



Office of Water Management
Indiana Department of
Environmental Management

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SUMMER
1996
Vol. 8, No. 1

Eighth Indiana Lake Management Conference

One hundred people attended the Eighth Indiana Lake Management Conference, held June 6-7 at the Indiana Government Center in Indianapolis. The conference is sponsored annually by IDEM.

Participants agreed that this year's program was one of the best ever. Thursday's sessions were devoted to shoreline management. Emphasis was on using natural materials to protect shorelines and provide habitat. Invited speakers gave advise on sea walls, glacial stone rip-rap, pea gravel beaches, native vegetation plantings, and Canada goose management. Mark Bennett of DNR explained that emergent plants such as cattail and shoreline shrubs not only protect shorelines from erosion, but also deter Canada geese. Apparently, Canada geese like clean, mowed-grass shorelines which they can easily walk up.

Don Roberts of the U.S. EPA and Carol Newhouse of IDEM described a variety of federal and state programs that offer technical and financial assistance to lake communities for management activities. Jan Henley, IDEM Assistant Commissioner of Water, discussed the many IDEM efforts to protect Indiana's water quality, and Dave Herbst, IDNR Deputy Director of the Bureau of Water Resource and Regulation, challenged the participants to get more involved in protecting Indiana's lakes. DNR and Senator Robert Meeks will sponsor a public forum for citizens to identify the major threats to Indiana's lakes later in the summer (for a report on this meeting, see the related story following.)

A spirited panel discussion on boating safety took place on Friday with State Boating Law Administrator Larry Rhinehart and John Birkinbine, Jr., Executive Director of the Personal Watercraft Industry Association, participating. The explosion of personal watercraft (PWC) sales and use has caused many concerns on Indiana's lakes and reservoirs. Mr. Birkinbine explained that only one (PWC) manufacturer also builds



The 1996 Indiana Lake Management Conference was held in the Indiana Government Center auditorium in downtown Indianapolis.



The spacious IGC atrium was a dramatic setting for conference exhibits.

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(CONFERENCE . . .

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boats, the others primarily manufacture either snowmobiles or motorcycles. Therefore, many first-time buyers were snowmobilers and motorcyclists who saw the machines at their dealers and had never been exposed to lake use "etiquette." This lack of lake use etiquette is also true of many people who rent PWCs. The Personal Watercraft Industry Association believes that the answers to many PWC problems can be addressed with education, regulation, enforcement, and understanding. They have produced instructional videotapes to educate the purchasers and users of PWCs on their proper use. These tapes will also be sent free to citizens upon request (312-946-6200).

Another Friday session focused on wetlands. Participants were updated on DNR's experiments with insects to control purple loosestrife, an invasive wetland plant. They also learned how constructed wetlands are being used in Indiana to treat septic system waste and rural agricultural runoff.



Jan Henley, IDEM Assistant Commissioner of Water (l) and Dave Herbst, DNR Deputy Director of the Bureau of Water Resource and Regulation (r) converse during a scheduled break.

Governor's Conference on the Environment

Learning about the future of environmental protection in Indiana is as easy as attending this year's Governor's Conference on the Environment. The 5th annual conference, *Models for Success, Models for the Future*, will be held November 9 at the Indiana Government Center South, in Indianapolis.

This year's conference will focus on Indiana's success stories. The conference also offers

government, businesses and private citizens a time to come together to discuss current issues. Key leaders in Indiana's environmental community will be present, including Michael O'Connor, commissioner of the Indiana Department of Environmental Management, and Pat Ralston, director of the Department of Natural Resources.

Proposed topics for breakout sessions include: Ozone Action Days, the Circuit Rider Program, Volunteer River Monitoring, the Beach Closing Initiative, the Compliance and Technical Assistance Program, Natural Resources Damages Programs, Wetland Conservation, Land Acquisition, and Supplemental Environmental Projects.

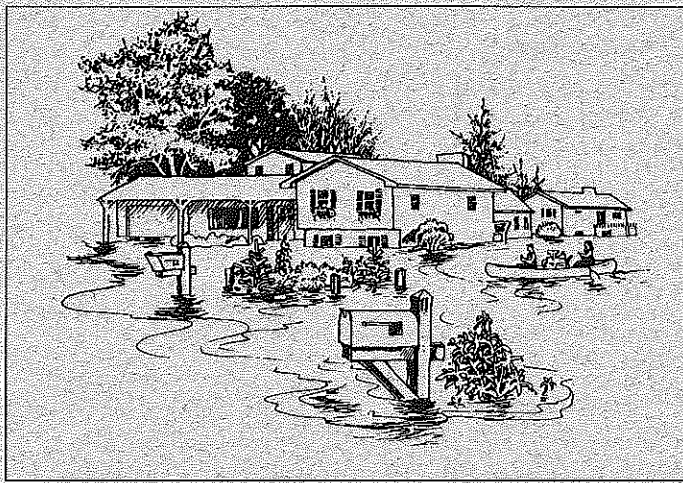
The Children's Conference will be running concurrently again this year. Children in grades 1-6 are welcome to attend at no charge if their parent or guardian attends the adult conference. Space is limited and registrations must be postmarked by October 25.

Registration fee is \$30 before October 25 and \$40 after October 25. Please make checks payable to Indiana Governor's Conference and send to: Governor's Conference Coordinator, IDEM, Office of Pollution Prevention and Technical Assistance, 100 N. Senate, P.O. Box 6015, Indianapolis, IN 46206-6015. Questions may be directed to the Governor's Conference Coordinator at (800) 451-6027, ext. 2-8172 or (317) 232-8172.

High Spring Water Levels Cause Lake Problems

Many areas of Indiana received near-record amount of rainfall in late spring. This meant significant runoff flowing into Indiana's lakes and reservoirs at a time when vegetation growth and cover was minimal. Without vegetation cover to hold the soil in place, soil erosion and nutrient losses were substantial. Many lakes in northern Indiana reported record high lake levels, excessive algae blooms, and the worst transparency on record. For example, the Secchi disk transparency in Caldwell Lake (Kosciusko Co.) dipped to only 2 inches in June due to a runoff-induced algal bloom, but it recovered to 28 inches by August. In 1995, 30 inches was the lowest Secchi disk transparency recorded at Caldwell Lake for the entire season! This trend was repeated at a number of other Indiana lakes this summer.

IDNR prohibited motorboats on a number of northern Indiana lakes because boat wakes with the high lake levels would have combined to cause property damage. Water levels at Monroe Reservoir (Monroe Co.) reached a record **17 feet** above



normal pool and remained above normal until late August. Luckily, as the sediments and nutrients settled, we've seen nutrient and water clarity conditions eventually return to normal. Precipitation amounts for some Indiana communities, provided by IDNR's Division of Water, are shown below.

LOCATION	APRIL	MAY	JUNE	TOTAL
South Bend	<u>3.08</u> 3.82	<u>7.48</u> 3.22	<u>6.58</u> 4.11	<u>22.13</u> 18.38
Fort Wayne	<u>2.82</u> 3.38	<u>7.09</u> 3.44	<u>5.26</u> 3.59	<u>20.94</u> 17.09
Indianapolis	<u>6.90</u> 3.70	<u>7.10</u> 4.00	<u>5.00</u> 3.49	<u>27.75</u> 19.76

Key: Actual (inches)
Normal (inches)



Indiana Issues New Fish Consumption Advisory

The *Indiana Fish Consumption Advisory* is published annually by the Indiana State Department of Health in cooperation with DNR and IDEM. The advisory helps Hoosier anglers make smart choices about what fish to keep and how much sport-caught fish to eat.

Each year, IDEM's environmental scientists catch and keep hundreds of fish. The fish are sent to a laboratory to be tested for PCBs, pesticides, and heavy metals, especially mercury. The tissue samples come from 334 separate locations on 120 streams or lakes in 74 counties.

This year the *Indiana Fish Consumption Advisory* includes new, more stringent standards for mercury contamination. The new guidelines have been adopted to conform with the Great Lakes Task Force standards for fish consumption advisories. Lee Bridges, chief of the assessment branch of IDEM's Office of Water Management said, "Including mercury brings us in conformity with Wisconsin and Minnesota and is a step toward uniformity on Lake Michigan and with all of the Great Lakes states."

Because lower levels of mercury are measured now, more Indiana bodies of water will be covered by the advisory. Fish from waters covered by the advisory can be eaten safely, but only if consumed in moderation. Pregnant women and women of childbearing age must be particularly cautious.

"Potentially, 22 more rivers and streams will be added, several stream reaches will be increased in length and 27 lakes and reservoirs will be added because of the new guidelines," said Dollis Wright, director of environmental epidemiology for the Indiana State Department of Health. For further information contact ISDH at (317) 233-7162 or IDEM at (317) 232-8560. (*Indiana Environment and Materials Exchange.*)

Lake Discussion Meeting Held in Angola

Over 300 lake residents, anglers, educators, community leaders, and government officials met at Tri-State University in Angola on August 20 to identify issues facing the future of Indiana lakes. Organized by State Senator Robert Meeks and David Herbst, deputy director of the DNR, the meeting provided a forum for the public to list lake management problems that may need attention by IDEM or DNR, or legislative action.

Participants broke into ten groups where they met for two hours to identify and prioritize lake issues of their own choosing. At the end of the breakout sessions, a spokesperson from each group summarized the discussion.

The following lake issues were identified by the citizens in my breakout group (listed in no particular order):

Water Quality

- poor drainage input quality
- polluted runoff from lakeshore homes
- sedimentation
- some residents dispose of grass clippings in lakes

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(LAKE MEETING . . .

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- mess and nutrients associated with high Canada geese populations
- lack of boat pump out facilities on public lakes
- stagnant water/little flow through
- public sewage overflows into lakes
- no state regulations to prevent the spread of exotic species, especially zebra mussels

Noise Pollution

- boats with twin screws and high horsepower are too noisy
- personal watercraft
- no decibel limits on boats
- no time zones or limits on noise-producing lake activities

Shoreline Erosion

- waves caused by high-speed boating erode shorelines
- bass tournament procedures encourage high speed near shores
- water skiing near shore
- boats speeding during high lake water levels
- boats destroy weed beds which protect shorelines

Water Safety

- lack of sufficient lake patrols and enforcement
- personal watercraft are operated recklessly
- lack of sufficient water safety education
- need to have a program providing for Reserve Officers on lakes

Public Access

- no toilet facilities at public access sites
- poor maintenance
- no trash receptacles
- more public access sites are needed

Fishing

- heavy pressure by out-of-state anglers where fishing seasons are different
- bass tournaments
- fishing on spawning beds
- lack of enforcement of existing regulations
- tournament-caught fish are not released back where they were caught

Planning and Zoning

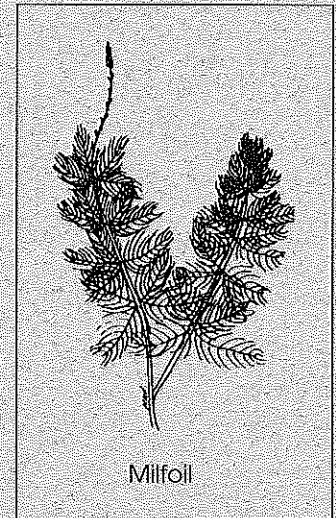
- "funneling" large inland housing areas through one lake access
- lack of lakeshore and watershed zoning controls
- better legislation to support lake property owners

These eight categories of issues illustrate the complexity and enormity of lake issues perceived by

Indiana citizens. All citizen comments were recorded and DNR will compile them. The recommendations will serve as future guidelines for agencies and for local lake associations. (Bill Jones.)

Milfoil Munchers on McCullom Lake, Illinois

McCullom Lake is a shallow natural lake in northeastern Illinois. Prior to 1993 the water in McCullom Lake was cloudy because thousands of carp stirred up bottom sediments. Water clarity averaged less than 12 inches. Carp were eradicated from the lake in 1993, thanks to a federal Clean Lakes Program Phase II grant from the U.S. EPA. Now water clarity extends to the lake bottom—as much as 12 feet. But with this improved clarity came a growth in rooted aquatic plants, especially the invasive Eurasian water milfoil which had spread to nearly 70 percent of the lake.



Milfoil

Herbicide treatments were planned in spring 1995 to curtail the growth of the Eurasian water milfoil but when the ice disappeared on McCullom Lake, there were only a few strands of milfoil present. No explanation for the disappearance of the milfoil could be found until June when Bob Kirschner, principal environmental planner for the Northeastern Illinois Planning Commission, and lake resident Bill Moerschbaeher discovered several strands of milfoil hosting more than 15 aquatic weevils called *Euhrychiopsis lecontei*. Kirschner believes this is the first confirmed sighting of the native weevil in connection with a significant decline of Eurasian water milfoil in Illinois. The tiny weevil is only about 1/3 the size of a grain of rice.

Because the weevil feeds exclusively on milfoil species, it has the potential to be an effective biological control. Similar declines of water milfoil have been connected to this insect in Vermont, Connecticut, Wisconsin, Washington, Ontario, and British Columbia. This summer, the weevil was found in the presence of significant milfoil declines in a number of other NE Illinois lakes. Thus, the

phenomenon is promising, but additional research is needed to fully understand the insect's role against the nuisance water milfoil before it can be considered a management tool.

Thus far, there have been no confirmed instances in Indiana of this aquatic weevil affecting our milfoil populations.

Questions from Readers

Q: We found a number of dead fish along our lake shoreline this past spring. Does this mean that our lake is dying?

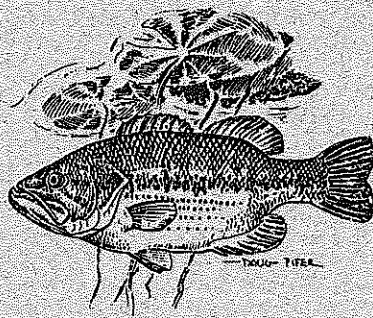
A: Minor fish kills are a common occurrence during the spring of the year and usually affect only weak or unhealthy fish. "Fish are more susceptible to stress during the spring," says Jed Pearson, DNR fisheries biologist. "They are weakened by harsh winter conditions where food is scarce. As the water warms, bacteria and other harmful pathogens flourish. On top of this, fish are gearing up physically for the coming spawning season. All of these factors produce stress that some individual fish simply cannot overcome."

Bass Numbers Vary in Natural Lakes

Hoosier anglers know that largemouth bass populations vary from lake to lake, and recent studies by the Department of Natural Resources demonstrate just how different they can be—case in point: small natural lakes in northern Indiana.

According to statistics compiled by DNR fisheries biologists, natural lakes less than 100 acres in size support anywhere from four adult bass per acre up to 52 bass per acre. That's a wide range in bass numbers, and as a result, a wide range in the quality of bass fishing.

"If there is such a thing as a typical small natural lake, it has 21 adult bass per acre," says



Jed Pearson, DNR biologist who oversees the agency's bass data. "About two-thirds of our lakes have 10 to 30 bass per acre."

These figures are based on 38 population estimates made by the DNR in recent years at various small lakes across northern Indiana. They routinely sample bass populations in April and May with electroshocking boats.

"Each spring we sample six to eight lakes, so we're accumulating a lot of information on bass populations," says Pearson. "We know a lot about bass densities, bass sizes, and bass growth. We use the data to track changes in bass abundance and evaluate habitat and fishing regulations. We're also trying to isolate key factors that affect bass abundance and size."

Not only have biologists found differences in bass numbers from lake to lake, but size structure also varies. "Three out of four bass in a typical small lake are eight to 12 inches long," says Pearson. "Some lakes may have only one bass this size per acre. The best lake had as many as 41 per acre."

Pearson says big bass, those 18-inch or larger, are scarce everywhere and small natural lakes typically contain only one big bass for every 1-1/2 acres. (*Indiana DNR.*)

Lake Communities have Stake in Water Clarity

Although record rainfall during May only temporarily muddied many northeastern Indiana lakes, the Department of Natural Resources says long-term declines in water clarity could directly reduce lakefront property values.

Lake residents want clean water and homebuyers are willing to pay more for property located next to clean lakes.

"Turbidity (muddiness) can have a direct relationship to property values around lakes," says Gwen White, staff biologist for the DNR's Lake and River Enhancement Program. "One study in Maine showed that the average selling price of a home dropped \$6,200 to \$7,400 with a three-foot drop in water clarity. Over a 10-year period White says that property market prices declined 10-20 percent.

Degraded water clarity not only lowers lakefront property values but also reduces tax revenues. In the study cited by White, lakeshore properties represented as much as 60 percent of the local tax base. Lakefront properties also account for much of the local tax base in Indiana counties with large lake acreages.

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(LAKE COMMUNITIES . . .
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"Individual property values dropped \$65 to \$141 per foot of shoreline with a three-foot decrease in water clarity," says White. "As lakeshore properties decrease in value a shift or drop in the tax base can occur. We think Hoosiers face similar problems associated with turbidity."

White says maintaining water clarity requires the cooperation and support of all residents in natural lake watersheds, including lake residents, farmers, developers and the general public. Several programs are in place to help local communities protect and improve water quality, including the Citizen Volunteer Lake Monitoring Program (see *Volunteer News* this issue).

"Investing in lake quality can pay big dividends in the future and benefit everybody," says White. "We can't afford to do otherwise." (*Indiana DNR*)

EPA Reports on National Water Quality Inventory

Nearly 40 percent of U.S. waterbodies assessed in 1992-1993 remain too polluted for fishing, swimming, and other uses, according to EPA's biennial report to Congress on the nation's water. The 1994 National Water Quality Inventory report includes data submitted from states, tribes, and other jurisdictions for 17 percent of the nation's rivers, 42 percent of lakes, and 78 percent of estuaries. The results of the most recent assessment are consistent with data from the last report in 1992, demonstrating that much work is still needed.

The Clean Water Act 305(b) reporting process began in 1975, and the current report marks the tenth presented to Congress. According to the 1994 report, nonpoint source pollution is the leading cause of impairment in all types of waterbodies.

- **Rivers**—Bacteria is the leading *cause* of pollution, followed by siltation. Agriculture is the primary *source* of pollution, followed by municipal sewage treatment plants;

- **Lakes**—Nutrients are the leading *cause* of pollution, followed by siltation. Agriculture is the primary *source* of pollution, followed by municipal sewage treatment plants; and

- **Estuaries**—Nutrients are the leading *cause* of pollution, followed by bacteria. Urban runoff/storm sewers is the primary *source* of pollution, followed by municipal sewage treatment plants.

EPA, which compiled the report under section 305(b) of the Clean Water Act, emphasizes that the results reported in the bi-yearly document reflect only a general characterization of water quality across the country. Few states have the resources to assess every river, stream, lake, pond, reservoir, and estuary within their boundaries, so they often focus on major perennial rivers, estuaries, and public lakes with suspected pollution problems. Not all states use identical survey methods and criteria to rate their water quality—a trade-off between flexibility and consistency, the report acknowledges.

In Indiana, data collected annually on approximately 80 public lakes under IDEM's Indiana Clean Lakes Program are reported to the U.S. EPA in the state's biennial 305(b) report.

Response to Conservation Provisions in Ag Reform Act Largely Positive

The Federal Agriculture Improvement and Reform (FAIR) Act of 1996, signed into law April 4, is considered by some to be the most powerful environmental legislation of the year. While much of the law concerns commodity programs and an orderly seven-year phase-down of government payments to farmers, its environmental provisions are significant.

FAIR creates several new programs to address high-priority environmental protection goals. The new law provides federal matching funds to state and local farmland protection programs for the first time. It also reauthorizes the wetlands programs; establishes an agricultural air quality task force and a private, nonprofit foundation for natural resources research and education; authorizes \$200 million for purchasing and restoring sensitive Everglades lands; authorizes funding to preserve farmland; and integrates several environmental programs.

The Environmental Conservation Acreage Reserve Program (ECARP) will now encompass the Conservation Reserve Program (CRP), the new Environmental Qualities Incentives Program (EQIP), and the Wetland Reserve Program.

- **CRP**: The Conservation Reserve Program will continue to protect highly erodible and environmentally sensitive lands with grass, trees, and long-term cover. As many as 36.4 million acres can be enrolled in the CRP as new contracts replace expired or terminated contracts. Contracts can be terminated after five years, but lands with high

environmental values are not eligible for the early out.

• **EQIP:** The Environmental Quality Incentives Program combines the functions of the Agricultural Conservation Program, Water Quality Incentives Program, the Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program.

EQIP has \$130 million in 1996 and \$200 million annually thereafter for cost-sharing conservation practices. It allocates half for crop production and half for small- to medium-sized livestock operations (although the maximum size eligible has yet to be defined) and requires that the participants use a conservation plan. Individual cost-share contracts will be limited to \$10,000 annually, and to \$50,000 for the life of the contract.

• **Wetlands Programs:** The law reauthorizes the Wetlands Reserve Program through 2002, with broader eligibility requirements and an enrollment cap of 975,000 acres. One-third of the total program acres must be placed in permanent easements; one-third in 30-year easements; and one-third in restoration-only cost-share programs.

The reauthorized Swampbuster provisions expand options for using mitigation and allow the Natural Resources Conservation Service (NRCS) to expedite activities identified as having a "minimal effect" on the environment. The Act also accepts wetlands conversions permitted under section 404 to allow agricultural production, "providing that the wetlands were adequately mitigated" and authorizes USDA to establish a pilot wetlands mitigation banking program.

The Swampbuster provision excludes farmers who drain wetlands from receiving farm program benefits, but wetlands converted before 1985 can now permanently keep their agricultural status. This portion of the Act also expands the definition of agricultural land contained in the 1994 interagency wetlands memorandum of agreement to include not only cropland and pastures, but also tree farms, rangeland, native pasture lands, and other land used for livestock.

Publications Available

Booklets

• *Your Lake and You.* Designed to help people better understand how to care for their lakes. 8 pages, free. Contact the Indiana Lakes Management Society (ILMS), 207 Hoosier Drive, Suite 2A, Angola, IN 46707-9315.

• *Design Features of Constructed Wetlands for Nonpoint Source Treatment.* Illustrates what features are most important to have in constructed wetlands to enhance their treatment capabilities. 8 pages, free. Contact Bill Jones, School of Public and Environmental Affairs, Indiana University, Bloomington, IN 47405. Phone: (812) 855-4556; FAX: (812) 855-7802.

• *Lakewalk Manual: A Guidebook for Citizen Participation.* This EPA manual comes with a workbook that shows citizens how to learn about lakes and how to collect observed information. Contact NCEPI, 11029 Kenwood Road, Building 5, Cincinnati, OH 45242.

• *Reflecting on Lakes.* The latest in CTIC's "Know Your Watershed" series was developed to promote an understanding of lakes and to encourage local voluntary watershed partnerships to address natural resource concerns. Contact Conservation Technology Information Center, 1220 Potter Drive, Room 170, West Lafayette, IN 47906. Phone: (317) 494-9555.

• *The Nation's Lake Resources: Their Value, Uniqueness, and Need for Wise Management.* This poster-brochure celebrates the beauty and usefulness of lakes and presents keys to wise lake management. It includes a chart of pollution sources, effects, and controls. The cost is \$3.95, plus \$3 shipping/handling. Contact Terrene Institute, 4 Herbert Street, Alexandria, VA 22305. Phone: (703) 548-5473; FAX: (703) 548-6299.

Posters

• *Healthy Lakes Need Wise Lake and Watershed Management.* This poster is one in a series that encourages community commitment to water quality protection by highlighting pollution sources and controls in lakes and watersheds. Cost: \$5 plus \$3 shipping and handling. Contact Terrene Institute, 4 Herbert Street, Alexandria, Virginia 22305. Phone: (703) 548-5473; FAX: (703) 548-6299.

• *Views from Your Lake: A Choice, an Action.* From the shoreline to wooded areas beyond the lake, from swimming docks to deeper waters, and from the upland slopes to the nearshore, a watershed perspective makes for good lake management. Cost: \$5 plus \$3 shipping and handling. Contact Terrene Institute, 4 Herbert Street, Alexandria, Virginia 22305. Phone: (703) 548-5473; FAX: (703) 548-6299.

Volunteer News

Three Cheers for Retiring Volunteers

This past year, several volunteer lake monitors had to "hang up their Secchi disk" due to illness, other commitments, or because they moved away from their lakes. We'd like to extend our sincere and profound thanks to these people for their interest in Indiana lakes and their dedication to helping monitor lake changes.

Don and Phyllis Amari—Jimmerson Lake, Steuben County (1992-95)

David Heckman—Round Lake, Big Cedar Lake, Little Cedar Lake, Whitley County (1993-95)

Vern Heil—Pike Lake & Little Pike Lake, Kosciusko County (1989-95)

Pat McClellan—Little Turkey Lake, Steuben County (1990-94)

Jeff Norris—Dogwood Lake, Daviess County (1994-95)

Dave Palenick—Simonton Lake, Elkhart County (1990-95)

Scott Stephenson—Lake Yellowwood (1992-95)

Mark Young—Lake Lemon, Monroe County (1990-95)

Welcome to New Volunteers

This summer, we have been very busy training new volunteers on lakes which were not being monitored or which lost their previous monitors. The following are new volunteers for 1996 and we'd like to "tip our Secchi disk" to welcome them aboard and to thank them for volunteering.

Mike Axom—West Boggs Lake (Martin County)

Karl Bauer—Flint Lake (Porter County)

Richard Bonsett—Cordry Lake (Brown County)

Lee Eckart—Yellowwood Lake (Brown County)

Stan Eme—Lake Pleasant (Steuben County)

Jonathan Gaskill—Lake Maxinkuckee (Marshall County)

Mike Gross—Cedar Lake (Lake County)

Tom Kreitner—Jimmerson Lake (Steuben County)

Ken and Tina Leatherman—Syracuse Lake (Kosciusko County)

Bill Lents—Dogwood Lake (Daviess County)

Todd Nichols—Round Lake (Whitley County)

Fred Merklein—Simonton Lake (Elkhart County)

Dick Reed—Crooked Lake (Steuben County)

Gerhard Webber—Sweetwater Lake (Brown County)

Are There Any MORE Volunteers Out There?

There are a number of lakes which had been monitored for Secchi disk transparency in past years but are no longer being monitored at this time. We would particularly like to recruit new volunteers for these lakes because current data will be even more meaningful because we can compare it with the past data to detect long-term trends. Lakes with past data but no current volunteers include:

Bass Lake—Starke County
Cook Lake—Marshall County
Dallas Lake—LaGrange County
Diamond Lake—Kosciusko County
Fish Lake—LaGrange County
Flat (aka: Mud) Lake—Marshall County
Galbraith (aka: Gilbert) Lake—Marshall County
Harper Lake—Noble County
Holm Lake—Marshall County
Hudson Lake—LaPorte County
John Hay Lake—Washington County
Kickapoo Lake—Sullivan County
Knapp Lake—Noble County
Kreighbaum Lake—Marshall County
Lawrence Lake—Marshall County
Lenape Lake—Sullivan County
Lincoln Lake—Spencer County
Little Long Lake—Noble County
Loon Lake—Whitley County
Mill Pond—Marshall County
Morse Reservoir—Hamilton County
Patoka Reservoir—Crawford County
Pigeon Lake—LaGrange County
Pretty Lake—Marshall County
Royer Lake—LaGrange County
Sand Lake—Noble County
Lake Shafer—White County
Shakamak Lake—Sullivan County
Shipshewana Lake—LaGrange County
Waldron Lake—Noble County
Worster Lake—St. Joseph County

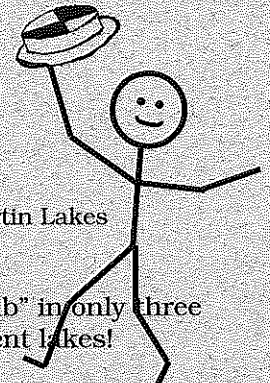
If you would like to become a volunteer monitor on any of these or another Indiana public lake, or if you'd like some additional information on what it takes to be a volunteer monitor, contact Bill Jones, SPEA 347, Indiana University, Bloomington, IN 47405.

Four Volunteers Join the "100" Club

Four volunteer lake monitors have passed a momentous milestone—they have made more than 100 Secchi disk measurements on their lakes. They are the first Indiana volunteers to reach this milestone. This accomplishment attests not only to their longevity but also to their dedication to helping manage Indiana lakes. We give a BIG "tip of the Secchi disk" to:

- Ray Cacini at Indiana Lake in Elkhart County;
- Tom Camire at Koontz Lake in Starke County;
- Bob Hampton at Lake Wawasee in Kosciusko County; and
- Bob Mayer at Olin, Oliver and Martin Lakes in LaGrange County

Bob Mayer reached the "100 Club" in only three years by monitoring three different lakes!



Meetings

October 22-24, 1996—*Nonpoint Source Pollution Information/Education Programs*, Chicago, Illinois. Contact: Mike Murphy, NE Illinois Planning Commission, (312) 454-0400.

November 5, 1996—*Agricultural Phosphorous and Eutrophication Symposium*, Indianapolis, Indiana. Call: (501) 575-5720; e-mail: tdaniel@comp.uark.edu

November 9, 1996—5th Indiana Governor's Conference, *Models for Success, Models for the Future*, Indianapolis, Indiana. Contact: (800) 451-6027, ext. 2-817.

November 13-16, 1996—*People, Lakes and the Land: Puzzling Relationships*, 16th International Symposium of the North American Lake Management Society (NALMS), Minneapolis, Minnesota. Contact: Steve Heiskary, Minnesota Pollution Control Agency, (612) 296-7217; e-mail: steven.heiskary@pca.state.mn.us

February 10-14, 1997—*Aquatic Sciences Meeting of the American Society of Limnology and Oceanography*, Santa Fe, New Mexico. Contact: Jonathan J. Cole, (914) 677-5343, e-mail: 76067.3033@compuserv.com

WATER COLUMN

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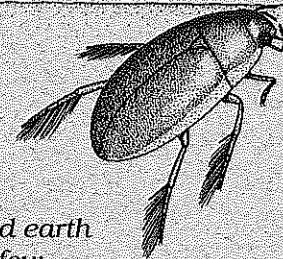
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PERSPECTIVES

Of all the many forms of life which exist upon the surface of this old earth of ours, and which are daily companions for good or ill during our few years' stay thereon, none are more numerous or less known than insects. Not only are they abundant as individuals, but the number of species in many fold greater than that of all other animals taken together. Both on the land and water they occur by millions, yet the life history of even the house-fly is known but to few.



—W.S. Blatchley

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