

Ada Lake Lakeshed Assessment

The lakeshed vitals table identifies where to focus organizational and management efforts for each lake. Criteria were developed using limnological concepts to determine the effect to lake water quality.

Lakeshed Vitals		Rating
Major Basin	Upper Mississippi River	descriptive
Major Watershed	Pine River	descriptive
Minor Watershed	11029	descriptive
Lakeshed	Lizzie Creek (1102904)	descriptive
Ecoregion	Northern Lakes and Forest	descriptive
Lake Area	963 acres	descriptive
Miles of Shoreline	7.21	descriptive
Miles of Stream	1.11	descriptive
Miles of Road	2.9	descriptive
Lake Max Depth	60 ft. (18.3 m)	descriptive
Lake Mean Depth	21.6 ft. (6.6 m)	+
Water Residence Time	NA	NA
Municipalities	None	+
Sewage Management	Individual waste treatment systems (septic systems and holding tanks – last inspection 1999)	+
Public Drainage Ditches	None	+
Lake Management Plan	Healthy Lakes & Rivers Partnership program, 2001	+
Lake Vegetation Survey/Plan	Survey completed 2007	+
Forestry Practices	None	+
Development Classification	Recreational Development	x
Shoreline Development Index	1.7	+
Total Lakeshed to Lake Area Ratio (total lakeshed includes lake area)	2.2:1	x
Public Lake Accesses	1	x
Inlets	1 – Unnamed	x
Outlets	1 – Unnamed	x
Shoreland Conservation Potential (% shoreland identified for conservation)	25%	+
Feedlots	None	+
Agriculture Zoning	None	+
Public Land : Private Land	0.6:1	-
Wetland Coverage	11%	+
Lake Transparency Trend	Improving trend (99.9% probability)	+
Exotic Species	None	+

Rating Key:

- + beneficial to the lake
- possibly detrimental to the lake
- x warrants attention

Lakeshed



Understanding a lakeshed requires the understanding of basic hydrology. A watershed is the area of land that drains into a surface water body such as a stream, river, or lake and contributes to the recharge of groundwater. There are three categories of watersheds: 1) basins, 2) major watersheds, and 3) minor watersheds.

Ada Lake is found within the **Upper Mississippi River Basin**, which includes the **Pine River Major Watershed** as one of its sixteen major watersheds (Figure 1).

The basin covers 20,000 square miles, while the Pine River Watershed covers 784 square miles (approximately 502,013 acres). Ada Lake falls within **minor watershed 11029**, one of the 69 minor watersheds that comprise the Pine River Major Watershed (Figure 2).

Within this watershed hierarchy, lakesheds also exist. A lakeshed is defined simply as the land area that drains to a lake. While some lakes may have only one or two minor watersheds draining into them, others may be connected to a large number of minor watersheds, reflecting a larger drainage area via stream or river networks. Ada Lake falls within the **Lizzie Creek (1102904) lakeshed**, covering 2,088 acres (includes lake area) (Figure 3).

Ada Lake Lakeshed Water Quality Protection Strategy

Each lakeshed has a different makeup of public and private lands. Looking in more detail at the makeup of these lands can give insight on where to focus protection efforts. The protected lands (easements, wetlands, public land) are the future water quality infrastructure for the lake. Developed land and agriculture have the highest phosphorus runoff coefficients, so this land should be minimized for water quality protection.

The majority of the land within Ada Lake's lakeshed is made up of private forested uplands. This land can be the focus of development and protection efforts in the lakeshed.

	Private (34%)					46%	Public (20%)		
	Developed	Agriculture	Forested Uplands	Other	Wetlands	Open Water	County	State	Federal
Land Use (%)	2%	1%	14%	12%	5%	46%	0%	20%	0%
Runoff Coefficient Lbs of phosphorus/acre/year	0.45 - 1.5	0.26 - 0.9	0.09		0.09		0.09	0.09	0.09
Description	Focused on Shoreland	Cropland	Focus of development and protection efforts	Open, pasture, grassland, shrubland	Protected				
Potential Phase 3 Discussion Items	Shoreline restoration	Restore wetlands; CRP	Forest stewardship planning, 3 rd party certification, SFIA, local woodland cooperatives		Protected by Wetland Conservation Act		County Tax Forfeit Lands	State Forest	National Forest

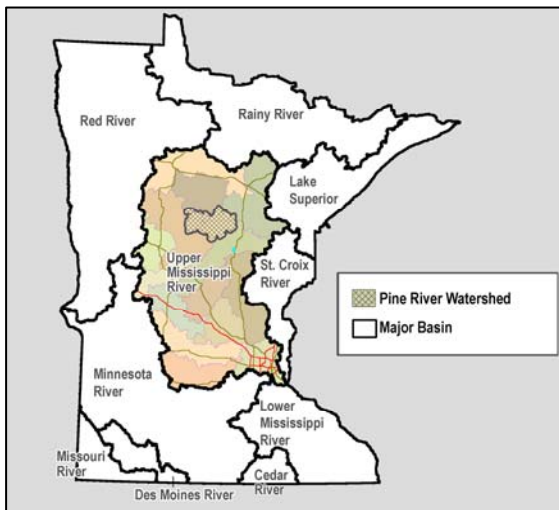


Figure 1. Upper Mississippi Basin and the Pine River Watershed.

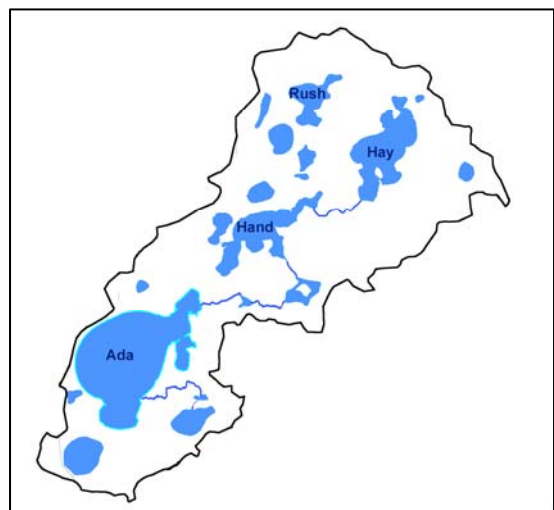


Figure 2. Minor Watershed 11029 contributes water to Ada Lake.

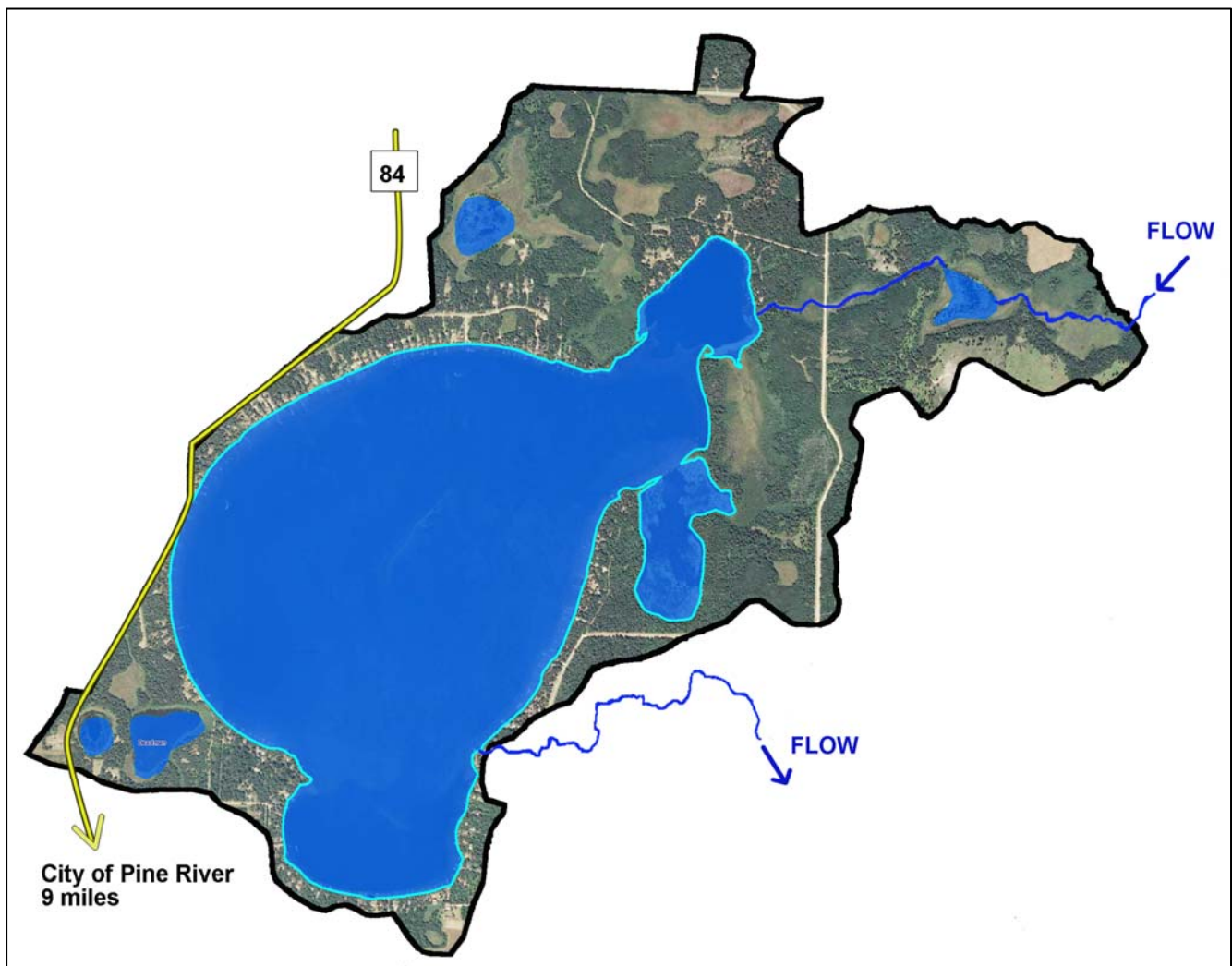


Figure 3. The Lizze Creek (1102904) Lakeshed (Aerial Imagery 2008 1M).

Conservation Easement Potential

In an ever-growing society, today's landscapes are being urbanized more and more to sustain the ever-growing population and behavior of recreational usage. In Minnesota, the land of ten thousand lakes, it is only natural to develop properties within the boundaries and beauty of our lakes and streams.

Conservation efforts to limit or slow down the development process can only assist in the preservation of the lakeshed and inevitably the water quality of water bodies found within.

Figure 4 identifies parcels within the lakeshed that are large enough to warrant the investigation of parcel conservation practices and purchase.

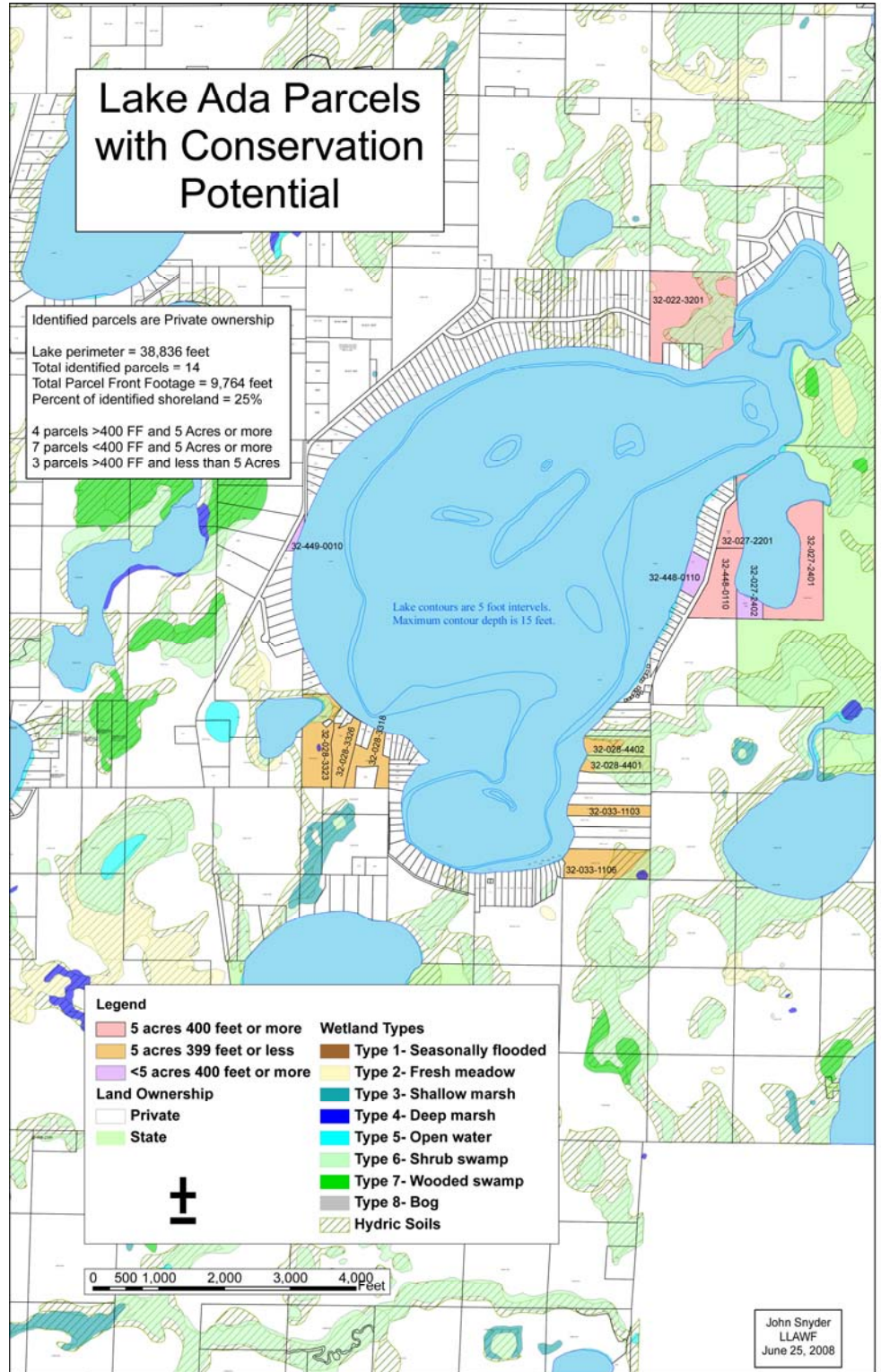


Figure 4. Lake parcels with conservation potential (developed by John Snyder, LLAWF).

Land Cover / Land Use

The activities that occur on the land within the lakeshed can greatly impact a lake. Land use planning helps ensure the use of land resources in an organized fashion so that the needs of the present and future generations can be best addressed. The basic purpose of land use planning is to ensure that each area of land will be used in a manner that provides maximum social benefits without degradation of the land resource.

Changes in land use, and ultimately land cover, impact the hydrology of a lakeshed. Land cover is also directly related to the lands ability to absorb and store water rather

than cause it to flow overland (gathering nutrients and sediment as it moves) towards the lowest point, typically the lake. Impervious intensity describes the lands inability to absorb water, the higher the % impervious intensity the more area that water cannot penetrate in to the soils. Monitoring the changes in land use can assist in future planning procedures to address the needs of future generations.

Phosphorus export, which is the main cause of lake eutrophication, depends on the type of land cover occurring in the lakeshed. Figure 5 depicts the land cover in Ada Lake's lakeshed.

The University of Minnesota has online records of land cover statistics from years 1990 and 2000 (<http://land.umn.edu>). Table 1 describes Ada Lake's lakeshed land cover statistics and percent change from 1990 to 2000. Due to the many factors that influence demographics, one cannot determine with certainty the projected statistics over the next 10, 20, 30+ years, but one can see the transition within the lakeshed from agriculture, grass/shrub/wetland, and water acreages to forest and urban acreages. The largest change in percentage is the decrease in agriculture cover (63%); however, in acreage, forest cover has increased the most (136 acres). In addition, the impervious intensity has increased, which has implications for storm water runoff into the lake. The increase in impervious intensity is consistent with the increase in urban acreage.

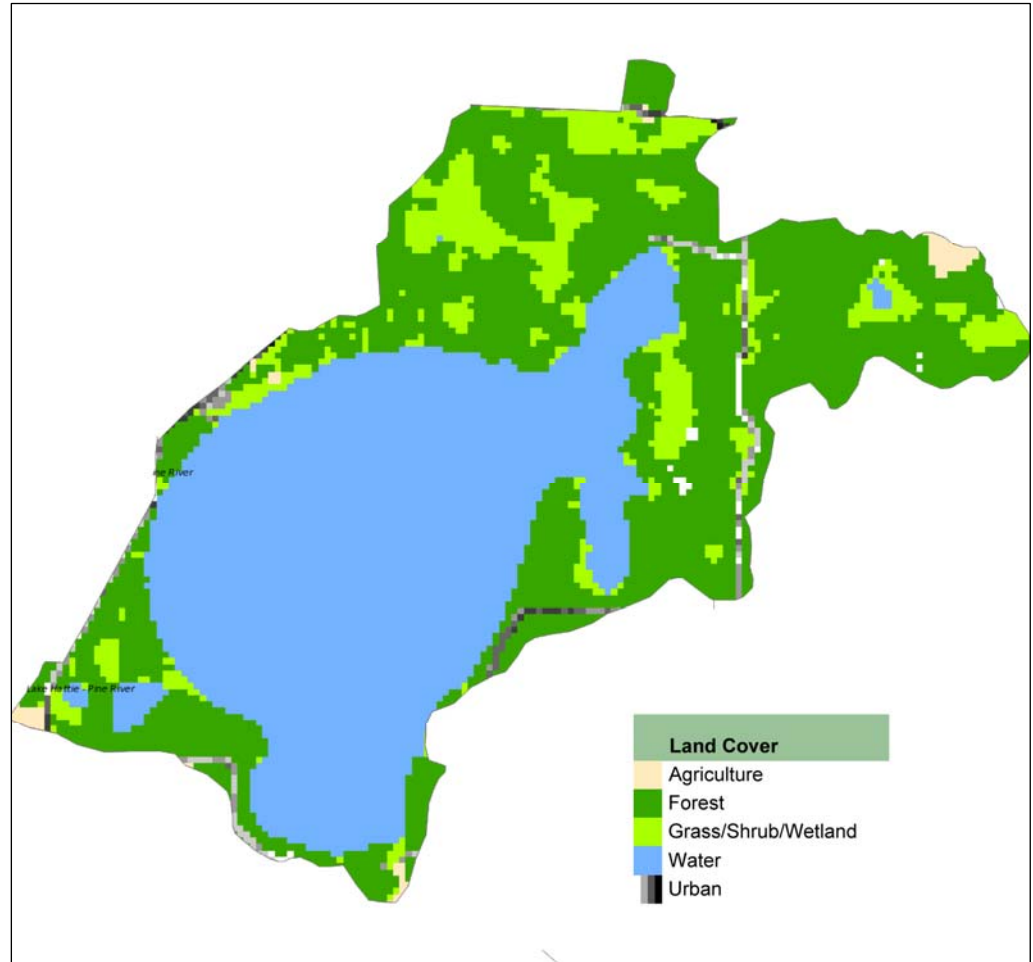


Figure 5. The Lizzie Creek (1102904) lakeshed land cover (<http://land.umn.edu>).

Table 1. Ada Lake's lakeshed land cover statistics and % change from 1990 to 2000 (<http://land.umn.edu>).

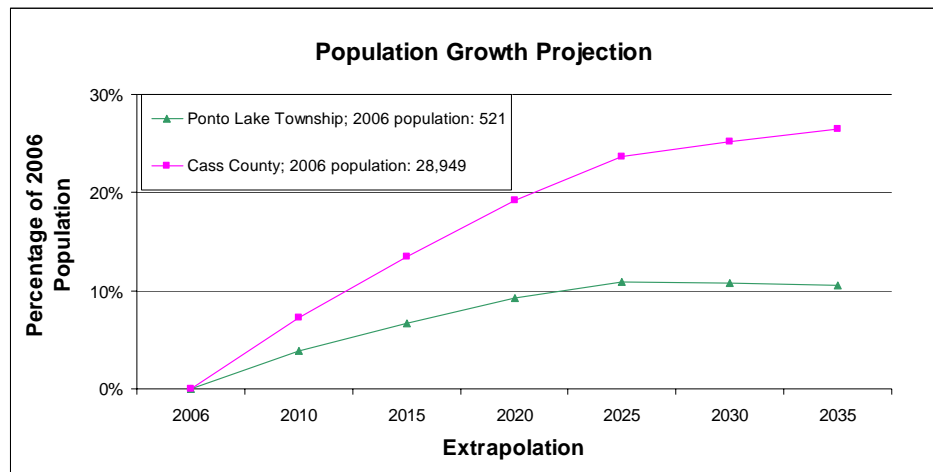
Land Cover	1990		2000		% Change 1990 to 2000
	Acres	Percent	Acres	Percent	
Agriculture	46	2.2	17	0.81	63 % Decrease
Forest	741	35.49	877	42	18.4 % Increase
Grass/Shrub/Wetland	250	11.97	214	10.25	14.4 % Decrease
Water	1,013	48.52	940	45.02	7.2 % Decrease
Urban	38	1.82	41	1.96	7.9 % Increase
Impervious Intensity %					
0	2,057	98.52	2,054	98.37	0.1 % Decrease
1-10	10	0.48	11	0.53	10 % Increase
11-25	11	0.53	12	0.57	9.1 % Increase
26-40	6	0.29	8	0.38	33.3 % Increase
41-60	3	0.14	3	0.14	No Change
61-80	0	0	0	0	No Change
81-100	0	0	0	0	No Change
Total Area	2,088		2,088		
Total Impervious Area (Percent Impervious Area Excludes Water Area)	6	0.56	7	0.61	16.7 % Increase

Demographics

Ada Lake is classified as a recreational development lake. Recreational development lakes usually have between 60 and 225 acres of water per mile of shoreline, between 3 and 25 dwellings per mile of shoreline, and are more than 15 feet deep.

The Minnesota Department of Administration Geographic and Demographic Analysis Division extrapolated future population in 5-year increments out to 2035. These projections are shown in Figure 6 below. Compared to Cass County as a whole, Ponto Lake Township has a lower extrapolated growth projection.

Figure 6. Population growth projection for Ponto Lake Township and Cass County. (source: <http://www.demography.state.mn.us/resource.html?id=19332>)



Status of the Fishery (DNR, as of 07/09/2007)

Ada Lake is a 974-acre lake located east of Backus, Minnesota that has 7.21 miles of shoreline and a maximum depth of 60 ft. There is a state-owned public access on the north shore. The Minnesota Department of Natural Resources (MNDNR) has classified Minnesota lakes into 43 different classes based on physical, chemical and other characteristics. Ada Lake is in Lake Class 27; lakes in this class are generally very large, deep, regularly shaped lakes. This lake is primarily managed for northern pike, largemouth bass, and walleye, and secondarily for bluegill, black crappie, yellow perch, and cisco (tullibee).

Northern pike are abundant in Ada Lake. The average length of northern pike sampled in 2007 was 19 inches, and fish ranged from 10 to 38 inches. The abundance of northern pike compared favorably to other lakes in this class. Since 2003, there has been a 24- to 36-inch protected slot limit for northern pike on Ada Lake. This regulation is intended to improve the size structure of the northern pike population. Since this regulation was put in place, the percentage of northern pike 24 inches or larger has increased. Largemouth bass up to 18 inches were sampled. Though Ada Lake has been stocked with walleye fry or fingerlings at high levels on an every other year basis, walleye abundance is low. The walleye population consists of larger fish. The walleye average length was 19 inches and fish up to 26 inches were sampled in 2007. The abundance of black crappie appears to be good. Black crappie sampled in 2007 averaged about 8 inches in length, however fish up to 12 inches were found. Bluegill abundance was similar to other lakes in this Lake Class. Average length of bluegill was about 6 inches, however fish up to about 9 inches were caught. Other species available for anglers include bowfin (dogfish), brown bullhead, cisco (tullibee), hybrid sunfish, pumpkinseed sunfish, rock bass, white sucker, yellow bullhead, and yellow perch.

Anglers can help maintain or improve the quality of fishing by practicing selective harvest. Selective harvest allows for the harvest of smaller fish for table fare, but encourages release of medium- to large-sized fish. Releasing these fish can help maintain balance in the fish community in Ada Lake and provide anglers the opportunity to catch more and larger fish in the future.

Shoreline areas on the land and into the shallow water provide essential habitat for fish and wildlife that live in or near Minnesota's lakes. Overdeveloped shorelines can't support the fish, wildlife, and clean water that are associated with natural undeveloped lakes.

Shoreline habitat consists of aquatic plants, woody plants and natural lake bottom soils. Plants in the water and at the water's edge provide habitat, prevent erosion and absorb excess nutrients. Shrubs, trees, and woody debris such as fallen trees or limbs provide good habitat both above and below the water and should be left in place. By leaving a buffer strip of natural vegetation along the shoreline, property owners can reduce erosion, help maintain water quality, and provide habitat and travel corridors for wildlife.

See the link below for specific information on gillnet surveys, stocking information, and fish consumption guidelines. <http://www.dnr.state.mn.us/lakefind/showreport.html?downum=11025000>