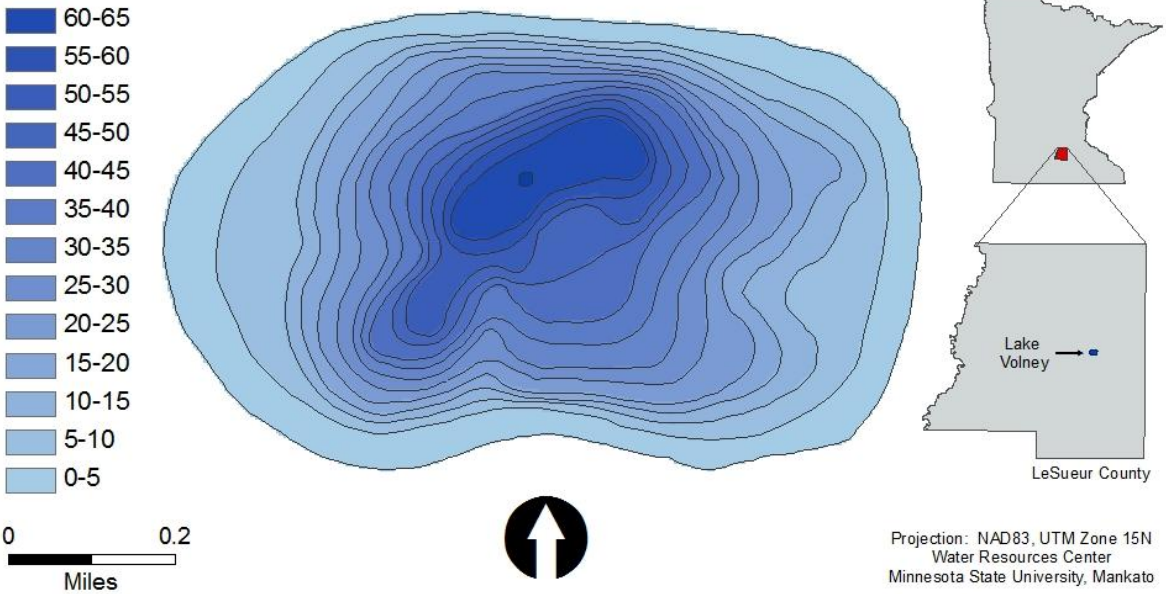
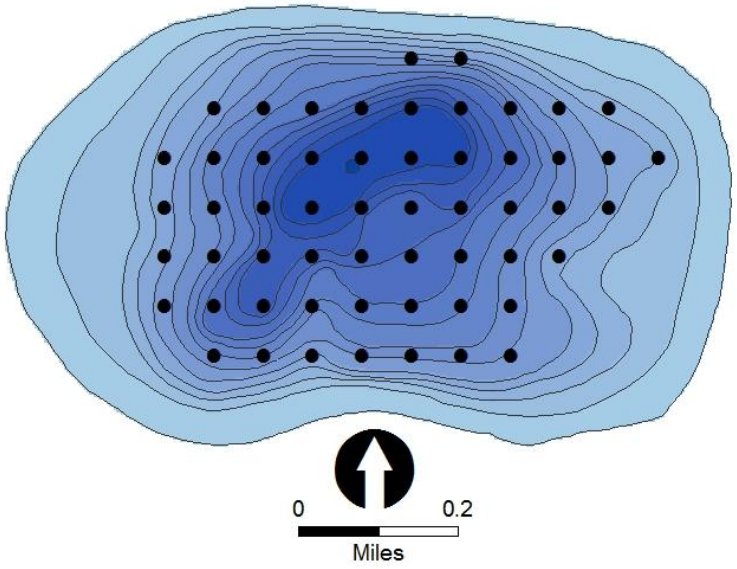
LAKE VOLNEY

Bathymetry



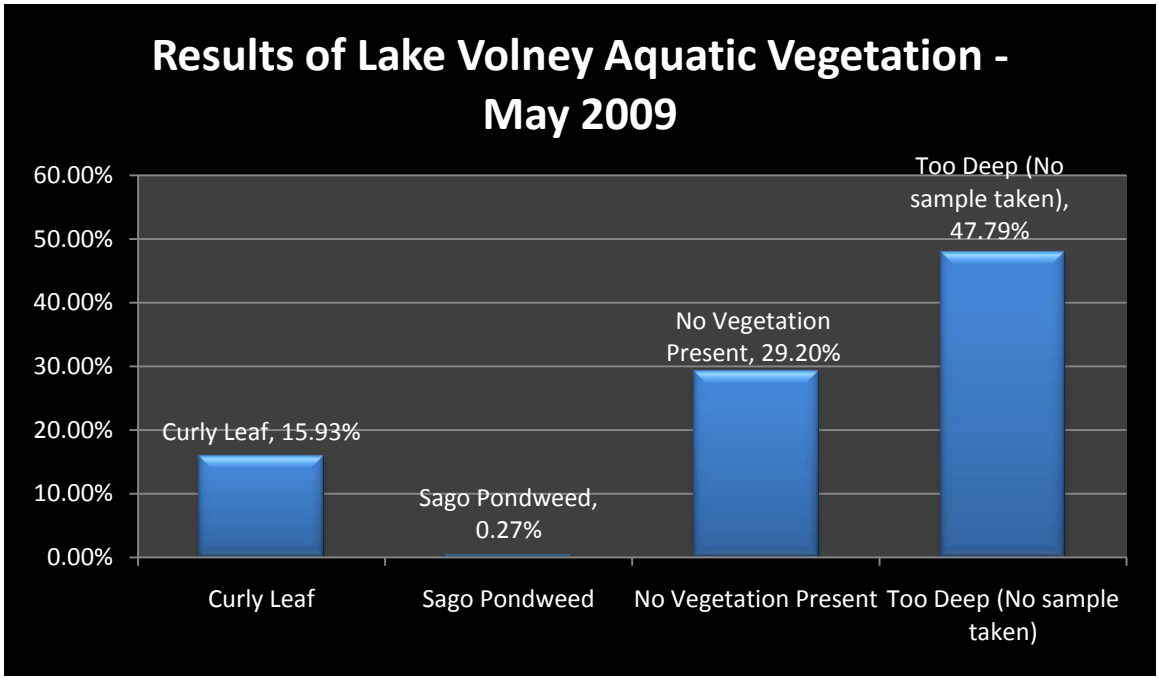
LAKE VOLNEY

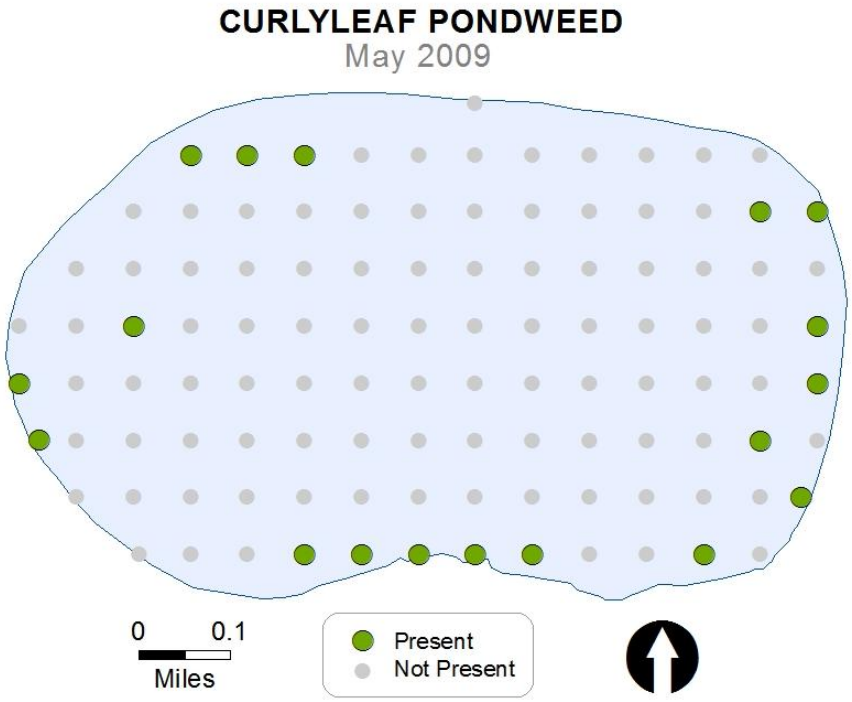
No samples collected (>15 feet)



May 2009 – Lake Volney -- Vegetation Survey

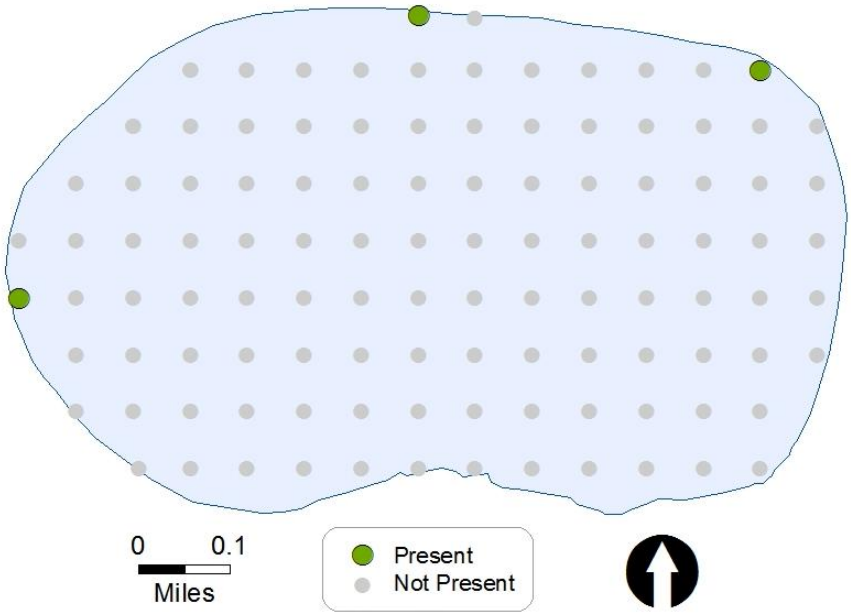
Water Resources Center (Minnesota State – Mankato)





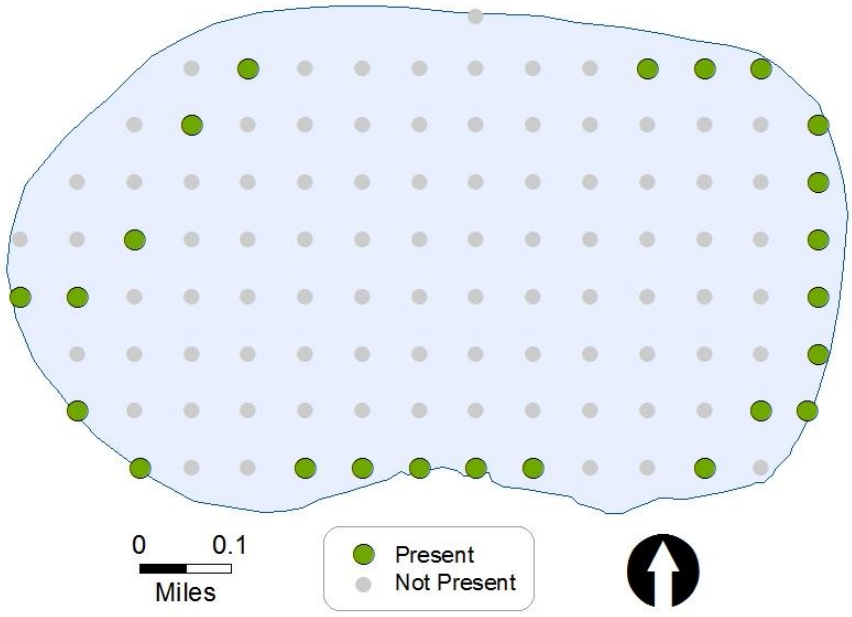
SAGO PONDWEED

May 2009



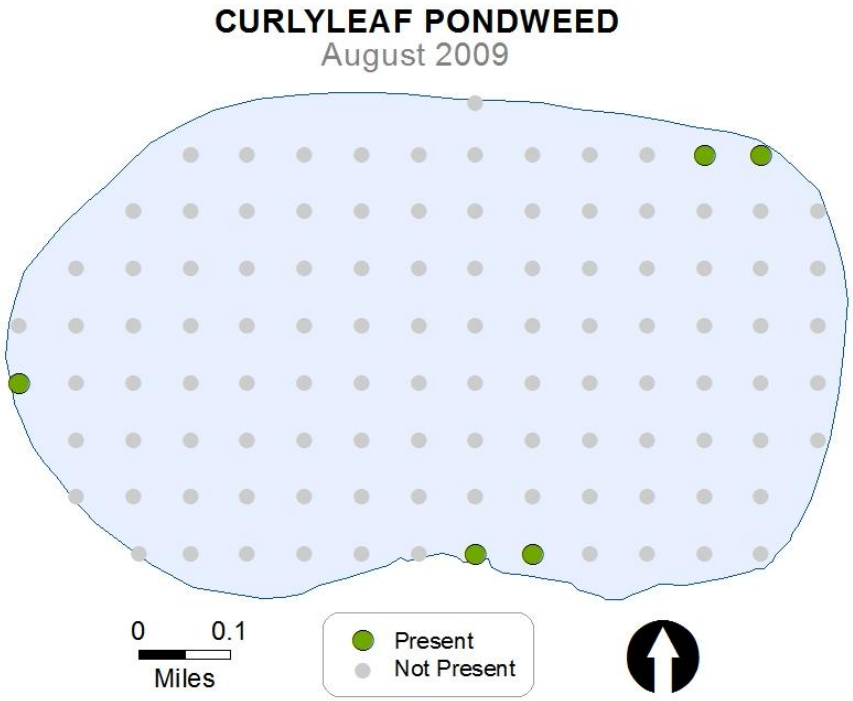
FILAMENTOUS ALGAE

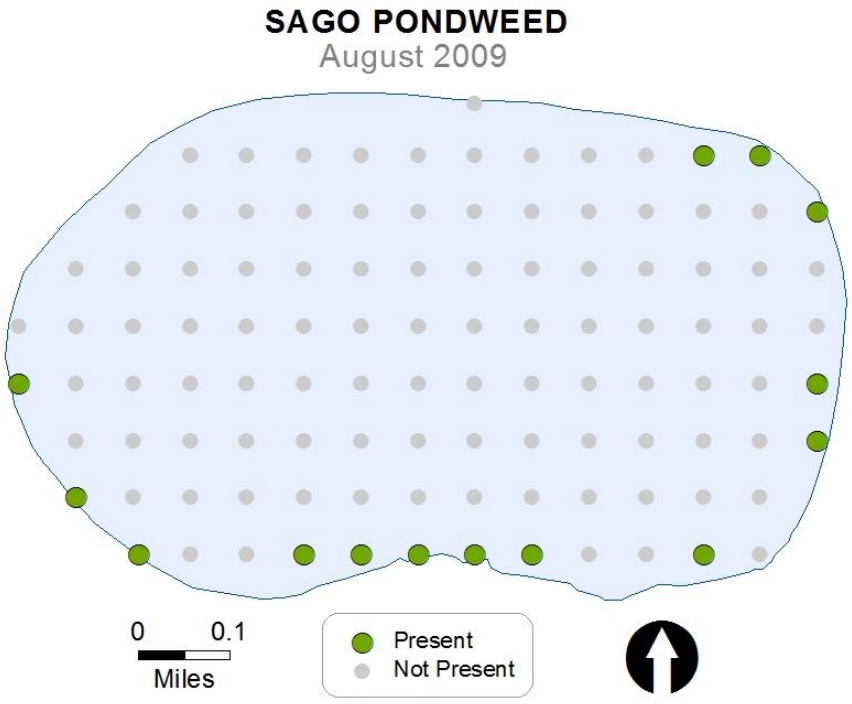
May 2009



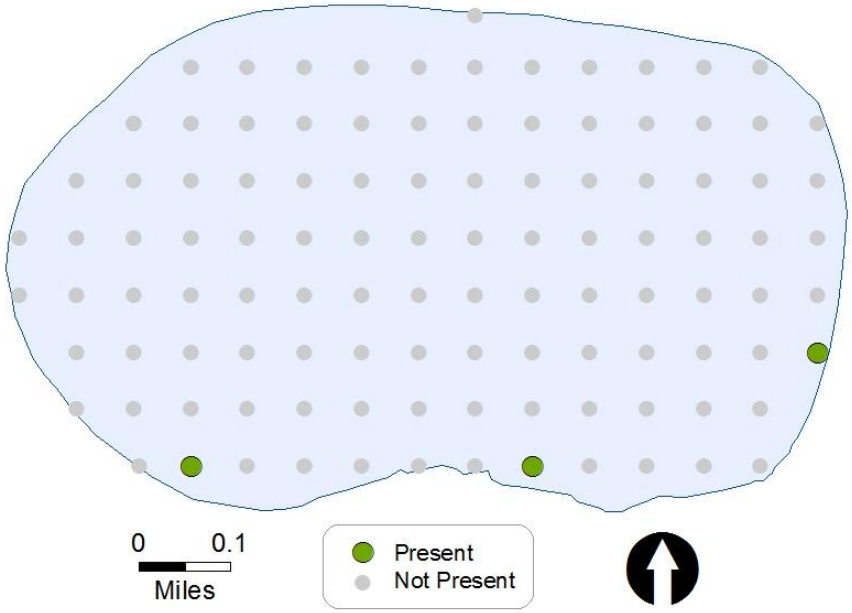
August 2009 – Lake Volney -- Vegetation Survey

Water Resources Center (Minnesota State – Mankato)

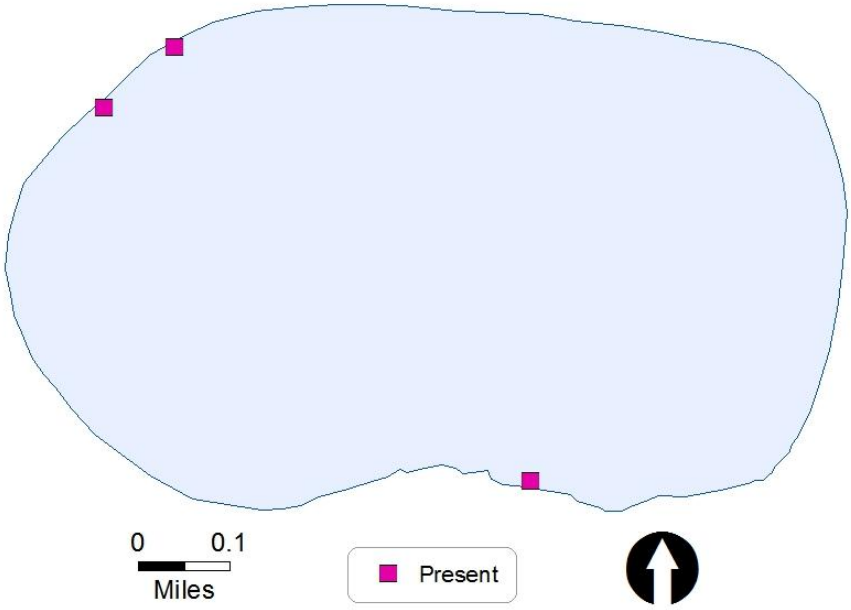




FILAMENTOUS ALGAE
August 2009



NARROW LEAF CATTAIL
August 2009



Lake Volney

Lake Volney is located in Le Sueur County, Minnesota. It is a very deep 267 acre lake for the north-central hardwood forest eco-region with a maximum depth of 67 feet. Anthropogenic changes to shoreline habitat and the introduction of invasive species has resulted in a lake environment that is not capable of supporting a high level of floristic diversity; resulting in an extremely low FQI score. In addition to a low level of species diversity, only 18/113 (16%) of locations sampled on Lake Volney had any macrophytes present. Historical data suggests that Lake Volney is receiving excess nutrients from its watershed; therefore, it can be assumed that macrophyte growth in the lake is not limited by a lack of nutrients. Efforts to reestablish macrophytes within the Lake may provide a valuable means of removing excess nutrients from the water column in the future.

The deepest point sampled that contained macrophytes was 2.74 m (9 ft). Of the 113 total point intercept grid locations, 54 points were considered too deep to sample (greater than 15 feet). Given the fairly deep depth profile of Lake Volney, the area for macrophytes to grow within the lake is relatively limited. High shoreline development around the entire lake is reflected by a lack of emergent species found along the shorelines; many shorelines around the lake consist of manicured landscapes with grass extending right to the shoreline.

Curly-leaf Pondweed *Potamogeton Crispus* and Sago Pondweed *Stuckenia Pectinata*, were the only two species of plants found in Lake Volney's basin. To calculate the Floristic Quality Index (FQI) for Lake Volney, we first found the coefficient of conservatism associated with each of the plant species identified during the survey. To figure out the FQI for Lake Volney the following formula can be used as found in the UWSP Protocol Appendix E: **FQI = (C) = Mean coefficient of conservation *√N= Number of species in sample.** The coefficient of conservatism (c-value) for sago pondweed is 3, while the c-value of curly leaf pondweed is obviously 0 because it is an invasive species, an obvious sign of a disturbed ecosystem. Our FQI value for Lake Volney is 2.31, an extremely low value. FQI values less than 20 are indicative of degraded habitats with very little natural vegetation left in the ecosystem

Common name	Scientific Name	Coefficient of Conservatism
Curly Leaf Pondweed	*Potamogeton crispus*	0
Sago Pondweed	*Potamogeton pectinatus*	3
Narrow leafed cattail	*Typha angustifolia*	1
Avg. C- Value		**1.33**
FQI Score	**1.33 *√3**	**2.31**