

## **Summary of Completed 5 Year Lake Protection Project.**

In October of 2015 Upper and Lower Turtle Lakes completed a 5 year, grant funded project officially entitled "Turtle Lakes 5 year Watershed Education and Best Management Practices Lake Protection Project". Our lake association was actively involved in the project along with the Lower Turtle Lake association and management district, the Town of Almena, the Barron County Soil and Water Conservation Department, the farming community and the Wisconsin DNR. A project summary, activities, outcomes and recommended "next steps" follow.

### **Background**

- Several hundred tons of sediment with nutrients enters our lakes each year as part of the natural watershed process. A 2003 study estimated about 400 pounds of phosphorus comes into Upper Turtle annually. Even more enters Lower Turtle Lake.
- These nutrients, especially phosphorus, contribute to excessive early plant growth.
- Watershed modeling suggests 68% of the phosphorus load comes from agriculture and about 32% from near shore sources, internal release and re-suspension of sediments and plant decay.
- One non-native invasive aquatic plant species, Curly-leaf pondweed (CLP), exists in both lakes and contributes to the problems experienced.
- The lake weed population and more frequent algae blooms are of concern to lakeshore property owners. They limit summer recreational activity and have the potential to decrease property value.

### **Activities and Education designed for Farmers**

- Farmer education to promote practices that prevent soil loss and protect water quality.
- Onsite field trips and no till vs conventional test plots set up to show farmers in the watershed how small changes could mean positive changes to their bottom line and protect the lakes at the same time.
- No till incentive projects.
- Attendance at the Red Cedar Watershed Conference by project stakeholders to learn from others experiencing similar water quality challenges.
- Attendance at Farm Technology Days showcasing latest improvements in production, research findings and technological developments.
- Mailings to local farmers detailing the programs being offered through the Lake Protection Project.

### **Activities and Education designed for Lakeshore Property Owners**

- Lake and tributary monitoring training on Clean Boats, Clean Water. Volunteers inspected boats coming into the lake and educated boat owners on practices designed to keep invasive species from entering.
- Sponsorship of a Lake Fair showcasing water quality monitoring, aquatic plant invasive species identification, shoreline restoration, surface water runoff and agricultural best practices.

- Attempts to increase participation in shoreline management improvement activities with rain barrel, tree and native plant give-a-ways.
- Shoreline Improvement Workshops and newsletters designed to help lakeshore owners reduce runoff from their property with buffers, rain gardens, use of native plants and site restoration.

### **Results/Outcomes**

- An increase in the number of no till acres in the Turtle Lakes watershed area.
- Several barnyard improvement projects designed to reduce runoff.
- Use of cover crops during fall and winter to reduce runoff.
- Shoreline improvement projects on both Upper and Lower Turtle Lakes.
- The tributaries to the two lakes that are draining the agricultural portions of the watershed show a fairly large reduction in total phosphorus levels from 2010-2014.
- The total phosphorus level in Upper Turtle did not change during the 5 year study period but the levels are discernibly higher than the six year period from 2000-2005.
- Water analysis data suggests that there was no discernible impact on the water quality during the 5 year study period. This is not unexpected as it typically takes many years for the effects of reduced sediment and phosphorus loading to be seen.
- Other phosphorus sources also have impact on the phosphorus load. These include recycling of phosphorus already in the lakes, stirring up of sediment already in the lakes, septic systems, phosphorus in the ground water, phosphorus attached to particles blown over the lake or cleansed from the air by rainfall.
- Checked boats both entering and leaving Upper Turtle Lake to prevent aquatic invasive species transfer.
- Absence of the dreaded invasive species, Eurasian Watermilfoil in both Upper and Lower Turtle Lakes. This species is present in other nearby lakes.

### **What can we do with the information learned from the study?**

- Work with the agricultural community in the watershed to both continue and expand no till practices. Align the agricultural interests and the interests of lakeshore property owners. Encourage farmers to plant winter cover crops and use buffer strips where warranted.
- Encourage property owners to make improvements to their nearshore area. These include native plant restoration, rain gardens, no mow areas and run off diversion projects through education and/or financial incentives.
- Consider the management of curly-leaf pondweed to reduce the amount of decaying vegetation in the lake and the overall phosphorus load.
- Continue to closely monitor for the presence of Eurasian Watermilfoil. If found, actively manage.
- Continue Water quality monitoring to track and document long term changes.