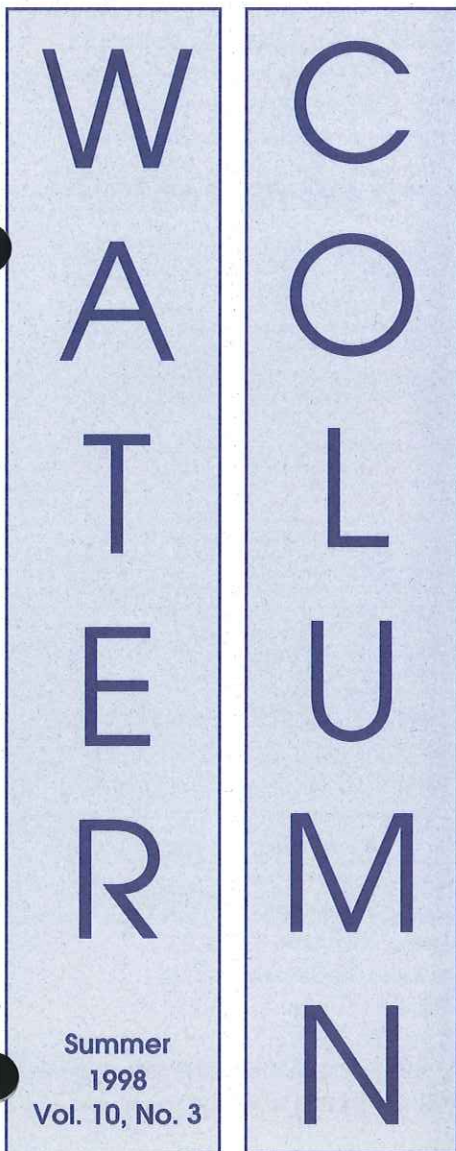




Office of Water Management
 Indiana Department of
 Environmental Management



Governor Signs "Lakes Appreciation Week" Proclamation

Indiana Governor Frank O'Bannon signed a proclamation on June 24 designating the week of June 28 - July 4, 1998 as Lakes Appreciation Week in Indiana. Lakes Appreciation Week is sponsored by the North American Lake Management Society (NALMS) to recognize the importance of our nation's "most under appreciated natural resource." The date coincided with the 1998 Secchi Dip-In, a now international event to document Secchi disk transparency in lakes and reservoirs. NALMS plans to make Lakes Appreciation Week an annual event. The text of Indiana's proclamation follows:

"Whereas, the State of Indiana is blessed with more than 1,000 lakes and ponds within its boundaries; and

Whereas, lakes and ponds are important resources to the Indiana way of life and its environment, providing sources of recreation, scenic beauty and habitat for wildlife; and

Whereas, Indiana's lakes are valuable economic resources for Indiana businesses, tourism and municipal governments; and

Whereas, the State of Indiana recognizes the need to protect these lakes and ponds for future generations;

Now, therefore, I, Frank O'Bannon, Governor of the State of Indiana, do hereby proclaim June 28 - July 4, 1998 as

LAKES APPRECIATION WEEK

in the State of Indiana, and invite all citizens to take due note of the observance."

DFW Checking Fish Health

In a first-of-its-kind project, the Division of Fish and Wildlife is now collecting bass and bluegills from eight northern Indiana natural lakes to look at the overall health of wild fish populations.

Bass over 14 inches long and bluegills over six inches long are being sent to Purdue University's Animal Disease Diagnostic Laboratory for what might be called a routine physical checkup.

Biologists hope to learn more about the presence of parasites, bacteria and viral infections, and potential harmful chemicals in natural lake fish populations.

Bass and bluegills were chosen because of their importance to sport fisherman.

"We don't know much about the overall health of fish in our lakes," says Gary Hudson, DFW fisheries supervisor. "By sampling now, we may be able to identify some problems we are not currently aware of and we will be able to monitor changes in fish health in the future."

Hudson says the DFW has sent sick fish to Purdue for analysis before in specific situations where problems developed, such as fish kills, but the DFW has never tried to quantify the extent and severity of diseases and parasites in natural fish populations.

The eight lakes chosen where initial fish samples are being collected include Blue Lake in Whitley County, Lime Lake in Steuben County, Manitou Lake in Fulton County, Skinner Lake in Noble County, Wall Lake in LaGrange County, and Beaver Dam, Shock and Webster lakes in Kosciusko County.

"We've tried to get a cross-section of lake size, lake type, watershed location and water quality," says Hudson. "The eight lakes should tell us how widespread fish health problems are."

(continued p. 2 . . .)

(FISH HEALTH...
continued from page 1)

According to Hudson, the Department of Environmental Management already monitors some chemicals in natural fish populations, such as PCBs and mercury, but does not look at other potential fish health problems.

"We want to give them a complete checkup," says Hudson. (Indiana DNR News Release)

The Meaning of Eutrophication

by Bill Jones

We're all either heard of or used the term eutrophic to describe a lake having dense algae growths, thick rooted plant stands, low transparency, noxious odors, fish kills or decreasing lake volume. Too often, however, the term is used improperly. What exactly defines a eutrophic lake?

The best definition for a eutrophic lake comes from a book entitled *Restoration and Management of Lakes and Reservoirs*, written by G. Dennis Cooke, Eugene Welch, Spence Peterson, and Peter Newroth in 1993. These authors define a eutrophic lake as one that receives an excessive addition of plant nutrients, organic matter and/or silt leading to increased biological production and a decrease in lake volume. The key part of this definition is the **lake response** to these additions by producing more plant material, either algae, rooted plants, or both.

My first limnology professor at the University of Wisconsin, Art Hasler, referred to a eutrophic lake as being "**physiologically senile**". This definition is remarkably simple once you think about it. A eutrophic lake produces more food than its fish, animals, and decomposers can consume. The excess food goes unused and becomes waste on the bottom of the lake. This waste consumes oxygen, contributes nutrients back to the water, and decreases the lake's volume. In short, the lake is not functioning very efficiently, much like a physiologically senile human.

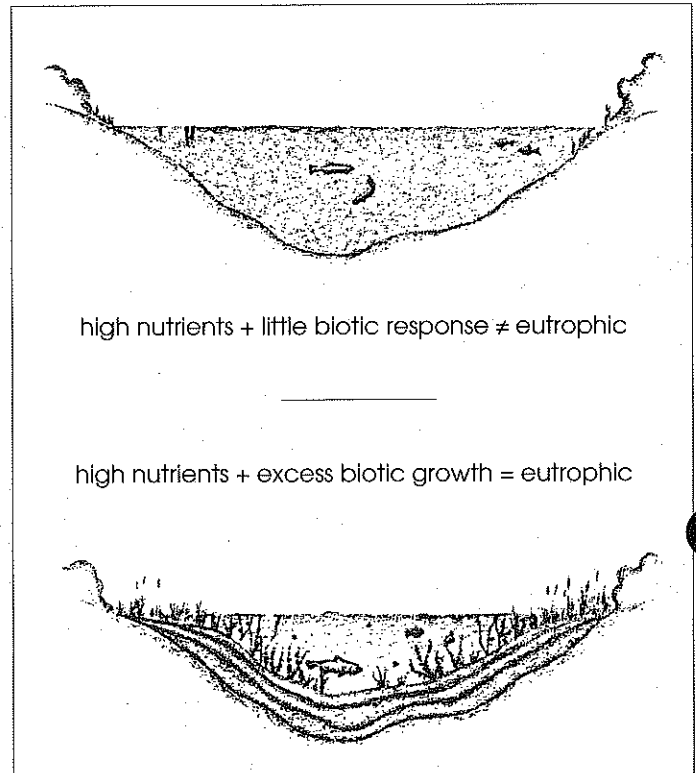
So high nutrient concentrations, or low Secchi disk transparency alone does not mean that a lake is eutrophic. Eutrophic conditions require a biological response to these additions.

Now the question becomes, how much increase in phosphorus or nitrogen, or decrease in transparency is enough to cause a biological response and eutrophic conditions? Some general ranges that define conditions suitable for causing eutrophication are given below.

PARAMETER	AMOUNT NEEDED TO CAUSE EUTROPHIC RESPONSE
Total Phosphorus	greater than 0.035 mg/L
Total Nitrogen	greater than 1.00 mg/L
Secchi Disk Transparency	less than 5 feet

You can compare recent data for your lake with the values in this table. Remember:

- the response of each lake to these parameters is different,
- other conditions such as cold water, low sunlight or high predation on algae by zooplankton can limit biological growth even in the presence of excessive nutrients,
- there must be a biological response, usually extensive algae or rooted plant growth, for the lake to be defined as eutrophic.



Volunteer News

Introducing the New Volunteers for 1998

We've had a busy spring and summer recruiting and training new lake monitoring volunteers. We feel fortunate to add the following people to our list of valuable volunteers:

- Keith and Melinda Antell - Lamb Lake (Johnson County)
- Joe Bonta - Indiana Lake (Elkhart County)
- Jim Smith - Lake Holiday (Lake County)
- Jill Hoffman - Lake Lemon (Monroe County)
- Mathew Neu - Adams Lake (LaGrange County)
- Bill Young - McClish Lake (Steuben County)

We look forward to working with these new volunteers in our quest to better manage Indiana's lakes and reservoirs.

Expanded Program Expands!

Additional funds were made available to the Volunteer Lake Monitoring Program this year that allowed us to add three more lakes to the "Expanded" Volunteer Monitoring Program. In addition to Secchi disk transparency measurements, volunteers participating in this program also collect monthly water samples during the summer that they send to the Limnology Laboratory at Indiana University for analysis of total phosphorus and chlorophyll *a*. The following volunteers received additional equipment and training this summer for the "Expanded" program:

- Patrick Burton - Lake George (Steuben County)
- Dan Robinson - Summitt Lake (Henry County)
- Brett Young - Lake Griffy (Monroe County)

As additional funds become available, we hope to increase the number of lakes where these additional parameters are monitored.



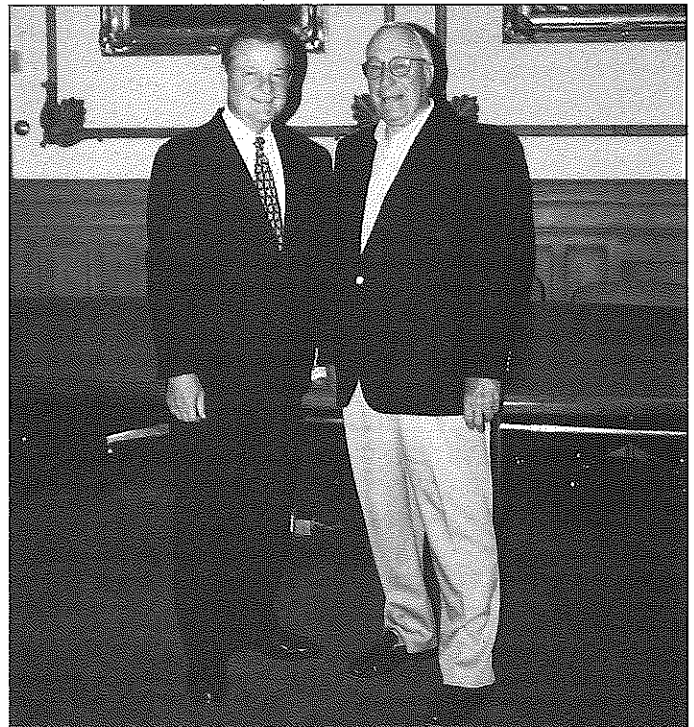
Steve Lundt demonstrates the use of an integrated water sampler to Brett Young, a new "Expanded" program volunteer.

Wedding Bells Ring for Our Volunteer Coordinator

Steve Lundt, the graduate student coordinating the Volunteer Lake Monitoring Program for 1998, wed Aimee Justice in Denver, Colorado, on August 1. Steve enters all the volunteer data into a database, answers volunteer questions, trains new volunteers, and keeps volunteers supplied with data cards and equipment. We wish Steven and Aimee all the best in their new life together!

Governor Greets Volunteer Lake Monitors in Reception

Indiana Governor Frank O'Bannon held a brief reception at the Statehouse where he recognized the dedication and fine work of citizens who volunteer their services in IDEM's Volunteer Lake Monitoring Program. Those attending the reception included volunteers Karl Bauer (Flint Lake), Dennis Grossnickle (Lake Manitou), Matt Neu (Adams Lake), Todd Nichols (Round Lake), and Bob Myers (Lake Wawasee), and volunteer coordinators Bill Jones of Indiana University and Kathryn Clendenin of IDEM.



Governor O'Bannon (left) greets volunteer Bob Myers of Lake Wawasee.

WATER COLUMN

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New Commission to Evaluate Recreation on Federal Lakes

Outdoor recreation enthusiasts may gain more opportunities to fish, boat, and swim at Federal lakes nationwide, now that the Congressionally authorized National Recreation Lakes Study Commission has been launched. The Commission is to evaluate recreation opportunities at Federal lakes while also protecting the surrounding environment.

There are nearly 1,800 federally managed, man-made lakes and reservoirs spread throughout the United States. Twenty-two are located in Indiana.

Other important numbers associated with Federal lakes:

1	rank of water as a recreation attraction in the U.S.
75	% of all recreation occurs within 1/4 mile of water
97	% of federally managed, manmade lakes and reservoirs are located within 50 miles of a city
7,000	jobs are associated with Federal lakes in Indiana
4,126,000	visitor days spent at Federal lakes in Indiana
489,000,000	dollars of economic impact due to recreation at Federal lakes in Indiana

LARE Provides Grants for Twenty Watershed Projects

The T-by-2000 Lake and River Enhancement Program (LARE) of the Indiana Department of Natural Resources has approved grants for \$830,000 to 20 projects statewide to help fund efforts to reduce soil erosion and protect water quality. The grants are for the fiscal year beginning July 1, 1998.

Awards include:

Feasibility/Design Studies

Indiana Lakes Chain (LaGrange County) - \$22,500

Lake Tippecanoe (Kosciusko County) - \$75,000

Construction Projects

Loon Lake (Whitley County) - \$73,700

Crooked Lake (Steuben County) - \$100,000

Lake Lemon (Monroe/Brown counties) - \$25,000

Lake Sullivan (Sullivan County) - \$50,000

Watershed Land Treatment Projects

Brewster Ditch (Adams County) - \$30,000

Gilbert Lake (Marshall County) - \$18,600

Lake Lemon (Monroe/Brown counties) - \$28,200

Vernon Fork of Muscatatuck River (Jennings/Ripley/Decatur counties) - \$40,000

Pike Lake (Kosciusko County) - \$55,000

Rhodes Creek (Morgan County) - \$30,000

Upper Laughery Creek (Ripley/Decatur/Franklin counties) - \$37,000

Lake Wawasee (Kosciusko County) - \$30,000

West Boggs Lake (Daviness County) - \$40,000

West Otter Lake (Steuben County) - \$23,000

Wildcat Creek (Clinton County) - \$40,000

Wolf Creek (Jay County) - \$37,000

Goose/Loon lakes (Whitley/Noble counties) - \$40,000

Twelve Mile Creek (Cass/Miami counties) - \$35,000

(Indiana DNR News Release)

Website Worth Looking At

<http://www3.sympatico.ca/lacs.chalets/homepage.htm>

This is the web site of the Federation of Associations for the Protection of the Environment of Lakes (FAPEL) in Quebec, Canada. In their own words, this is "a truly committed and often spicy Website on the protection of lakes and their environment."

The site is designed for cottagers, cottage owners and associations dedicated to the conservation of lakes. It offers some practical advice for living on lakes. It also provides insight to issues affecting lakes in Canada.



Ever see a Bryozoan?

We occasionally get calls from lake users about interesting things they see in their lakes. One such caller reported seeing a jelly-like blob attached to an old log several feet below the water surface. This peculiar find is not uncommon to those who pay close attention to lakes. This beast is actually a whole community of inoffensive creatures called **bryozoans**. (Biologists also call them moss animalcules.)

Often confused with freshwater sponges, bryozoans are microscopic animals that form huge colonies shaped like branching twigs or jelly-like blobs. They are found in ponds, lakes and slow streams. They live on the underside of logs and rock ledges. Colonies may reach several centimeters in thickness and may consist of thousands of individuals weighing several kilograms.

These colonies of animals cannot survive in polluted or muddy waters or where dissolved oxygen levels are low. So their presence usually indicates good water quality.

The minute-sized individual animals are filter feeders, dining on a variety of small plants and animals they strain from the water. Snails, insects and fish occasionally prey them upon but predation is never extensive.

Bryozoans reach peak abundance and size in late summer when water temperatures are in the 70s and then die off in the fall as water temperatures drop. They are most often seen when they break up and are washed ashore by waves.

In the U.S. bryozoans only occur in the Northeast—east of the Mississippi River and north of the 39th parallel.



Got a question about your lake? Or lakes in general? Or about something you've read? Write to us at the *Water Column* and we will do our best to answer it.

Wisconsin Buffers Serve Dual Purposes

Otter Creek in Sheboygan County, Wisconsin, provides an excellent example of the multiple benefits of streambank buffer strips and the role of local citizens in improving water quality. Using \$20,000 donated by the Southeast Wisconsin Chapter of Pheasants Forever, the county department of conservation is planting riparian buffers that double as pheasant habitat between agricultural lands and the creek.

The Sheboygan County Land Conservation Department inventoried riparian habitat along the creek in 1996 as part of the Sheboygan River Priority Watershed Project. Although landowners had taken action to help control farm runoff and upland erosion, the inventory showed that streambank vegetation would complement those upland conservation measures by providing additional water quality protection and creating and enhancing wildlife habitat, especially needed pheasant habitat.

Estimating that the land would produce crops worth \$100 per acre if farmed, the county conservation department agreed to compensate farmers for that amount annually for the next 10 years. Nearly 20 acres were planted as buffers ranging in width from 16 to 95 feet. Based on Iowa State University sediment removal studies, conservation department officials estimate that the new buffer strips could reduce sediment delivery to Otter Creek by as much as 40 percent.

Otter Creek is also one of 22 sites included in a national EPA-funded monitoring program that collects data on water quality, stream habitat, aquatic insect and fish populations, and land use to determine the effectiveness of BMPs in the watershed. Working side-by-side, the two projects should produce a well-managed stream corridor that supports an abundance of wildlife. (Nonpoint Source News-Notes, April/May 1998)

EPA Releases Nutrient Strategy for Waterways

A key goal of the President's Clean Water Action Plan is the development of water quality criteria for the nutrients nitrogen and phosphorus by the year 2000. Excess nutrients are thought to contribute to microbial diseases, such as *paratuberculosis*, in waterways. On June 18, EPA released a national strategy outlining the process and approach for the development of numeric criteria for nutrients and adoption of nutrient provisions of state water quality standards. Under the approach described in the new nutrient strategy, EPA will develop nutrient guidance documents for various types of waterbodies (e.g., rivers, lakes, coastal waters, and wetlands) over the next several years. States will be able to use these guidance documents and target ranges as they develop numeric criteria for nutrients as part of state water quality standards. EPA has formed a National Nutrient Team to guide the nutrient criteria development process and is forming Regional Nutrient Teams in each EPA region. The Nutrient Strategy is available on the Internet at: <<http://www.epa.gov/OST>> or contact Bob Cantilli at 202-260-5546.

Meetings

September 26, 1998. *1998 Watershed Workshop.* West Boggs Lake, Loogootee, Indiana. Sponsored by Indiana Department of Environmental Management and the Indiana Lakes Management Society. Contact: Kathryn Clendenin, Phone: (317) 232-8603; e-mail: KCLENDEN@dem.state.in.us

November 11-13, 1998. *18th International Symposium of the North American Lake Management Society.* Banff Springs Hotel, Banff, Alberta, Canada. Contact: Brian Kotak, tel: (403) 525-8431; e-mail: kotak@compusmart.ab.ca; web: <www.nalms.org/symposia/banff98.html>

March 24-27, 1999. *Annual Meeting of the Southeastern Lake Management Society Developing Watershed Solutions: Community Partnerships.* Clemson University Clemson, South Carolina. Contact: Dr. Barbara Speziale, 415 Tillman Hall, Clemson University, Clemson, SC 29634; Phone: 864-656-1398; Fax: 864-656-7243; e-mail: bjspz@clemson.edu

April 8-10, 1999. *Communities Working for Wetlands—Third Annual American Wetlands Month Conference.* Omni Indianapolis North Hotel, Indianapolis, Indiana. Contact: Terrene Institute: (703) 548-5473; web: www.terrene.org

May 23-28, 1999. *Sustaining the Global Farm 10th International Soil Conservation Organization Conference.* Purdue University, West Lafayette, Indiana. Contact: Phone: 765-494-8683; Fax: 765-494-5948 (c/o ISCO99); e-mail: isco99@ecn.purdue.edu

Conservation Tillage Acres Outnumber Conventional Agriculture Acres

For the first time, conservation tillage systems were used on more U.S. crop acres than intensive tillage systems, according to a report on the National Crop Residue Management Survey. Iowa, Illinois, South Dakota, Kansas, and Indiana together accounted for five million of the six-million acre increase in environmentally friendly farming techniques.

Conservation tillage systems now account for 109.8 million acres, or 37 percent, of the 294.6 million acres of crops planted annually in the United States. Traditional farming methods, which cause more soil erosion and runoff, declined by four million acres to 107.6 million acres. (A system called reduced-till accounts for the other 77.3 million acres of cropland planted in 1997.)

Conservation tillage is, by definition, any tillage or planting system that leaves 30 percent or more of the soil surface covered with crop residue (e.g., leaves, stems, stalks) after planting. In addition to reducing soil erosion from water and wind, crop residues help keep nutrients and pesticides from washing off the field. The leftover plant matter acts like a series of tiny dams to hinder runoff, allowing more infiltration and less overland flow into streams and rivers. "Independent research and practical application across the country show that these systems not only replenish and build organic matter in the soil for improved future food productivity but they also protect water quality and enhance wildlife and the environment for future generations," said John Hebblethwaite, executive director of the Conservation Technology Information Center (CTIC) which compiled the data for the study. (Nonpoint Source News-Notes, April/May 1998)

PERSPECTIVES

I first fished in Chapman Lake in 1948. We built a cottage in 1957 and weekendened until 1983 when we moved here permanently. In 1948 the water was so clean I think it would have been safe to drink. In 1950, the largest motor was a 5 HP. That year, a neighbor bought a 9.9 Evenrude. The DNR stopped him and said, "don't you think that is a little large for this lake?" My, how things have changed.

(Editor's Note: *Water Column* received this correspondence from Herman Miller, a volunteer lake monitor on Chapman Lake)

WATER COLUMN

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