



Office of Water Management  
Indiana Department of  
Environmental Management

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Spring  
1997  
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## Highlights of the 1997 Indiana Lake Management Conference

Over 150 people attended the 9th Indiana Lake Management Conference held April 4-5, 1997 at Pokagon State Park near Angola. Interesting sessions, eighteen exhibitors, a beautiful setting, and plenty of time for socializing made for a lively and rewarding conference.

Watershed planning for lake protection was the first session. Participants heard from two county planning directors about specific actions that can be taken for protecting lakes and their watersheds. We also learned and were encouraged about innovative steps that the Steuben County Surveyor and Drainage Board have taken to improve the quality of watershed runoff.

Another session offered tips for homeowners for prudent lawn fertilization and maintenance practices, seawall and beach construction, lake vegetation management, and options for on-site waste treatment. Lake access policies of the Indiana Department of Natural Resources generated much interest during a talk by Gary Hudson and Jed Pearson. Lake education was the focus of another session where the use of topographic and lake depth maps were discussed, and participants had the opportunity to tour a mobile watershed management education van. Following the banquet Friday evening, Fred Wooley, Pokagon State Park interpreter, gave an entertaining slide show and live demonstration of the many water wonders contained in Indiana state parks.

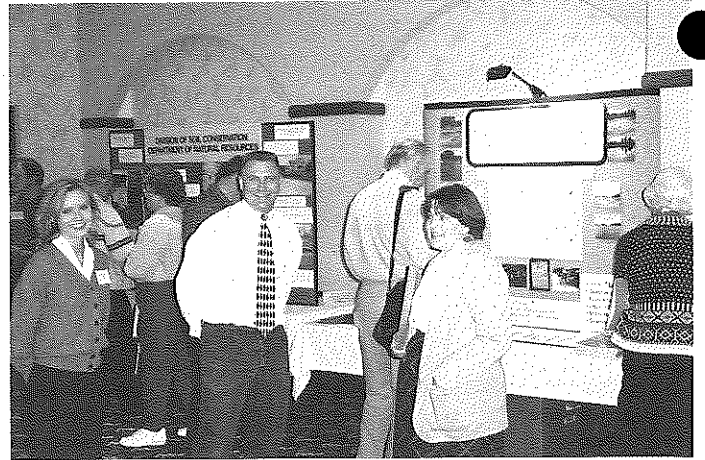
A zebra mussel workshop Saturday morning included talks about zebra mussel ecology, distribution in Indiana, detection, and prevention. David Herbst and Senator Robert Meeks discussed the future of Indiana lakes and what the state hopes to do about it. Finally, volunteerism was emphasized in talks about the Riverwatch and Volunteer Lake Monitoring programs in Indiana.

The Indiana Lakes Management Society (ILMS) held their annual meeting during the conference. At this meeting, the following office election results were announced: President—Everett Lienhart; President-elect—Greg Bright; Secretary—Julie Fernatt; Treasurer—Holly LaSalle; Directors—Joe Richardson, Bob Myers, Mike Axsom, and Joe Roach. Our congratulations go out to all of these dedicated people who will lead ILMS during 1997.





## Scenes from the Indiana Lake Management Conference



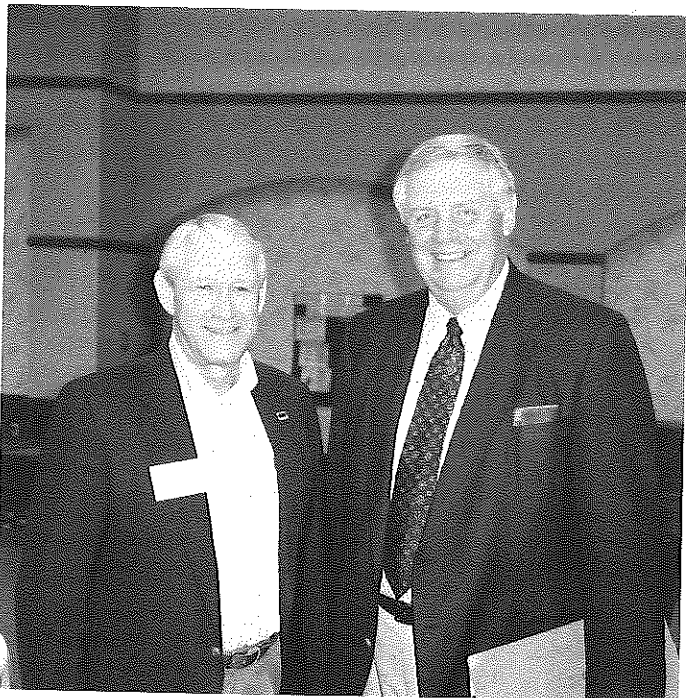
## Statewide Lakes Study Team

Senate Bill 75, sponsored by Senator Robert Meeks of Lagrange, has been signed into law. This legislation establishes a 26-member work group to develop solutions for problems affecting Indiana's public freshwater lakes. Qualifications for membership in this group assure that a wide variety of interests and backgrounds are represented. The group is specifically charged as follows:

1. Conduct public meetings to hear testimony and receive written comments concerning problems affecting the lakes of Indiana.
2. Develop proposed solutions to problems affecting the lakes of Indiana.
3. Issue reports to the natural resources study committee when directed to do so.
4. Issue: (a) an interim report before July 1, 1998; and (b) a final report before December 31, 1999.

## DNR's Herbst to Retire

Indiana state government will lose one of its strongest supporters of lakes when David Herbst retires this summer. Dave has been a Deputy Director of the agency since 1993. He oversees the



David Herbst (l) and Senator Robert Meeks (r) at the recent Indiana Lake Management Conference

Bureau of Water and Resource Regulation, which is comprised of the Divisions of Entomology and Plant Pathology, Fish and Wildlife, Outdoor Recreation, Soil Conservation, and Water. Dave was instrumental in initiating the statewide dialog on lakes last summer which has resulted in the creation of a Statewide Lakes Study Team (see article above).

Dave got his start with the Soil Conservation Service (SCS, now NRCS) in 1961-62, then spent nine years with the DNR Division of Fish and Wildlife, six years as Director of DNR State Parks, and 14 years as five-state regional executive of the National Wildlife Federation. Dave has long been a supporter and advocate of the principles espoused by Aldo Leopold (see this month's *Perspectives*) as well as being an admirer of Hugh Hammond Bennett, the "father" of soil conservation.

We are confident that Dave will remain active in Indiana lake issues in his retirement and we wish him well.

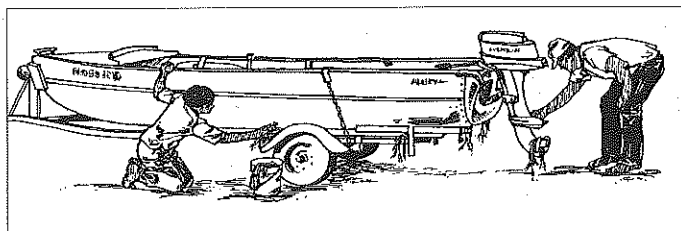
## Checklist for Clean Boats and Clean Waters

- ✓ If you are a water recreationist—boater, angler, water-skier, scuba-diver, sailor, or canoeist—there are some important things you can do to prevent the transport of harmful exotic species from one lake or river to another. In some states and provinces it is illegal to transport harmful exotic species.
- ✓ Inspect your boat, trailer, and boating equipment (anchors, centerboards, rollers, axles) and remove any plants and animals that are visible before leaving any waterbody.
- ✓ Drain water from the motor, livewell, bilge, and transom wells while on land before leaving any waterbody.
- ✓ Empty your bait-bucket on land before leaving the waterbody. Never release live bait into a waterbody, or release aquatic animals from one waterbody into another.
- ✓ Wash/dry your boat, tackle, downriggers, trailer, and other boating equipment to kill harmful species that were not visible at the boat launch. This can be done on your way home or once you have returned home. Some aquatic nuisance species can survive more than two weeks out of water, so it is important to:

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(CHECKLIST FOR CLEAN BOATS . . .  
continued from page 3)

- rinse your boat and equipment that normally gets wet with hot (at least 40°C or 104°F) tap water, or
  - spray your boat and trailer with high pressure water, or
  - dry your boat and equipment for at least 5 days, before transporting to another waterbody.
- ✓ Learn what organisms look like (at least those you can see). If you suspect a new infestation of an exotic plant or animal, report it to your natural resource agency.
- ✓ Consult the Indiana Department of Natural Resources for recommendations and permits before you try to control or eradicate an exotic "pest." Remember, exotic "pests" thrive on disturbance. Do it yourself control treatments often make matters worse and can harm native species. (Illinois-Indiana Sea Grant)



## Access Sites Available to Lake Visitors

Although controversy sometimes surrounds development of public boat launching sites on Indiana natural lakes, figures from a recent survey released by the Division of Fish and Wildlife (DFW) indicate access sites provide valuable recreational opportunities to thousands of anglers and boaters.

Last year from April through September, as many as 5,175 vehicles were counted by DFW survey clerks on 84 separate occasions at 14 state-owned access sites in Kosciusko, Noble and Whitley counties. This figure translates into 350,177 total hours of use by site visitors.

Based on the survey and data from similar surveys, the DFW estimates that the 102 public access sites currently located on northern Indiana natural lakes accommodate \$14 million worth of fishing activity alone each summer.

"Adding in the value of boating and other recreational activities of visitors who enjoy the lakes, we think public access sites make good economic investments," says Gary Hudson, DFW fisheries supervisor. "Besides, as many as 80% of Indiana's fishermen tell us that free public access is important to them when they choose a place to fish."

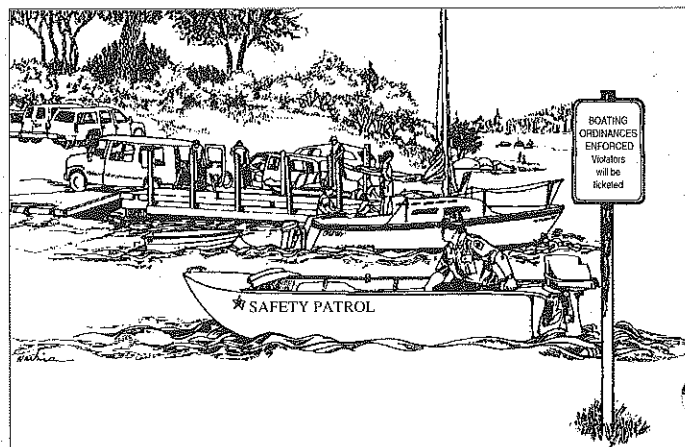
Despite their popularity, Hudson says that most access sites are not used heavily and disputes claims by some local lake residents that the sites are overused and misused.

"We found that a typical access site is empty 13% of the time on weekends and 30% of time on weekdays," says Hudson. "The average number of vehicles parked at any one time at each access site in our survey was only four, although some sites get used more often than others." Site use was about equally split among weekend visitors and weekday visitors. As expected, use was greatest in June.

Sites on bigger lakes like Syracuse and Wawasee were more heavily used. Both experienced more than 70,000 hours of visitor-use. Other popular sites were located in Webster, Dewart, Kuhn and Big Chapman lakes. Each had more than 20,000 hours of visitor-use.

Lesser-used sites were generally located on smaller lakes in rural areas, including Village, Old, Smalley and Crane. Each experienced fewer than 7,000 visitor-hours. Other sites with moderate use included Loon, Big, Crooked and Grassy Creek.

Hudson admits that use may be increasing, but says the increase justifies the need to acquire more sites. "We saw a 31% increase in use at four sites we surveyed in 1983 and again last year," says Hudson. "Fishermen tell us they would like to have more. We think building more access sites is one of the best ways we can guarantee more fishing opportunities in the future." (Indiana DNR)



## Improved Public Access Site Ready for Boaters

A new and improved access site area is now available to Lake of the Woods (Marshall County) boaters. A three-month project to add a new access ramp, gravel parking lot, and a dusk to dawn light at the public access park on the west side of the lake was completed last week. The ramp opened for use on Saturday, May 10.

The ramp was paid for through the Adopt-a-Ramp program coordinated by the Indiana DNR, while the light was paid for by the Bremen Conservation Club. Under the program, volunteer site sponsors are responsible for picking up litter and trash and mowing the property. Sponsors are required to sign one-year agreements to care for their sites, while in turn, the DNR will make any necessary repairs at the site.

Adopt-a-Ramp is a long-term commitment by the DNR Division of Fish and Wildlife and receives federal funds from the Sport Fish Restoration Act and the Wildlife Restoration Act for the program. (*Bremen Enquirer*, 5/14/97)

## What Do You See?

by: Sue Wiggins, Golden Lake

What do you see when you spend the day at the lake? Do you take the time to look at the sights around you? Not the human kind of sights, but the ones that have always been there, but we just don't take the time to see? Do you stop to notice the way the water laps over rocks and against seawalls? Have you been up early enough to really see a frog jump on a lily pad? Does that really happen? Who takes the time to watch the Blue Heron fly to its nest high in the trees or count the number of turtles that have decided to sun themselves on the same log? Maybe they have contests!

What do you hear when you come to the lake? Take 30 minutes out of your day and listen to the sounds around you. The duck quacking, geese honking, frogs croaking, birds singing, fish jumping, dragonflies, bees, racoons, deer. The list goes on and on. They are all there for us to enjoy if only we take the time to do so.



Next time you're at the lake, listen to what it's telling you. The conversation can be long or short. It lets us know if we're being too hard on it. Look at the water. Is it cloudy or clear? What kind of things are washing up on your shores? Do you keep plastic bags on your boat to collect your trash during a day of boating? Smell the air. Is it clean and fresh or pungent with the scent of pollution? Can you do anything to change what you see, smell and hear? LISTEN to what your lake is telling you.

As alarming as some signals can be, the pleasures of watching Mother Nature at its best and worst is comparable to nothing I know. If we treat our lakes with respect and teach our children and grandchildren (by example) to do the same, then we all win. (*Soundings*, Fall 1996).

## Your Lake in Summer

by: Bill Jones

Summer is a much anticipated time for those of us who enjoy lakes. It is a time to swim, fish, water ski, sail, canoe, or just enjoy sunrises and sunsets over the water. Whatever the reason, there is a lot of human activity on our lakes in summer.

There is also a lot of activity *within* our lakes in the summer. Although water temperatures remain somewhat stable, water chemistry and aquatic life are constantly changing during this season.

Spring turnover leaves most lakes well-mixed with relatively uniform water temperatures from top to bottom. As the sun rises higher in the sky and air temperatures warm, the surface waters of lakes warm up too. Wind mixing and diffusion can carry this heat down to 15 feet in large lakes. However, the warm surface water is less dense or 'lighter' than the cold bottom waters so thermal mixing is not complete in summer.

These temperature and density differences create a condition called *thermal stratification*. The wind-mixed surface waters (called the *epilimnion*) continue to gain heat throughout the summer, up to 80-85°F, while the bottom waters (*hypolimnion*) remain uniformly cold, about 40-50°F. In between is a narrow layer of water where temperature changes rapidly with depth called the *metalimnion*. The metalimnion acts like a submerged cover that prevents mixing between the surface and bottom waters.

Fish and other larger aquatic organisms can easily move across the metalimnion boundary. The sinking rate of algae often slows down as they get to

(Continued on next page)

(YOUR LAKE IN SUMMER. . .  
continued from page 5)

the denser water of the metalimnion. This can result in a concentration of algae at the top of the metalimnion. Dissolved materials such as oxygen, phosphorus and ammonia, cannot move across the metalimnion boundary except by the very slow diffusion process.

In the epilimnion, sunlight allows for the growth of algae in the open water and rooted plants along the lake margins. These plants use up available nutrients (phosphorus and nitrogen) and give off oxygen as a by-product of photosynthesis. Algae may bloom or die-back several times during the summer depending on the availability of nutrients. Additional oxygen added to the water by diffusion from the air followed by wind mixing keeps the epilimnion well-oxygenated.

The hypolimnion is usually too dark for photosynthesis to occur. In addition, the metalimnion prevents the addition of oxygen from the atmosphere. So there is no supply of oxygen to the hypolimnion of most lakes. Furthermore, oxygen is consumed by bacteria which decompose plants and organic material from the previous summer's growth and from algae which continuously sink out of the epilimnion into the hypolimnion.

If organic matter accumulation is significant, the decomposition processes may use up all the available oxygen in the hypolimnion. When this happens, the hypolimnion is *anoxic* (without oxygen). Fish and many other aquatic organisms cannot live without oxygen so anoxia greatly limits the habitat available to air-breathing organisms. Anoxia can also cause certain chemical reactions that can be detrimental to lakes. For example,

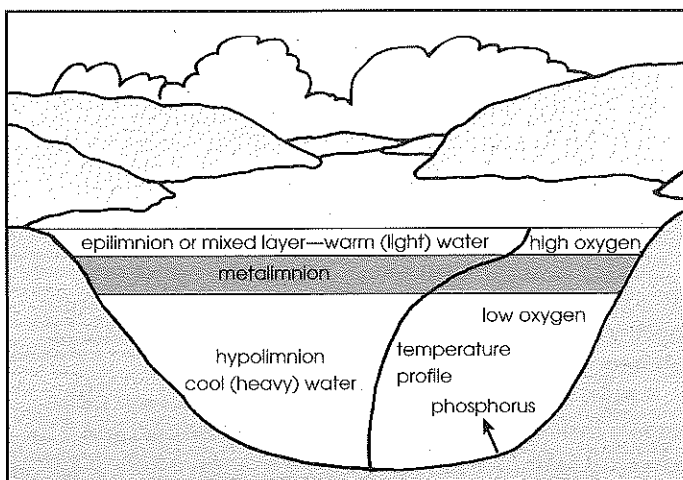
anoxia can allow phosphorus that was tied up in the sediments to dissolve and release into the water where it can promote further algal growth.

So, have a great summer on the water. And while you're at it, try to think about all the changes and activities going on within your lake in summer.

## Lakes on the 'Net

For all you computer hounds out in cyberspace, here are some useful discussion sites on the internet:

- lakes-1 is a network on lakes for people who enjoy, live, work, or are concerned about lakes and reservoirs. All sorts of interesting lake questions are posted and answered on this site. lakes-1 is available by free subscription. Send an e-mail message to: <majordomo@badger.state.wi.us>. In the body of the message, write the following: <subscribe lakes-1> or <help>. You will receive a confirmation and welcome message that will give further details about this list. To distribute a message to all subscribers, send it to: <lakes-1@badger.state.wi.us> (NOTE: do not type the brackets.)
- lakes-student-1, little brother to lakes-1, has been set up for students and youth to correspond. You can subscribe the same way: <majordomo@badger.state.wi.us> and subscribe <lakes-student-1>. Owner for both sites is Jim Vennie: <LAKEBB@DNR.STATE.WI.US>
- SGNIS is the Sea Grant Nonindigenous Species Site produced by the Great Lakes Sea Grant Network. It is a national information center that contains a comprehensive collection of research publications and education materials produced by Sea Grant programs and other research institutions across the country on zebra mussels and other aquatic nuisance species. All materials available through this home page have either appeared in professional science journals or have been through a rigorous scientific review to ensure the quality of the information provided. Links are provided to other sites that also focus on non-native species. Access this site at <http://www.ansc.purdue.edu/sgnis/>.



degrees Fahrenheit: 32 41 50 59 68 77



## Aquatic Plants Important to Small Fish

Lake residents who spray chemical herbicides along their water frontage to remove unwanted aquatic plants may be destroying critical habitat for juvenile fish, according to the Indiana Division of Fish and Wildlife (DFW).

Biologists say aquatic plants provide attachment areas for tiny bugs eaten by juvenile fish and provide safe hiding places to escape predators. Without aquatic plants, or where plant densities are low, juvenile fish are forced to search for food and increase their own risk of being eaten.

How dense should plants be to protect small fish? "New research has shown that numbers of juvenile bluegills are significantly greater where aquatic plant densities are high and remain so throughout the summer," says Jed Pearson, DFW fisheries biologist.

Pearson cites an Ohio study\* where researchers found high-density mats of artificial plants (3,844 stems/m<sup>2</sup>) always attracted more small bluegills than did low-density (400 stems/m<sup>2</sup>) or medium-density mats (961 stems/m<sup>2</sup>). When natural plant densities declined in the study lake after herbicide treatment, the number of juvenile bluegills using the artificial plants increased.

When placed in cages with largemouth bass, juvenile bluegills were about two times more vulnerable to predation in low-density beds than high-density plant beds. Juvenile bluegills often swam above the plant stems over the high-density mats but moved down into the artificial plants at the approach of a bass.

"Some of the best bluegill lakes in northeastern Indiana have very high densities of aquatic plants," says Pearson. "Herbicide use in some areas may be necessary but lake residents need to realize that aquatic plants play an important role in the ecology of our lakes." (Indiana DNR)

\*Hayse, J.S. and T.E. Wissing. 1996. Effects of stem density of artificial vegetation on abundance and growth of age-0 bluegills and predation by largemouth bass. (*Transactions of the American Fisheries Society* 125:422-423)

## DNR Fishing Guide Available at Sports Shops

The 1997 *Fishing Guide* is now available at sports shops, discount stores and Department of Natural Resources properties throughout the state.

The free publication provides a digest of fishing rules and regulations for the public waters of the

state. In addition, the guide includes a section on "Where to Fish in Indiana," providing information on site locations, lake acreage and best fishing species. "Where to Fish" also lists many of the more than 300 public access sites of the DNR's Division of Fish and Wildlife.

Indiana residents are required to have a valid state fishing license to fish in public lakes, streams, rivers or boundary waters. Fishing licenses from 1996 expired on February 28, 1997. Trout/salmon anglers must also purchase a trout/salmon stamp to legally take trout and salmon.

Remaining the same since 1988, an annual resident fishing license costs \$8.75; a one-day resident fishing license is \$4.75. A combination annual fishing and hunting license for Indiana residents costs \$13.75. Non-residents may purchase an annual fishing license for \$15.75; a one-day fishing license, \$4.75; a three-day license, \$6.75; a seven-day license, \$8.75.

## National Satellite Videoconference

The Illinois-Indiana Sea Grant Program in cooperation with the Great Lakes Sea Grant Network, the Purdue University Cooperative Extension Service, and the A\*DEC Distance Education Consortium invites you to participate in a national satellite videoconference designed to update and educate natural resource professionals, scientists, and industrial and recreational water users about the biology, environmental and economic impacts, and control of the zebra mussel in inland surface waters. The videoconference will take place on September 10, 1997 at 2-4 p.m. Eastern (1-3 p.m. Central). For more information, call Pat Charlebois at 847-872-0140 or e-mail at <p\_char@ix.netcom.com>. You can also find more information from the following WEB site: <<http://www.aes.purdue.edu/acs/zm/regis.html>>.

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# **PERSPECTIVES**

*A harmonious relation to land is more intricate,  
and of more consequence to civilization, than the  
historians of its progress seem to realize.  
Civilization is not, as they often assume, the  
enslavement of a stable and constant earth. It is  
a state of mutual and interdependent  
cooperation between human animals, other  
animals, plants, and soils, which may be  
disrupted at any moment by the failure of any of  
them. Land-despoliation has evicted nations,  
and can on occasion do it again.*

—Aldo Leopold,  
*The Conservation Ethic* (1933)

ATTN: Bill Jones  
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