Water Column

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Indiana Clean Lakes Program – A Brief History

By Bill Jones

Winter is a good time for reflection. This winter, I attended the 25th Anniversary Symposium of the North American Lake Management Society (NALMS) held in November in Madison, Wisconsin. There was plenty of reflection at this meeting as we remembered the early days of the Society, the past leaders, past issues (many are still with us), and accomplishments.

Upon returning to Bloomington, I continued reflecting on progress that we've made here in Indiana with the Indiana Clean Lakes Program and thought it might be interesting and informative to take a look back in this issue.

In the Beginning…

It was back in September 1987 that, following discussions with John Winters of IDEM, I prepared a "Study Paper to Discuss Creating an Indiana Lake Management Program", which drew heavily upon similar programs in Wisconsin and Illinois. A very receptive John Winters read the study paper and, following the hoped-for discussions, I submitted a proposal to create the Indiana Clean Lakes Program on 1/26/88. Being one of the more creative people in state government, and someone who knew a good idea when he saw one, John went about finding funding for this program. That initial funding came from some surplus federal funds plus state matching funds. With funding secured, the Indiana Clean Lakes Program (CLP) began its mission on 6/1/88.

The Mission

The Indiana Clean Lakes Program is a comprehensive, statewide program designed to address important lake and watershed information needs to help manage, protect, and prevent further deterioration of Indiana's lakes. Balancing the collection of lake data with public education, the CLP has four components:

1. *Information and Education*: accomplished by a quarterly newsletter, the *Water Column*; the annual Indiana Lake Management Conference; technical publications; and, more recently, a Web site.
2. *Technical Assistance*: CLP staff answer citizen requests for information and are available to speak on a variety of lake management topics at lake association meetings.
3. *Volunteer Lake Monitoring*: a program to promote local stewardship where citizen volunteers are trained and equipped to measure Secchi disk transparency, color, temperature, dissolved oxygen, total phosphorus, and/or chlorophyll *a* from Indiana lakes.
4. *Lake Water Quality Assessment*: CLP staff conduct complete lake assessments on approximately 80 Indiana lakes each summer during July and August.

Let's take a closer look at some of these components.

Water Column *Newsletter*

A major focus of the Indiana Clean Lakes Program has always been citizen education and information. This *Water Column* newsletter and the annual Indiana Lake Management Conference are important tools to further public and professional education in lake-related areas.

The *Water Column* newsletter debuted with the Winter 1988 issue. This current issue is the 58th. The inaugural issue included: a telephone locator for lake assistance in Indiana, a watershed management fold-out map; articles on statewide fish tissue monitoring and a fisheries renovation plan for Palestine and Caldwell lakes; questions from readers; a listing of upcoming meetings; and other information.

Can anyone name the four different colors of paper that *Water Column* has been printed on? (The first issue was blue, followed by five cream-colored issues, 17 issues were blue-gray, and the last 34 issues are the present off-white.) How many of these issues do you still have?

Water Column has always been available free of charge. At its peak, we mailed paper copies of *Water Column* to 1,344 subscribers, most of whom were in Indiana, but some were sent to addresses in Florida, Illinois, Kentucky, Ohio, Oregon, New Jersey, New York, North Carolina, Massachusetts, Michigan, Minnesota, Texas, Washington, D.C., Wisconsin, and Virginia. In the Summer 2004 issue, to update our mailing list, we enclosed a post card for readers to return to continue receiving *Water Column*. At that time we also began offering *Water Column* in electronic form. Today, 286 people receive the paper copy and 150 receive the newsletter electronically.

We suspect that many readers overlooked the return postcard and inadvertently were removed from the mailing list. Please feel free to tell your friends and neighbors about how they can receive this free newsletter.

Indiana Lake Management Conference

The 1st Indiana Lake Management Conference was held on Saturday, April 22, 1989 at the Center Lake Pavilion in Warsaw, IN. Nearly 160 people from 27 different Indiana counties and from the neighboring states of Illinois, Ohio, Michigan, and Wisconsin attended. There was no registration fee for this first conference and a box lunch was served. John Winters of IDEM and Gary Doxtater and Bill James of IDNR described their respective programs and Tom Davenport of Region V U.S. EPA discussed the federal Clean Lakes Program.

Other speakers discussed management efforts at Lake Maxinkuckee and Lake Lemon. An aquatic plant management session and a citizen involvement workshop rounded out the program. The first citizens in the Volunteer Lake Monitoring Program were trained on the dock extending from the pavilion into Center Lake.

At the 2nd Indiana Lake Management Conference in Culver, where the registration fee was $10, attempts were made to create a statewide lake management society but there wasn't enough interest. With encouragement during the following year, we came together again at Tri-State University in Angola for the 3rd conference and there, the Indiana Lake Management Society (ILMS) was formed on 4/20/91.

The first Officers in ILMS were:
President – Hank Baker, Angola
President-Elect – Ted Hege, Columbia City
Secretary – Carolyn Smith, Angola
Treasurer – Karen Dehne, Culver

Did you know that a proceedings of selected talks from the 3rd and 4th annual conferences

Registration at the 2nd Indiana Lake Management Conference

Early conferences were simple affairs but well-attended.

was published in 1993? This was the only written proceedings produced…to date.

With the 10th Annual Indiana Lake Management Conference, planning and coordination of the event switched from the Clean Lakes Program to ILMS. The Conference is still going strong, having just had its 17th annual event.

The site for the conference has moved around Indiana to encourage new people to attend. It shouldn't be a surprise that most of the conferences (11 of 17) have been held in the northern lake counties and the City of Angola has hosted three conferences, the most at any one city. The Potawatomi Inn at Pokagon State Park is the most popular meeting facility, having been the site of two conferences and as well as the site of the 2006 Conference.

The conference dates varied some in the early years, from March to late April. The 8th conference wasn't held until June. After that, the conference has settled into the early April time period for consistency.

How many Indiana Lake Management Conferences have you attended? Is there anyone out there who has attended all 17 conferences? If so, we'd like to hear from you.

INDIANA LAKE MANAGEMENT CONFERENCES 1989-2005

CONFERENCE DATE	*LOCATION*
1st – April 22, 1989	Center Lake Pavilion, Warsaw
2nd – March 21-22, 1990	Culver Academies, Culver
3rd – April 19-20, 1991	Tri-State University, Angola
4th – April 24-25, 1992	Tippecanoe Country Club, Monticello
5th – April 30 – May 1, 1993	IUAA Shawnee Bluffs Family Camp, Bloomington
6th – April 29-30, 1994	Holiday Inn, LaPorte
7th – April 7-8, 1995	Holiday Inn, Warsaw
8th – June 6-7, 1996	Indiana Government Center, Indianapolis
9th – April 4-5, 1997	Pokagon State Park, Angola
10th – April 17-18, 1998	Ramada Inn, LaPorte
11th – April 9-10, 1999	Fourwinds Resort, Bloomington
12th – April 7-8, 2000	Oakwood Inn, Syracuse
13th – April 6-7, 2001	French Lick Springs Resort, French Lick
14th – April 5-6, 2002	Radisson Hotel, Merrillville
15th – April 4-5, 2003	Fort Harrison State Park, Indianapolis
16th – April 2-3, 2004	Pokagon State Park, Angola
17th – April 8-9, 2005	Holiday Inn, South Bend

Volunteer Lake Monitoring Program

The Volunteer Lake Monitoring Program began with a simple idea to use it to empower Indiana citizens with the care of their lakes. It was an idea whose time had come. At the initial training during the 1st Indiana Lake Management Conference, there was a virtual stampede for the Secchi disks and we couldn't record who took them all—such was the enthusiasm of the citizens to do something for their lakes! That first year, we had 45 volunteers on 52 lakes take 368 Secchi disk transparency measurements. David Trott sampled all seven lakes in the Barbee Chain for the first six years of the program. The most overachieving volunteer has to have been Tom Parsons who, over three years, regularly sampled nine lakes in Marshall County. Many other volunteers have regularly sampled two or three lakes.

It is difficult to single out specific volunteers because everyone's contribution of time and talent to the program are valuable and we appreciate them all. However, we must draw attention to several volunteers for going the "extra yard" for longevity and activity in the program. Twenty-eight of our volunteers were involved in the program for more than 10 years. Believe it or not, Steve Merrill has monitored Long Lake for 17 years—ever since the Volunteer Lake Monitoring Program began. Tom Camire (Koontz Lake), Joy Kamradt (Flint then Clear), and Denise Heckman (Goose Lake) each have contributed to the program for 16 years. All volunteers with more than ten years of service are listed on the table on the text page.

Since its beginning 17 years ago, 282 different volunteers

Participants gather outside the site of the 5th Annual Conference. ILMS Past-President Roy Mann is the tallest person in the middle.

have made 9,289 Secchi disk transparency measurements on 180 different lakes. As another gage of dedication to the program, 15 volunteers have made more than 100 Secchi disk transparency measurements. Of these, Bob Mayer has made a whopping 505 Secchi disk measurements. Tom Camire (238) and Larry Lehman (211) have both made more than 200 measurements. Those volunteers with more than 100 measurements are listed in the table at right (bottom).

We have always made our own Secchi disks, rather then purchase them at a higher cost from suppliers. Initially, we made them from sheet aluminum. The paint didn't hold up very well on these disks so we switched to PVC disks, which also cut down on our painting since the disks were white to begin with. We used ropes marked with indelible marker every foot initially but we soon began purchasing 30-foot fiberglass spooled tapes for lowering the Secchi disks and recording the depth.

In 1992, we began equipping and training a small number of proven volunteers to collect water samples for total phosphorus and chlorophyll *a* determination. These "expanded" volunteers collect and filter water samples monthly June through September. Frozen samples are shipped overnight to our labs at SPEA for analysis. The expanded program provides data on an important eutrophication-causing parameter (total phosphorus) and the principal response variable (chlorophyll *a*). Our first integrated sampler (one that collects a water sample uniformly from a depth of 2 meters to the surface) was a 12-foot length of weighted garden hose that had to be crimped to hold the water. This cumbersome device was soon replaced with an 8-foot length of PVC pipe with a ball valve.

In 1999, IDEM purchased several temperature and dissolved oxygen meters for use in the Volunteer Lake Monitoring

VOLUNTEER MONITORS WITH MORE THAN 10 YEARS SERVICE

VOLUNTEER	*LAKE*	*YEARS*
Jim Aikman	Hogback	11
Judy Ausderan	Big Cedar	12
Brian Breidert	Saugany	12
George Bruce	Crooked	11
Robert Busch	Dewart	12
Tom Camire	Koontz	16
Neal Carlson	Center	14
Gus Czizik	Big Bass	10
Bill DeRyk	Big Turkey	10
Jon Ditmar	Lower Fish	13
Velda & Arnie Dose	Big & Little Otter	12
Joe Geiger, Jr.	Barton	13
Dennis Grossnickle	Manitou	11
Gordon Guntner	Lake of the Woods	13
Denise Heckman	Goose	16
Dan Hoagland	Clear	13
Mike Martin	Big	15
Mike Marturello	Snow	15
Bob Mayer	Olin, Oliver & Martin	13
Steve Merrill	Long	17
Pete Meyer	Millark & Mt. Zion	11
Herman Miller	Big Chapman	13
Mary Ellen Nuttle	Hamilton	10
Dan Robinson	Summitt	14
Dick Smith	Silver	14
Roxanne & Jim Thompson	Otter	15
Ben Tipton	Upper Long	10
Carol & Charles Wise	Monroe	14
Joy Kamradt	Flint/Clear	16

VOLUNTEER MONITORS WITH MORE THAN 100 SECCHI DISK MEASUREMENTS

NAME	*LAKE*	*# MEASUREMENTS*
Robert Busch	Dewart	116
Ray Cacini	Indiana	142
Tom Camire	Koontz	238
Neal Carlson	Center	145
Emily Greenland	Tippecanoe, James, Oswego	119
Dennis Grossnickle	Manitou	121
Gordon Guntner	Lake of the Woods	113
Robert Hampton	Wawasee	121
Denise Heckman	Goose	104
Larry Lehman	Indiana	211
Mike Martin	Big	162
Bob Mayer	Olin, Oliver, Martin	505
Herman Miller	Big Chapman	121
Tom Parsons	Cook, Flat, Gilbert, Holem, Kreighbaum, Lawrence, Mill Pond, Myers, Pretty	190
Dick Smith	Silver	105

Program. To make these instruments available to as many volunteers possible, we entered into agreements with soil and water conservation districts in the lake counties to house and maintain these instruments. Volunteers can check out a meter to measure temperature and dissolved oxygen depth profiles on their lake. Such measurements are useful in detecting periods and depth of thermal stratification, and the extent of anoxia (no oxygen) in deeper waters. Today, eight of these instruments are located in Fulton, Koskiusko, Lagrange, Marshall, Monroe, Noble, Steuben, and Porter counties.

Volunteers also record water color and recreation potential of their lakes each time they go out. In 2004, we enlisted the expanded volunteers to be on the watch for a late season bloom of a toxin-forming blue-green algae called *Cylindrospermopsis*. Nine volunteers detected visual symptoms of a bloom and took samples, one of which was positive for this potentially dangerous alga.

In 2005, volunteers on 89 lakes collected 566 Secchi disk transparency measurements, 124 total phosphorus samples, and 124 chlorophyll *a* samples.

The Secchi disk transparency, total phosphorus, and chlorophyll *a* data collected by our citizen volunteers provides us with important data needed to examine water quality trends in Indiana lakes at a very competitive cost. The volunteer data are included in the Section 305(b) water quality report that IDEM prepares every two years for the U.S. EPA. Summary data are available on the Indiana Clean Lakes Program Web site at: *http://www.spea.indiana.edu/clp/*.

The State showed its appreciation of the citizen volunteers in a very public way when, in the summer of 1998, Governor Frank O'Bannon held a Statehouse reception for all of the volunteers. Volunteers present were photographed with the Governor and had a chance to chat with him. All volunteers received a certificate signed by Governor O'Bannon and the IDEM Commissioner, John Hamilton.

Volunteer Coordinator Jeff Jontz trains Gordon Guntner and Tom Parsons in use of the hose sampler. After one year, Parsons designed a pipe sampler that we continue to use today.

Lake Water Quality Assessment

The purpose of conducting periodic lake water quality assessments on Indiana lakes is to collect rigorous scientific data that can be used to detect changes and trends in water quality (both positive and negative) and that assist IDEM in evaluating statewide water conditions.

The same standard sampling protocol has been used from the start. Lakes are sampled by trained SPEA students, staff, and faculty only during July and August to provide year-to-year consistency in the data. The July-August period represents the year's worse water quality in most lakes; a time when thermal stratification and hypolimnetic anoxia are most likely to occur. Blue-green algae are also more likely to be a problem during July and August.

At each lake, samples are collected from one meter below the water surface and 1-2 meters off the lake bottom for analysis of: soluble phosphorus, total phosphorus, nitrate-nitrogen, ammonia-nitrogen, total nitrogen, pH, alkalinity, and chlorophyll *a*. Vertical profiles are measured at

Then-Governor Frank O'Bannon greets volunteer Bob Myers of Lake Wawasee during a Statehouse reception in 1998.

one-meter intervals for temperature and dissolved oxygen. Secchi disk transparency and light transmission are measured to characterize the euphotic zone (that depth with sufficient light to support photosynthesis). Finally, a net is towed from the bottom of the euphotic zone to the surface to collect algae for identification.

Each summer, 70-90 lakes are assessed in this way. At this rate, it takes approximately five years to sample all the boat-accessible lakes in Indiana. The process is then repeated.

Since the CLP began in 1988, 562 different lakes have been assessed for a total of 1,413 lake assessments. This represents nearly 20,000 separate water quality analyses.

These data have been included in every biannual Indiana 305(b) Water Quality Report to the U.S. EPA since 1988. Recent 305(b) Water Quality Reports are now available on IDEM's Web site at *http://www.ai.org/idem/*.

Technical Assistance

To provide assistance to Indiana citizens, Clean Lakes Program staff at Indiana University's School of Public & Environmental Affairs have made countless talks at lake association meetings, at lake conferences, and at other meetings throughout the State. In addition, staff receive and respond, on average, to one information request each month. Questions range from explaining observed lake conditions to analyzing lake data on a particular lake.

To better facilitate technical assistance and public outreach, we unveiled the Indiana Clean Lakes Program Web site in the summer of 2000. The URL of our Web site is *http://www.spea.indiana.edu/clp*. This Web site contains much information of interest to Indiana citizens, including meeting announcements, informational fact sheets, Power Point presentations, past issues of the *Water Column* newsletter, Volunteer Monitoring Program results, and links to other sources of lake-related information.

Volunteers can enter their Secchi disk transparency measurements into a form on the Web site and the data are placed directly into our database format for easy transferring. In the near future, we plan to include an interactive map where people can obtain the latest lake water quality assessment data for Indiana lakes.

Conclusions

There have been many accomplishments of the Indiana Clean Lakes Program, from all the lake data generated, to getting citizen's more involved in their own lakes, to being the stimulus for creating ILMS, and many others. One of the more important and lasting legacies of the CLP are the many students who have been trained in the science of limnology by working with the program. Since its inception in 1988, 70 graduate students at Indiana University's School of Public and Environmental Affairs (SPEA) have received not only college financial aid from the CLP, but also were trained and developed important field and laboratory skills in lake assessment. Four of these former students currently work for IDEM while others work at IDNR, U.S. EPA, U.S. Forest Service, National Park Service, other state governments, and many consulting firms spread across the country.

If you would like to learn more about the Indiana Clean Lakes Program, please visit our Web site or contact Program Director Bill Jones (e-mail: *joneswi@indiana.edu*; regular mail: 1315 E. Tenth Street, SPEA-Indiana University, Bloomington, IN 47405-1701).

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