Indiana Water Monitoring Council
Maximizing resources through improved communication, coordination, data sharing, and collaboration

January 2017
Volume 4, Issue 1

WATER IN THE NEWS

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Monitoring Nutrient Water Quality Impacts on Agricultural Lands

By: Shawn Naylor

Background

The State Nutrient Management Strategy is working to reduce nutrient runoff into Indiana's waters from both point and nonpoint sources. The Nutrient Management and Soil Health Strategy, developed by Indiana's agriculture organizations, is helping to implement the strategies for agriculture by promoting solutions to optimize nutrient use while improving soil health and water quality on agricultural lands. Monitoring recommendations are a summary of input from stakeholders at the Indiana Ag Water Quality Monitoring Forum held in August 2015.

Call to Action: Monitoring Needs

Water quality monitoring projects across the state are working to show that management solutions on agricultural lands result in water quality benefits through reduced nutrient runoff. In order to help track progress of the Nutrient Management and Soil Health Strategy, water quality data is needed to show:

- Impacts from different types of tillage (conventional, strip/ridge till, conservation tillage, never till)
- Impacts from different types of nutrient management (including source, rate, timing, placement)
- Impacts of cover crops (species, mixes, timing, seeding method, soil type)
- Impacts of drainage management (tiles, blind inlets, drainage water management, saturated buffers, two stage ditches, bioreactors, subsurface irrigation)

Monitoring continued…

The following recommendations for agricultural water quality monitoring projects have been developed, with input from researchers, policy makers, agriculture groups and farmers. These recommendations are intended to provide common guidance to all stakeholders for use in developing projects, to insure funders provide support for projects striving to meet these recommendations, and to facilitate more consistency and comparability among projects. It is acknowledged that funding is the main obstacle in implementing projects that meet all of the recommendations. The intent of these recommendations is not to discredit research that cannot incorporate all of these monitoring activities.

Critical Monitoring Activities

- Measure concentration and flow, resulting in load calculations.
- Paired watersheds or paired fields that monitor a control area compared to an area with a management or structural change.
- Relating water quality data to the management practices on the farm field.
- Include nutrients (dissolved and total forms of phosphorus and nitrogen) in the parameters being monitored.

Strongly Recommended Monitoring Activities

- Year-round sampling.
- A baseline period of at least two years before making a management or structural change (applying a best management practice or changing a practice).
- Projects at various scales from the small (12-digit HUC or smaller) to the large (basins, 8-4 digit HUCs).
- Water quality and biological monitoring, before, during and after a management or structural change.
- Consider farm field inputs as well as other possible inputs, such as streambank or in-stream inputs.
- Measure tile drains, overland flow and streams. Measure groundwater impacts if appropriate.
- Long-term sampling with a commitment to at least 5-10 years or more of data collection.

Next Steps

The call to action and monitoring recommendations should be helpful to researchers, policy makers, agriculture groups and farmers, and result in:

- Development of agricultural monitoring projects that match the call to action, and strive to reach the monitoring recommendations.
- Coordinated funding for projects in order to reach recommended monitoring activities for agricultural water quality monitoring.
- Increased infrastructure support for statewide monitoring and gages.
- Increased collaboration among policy makers, researchers, and ag organizations.
- Data that validates or redirects the implementation of the Nutrient Management and Soil Health Strategy.

Funding available for developing young forests

By: John Seifert, State Forester

A new forest wildlife habitat program will distribute almost $1 million in federal funding to private landowners in southern Indiana for the development of young forests.

Similar to young forest projects in the New England, Mid-Atlantic and Great Lakes areas, the Southern Indiana Young Forest Initiative is a multiple-agency partnership that will make available $960,000 in cost-share funding to landowners in 43 southern counties.

The Indiana Department of natural Resources (DNR) Division of Forestry will lead the five-year program. The goal is to create 3,000 acres of young forest habitat, also called early successional habitat, on private land. Hoosier National Forest, DNR Forestry, The Nature Conservancy Indiana Chapter and U.S. Fish & Wildlife Service will contribute an additional 5,436 acres for a combined 8,436 acres of habitat.

The program will benefit many at-risk and state-endangered species, according to State Forester John Seifert.

“The Southern Indiana Young Forest Initiative will advance the population recoveries of young forest bird species such as ruffed grouse, American woodcock, blue-winged warbler, yellow-breasted chat, and whip-poor-will,” Seifert said. “This area is based on the Central Hardwoods Joint Venture bird conservation region and shows a dramatic lack of early successional habitat.”

Young forest habitat is lacking in Indiana due to changes in land use over the last century. After farms on hilly and marginal land failed during the Great Depression, Indiana experienced a period of reforestation and a boom in young forest habitat. But those reforested areas have aged in unison and are reaching maturity.

The initiative is being funded by the USDA’s Natural Resources Conservation Service (NRCS) Regional Conservation Partnership Program (RCPP).

Other partners include DNR Fish & Wildlife, Ruffed Grouse Society, Indiana Forest & Woodland Owners Association, Izaak Walton League, The Indiana Forestry Educational Foundation, Central Hardwoods Joint Venture and National Wild Turkey Federation.

DNR district foresters will help private landowners develop young forest management plans and apply for funding.

Enrollment opportunities are expected to begin in 2017. Landowners can begin the process by contacting their local NRCS district conservationist or DNR district forester.

Contact information for NRCS district conservationists is at nrcs.usda.gov/wps/portal/nrcs/main/in/contact/local.

Contact information for DNR district foresters is at dnr.IN.gov/forestry/4750.htm.

Indiana Parks Alliance Releases "Outdoor Bucket List"

By: Tom Hohman, Indiana Parks Alliance

If you are looking for a "bucket list" of places to go and things to do this year, the Indiana Parks Alliance (IPA) has what you need. During the centennial celebration for Indiana State Parks in 2016 and in preparation for the 50th anniversary of the Nature Preserves Act this year, the IPA asked Hoosiers to select their top "outdoor bucket list" visit locations at Indiana State Parks and State-Dedicated Nature Preserves.

The top 15 vote-getters were:

1. Hike a trail of boulders left by the last glacier and climb the ladders of Trail 3 at Rocky Hollow-Falls Canyon Nature Preserve at Turkey Run State Park.
2. Explore the Pioneer Village at Spring Mill State Park.
3. Watch the sunset on Lake Michigan at Indiana Dunes State Park.
4. Wade in the creek below the waterfall at McCormick's Creek State Park.
5. Visit a state park nature center to watch birds and learn about park wildlife.
6. Linger and enjoy the sunset at Hesitation Point in Brown County State Park.
7. Walk on the world-renowned 386 million year-old fossil beds at Falls of the Ohio State Park.
8. Ride the refrigerated toboggan run at Pokagon State Park.
9. Visit Monroe Lake to search for bald eagles in winter.
10. Sit by the fire in the historic Lonidaw Lounge in Potawatomi Inn at Pokagon State Park.
11. Stand beside the Great Mound at Mounds State Park and listen to the wind.
12. Explore the old-growth forest at Donaldson's Woods Nature Preserve in Spring Mill State Park.
13. Walk across the Cataract Covered Bridge at Cataract Falls State Recreation Area (Cagle's Mill Lake).
14. Explore the Abraham Lincoln Bicentennial Plaza at Lincoln State Park.
15. Hike the narrow "backbones" of Pine Hills Nature Preserve.

Information about Indiana State Parks is at stateparks.IN.gov, and information about State-Owned Nature Preserves is at dnr.IN.gov/naturepreserve. If 15 items is not enough for your bucket list, the remainder of the vote-getters can be seen at indianaparksalliance.org.

"There are some iconic features in our state parks and nature preserves," said Tom Hohman, president of IPA. "This list is a great guide for parents, grandparents and just about anyone, so you can make sure you discover what Indiana has to offer on public lands, and also find your own favorite outdoor places to enjoy."

The IPA supports Indiana State Parks and State-Owned Nature Preserves through advocacy, fundraising and assistance for local property Friends groups. IPA also supports fundraising initiatives of the Indiana Natural Resources Foundation (INRF) that are designated for Indiana State Parks or Nature Preserves, such as the Discovering the Outdoors Fund.

Support for IPA comes from memberships and donations. A variety of membership options are available. Donations are tax-deductible. Visit .indianaparksalliance.org for details and membership information.

Save the date!

Origin of the Ohio River During the Ice Age – Falls of the Ohio State Park

Wednesday, January 18th, 2 pm
201 W. Riverside Dr, Clarksville, IN 47129

Did you know the Falls of the Ohio is one of the youngest geological features in the United States? The Ohio River we know today did not exist before the Ice Age. Dr. William Andrews, the Kentucky Geological Survey geologist who is featured in our exhibit on the birth of the Ohio River and the origin of the Falls of the Ohio, will present on the nature of the landscape before the Ice Age and how glaciers dramatically reshaped the region, exposing the Devonian fossil beds in the process.

Freezing for a Reason! Polar Plunge – Whitewater Memorial State Park

Saturday, February 25th, 11 am
1418 S. State Road 101, Liberty, IN 47353

Get your chill on and sign up today to join hundreds of Hoosiers that help support sports training and athletic competition for more than 12,000 Special Olympics Indiana athletes by jumping in a cold body of water near you. Friends don't let friends plunge alone! Encourage a family member, school group, civic group or co-worker to participate with you at the event! The 2017 Plunge season promises to have lots of magical moments from crazy costumes to super splashes. It's an event you don't want to miss.

This event is open to the public and all spectators are welcome! The plunge will take place at the Whitewater Memorial State Park Beach.

There will be an after plunge party at Frames Outdoors in Liberty, Indiana, just north of the park entrance at 12:30 pm. The after plunge party is free to all plungers and a cost of $5.00 for all other attendees. There will be music, awards, food, drinks, door prizes and a silent auction.

For more information about the organization or how to participate, please contact Lonnie Snow at lsnow1952@yahoo.com or (765) 732-3636.

You can register online at http://www.firstgiving.com/soindiana/2017-liberty

29th Annual Indiana Lakes Management Conference

Thursday- Friday, March 2nd -3rd, begins at 8 am
Fourwinds Lakeside Inn and Marina, 9301 Fairfax Road, Bloomington, Indiana

The Indiana Lakes Management Society promotes the understanding and comprehensive management of Indiana lakes and reservoirs and their watershed ecosystems. ILMS provides a forum and technical assistance network for information sharing; assists with development of lake restoration and protection programs, policies, and legislation; and encourages local and statewide organization cooperation.

You can register online at http://www.indianalakes.org/?page_id=377

Indiana Water Monitoring Data

By: Greg Bright, Commonwealth Biomonitoring

A wide variety of professional scientists and volunteers collect water information that can be used to make management decisions for our Indiana water. Here are places where information is currently collected and where it can be obtained:

U.S. Geological Survey (USGS)

USGS currently maintains a network of 242 stream flow monitoring stations. Real-time data from these sites is available on the internet at: https://waterdata.usgs.gov/in/nwis/current/?type=flow and archived annually. Some of the records date back to as early as 1903. At some of these sites, additional data (temperature, pH, temperature, turbidity, nitrate, dissolved oxygen) are also available in real-time. The site also has information on precipitation, groundwater levels, and lake levels at some locations.

Data from field and/or laboratory analyses of water samples, biological tissue, sediments, or other environmental samples have been collected at 7039 total sites within the state. Data include approved, quality-assured data that may be published, and more recent provisional data, whose accuracy has not been verified.

The USGS National Water-Use Information Program is responsible for compiling and disseminating the nation's water-use data. The USGS works in cooperation with local, State, and Federal environmental agencies to collect water-use information at a site-specific level. USGS also compiles the data from hundreds of thousands of sites to produce water-use information aggregated up to the county, state, and national levels. Every five years, data at the state and hydrologic region level are compiled into a national water-use data system.

Indiana Department of Environmental Management (IDEM)

IDEM's Fixed Station Monitoring Program provides monthly data for water quality trend analysis and many existing and prospective users of surface water information in Indiana. Water quality data are collected monthly from more than 160 sites on various rivers and streams. Although the number and location of some of these stations have changed over time, a number of the stations have been continuously monitored since 1957. The program was developed to determine chemical, physical, and bacteriological characteristics of Indiana water under changing conditions. Because samples are collected throughout the year, it provides critical information for understanding seasonal variation.

The state is geographically divided into nine major river basins for environmental sampling, analysis, and assessment. Each year, IDEM conducts environmental monitoring in a different basin with the goal of sampling the entire state over a nine-year period. Data collected from samples collected and measurements taken in the field sampling are evaluated for physical, chemical, and biological parameters. These data are used to assess the condition of the water body and to identify potential stressors when assessments indicate that the waters are not supporting their uses designated in Indiana's water quality standards. IDEM maintains a

database of information and makes it publicly available on the Indiana Water Quality Atlas at the website http://www.in.gov/idem/nps/pages/iwqa/index.html.

The Indiana Clean Lakes Program, administered by the Indiana University School of Public and Environmental Affairs through a grant from IDEM, conducts water chemistry monitoring on public lakes throughout the state. The information collected from this program is available at http://www.indiana.edu/~clp.

Indiana Department of Natural Resources (IDNR)

The IDNR Division of Water currently maintains, in original paper and digital form, the records of over 400,000 water wells drilled in Indiana. Of this number approximately 138,000 records have been field verified.

The Water Resource Management Act passed by the 1983 Indiana General Assembly requires the Natural Resources Commission "take and maintain an inventory of significant uses of water withdrawn from the surface or ground". A significant water withdrawal facility is defined in the act as one which has the capability of withdrawing more than one hundred thousand (100,000) gallons of ground water, surface water, or ground and surface water combined in one day. This database is maintained and updated by the IDNR Division of Water.

The IDNR Lake and River Enhancement Program uses funds collected from boat owners to protect and enhance public waters. One part of the program (conducting diagnostic studies) collects chemical and biological information to determine priorities for management. This information is available in project reports on the following website: http://www.in.gov/dnr/fishwild/3303.htm.

U.S. Army Corps of Engineers (USACE)

USACE collects water level, temperature, and dissolved oxygen profiles on the eight flood control reservoirs operated by the USACE in Indiana. USACE data is available online at: www.lrl.usace.army.mil/missions/civilworks/waterinformation

Ohio River Sanitation Commission (ORSANCO)

ORSANCO collects monthly chemical and algal and bacteria data at sites within the Ohio River mainstem. They also collect annual fish and macroinvertebrate community data. Data are available at ORSANCO's website: www.orsanco.org

St. Joseph River Basin Commission

The St. Joseph River, flowing into Indiana from Michigan and flowing back into Michigan near South Bend, has water chemistry data available at their website: www.sjrbc.com/resources/index.html.

City of Elkhart

The City of Elkhart collects fish community data annually within the St. Joseph River basin. Data are available at: www.elkhartindiana.org/aquaticbiology

Muncie Sanitary District

The Muncie Sanitary District has been collecting water quality and biological community information in Delaware County since the 1970s. Their data is available at the website: www.munciesanitary.org/departments/general/bureau-of-water-quality

Manchester University

Students at Manchester University in North Manchester collect chemical, bacteria, and fish community information from the Eel River watershed. Summaries of their data are available at the website: www.manchester.edu/eelriverinitiative/datamap.htm

Various Watershed Groups

Local watershed groups, many supported by county Soil and Water Conservation Districts or volunteers, collect chemical, physical, and biological information to educate and guide local water conservation programs. Hoosier Riverwatch, a state-wide program supported presently by IDEM, trains volunteers to collect data and publishes the data on its website: www.hoosierriverwatch.com

Community Collaborative Rain, Hail, and Snow Network (CoCoRHAS)

This is a group of 263 volunteers in Indiana, trained by the National Weather Service and the Indiana State Climate Office at Purdue, who collect daily precipitation data and publish it on the internet at: www.cocorahs.org/ViewData/StateDailyPrecipReports.aspx?state=IN

Municipal Drinking Water and Wastewater Utilities

Regular (daily for most wastewater treatment utilities) water chemistry measurements are made at over 400 locations throughout the state as part of a regulatory permit requirement in Indiana. This information is available at the IDEM website, virtual file cabinet: www.in.gov/idem/6953.htm.

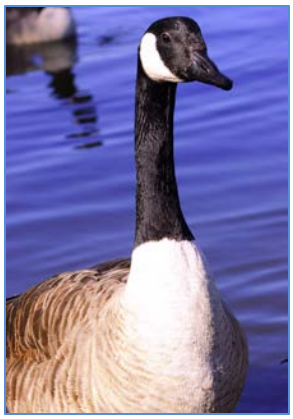
Academic Researchers

A large amount of water monitoring information is collected by academic researchers at Indiana's state and private colleges and universities. The data are usually available only in various scientific publications. The Proceedings of the Indiana Academy of Science is an important source for much of the local data, much of which is available online at: http://www.indianaacademyofscience.org/Publications/Proceedings.aspx*Summary of Information from Additional Water Monitoring Contributors*

The Indiana Water Monitoring Inventory is a portal for locating water monitoring information in the state of Indiana. Many government agencies and organizations monitor Indiana's waters, and this site provides a one-stop site where you can locate monitoring sites, determine what data have been collected, and contact the data holders or their web site for more information. The actual monitoring data is not stored here -- only detailed information on the location of the monitoring site and what is being monitored or was monitored in the past. Over 5400 sites throughout Indiana are currently in the database, available at http://inwater.agriculture.purdue.edu/monitoring/.

2017 - The Year of Less Bacteria in Our Water!

By: Jill Hoffman, EmPower Results



Have you made a New Year's resolutions to eat less and be healthier? Well, let's help our waterfowl do so too! *Clear Choices Clean Water* just launched its newest public action campaign to help prevent bacteria and algae in our waters – ***Don't Feed Waterfowl, Their Poo is Fowl Too!*** You might not think feeding the ducks or geese and swans is a big deal, but it is! A single Canada Goose eats 3-4 pounds of grass and can create as much as three pounds of waste per day sending lots of bacteria into our stormwater ponds and streams! Take a Pledge to enjoy waterfowl **simply by watching and not feeding**. Invite your friends, family, and neighbors to take the pledge too! indiana.clearchoicescleanwater.org/waterfowl

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The InWMC addresses the full range of water resources, physical, chemical, and biological, including ground and surface waters.

Visit our website to learn more or click here to join today!

InWMC serves as a broad-based collaborative body to help achieve effective and efficient collection, interpretation, and dissemination of basic data and processed information for use in addressing issues of Indiana waters.

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