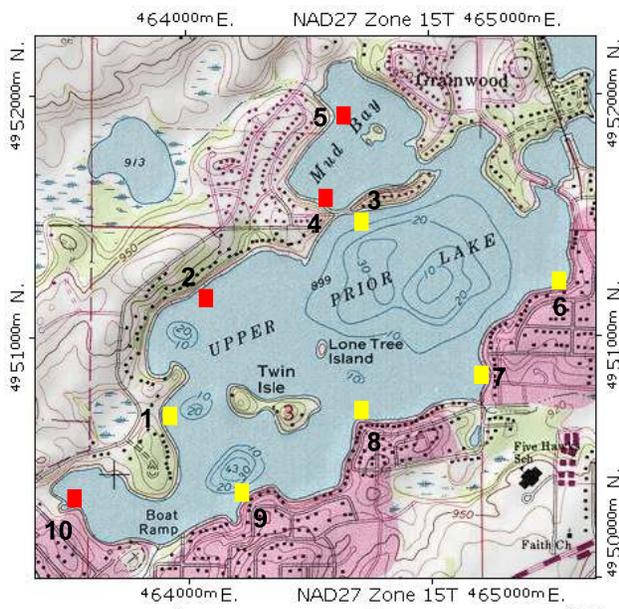
Predicted - Curlyleaf Growth



Actual - Curlyleaf Pondweed (June 2008)



Predicted - Watermilfoil Growth



Actual - Watermilfoil (Sept 2008)

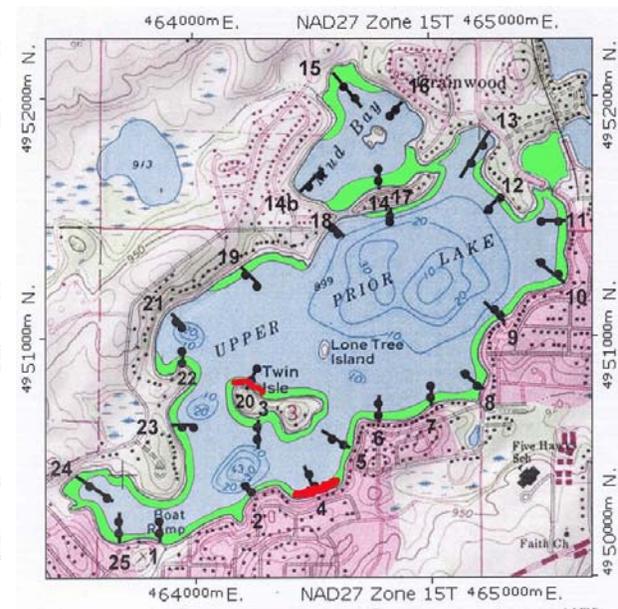
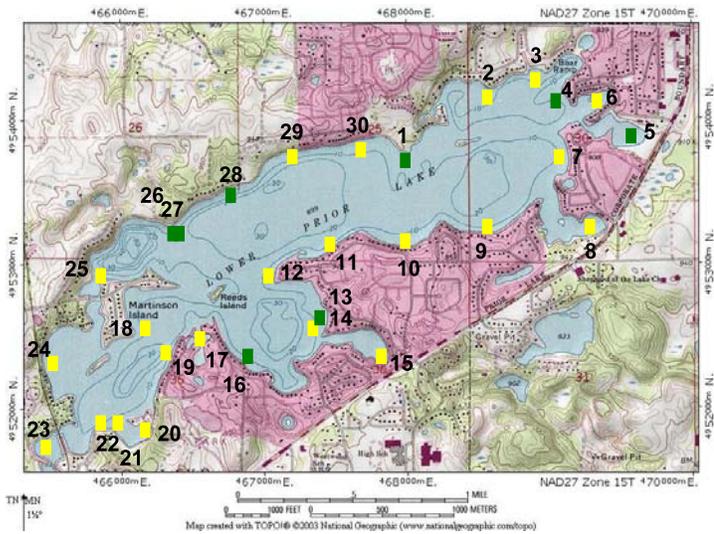


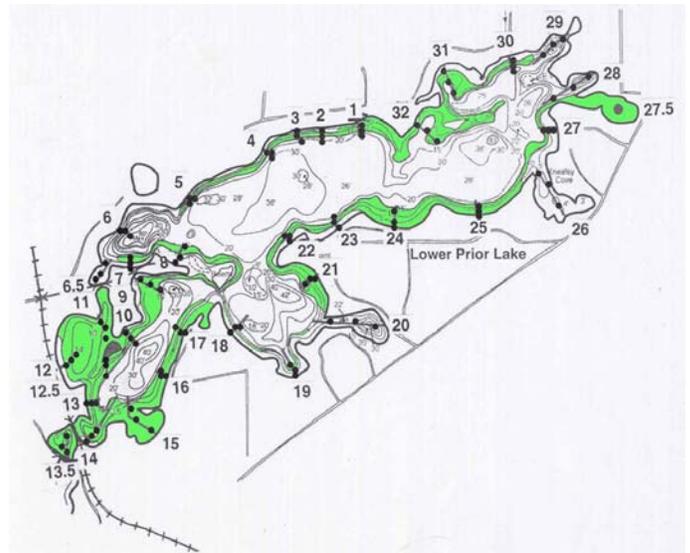
Figure 3. Sediment sample locations are shown with a square. The square color indicates the potential for heavy growth of curlyleaf pondweed or Eurasian watermilfoil to occur at that site. Key: green = low; yellow = medium; red = high potential.

Lower Prior Lake

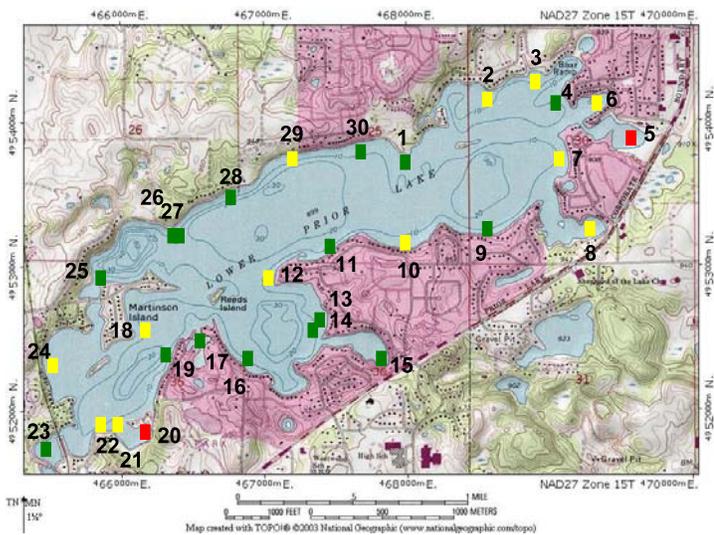
Predicted - Curlyleaf Pondweed Growth



Actual - Curlyleaf Pondweed (June 2008)



Predicted - Eurasian Watermilfoil Growth



Actual - Eurasian Watermilfoil (August 2008)

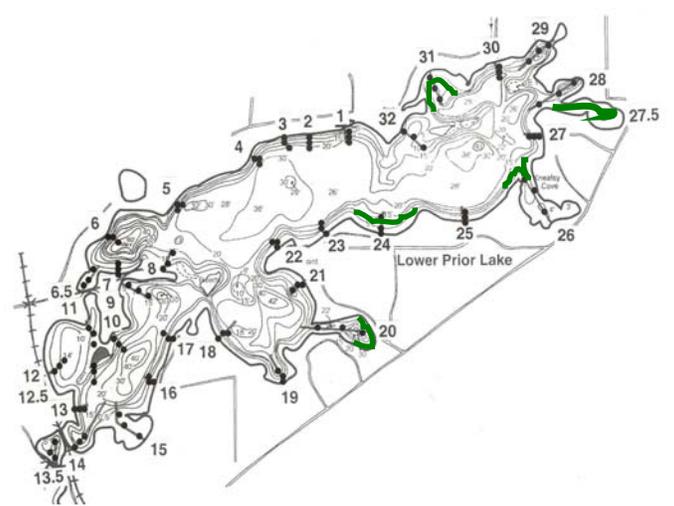


Figure 4. Sediment sample locations are shown with a square. The square color indicates the potential for nuisance curlyleaf pondweed or Eurasian watermilfoil to occur at that site. Key: green = low; yellow = medium; red = high potential.