



Office of Water Quality
Indiana Department of
Environmental Management

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Indiana Lake Management Conference a Success

The Indiana Lake Management Society (ILMS) celebrated its 10th Anniversary in conjunction with the 13th Annual Indiana Lakes Management Conference held this year at the French Lick Springs Resort in sunny, southern Indiana. Approximately 135 lake-loving people were in attendance this year at the two-day event held April 6 & 7. General sessions were held in the ballroom of this grand old hotel.

Ample space in the registration area allowed ILMS to highlight some of their projects of the past year, such as running the 10-minute video they sponsored on volunteer monitoring efforts in the state. Also on display were a 12' Jon boat outfitted with field gear, and a laboratory setup complete with microscope and samples, plus maps, photos, brochures, and data sheets used in an effort to develop bioindicators of lake and reservoir health in Indiana. At least 25 vendors/exhibitors from across the United States rounded out the participation and interaction at this year's conference. Next year's conference is slated for the Radisson Hotel in Merrillville, Indiana in the northwest portion of the state.

ILMS debuted their new t-shirts this year and these were popular items. An extra \$600 was brought in during the silent auction, concluded during the Friday night banquet. In addition to the wonderful beef and salmon steaks served as this year's banquet fare, attendees were delighted with the slides and travel accounts of Mr. Alan McPherson canoe enthusiast and author of *Paddle Indiana*.

Upcoming Workshops—

Fall workshops are in the works for both the northern and southern halves of the state. The northern workshop will be conducted at Lakes of the Four Seasons in Lake County, while the southern workshop is scheduled to be held at Heritage Lake in Putnam County; exact times, topics, and registration details to be announced.

*Photos courtesy of Mark Mongin,
SePRO Corporation*



The meeting hall was grand and spacious



The exhibit area had much to offer



Meals provided time to socialize



The silent auction was a popular fundraiser

Nutrient Criteria for Lakes

In response to directives in the 1998 Clean Water Action Plan, the U.S. Environmental Protection Agency (EPA) is in the process of developing nutrient criteria for lakes and reservoirs in the United States. Cultural eutrophication of surface waters is a long-standing problem. Excessive levels of nutrients are the major reason why as much as one-half of the nation's surface waters do not meet water quality objectives. Nitrogen and phosphorus are the primary cause of eutrophication and algal blooms are often a response to enrichment. Within lakes and reservoirs, chronic symptoms of over-enrichment include low dissolved oxygen, fish kills, increased sediment accumulation, and species and abundance shifts of flora and fauna.

The problem is National in scope, but varies in nature from one region of the country to another due to geographical variations in geology and soil types. Any criteria developed for management decision making must, therefore, be done on an ecoregional basis. Ecoregions are areas of similar ecological characteristics with regard to: soils, land use, land surface form, and potential natural vegetation.

Nutrient criteria are numerical values for both the causative (phosphorus and nitrogen) and response (chlorophyll and turbidity) variables associated with the prevention and assessment of eutrophic conditions. Such criteria will be developed to cover four major types of waterbodies—lakes and reservoirs, rivers and streams, estuarine and coastal areas, and wetlands. These criteria are expected to be used to help identify problem areas, serve as the basis of state and tribal water quality standards for nutrients, and evaluate relative success in reducing cultural eutrophication.

How will nutrient criteria be developed?

- The nation has been divided up into fourteen nutrient ecoregions. These larger ecoregions are aggregates of the smaller Level 3 ecoregions. For example, northern Indiana is included in aggregate nutrient Ecoregion VII, which includes seven Level 3 ecoregions (see figure).
- Historical and recent nutrient data from Federal and State databases were used to assess nutrient conditions from 1990 to 1998.
- Reference sites and reference conditions were selected using a representative sample of all lakes within the region. For

starters, reference conditions were established at the level of the lower 25th percentile of distribution of each parameter. For example, for Nutrient Ecoregion VII the reference conditions are:

Total phosphorus (ug/l)	14.75
Total nitrogen (mg/l)	0.66
Chlorophyll a	2.63
Secchi depth (m)	3.33

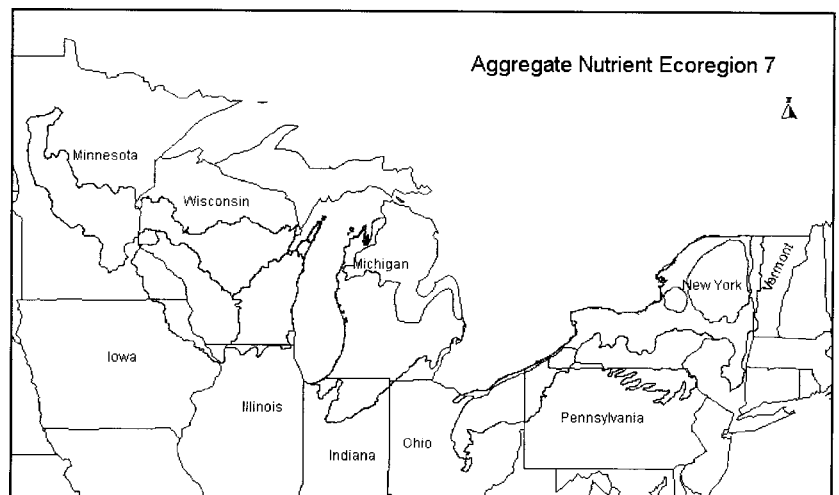
- A Regional Technical Assistance Group (RTAG) composed of Federal and State agency water staff from the Nutrient Ecoregion, will assess all the data, develop models, and establish the final reference conditions and nutrient criteria after several years of work.
- The RTAG should also assess the potential effects of the proposed criteria on downstream water quality and uses. Will there be a negative, positive, or neutral effect on downstream water bodies?

What does this mean for Indiana?

Indiana is at the southern end of Nutrient Ecoregion VII and our lakes may be more impacted by human activity than lakes in Wisconsin or Minnesota. For example, 97% of 160 Indiana lakes within this Ecoregion exceed the total phosphorus reference condition of 14.75 ug/l and 83% of these lakes exceed the Secchi depth reference condition of 3.33 meters.

It is important to remember that the reference criteria are just a starting point for developing nutrient criteria. The RTAGs will evaluate whether conditions at a smaller geographic scales than an ecoregion would warrant different levels of criteria.

The intent of all this is to represent conditions of surface waters that are minimally impacted by human activities and thus protected against the adverse effects of nutrient over enrichment from cultural eutrophication. Nutrient criteria developed



using this process will protect aquatic life while recognizing regional differences, human uses of the water resources, and natural constraints.

This is a long and detailed process and one that all water users should be informed of. For more information, please see the U.S. EPA web page: <http://www.epa.gov/ost/standards/nutrient.html>

The Changing Nature of Indiana's Lakeshores

On the Brink - The Changing Nature of Indiana's Lakeshores is a new, electronic slide program available to anyone with a computer and Internet access. The program, prepared by Bill Jones of Indiana University's School of Public and



Environmental Affairs, was presented at the 14th Indiana Lake Management Conference.

On the Brink explores how Indiana's lakeshores have gone from natural, to developed, to

over-developed and illustrates many of the disturbing consequences that such lakeshore use has on lake ecosystems.

Virtually all of Indiana's developable lakeshore frontage is now developed. With demand for lakefront homes at an all-time high, prospective homeowners are buying up 'cottages' and even year-round homes only to demolish them to build 'city mansions' in their place. With these 'city mansions' people also bring their city notions of landscaping. The result is turf grass lawns extending right to the water's edge (or to the all-too-common seawall).

The consequences of these actions to the lake are substantial:

- Increased nutrient and sediment loading
- Decreased shoreland habitat for fish and other aquatic wildlife
- Reduced access between the lake and shoreland for frogs, turtles, and other organisms that move between these areas.

On the Brink is accessible from the Indiana Clean Lakes Program web page at: <http://www.spea.indiana.edu/clp/resources.htm>. The program, viewable on the web, can also be viewed and saved as a PowerPoint presentation. The

program may be used solely for educational non-profit purposes. People are encouraged to show this program at lake association, local government, and other meetings where appropriate.

Fish Die-offs are More Common This Spring

As we reported in the last issue of *Water Column*, conditions this past winter did cause winter kill of fish in ice- and snow-covered ponds. Indiana DNR biologists have received hundreds of calls from concerned pond owners, lake residents and anglers about dead fish washing up on shorelines.

"It's a sign of spring," said Dr. Gwen White, fisheries biologist with the DNR Division of Fish and Wildlife. "A number of environmental conditions conspire this time of year to kill weak and unhealthy fish. The heavy ice and snow cover this past winter may have caused a larger number of die offs than usual."

As the weather warms, bacteria and other pathogens may infect fish. Also, fish are physically stressed because they are gearing up for spawning. Heavy snow and ice cover in some areas reduced oxygen available to fish this past winter. Combined, these factors fatally stress some fish.

Suspected fish die offs can be reported to a DNR district fisheries biologist or conservation officer.

- Fisheries biologist directory:

<http://www.ai.org/dnr/fishwild/fishing/fishbiol.htm>

- Conservation officer directory:

<http://www.ai.org/dnr/lawenfor/tel.htm>

- For more information on managing ponds for fishing, see:

<http://www.ai.org/dnr/fishwild/fsmgt/fishpd.htm>

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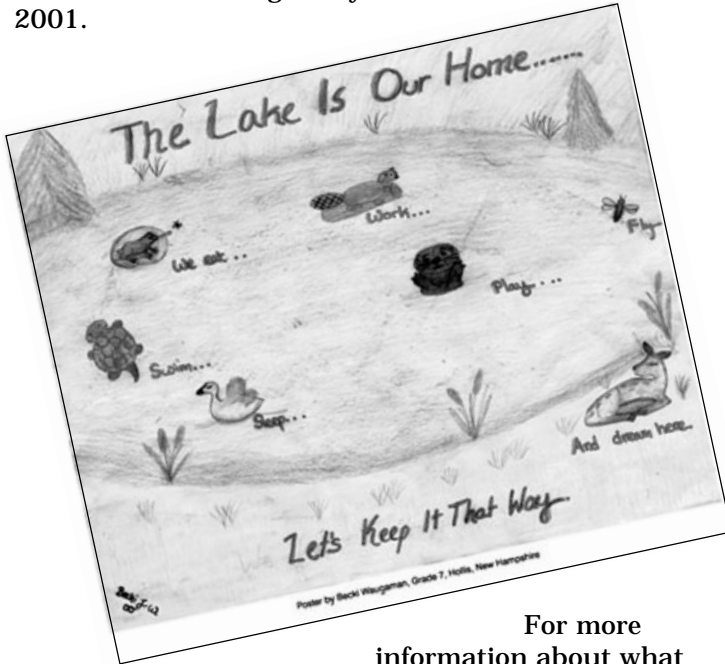
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Upcoming Events

Lakes Appreciation Week 2001

Governor Frank O'Bannon has again signed a proclamation encouraging Hoosiers to celebrate Lakes Appreciation Week. This event, sponsored by the North American Lake Management Society (NALMS) seeks to raise public awareness of our Nation's lakes. The 4th annual event will be held from June 30 through July 8, 2001.



For more information about what you can do, see the NALMS web site at: <http://www.nalms.org/resource/lkvolmon/law.htm>

The Great North American Secchi Dip-In

The 8th Annual Great American Secchi Dip-In will be held between June 30 and July 15, 2001. This event is a demonstration of the potential of



volunteer monitors to gather environmentally important information on our lakes, rivers and estuaries. A goal of the Dip-In is to increase the number and

interest of volunteers in environmental monitoring. The Dip-In also provides a national perspective of water quality. It gives a comprehensive glimpse at transparency at volunteer-monitored sites across North America. For more information, visit the Dip-In web site at: <http://dipin.kent.edu/>

PERSPECTIVES

We have made incredible gains in the quantity of our life, but what about the quality? Despite a widespread and growing recognition of environmental imperatives in recent years, in some cases the attention given to the economy and development still outweighs the attention given to environmental and personal well being.

—Bob Korth, Wisconsin Lakes Partnership

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