West Branch Millpond

Final Study Results 2013

University of Wisconsin–Stevens Point
and
Waushara County Staff and Citizens
To protect the lake we must protect the “watershed,” the land that drains or sheds its water into the lake.
West Branch Millpond – Location

West Branch Millpond
West of Wautoma
North of County Highway Y
Township of Deerfield

Surface Area: 60 acres
Maximum Depth: 29 feet

Water Flow

- West Branch Millpond is an impoundment; most water enters via the White River. Surface water runoff, direct precipitation and groundwater also contribute water to lesser extents.
- Most water exits West Branch Millpond via the river and groundwater.

Waushara County Lakes Study - Final Study Results 2013
Land uses and land management practices occurring in a watershed can affect the water quality in a lake. Land uses and land management also play major roles in how water moves across the landscape and how much water soaks into the ground (for long-term storage) or quickly runs off the land.

The surface watershed of West Branch Millpond is 1,336 acres.

Developed land, forests, and cultivated crops account for the primary land uses within the watershed area.

Forests, wetlands, and developed land border the millpond. Generally, the land closest to a pond or lake will have the greatest immediate impact on water quality.
Groundwater provides water to lakes in Waushara County throughout the entire year. Hard surfaces on the landscape prevent water from soaking into the ground and becoming groundwater. This results in less water flowing to the lake during the winter and between rains. Groundwater pumping can also reduce the amount of water entering lakes.

The quality of groundwater reflects what is happening on the land surface. Precipitation falling on forested land produces clean groundwater, whereas precipitation falling on lands that have chemical use can leach contaminants to groundwater. Groundwater contamination in central Wisconsin may include nitrogen, pesticides, herbicides and other soluble chemicals originating from septic systems, crops, barnyards, road maintenance, etc. Once in the groundwater, these chemicals slowly move towards a lake or river.

On the map below, arrows indicate the direction of groundwater flow to and from the lakes and streams. Groundwater flows towards the West Branch Millpond from the north.
Shoreland vegetation is critical to a healthy lake’s ecosystem. It provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and many small and large mammals. It also helps to improve the quality of the runoff that is flowing across the landscape towards the lake. Healthy shoreland vegetation includes a mix of tall grasses/flowers, shrubs and trees.

A few stretches of the shoreland around West Branch Millpond have healthy shoreland vegetation (displayed in green and on much of the southern and western sides); however, many stretches could benefit the lake by being restored.
The aquatic plant community of the West Branch Mill Pond is characterized as having an above-average diversity of plant species when compared to other lakes in the Waushara County Lakes Study, with a total of 20 species documented in the August 2013 survey. There were four species with a C-value of 8 or higher, indicating a healthy aquatic plant community. C-values range from 0 to 10; species with higher C-values are more sensitive to disturbance.
During the 2013 aquatic plant survey of the West Branch Millpond, 91 percent of the sites sampled had vegetative growth. The greatest depth at which aquatic plant growth was found was 31 feet.

The two most frequently encountered plant species were muskgrass (Chara spp.) and southern naiad.

Eurasian water milfoil was detected in scattered populations throughout the millpond, with greatest abundance near the north central shore. EWM can create dense beds which can stall or damage boat motors, make areas non-navigable, and prevent activities like swimming and fishing.

The survey did not document curly-leaf pondweed (CLP), although it had been found in the millpond in June. Because CLP dies off in late June, it should be monitored in early June each year.

**Species Richness** is a count of the number of plant species found at a survey point. A greater number of species in a lake helps to make the aquatic plant community more resilient to year-to-year changes and aquatic invasive species. More plant species means more diverse habitat and food sources are available.

**Chara** often grows in low, dense mats and is identified by its musky odor and rough texture. The water is often clear where Chara grows densely because of its ability to filter nutrients from water.

**White-stem pondweed** offer shade, shelter and foraging opportunities for fish. Its fruits are a valuable food for waterfowl.
**West Branch Millpond – Aquatic Invasive Species**

**Aquatic Invasive Species** are non-native plants or animals that may cause significant harm to a lake’s ecosystem. Typically, they are introduced to a lake by hitching a ride on clothing, boats, trailers and other water recreation equipment. Aquatic invasive species can be introduced to a lake accidentally or intentionally. Once in a lake, they may be impossible to completely remove and can be difficult and costly to remove. Prevention and early detection are the best ways to keep aquatic invasive species from establishing in a lake.

### Lakes with Aquatic Invasive Species in Waushara County, 2012

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<thead>
<tr>
<th>Lake Name</th>
<th>Banded Mystery Snail</th>
<th>Chinese Mystery Snail</th>
<th>Rusty Crayfish</th>
<th>Curly Leaf Pondweed</th>
<th>Eurasian Water Milfoil</th>
<th>Hybrid Eurasian/Northern Water Milfoil</th>
<th>Zebra Mussel</th>
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Learn to identify invasive species & look for them in your lake!
Lakes go through a natural aging process that results in increased aquatic plant growth, fish, and wildlife over time. Within a lake’s watershed, human activity on the land, in a wetland, or in the lake can dramatically accelerate this process. Depending on land management practices, changes in a lake that may have normally taken centuries to occur may take place in decades or even years. The amounts of nutrients, algal growth, and water clarity measurements help to define the age of a lake. Based on these measures, lakes can be classified for comparison to one another.

**Oligotrophic Lakes**

*Common uses:*
- Swimming
- Skiing
- Boating

*Vegetation of oligotrophic lakes:*
- Very little vegetation

**Mesotrophic Lakes**

*Common uses:*
- Boating
- Fishing

*Vegetation of mesotrophic lakes:*
- Increased vegetation
- Occasional algal blooms

**Eutrophic Lakes**

*Common uses:*
- Fishing
- Wildlife watching

*Vegetation of eutrophic lakes:*
- Lots of aquatic plants
- Frequent algal blooms

Winter fish kills can occur in shallow lakes due to low oxygen levels.
**Phosphorus** is a major nutrient that can lead to excessive algae and rooted aquatic plant growth in lakes. In fact, one pound of phosphorus entering a lake can result in 300 to 500 pounds of algal growth. All Waushara County lakes have either sufficient or excessive nutrients for aquatic plant growth, so these lakes will benefit from limiting the addition of more nutrients. Sources of phosphorus include septic systems, animal waste, storm water runoff, soil erosion, and fertilizers for lawns, gardens and agriculture.

- Total phosphorus levels measured when the lake was well-mixed during spring and fall are displayed in the graph to the left.
- During fall and spring 2010-2012, the average total phosphorus level was similar to earlier measurements.

**Water clarity** is a measure of how deep light can penetrate (Secchi depth). Clarity is affected by water color, turbidity (suspended sediment), and algae. Water clarity helps determine where rooted aquatic plants can grow.

- The graph to the left shows water clarity measurements taken between May and November. It is typical for water clarity to vary throughout the year.
- During the summers of 2011 and 2012, the poorest average water clarity in West Branch Millpond was 8.5 feet in July and the best was 10.2 feet in June.
Stop the Spread of Aquatic Invasive Species!

**Wetlands and Shorelands:**
- LEARN how to identify invasive plants and animals, and know who to contact if found.
- DO NOT PURCHASE prohibited and restricted species! Whenever possible purchase native plants.
- NEVER transplant water garden plants or aquarium plants into lakes, streams, wetlands, or storm water ponds. Properly dispose of unwanted plants and animals!
- REMOVE invasive exotic plants from your landscape and replace them with native plants or non-invasive exotic plants. Scout annually for new invasive plants.
- AVOID using garden plants from other regions whose invasive potential is poorly understood.

**Lakes and Rivers:**
- LEARN what Wisconsin invasive plants and animals look like and who to contact if seen in a lake or river.
- INSPECT your boat, trailer and equipment when traveling to different water bodies and REMOVE any attached aquatic plants or animals (before launching, after loading, and before transporting on a public highway).
- DRAIN all water from boats, motors, and all equipment after use at a lake.
- NEVER release live fish, bait or pets into a wetland or water body.
- BUY minnows from a Wisconsin bait dealer. Only use leftover minnows at that same water body.
West Branch Millpond – Primary Researchers

Aquatic Plants
Golden Sands Resource Conservation & Development Council, Inc.

Sediment Core
Dr. Samantha Kaplan (UW-Stevens Point) and Paul Garrison (Wisconsin DNR)

Shoreland Assessments
Ed Hernandez and Waushara County Land Conservation Department Staff
Dan McFarlane (UW-Stevens Point)

Water Quality and Watersheds
Nancy Turyk, Dr. Paul McGinley, Danielle Rupp and Ryan Haney (UW-Stevens Point)

Ed Hernandez and Waushara County Land Conservation Department Staff

UW-Stevens Point Students

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