

JESSIE LAKE WATERSHED ASSOCIATION

JESSIE JABBER



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GREETINGS FROM PRESIDENT HAROLD GOETZMAN:

I hope you all had a healthy and prosperous winter. I'm sure with the warm spring weather that you are looking forward to the ice going out on the lakes as we embark upon a new summer season. Walking down the road a few weeks ago we noticed the eagles have returned, deer are moving about and the creeks are opening. It was also apparent that the pressure of lakeshore development continues as we observed the property previously owned by Amy Anderson had been subdivided into six lots.

As your president at the ending of one century and the beginning of a new one, I feel proud of the accomplishments made by our Association over the past two years. We have developed a solid base to work toward our mission of maintaining the health and sustainability of the Jessie Lake Watershed. This includes an excellent working relationship with our governmental agency partners resulting in a collaborative effort to develop a watershed management plan involving all the stakeholders. As I mentioned in my letter last fall, we were joining the Itasca County Soil and Water Conservation District (ICSWCD), Department of Natural Resources (DNR), and the U.S. Forest Service (USFS) in applying for a Clean Water Partnership (CWP) grant from the Minnesota Pollution Control Agency (MPCA). Since that time, the application was submitted, interviews were held, and our grant was approved on Feb. 29th. Because of the great effort on everyone's part, the Jessie Lake Watershed Project was ranked number one by the reviewing committees. The details of this project are explained in the following article, but the two-year grant totaling \$155,850 includes \$72,000 MPCA matching funds. The project managed by ICSWCD will develop "A Case Study for Water Quality of a Polymictic Lake." This will provide the information necessary to understand the role of lakeshore development on the natural degradation for lakes of this type (polymictic), which refers to lakes that frequently turn over during the summer. Together with our last two years of data we will have four consecutive years of water quality data. A work plan and the details of our role in the project should be available at the spring meeting. This is an exciting beginning to the New Millennium for the JLWA and will require the cooperation and dedication of all our members. Hopefully, you will agree with the direction your Board is taking and join the effort to keep this watershed the beautiful area we all desire.

We will also be continuing the other projects that we have underway and will require help throughout the year. Stream maintenance, shoreline planting and walleye monitoring will need volunteers. Remember to hang your duck houses early if you haven't already done so and if you need one check with Jim Anderson on availability.

I am looking forward to seeing you all at the spring meeting and sharing your ideas or concerns. Think about things or events you would like to see happen in the Association. I still would like to see us find a way to do a roadside cleanup (set a day this summer), maybe a social

event such as a member's only fishing contest, or a picnic with Bocce Ball and horseshoes. We could also arrange some special evening meetings with informational speakers if there is an interest. If you can't attend the spring meeting, feel free to call me or any of the other officers with your ideas. Also, don't forget to release a few of those big walleyes.

CLEAN WATER PARTNERSHIP GRANT

By Harold Goetzman

Over the past two years the Jessie Lake Watershed Association (JLWA) and ICSWCD has been sampling and assessing the water quality in Jessie, Peterson, Spring and Little Spring Lakes. Based on the data for Jessie Lake it is apparent there is a severe fluctuation in nutrient levels (phosphorus) and resulting algae blooms. These swings in phosphorus loading not only affect the lake seasonally (recreational and fishery potential), but also are detrimental to the long-term health of the lake and therefore property values. It appears that Jessie Lake is near the phosphorus limit for a windswept, shallow lake and small increases in phosphorus could result in increased algal blooms and decreases in water transparency. The potential for further degradation of water quality is a major concern at this time because of the likely increase in shoreline development in the near future.

The application for a CWP grant was first discussed last year at a meeting of the Jessie Lake Watershed Technical Advisory Committee, which coordinates the efforts between the ICSWCD, DNR, MPCA, USFS and JLWA in addressing issues and concerns of area citizens. Working together these organizations, the USFS Experimental Forest Research Station and the University of Minnesota Hydrology Department outlined a project totaling \$155,850 to study the Jessie Lake Watershed over the next two years. Our proposal was one of twenty-four submitted to the MPCA. Since these proposals requested about a million dollars more than were available only half were funded. We sincerely appreciate the excellent work of Justin Watkins (ICSWCD) and Karl Koller (DNR) in preparing our highest ranking proposal.

The project goal is to solidify a partnership between local citizens and governmental agencies in an effort to protect and maintain the aesthetic, economic, and recreational value of Jessie Lake and its watershed. This overall mission is more specifically composed of the following goals:

- 1). Improve or at least maintain the water quality of Jessie Lake (Trophic State Index of 40-50).
 - A). Understand phosphorus cycling by identifying the phosphorus contributors to the lake and investigating the relationship between stream flow and lake conditions. Identify internal loading and possible causes of phosphorus sedimentation. Examine sediment composition and its effect on internal phosphorus loading. Determine the link between lake level and trophic status.
 - B). Evaluate lake levels and determine whether the fluctuations are natural or accelerated by human activities in the watershed.
- 2). Preserve the aesthetic and economic value of the total watershed. Provide educational material to property owners on implementing best management practices in the watershed. Evaluate and monitor water crossing and road construction practices.
- 3). Maintain high quality fishing, swimming and boating recreation potential. Maintain or improve the current state of natural diverse habitat for wildlife, especially in riparian areas.
- 4). Generate a case study of the water quality of a shallow, polymictic lake.

The JLWA receives no funds from the grant and has volunteered to contribute \$19,500 in labor and expenses. Members of the JLWA are responsible for a variety of tasks, many of which are a continuation of past efforts. We will assist in developing the detailed monitoring plan, collect the

majority of the water samples, monitor stream flows and lake levels, monitor walleye spawning in the tributary streams, and maintain spawning habitat, complete shoreline restoration demonstration projects, and develop and disseminate educational material to the membership. Funding received by the agencies will be used to purchase equipment, pay laboratory costs of chemical analysis of water and sediment samples, and salaries for staff while they are working on the project.

BOATERS BEWARE

By Bill Nelson

As a part of the CWP study Miki Hondzo, a professor at the University of Minnesota, will be anchoring a small raft in the middle of Jessie Lake during August and September. This raft, about 2x5-feet in size, will have reflectors on it and be surrounded by floats. The raft will have a wind gauge mounted on top and an array of scientific instruments hanging below to measure a variety of physical and chemical parameters. Many of these instruments are extremely expensive, up to \$30,000, and very sensitive. The purpose of this phase of the CWP study is to measure wind generated water velocities throughout the water column and the exchange of chemicals between the water and lake bottom. Please stay away from this raft; there is absolutely nothing to see since all the instruments will be deeply submerged.

WALLEYE, WALLEYE EVERYWHERE, BUT NOT A ONE WILL BITE!

By Karl Koller, Fisheries Specialist, Department of Natural Resources

This past summer, crews from the Grand Rapids Area Fisheries office completed population assessments on Jessie, Spring and Little Spring Lakes; Peterson Lake will be surveyed this summer. During these assessments gill nets and trap nets were set daily for about a week to assess the status of the fish populations (see the Spring 1999 newsletter for a description of the nets). We use the average number of fish caught per net as an indicator of how many fish of a given species are in a lake. This number can be compared to previous catches in the lake to see if the population is changing, and compare it to catch rates on similar type lakes around the state to see how the lake compares to an expected range. We also take scales from some species so we can tell their age (fish scales have rings for each year, much like a tree). We use these data to determine how fast fish are growing, and, in the case where we are stocking a species, whether a given fish was born in a year when we had stocked, or in a non-stocked year. Here is a brief summary of what we learned.

Jessie Lake

One of the main reasons we survey Jessie Lake is to assess the walleye population to determine how successful natural reproduction has been, and to determine how often it will be stocked. Before we set the nets, we had expected to see a large population of walleye from the 1996-year class. Fall electrofishing for walleye fingerling over the past few years always revealed a lot of fish from that year class. However, the number of walleye we actually sampled this summer surprised even us. The average catch rate in our gill nets was 22.0 walleye/net! This is the highest catch rate ever observed in Jessie Lake, and one of the highest ever observed in the Grand Rapids area (and more than three times the median catch rate of walleyes in similar type lakes around the state). As expected, most of the fish were from the 1996-year class. Most of these fish ranged from 11.5 to 16 inches in length, and they should grow another inch or two as this summer progresses. What does this mean for the angler? Well, although fishing should be good for a few years to come, if there is a lot of food in the lake for the walleye, or weather conditions are poor when you are fishing, it may be more difficult than you would expect. In other words, just because there are a lot of fish, don't expect them to be jumping in the boat.

What else did we find of interest? First of all, we sampled very few northern pike, 0.4/net. This is the lowest catch rate on record (previous low was 1.8/net in 1987). Because northern pike will feed on walleye and will compete for the same food, the low northern pike abundance could be one factor that contributed to the unusually high walleye abundance. The reason for such low abundance of northern pike is not known. However, northern pike like to run up streams to spawn on flooded plants, but beaver and debris dams have blocked Spring Creek. The JLWA's clearing of Spring Creek should help northern pike populations increase in the future to more normal levels.

Yellow perch are another species that we pay close attention to when determining our management activities. Yellow perch are usually the main food for walleye and northern pike in a lake, so we like to monitor the population to make sure we don't stock more walleye than the perch population can support. Our test netting last summer indicated that perch catch rates have declined noticeably, from 86.6/net in 1993 to 32.3/net in 1999, but that they are still abundant enough to support a good walleye population. They are also abundant enough that the walleye shouldn't have a hard time finding a meal, and therefore may not be too easy to catch. The high abundance of yellow perch in the past may be another reason for the unusually high walleye abundance. Perch sampled in 1999 ranged from 4.8 to 11.5 inches in length.

Black crappie catch rates were fairly low compared to past assessments. Crappie abundance in many lakes fluctuates greatly from year to year, much like walleye. Crappies are also known to compete with walleye, either by feeding directly on young walleye, or by competing for the same food as young walleye. The fact that crappie abundance was so low could be the third reason walleye have become abundant. We sampled several other species in our nets, but I won't cover everything at this time.

As for the future of Jessie Lake's walleye population, the 1996-year class was large enough that fishing should be good for the next few years. Electrofishing last fall indicated the 1999-year class should be abundant and provide good fishing in a few years. Will we see 22 walleye per net again? Not likely. Fish populations fluctuate, and this high catch rate was probably the maximum. In 1996 the stars were aligned just right, with low abundance of competitors, high abundance of prey, and perfect weather conditions to ensure good survival of stocked walleye fry. If anglers want to see the good fishing last into the future, they should only keep as many fish as they really need, releasing the rest to be caught and enjoyed another day. Particularly, the big females (both walleye and northern) that produce the most eggs.

Spring Lake

Spring and Little Spring Lake's are quite different from Jessie Lake in size, shape, depth and the type of habitat present. Because of these differences, they support different fish populations. Contrary to what we found last summer in Jessie Lake, the northern pike catch rate in Spring Lake of 12.5/net was the highest we've ever seen in this lake. Typically when you have a lot of northern pike in a lake, there is so much competition for food that most fish are smaller. This appears to be the case in Spring Lake, as the mean length of the northern pike in our nets was 18.3 inches. Yellow perch numbers (15.5/net) were also lower than on Jessie Lake, but this would be expected with high northern pike abundance. They were smaller perch, the largest only being 8.7 inches. Only two walleye were sampled in this assessment, for a catch rate of 0.3/net. Twice in past assessments walleye were sampled at a rate of 1.0/net.

Although they were not sampled in very high numbers, Spring Lake is probably best suited for producing largemouth bass, bluegill and crappie. Bluegill sampled in our nets had a mean length of 5.6 inches and the largest sampled was 8.8 inches. We sampled very few crappie and bass, but the

nets we use are not as efficient at sampling these species.

One other species of interest in Spring Lake is the tullibee (or cisco). They are relatively abundant (5.2/net) and several sizes are present (up to 17.7 inches in length). Tullibee are a very good food for northern pike and walleye, and where present, can produce some trophy walleye and northern pike. Finally, because tullibee need cool water that has good oxygen concentrations, their presence indicates fair to good water quality.

Little Spring Lake

The Little Spring Lake fish population was similar to Spring Lake. Northern pike were abundant (9.0/net) and always have been; the catch rate was 11.0/net in the 1959 and 1978 population assessments. Northern pike sampled in 1999 had a mean length of 19.8 inches, although one was 34 inches long. Yellow perch catch rates were low (5.8/set), but the perch tended to be larger than in Spring Lake (mean length of 8.9 inches). Panfish populations were relatively low, but there were some quality fish present. Bluegill averaged only 5.0 inches long, but were sampled up to 10.5 inches. The three crappie caught in trap nets were 11.8 to 13.3 inches. Surprisingly, despite the fact that Little Spring Lake is only about 12 feet deep, there were eight tullibee caught.

What's next?

All the information discussed above is currently being written up as population assessment reports. The reports will be sent to St. Paul and you will be able to access it on the DNR web page (www.dnr.state.mn.us) sometime in August, or you can get a copy by calling our St. Paul office (1-800-766-6000). We will also send copies to the JLWA president that you should be able to borrow or copy.

The next step will be to write management plans that spells out what our goals are for these lakes and what management activities, such as stocking and future assessments, we will do. As we write these, we will seek public input on the plans. Once a draft is completed, we will invite anyone interested to a public meeting to ask questions or comment on the plan. Watch the Herald Review for an article announcing the meeting. In the mean time, feel free to call our office if you have any questions.

WATERSHED HISTORY STUDIED

By Jeremy Cable, District Biologist, Marcell and Deer River Ranger Districts, Chippewa National Forest

Chippewa National Forest assigned a seasonal employee during the summer of 1999 the task of tracking down historical information about Jessie Lake Watershed. If we can learn conditions in the past, the information may help the partners of Jessie Lake Watershed Project choose what to do in the future. Specific interest areas included resorts, timber, fisheries, wildlife, agriculture, and settlement population trends, as well as assembling a general history.

Newspapers from 100 years ago, old government records and files, and photographs on file at the State Historical Society were reviewed for any relevant information. Additionally, over the past couple years a number of Forest employees interviewed long-term residents to gain better insights from their recollections. A number of stories from the late 1800's to early 1940's reveal a wealth of character and characters. We'll glean little tidbits to share in this and future newsletters. The first tales are below.

Nonetheless, the expectation is the findings will eventually be summarized and made a part of the National Forest's watershed management analysis report, as well as shared with the Association and agency partners.

There are some gaps remaining; perhaps members of the JLWA can help fill those gaps. Of

interest are photos from before 1925, which show conditions in the watershed. Photos of hunting or fishing parties from the Jessie Lake and Spring Lake vicinities prior to 1925 are of special interest. If you have any photos you are willing to let the USFS study, please contact Jeremy Cable, District Biologist, at the Marcell Ranger District (832-3161) or Deer River Ranger District (246-2123).

History Tidbits:

The Herald Review reported in 1906 the case of Muskrat Joe, who was arraigned for selling moonshine from a barge on Jessie Lake, to several timber camps along the shore. His defense was that he never set foot on shore; he lost.

Logging led the railroads north through the country and by the end of 1903 stations were in place in the towns of Jesse Lake and Spring Lake. Horses brought the logs from the woods for loading on the railroad. The Big Fork Settler newspaper of January 10, 1907 provides the following account: "Mr. Leslie who lives at Jesse Lake had a team drown in that lake one day last week. The team was working on the logging sled for the Pillsbury Co. and while the driver was hauling a load of logs on the lake the ice gave way under the load and the sleds not being properly put together sank taking the team under while the load of logs floated."

WATER QUALITY STUDY RESULTS FOR 1999

By Justin Watkins, Limnologist, Itasca County Soil and Water Conservation District

As part of an ongoing water quality study the JLWA and ICSWCD sampled Jessie Lake and its tributaries from April to October of 1999. Weather conditions were considerably different in 1999 than in 1998. The April-September total of 32.03 inches of rain nearly doubled the 17.14 inches that fell during that period in 1998. Consequently, the highest water level recorded since the installation of the lake gage was recorded, opposed to 1998 when the lowest lake level was observed. Stream flow in and out of Jessie Lake in 1999 was almost ten times what it was in 1998. As a result, residence time, which is lake volume/outflow, decreased from 11.6 years to 1.4 years.

Windier conditions resulted in more frequent and deeper mixing of the water column in 1999 than 1998, thus preventing the development of a defined hypolimnion (the lowermost, non-circulating layer of water in a thermally stratified lake that lies below the thermocline; it remains cold and is usually deficient of oxygen). Accordingly, prolonged loss of oxygen near the sediment/water interface did not occur. This well-oxygenated, well-flushed condition resulted in a less productive year than 1998. Samples taken near the bottom of the lake indicated a mean total phosphorus concentration of 34.75 ppb compared to 123.72 ppb in 1998. Mean surface total phosphorus (30 ppb) and chlorophyll-a concentrations were almost exactly half of what they were the previous year, and Secchi disk measurements for water clarity increased by 56%.

Carlson's Trophic Status Index (TSI) evaluates the productivity of a lake. It is a measure of eutrophication of a body of water using a combination of measures of water transparency or turbidity (using Secchi disk depth recordings), Chlorophyll-a concentrations, and total phosphorus levels; TSI ranges from 20 to 80. In 1999 the mean TSI was 50.6, a substantial improvement from the 58.0 measured in 1998, and similar to the measurements from 1986 (49.7) and 1992 (42.9). Based on these results, Jessie Lake would be classified as a mesotrophic lake, a much healthier situation than in 1998.

Sampling of Peterson Lake in 1999 also showed improved water quality as the phosphorus level went from about 29 to 20 ppb.

DID YOU KNOW?

By Harold Goetzman

- The DNR has a very informative web page (www.dnr.state.mn.us) that can provide lake contour maps for 4500 lakes as well as fish netting reports, water quality data, and general lake data. Click on maps under the Information Center and then click on Lake Depth Maps to search for the desired lake. Maps can be downloaded for free.
- Plastic refuse currently represents 7.3% by weight or 31% by volume of the nation's solid waste. Biodegradable plastics made with corn starch are now available for many products and we should use them when possible.
- Many people think there are only two types of turtles in the state, mud and snapping turtles. Actually, there are nine species in Minnesota that are in the three general groups: pond, river and marsh turtles.
- A rain event as in July 1999 with more than 5.5 inches only happens once in a 100 years. An average of 27 inches per year is normal for this area and 1999 had more than 40 inches. With 1991 to 1999 all being above average years we have accumulated an extra year's worth of precipitation (30 inches) in eight years.
- Lakescaping to provide a buffer of taller native plants along the shore will also deter Canadian Geese from grazing in your yard. Geese avoid using areas where plants obstruct their view of the surrounding area.
- Only 1% of the land in the Chippewa National Forest is restricted or designated for non-motorized uses such as hiking, biking, cross-country skiing, snowshoeing and hunting. We need to protect and preserve these valuable resources.
- The Itasca Farm Store in Grand Rapids will be carrying phosphorus free fertilizer that is recommended for use near lakes.
- This winter Jessie Lake was frozen over for less than four months, from December 17 to early April. This was the shortest period of ice cover in the past 24-years. Since 1977 Jessie Lake has on the average frozen over on November 25 and the ice has normally gone out five months later on April 25. The longest period of ice cover was nearly six months during the winter of 1995-96 when then lake froze over November 12 and did not reopen until May 9.
- After experiencing record high water levels in 1999 the lack of fall rains and snow has resulted in low lake levels and stream flows this spring. At the time this newsletter was prepared Jessie Lake was only about 6-inches above the all time low water level recorded in 1998. Unless we get some rain, it could be another year of trying to get our boats on and off the lifts.

MEETING ANNOUNCEMENT

The spring meeting of the Jessie Lake Watershed meeting will be held at the Bowstring Town Hall on May 27. The meeting is scheduled for 10:00 A.M., a time selected to minimally interfere with fishing. Our guest speaker will be Jeff Tillma, a fisheries biologist with the DNR who will discuss fish stocking and the results of last summers fisheries survey of lakes in the watershed.