Bentley Pond

Final Results

Portage County Lake Study

University of Wisconsin-Stevens Point, Portage County Staff and Citizens

March 31, 2005

What can you learn from this study?

You can learn a wealth of valuable information about:

- *Critical habitat that fish, wildlife, and plants depend on*
- *Water quality and quantity of your lake*
- *The current diagnosis of your lake – good news and bad news*

What can you DO in your community?

You can share this information with the other people who care about your lake and then plan together for the future.

- ✓ *Develop consensus about the local goals and objectives for your lake.*
- ✓ *Identify available resources (people, expertise, time, funding).*
- ✓ *Explore and choose implementation tools to achieve your goals.*
- ✓ *Develop an action plan to achieve your lake goals.*
- ✓ *Implement your plan.*
- ✓ *Evaluate the results and then revise your goals and plans.*

To protect

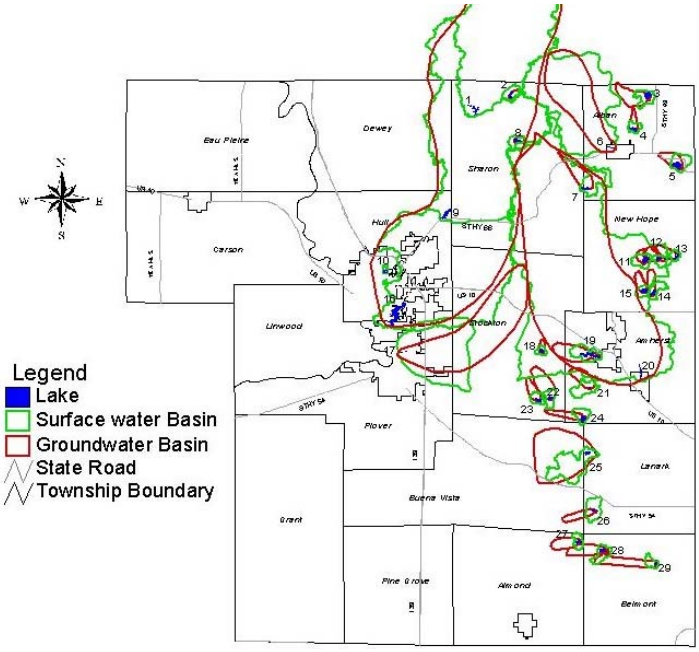
the lake we must protect the "watershed," the land that drains or sheds its water into the lake.

Bentley Pond ~ Location

Bentley Pond
On County Rd Y, Northeast of Dewy Marsh State Wildlife Area; Town of Sharon

Water flow

- Bentley Pond was created by a dam on the Plover River
- It is 86 acres with a maximum depth of 5 feet
- Water enters Bentley Pond from the Plover River, with some input from runoff, groundwater, and precipitation
- Water exits the lake to the Plover River and to groundwater

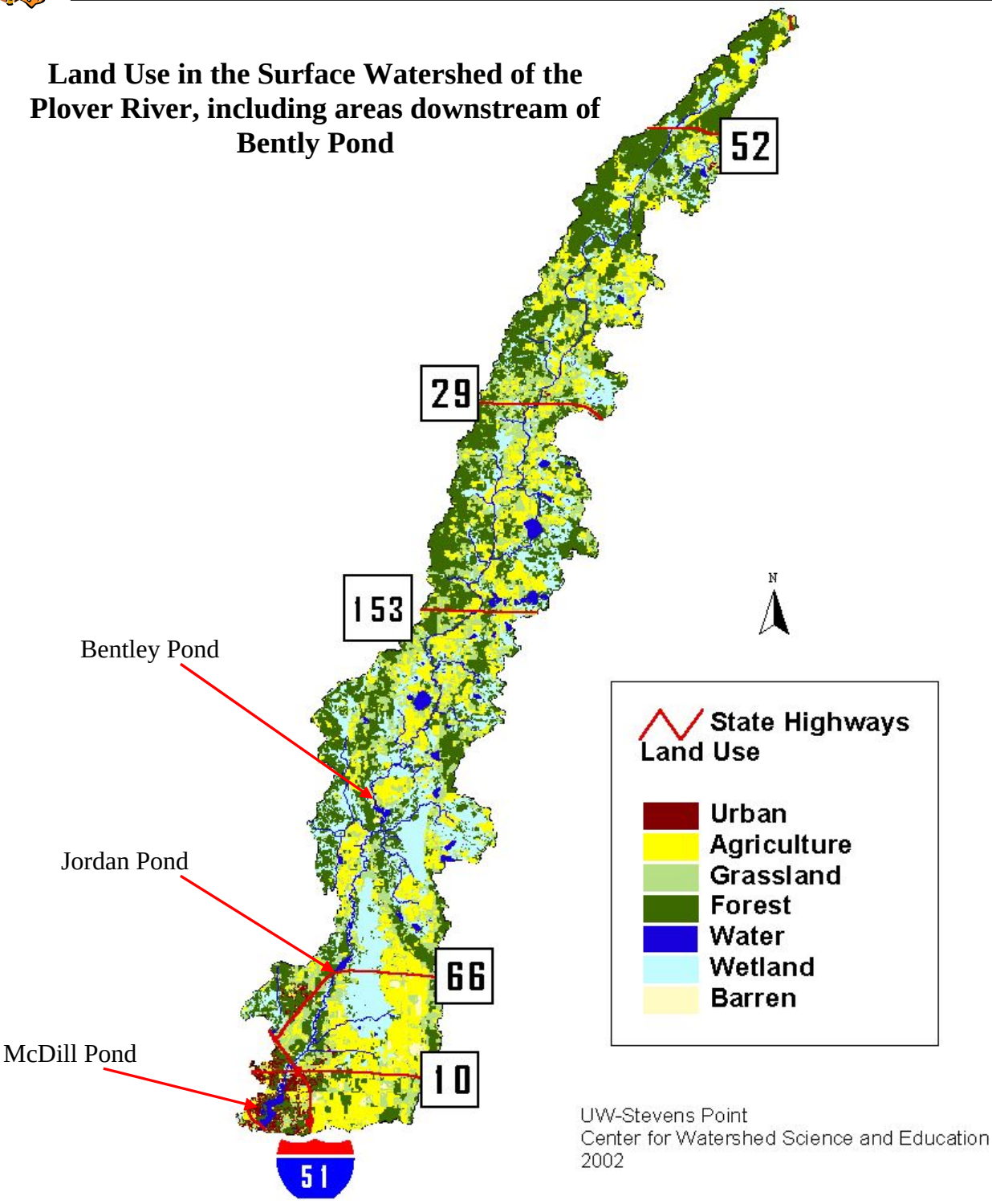


Bently Pond

Bentley Pond ~ Land Use in the Surface Watershed

Surface Watershed: The land area where water runs off the surface of the land and drains toward the lake.

Land Use in the Surface Watershed of the Plover River, including areas downstream of Bently Pond



UW-Stevens Point
Center for Watershed Science and Education
2002

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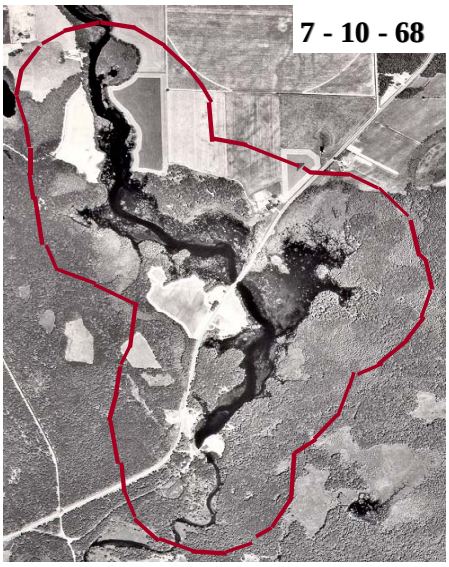
Bentley Pond ~ Taking a closer look
(Within 1,000 feet of the lake)

1960 Air Photo Image



1968 Air Photo Image

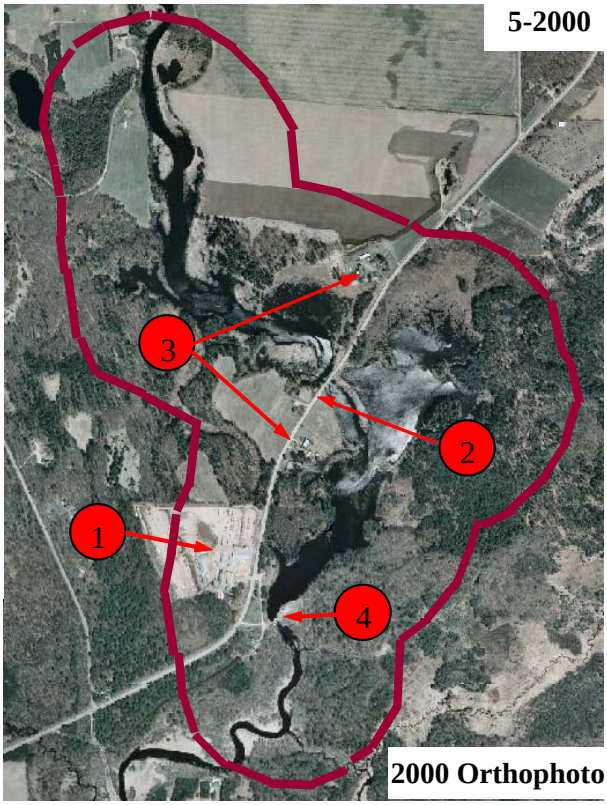
Points of Interest

1. Area of commercial development that was constructed after 1968. This accounts for most of the impervious surface increase.

2. The road was improved between 1960 and 1968.

3. Both farms existed before 1938.

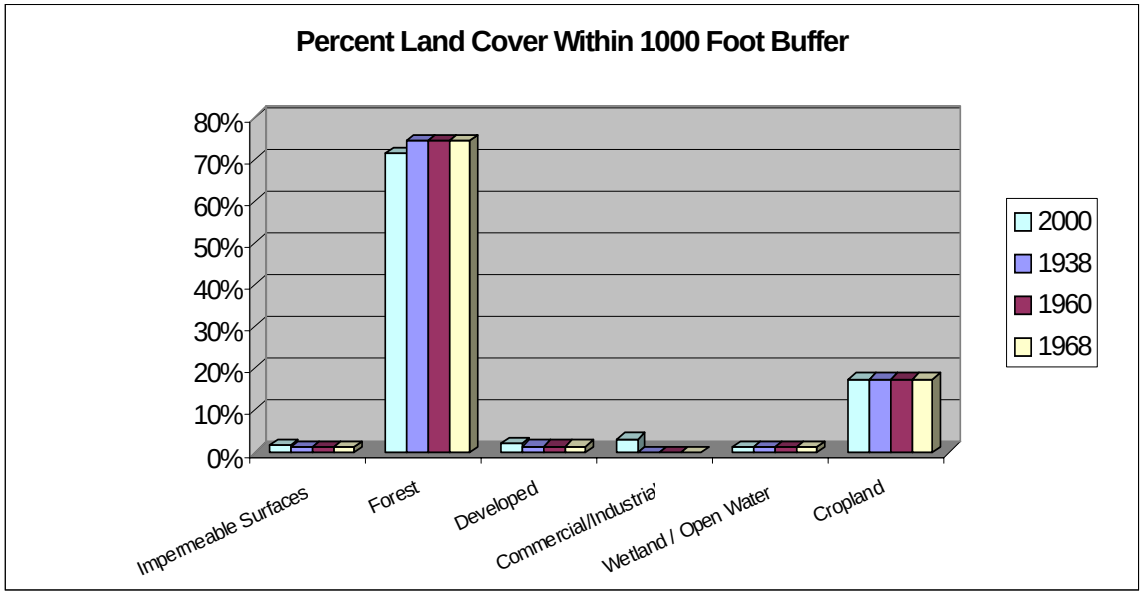
4. The only residential development that has occurred within the near lakeshore area since 1968.



Bentley Pond ~ Taking a closer look
(Within 1,000 feet of the lake)

Changes from 1938 to 2000

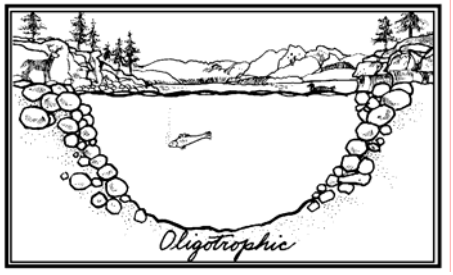
	1938	1960	1968	2000
Impervious Surface (acres)	5	5	5	7
Residential (acres)	6	6	6	8
Cropland (acres)	69	69	69	68
Forest (acres)	292	292	292	277
Wetland / Open Water (acres)	4	4	4	4
Comm. / Ind. (acres)	0	0	0	12



Bentley Pond ~ Water Quality

Total Phosphorus

In more than 80% of Wisconsin's lakes, phosphorus is the key nutrient affecting aquatic plant and algae growth. Once in a lake system, phosphorus levels are difficult to reduce, so limiting phosphorus input is key. Phosphorus at levels above 30 parts per billion (ppb) can lead to nuisance aquatic plant growth and accelerate a lake's change from oligotrophic to eutrophic. Sources of phosphorus include septic systems, detergents, animal waste, farmland and storm sewer runoff, soil erosion, and fertilizers for lawns, gardens, and agriculture.



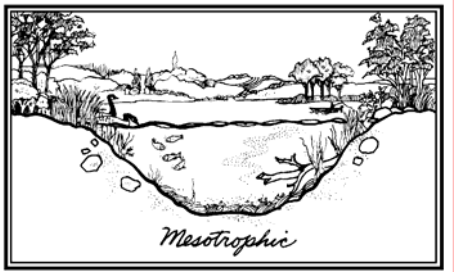
Oligotrophic Lakes

Common uses:

- ✓ Swimming
- ✓ Skiing
- ✓ Boating

Vegetation of oligotrophic lakes:

- ✓ Very little vegetation



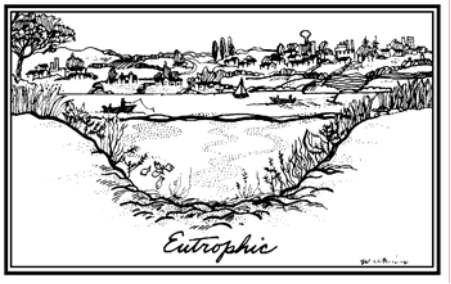
Mesotrophic Lakes

Common uses:

- ✓ Boating
- ✓ Fishing

Vegetation of mesotrophic lakes:

- ✓ Increased vegetation
- ✓ Occasional algal blooms



Eutrophic Lakes

Common uses:

- ✓ Fishing
- ✓ Wildlife watching

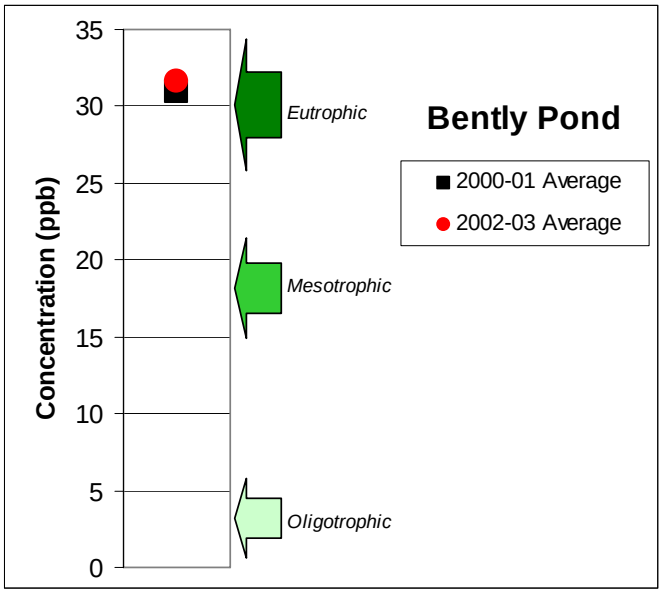
Vegetation of eutrophic lakes:

- ✓ Lots of aquatic plants
- ✓ Frequent algal blooms

Winter kill problems are most common on shallow lakes

Bentley Pond ~ Water Quality

Average Total Phosphorus Levels



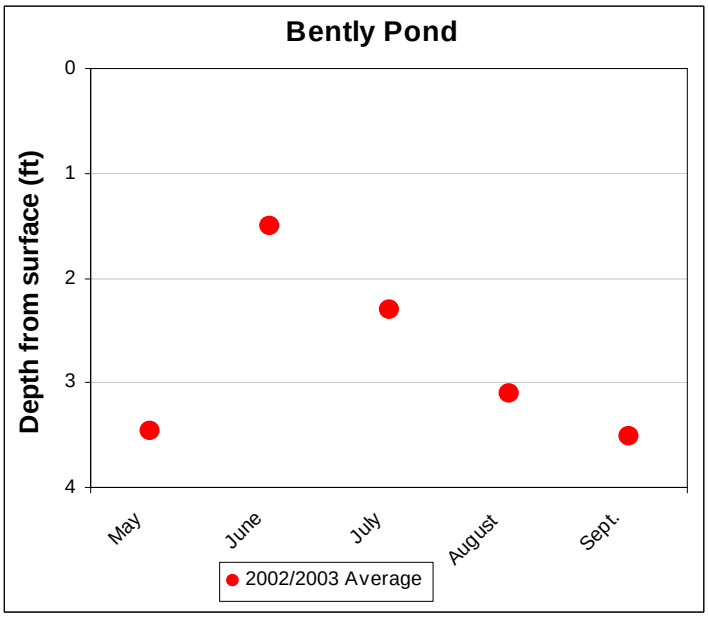
The graph to the left shows total phosphorus levels measured when the lake is well mixed during spring and fall months. Phosphorus levels in Bentley Pond are very similar to 2000-01 levels. Average total phosphorus concentrations for Portage County impoundments is 35 ppb. The concentration in Bentley pond is less than this average.

Bentley Pond is generally always mixed due to the constant flow of the Plover River through it.

Definitions of eutrophic, mesotrophic, and oligotrophic are on the previous page.

Water Clarity

Water clarity (Secchi disc depth) is an indicator of water quality. The two main components affecting water clarity are materials dissolved in the water and materials suspended in the water. Water clarity can indicate overall water quality, especially the amount of algae and suspended sediment present.



The water clarity in Bentley Pond is considered fair. The average Secchi depth for similar ponds in the region is 5 feet. Bentley Pond has poorer clarity than this. Natural water color of the Plover River somewhat decreases light penetration. During 2002-03, the water clarity of Bentley Pond was the best during the months of May and September, and the worst during June. These fluctuations throughout the summer are normal as algae populations and sedimentation increase and decrease.

2002 Amphibian Distribution at Portage County Lakes

This summary provides preliminary information on the amphibian species present and their distribution at the twenty-nine Portage County lakes. Surveys were conducted from April 2002 - August 2002, the typical breeding period of the frogs and salamanders found in the county.

Twelve frog species have been documented in Wisconsin, nine of which currently inhabit Portage County: American toad, chorus frog, spring peeper, eastern gray treefrog, Cope's gray treefrog, green frog, pickerel frog, northern leopard frog, and wood frog. Historically, Blanchard's cricket frog inhabited Portage County but is believed to now exist only in southeastern Wisconsin. Of all species believed to inhabit Portage County, only the pickerel frog was not found during the spring and summer of 2002. The pickerel frog has been listed as a species of special concern in Wisconsin. No new species to Portage County were recorded in 2002.

Seven salamander species have been documented in Wisconsin, all of which currently inhabit Portage County: blue-spotted salamander, spotted salamander, tiger salamander, central newt, mudpuppy, northern redback salamander and four-toed salamander. The four-toed salamander is listed as a species of special concern in Wisconsin.

Large sections of continuous natural shoreline on lakes are ideal habitats for frog and salamander populations. Natural areas with large amounts of submergent, emergent and floating-leaf vegetation provide protection for amphibians. Many species also use the vegetation for attachment of eggs during the breeding season. Green frogs, bullfrogs, pickerel frogs and leopard frogs depend on the shoreline area throughout the year. In contrast, American toads, spring peepers, tree frogs, wood frogs and chorus frogs depend on the shoreline area in the spring for breeding and then move to other areas for the rest of the year.

Undisturbed areas of shoreline that are also connected to large natural upland areas provide ideal habitat for many amphibian species because they lessen frogs' exposure to predators. Many frog and salamander species migrate to the lakes in the spring to breed and spend the summer months foraging in the uplands. Many amphibian species will also over winter in the uplands.

Bentley Pond ~ Frogs and Reptiles

Bentley Pond
Number of species: 3

Species observed to date: spring peeper, northern leopard frog, green frog

Location of primary habitat: many areas around the pond

Key features of habitat: protected areas of marsh with large amounts of submergent, emergent and floating-leaf vegetation as well as downed trees

Map Key
Red outlined areas = primary frog habitat

Good news
Numerous, large areas of suitable amphibian and reptile habitat surround the pond

Bentley Pond ~ Aquatic Plants

Aquatic plant surveys were conducted in each lake more detailed information is available in the final report.

Aquatic Plant Survey

There are 27 species of aquatic and wetland plants that have been found on Bentley Pond, which is below average for the Portage County lakes.

Bentley Pond has dense submersed vegetation of relatively few species, primarily waterweed, coontail, and variable pondweed. Much of the pond is shallow enough to be dominated by emergent plants, especially cattail, burreed, wild rice, and sedges. The UWSP has no collections or studies made on Bentley Pond before 2003.

Invasive Exotic Aquatic Plants

> Invasive species displace native species, disrupt ecosystems, and affect citizen's livelihoods and quality of life. They hamper boating, swimming, fishing, and other water recreation, and take an economic toll on commercial, agricultural and aquatic resources. (Wisconsin DNR)

Aquatic plants surveys revealed that some of the lakes in the study have invasive aquatic plants present.

Eurasian milfoil (Myriophyllum spicatum) was present in

- Bear Lake
- Lake Emily
- Lake Joanis
- Jordan Pond
- McDill Pond
- Springville Pond
- Thomas Lake

Curly leaf pondweed (Potomogetan crispis) was identified in

- Spring Lake
- Amherst Millpond

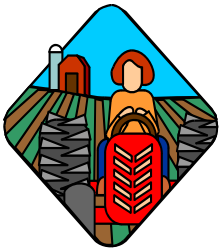
Contact the Portage County Land Conservation Department for additional information.

We Can All Help Take Care Of Our Lake

A lake is a magnificent water resource. The quality of its water is a reflection of what happens on the land that surrounds it.

Lake Users:

- ✓ Run boat engines efficiently.
- ✓ Observe no/low wake zones.
- ✓ Refuel away from water.
- ✓ Dispose of trash property



Land Owners:

- ✓ Control soil erosion from fields.
- ✓ Keep livestock out of lakes and streams.
- ✓ Control manure runoff.
- ✓ Carefully manage nutrients and pesticides.
- ✓ Learn to identify and look for invasive species.

Home Owners:

- ✓ Leave natural vegetation buffers in place or replace them if they have been removed.
- ✓ Eliminate the use of fertilizer or use low/no phosphorus fertilizer.
- ✓ Eliminate or minimize us of pesticides.
- ✓ Clean up after pets.
- ✓ Learn to identify and look for invasive species.

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- Wisconsin DNR Lake Protection grants
- UW-Stevens Point
- Portage County
- Portage County Citizens

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Bentley Pond ~ Primary Researchers

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Planning Assistance
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Reptiles and Amphibians/Near Shore Habitat
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Water Quality/Watersheds
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Dr. Byron Shaw
Dick Stephens
Nancy Turyk

Near Shore Summary
Dr. Glenn Bowles

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