Volunteer Lake Monitoring Program

The Lake Beat

Volunteer Lake Monitoring Program

Fall/Winter 2013

Macroinvertebrates

A new way of looking at aquatic life health in lakes

How can you tell if the condition of a lake is good or bad? It's pretty easy to tell really bad conditions, like if the lake is covered in green slime, the water is turbid, and smells like sewage. It's also pretty easy to see if it's in great health. The water is clear and cool, and there's plenty of fish to be caught. It's the full range in between that gets tricky to put a numeric value of quality on. Having enough information about a lake is key to determining that range of quality, and protecting the lake from degradation.

One of the missions of the Illinois Environmental Protection Agency (Illinois EPA) is to protect aquatic life. The agency uses chemical water quality standards to assess inland lakes and make determinations about the health of the aquatic life in a lake. The good thing about this method is that it allows the agency to find the pollutant that causes a specific problem, and after pin-pointing the source of that pollution, we can take steps to control and regulate it.

Topics:

- Diane Tancl, Illinois EPA's Northern Region Biologist, discusses using macroinvertebrates to help determine a lake's health.
- Jennifer Clarke, Illinois EPA's TMDL Program Coordinator, discusses TMDLs for herbicides in PWS Lakes.
- Welcoming the new VLMP Southern Regional Coordinator, Beau Henson
- Yeats' The Lake Isle of Innisfree
- Lake Education Assistance Program Grants.
- 29th Annual Illinois Lake Management Association Conference.

Glyptotendipes head capsule.

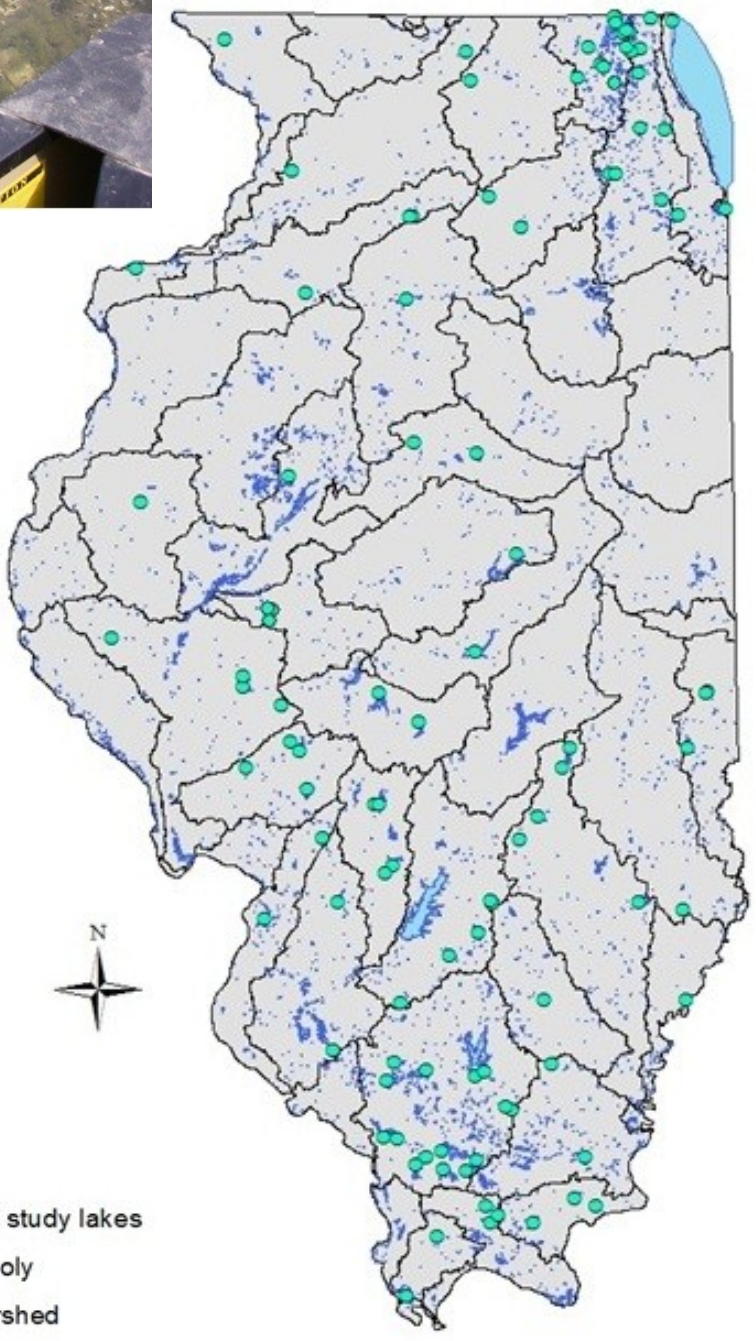
Photograph - Jim Hefley

Macroinvertebrates, Continued

Left Zebra mussels in the littoral zone of Axehead Lake in Cook county.

Below

Illinois EPA m-IBI Study Lakes



The problem with assessing aquatic life in this way is that the biologists are not looking at aquatic life directly in order to assess it. Pollutants in water can impact organisms in different ways. High levels of a single pollutant may cause an acute reaction in a water body, such as a fish kill. How can we determine the long term impacts of pollutants or the cumulative effects of multiple pollutants? This is where bioassessments become an important tool for protecting aquatic life in surface water. Bioassessments use surveys of organisms (plants, algae, macroinvertebrates and other aquatic organisms) to determine the condition of a lake.

Illinois EPA is currently working toward a new macroinvertebrate Index of Biological Integrity (m-IBI) for inland lakes. This index will provide the biologists with a numeric score for a particular lake, based on the types and number of macroinvertebrates sampled there. The score will be used in conjunction with other physical and chemical data to assess the quality of inland lakes in Illinois.

Macroinvertebrates, Continued

Macroinvertebrates are invertebrates that can be seen with the naked eye. Most of the macroinvertebrates found in lakes are aquatic insects. Worms, leeches, crayfish, amphipods, isopods, and mollusks are also observed in lakes and will be included in the study. Illinois EPA chose macroinvertebrates as the subject of the biological index for a number of reasons. Macroinvertebrates are a central part of the food web in a lake. They feed on anything from algae to other insects, and they are a main food source for fish and waterfowl. Some macroinvertebrates have long life cycles in the water, meaning they will be exposed to many pollutants over a great period of time. Macroinvertebrates vary by lake habitat, so the health of different parts of the lake can be evaluated using the organisms. Gradients of aquatic life health within a lake can be observed as well. Macroinvertebrates are relatively cheap to sample, and Illinois EPA already has taxonomists on staff to identify the samples.

Since 2008, Illinois EPA has been collecting macroinvertebrate samples on inland lakes to build a dataset. This dataset includes the macroinvertebrate samples, plant surveys, shoreline habitat surveys, and chemical data on 102 lakes. Over 150,000 macroinvertebrates were enumerated for the dataset representing almost 400 unique macroinvertebrate taxa. A contractor is going to work with the dataset to develop the m-IBI. There are a number of steps in index development including lake classification, determination of reference conditions, and metric analysis. Once complete the index will provide another piece of data that Illinois EPA can use to assess the aquatic life condition in inland lakes. The index will be able to quantify cumulative effects of pollutants and human disturbances on the aquatic life in a lake. It may also help Illinois EPA staff identify when aquatic organisms are being stressed by pollutants that are unknown or not sampled for in routine water chemistry. Having another tool for identifying impairments in lakes will lead to better protection of the aquatic life in Illinois, and more accurate answers to the question of lake health.

~Diane Tancl, Lake Biologist,

Surface Water Section

In this picture, I am collecting a benthic grab sample, a single bottom sediment sample potentially containing macroinvertebrates and other organisms, using a devise called a petite ponar. This vise-like sampler closes on contact with the lake bed.

Herbicide Impaired Public Water Supply Lakes get Higher TMDL Priority

Illinois EPA is in the process of developing atrazine/simazine Total Maximum Daily Load (TMDL) studies for impaired waterbodies that are listed on the 2012 and Draft 2014 303(d) list of the Integrated Water Quality Reports. Higher priority is given for waters impaired for atrazine and/or simazine herbicides due to the nonattainment of public water supply designated use. Starting in the summer of 2013, a total of ten draft lake TMDLs have been developed for atrazine and/or simazine (Figure 1) in several watersheds. This includes the herbicide load capacity calculations and the reductions needed for the lakes to meet the maximum contaminant level (MCL) target.

The atrazine/simazine monitoring data (available in the Agency database and additional data acquired by Syngenta) were used to determine the exceedences of the herbicides. The goal of the Draft TMDLs is to engage the public through our public meetings and present the recommendations of the TMDL to lower herbicide runoff in the upland watershed and tributaries. Implementation actions to meet the goal are promoting correct application practices and best management practices (BMPs) to increase infiltration of runoff. Correct application procedures include not spraying within 66 feet of a stream or tile inlet, 50 feet of any well nor within 200 feet of a lake. The recommended BMPs to increase infiltration and slow the movement of runoff include conservation tillage, grassed waterways and filter strips.

Lower levels of herbicides going into the lakes will reduce the need to do expensive carbon treatment for finished drinking water. It also reduces the amount of atrazine in the lake which can negatively affect aquatic life and plants. All actions are voluntary and the study includes information on grant funding available. Most of the lakes have also had TMDLs for phosphorus reductions and the recommended BMPs if implemented will also help with phosphorus reduction in the lakes.

The lakes with atrazine and/or simazine impairment that have Draft TMDLs developed are: Spring Lake, Hillsboro Old Lake, Glenn Shoals Lake, Carlinville Lake, Salem City Reservoir, Lake Mattoon, Lake Paradise, Nashville City Reservoir, Washington County Lake and Farina Lake. Stakeholders at the meetings have included staff from the Soil and Water Conservation Districts, Natural Resource Conservation Service, the Farm Service Agency, Syngenta Corporation, the Corn Growers Association, local water plants along with local farmers and citizens.

~Jennifer Clarke, TMDL Program Coordinator

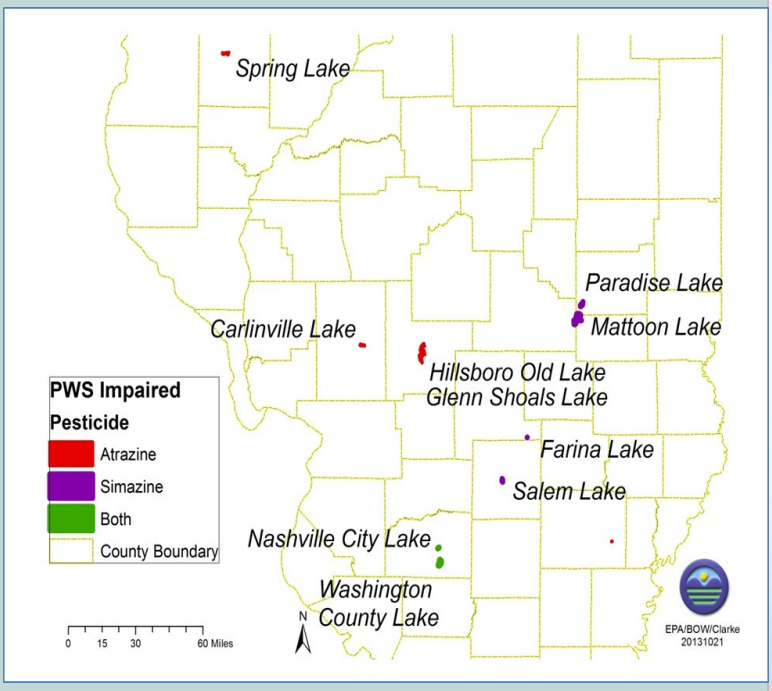


Figure 1. Atrazine or Simazine TMDL Lakes

~2013 TMDL Development

For more information on the TMDLs and atrazine/simazine information please refer to our webpage at http://www.epa.state.il.us/water/tmdl/atrazine-simazine.html.

Welcome Beau Henson to the VLMP Coordination Team!

Beau **H**enson is the Southern Regional Coordinator for the Volunteer Lake Monitoring Program. He makes his home in the midst of the Crab Orchard National Wildlife Refuge and the Southern Illinois Wine Trail, enjoying the benefits of a world-class environmental setting. His hobbies include kayaking, hiking, and camping while always attempting personal endurance records. Working as an Economic Development Specialist for the Greater Egypt Planning & Development Commission allows for work on a myriad of projects and programs. With his belief that clean water, air, and land are paramount foundations for economic success; the VLMP remains a personal favorite. Beau is preparing a thesis defense for his Master of Public Administration degree from Southern Illinois University – Carbondale. He went to undergrad at Georgetown University and is also a veteran of the US Navy. Be sure to introduce yourself to Beau at the Illinois Lake Management Association Conference next April in Sandwich.

~ Greater Egypt Staff

The Lake Isle of Innisfree

I will arise and go now, and go to Innisfree,
And a small cabin build there, of clay and wattles made:
Nine bean-rows will I have there, a hive for the honeybee,
And live alone in the bee-loud glade.

And I shall have some peace there, for peace comes dropping slow,
Dropping from the veils of the morning to where the cricket sings;
There midnight's all a glimmer, and noon a purple glow,
And evening full of the linnet's wings.

I will arise and go now, for always night and day
I hear lake water lapping with low sounds by the shore;
While I stand on the roadway, or on the pavements gray,
I hear it in the deep heart's core.

~ William B Yeats (1865-1939)

Volunteer Lake Monitoring

End of Season Wrap Up

Send any completed Secchi Monitoring forms to your Regional Coordinator as soon as possible.

Recycle all unused lab sheets and used ½ gallon jugs.

Rinse and dry all monitoring equipment before storing for the winter. Do not use cleansers on any of the equipment. A quick rinse with tap water will do the job! Dry thoroughly. Once clean and dry, place all equipment neatly and upright in the tote and store in your basement, garage, or other location that is safe from the weather.

Unused sample bottles may be retained for use.

Any volunteer not wanting to continue in the Program next year, may contact their regional coordinator or Greg Ratliff at Illinois EPA to make arrangements for equipment pick-up. Greg can be reached by email at greg.ratliff@illinois.gov or by telephone at 217/782-3362.

A few specific tips:

Secchi Disk: Rinse your Secchi disk to remove as much dirt as possible. Dry carefully. If you are using a measuring tape, make sure the line is dry and wound back in its reel without folds and moisture. If you are using a rope or surveyor line, make sure the line is dry and untangled before winding back on its reel.

Chlorophyll Equipment: Make sure your weighted bottle sampler is clear of mud and is fully dry before putting into storage. Give your filtering equipment (magnetic funnel, filter base, graduated cylinder and collection flask) one final rinse and let sit out to dry completely before storing.

Storage Tote(s): Make sure the tote is clean. Dry thoroughly before storing equipment.

Depth Finder: If dirty, gently wipe clean with a damp, soft cloth. Remove the battery before storing.

DO/Temp Meter: Disconnect the probe from the meter. Remove the batteries from the meter. If dirty, gently wipe off the meter, probe shroud, or probe body with a damp, soft cloth. Store in the aluminum (or plastic) tool case provided.

Cardboard Storage Box (used to store unused sample bottles): Please store this box with your other equipment over the winter in a clean, dry environment. We will refill the box with new sample bottles next year.

~ Lakes Unit Staff

Harmful Algal Bloom (HAB)

Contact emails:

EPA.HAB@illinois.gov

&

your regional VLMP coordinator

If you find Hydrilla, contact your regional VLMP coordinator.

Regional Coordinators:

VLMP Statewide Contacts

Greg Ratliff, IEPA, Springfield, 217-782-3362 & greg.ratliff@illinois.gov

Northern Coordinator

Holly Hudson, CMAP, Chicago, 312-454-0400 & hhudson@cmap.illinois.gov

Lake County Coordinator

Kelly Deem, LCHD, Libertyville, 847-377-3009 & kdeem@lakecountyil.gov

Southern Coordinator

Beau Hensen, GERPDC, Marion, 618-997-9351 & beauhensen@greateregypt.org

www.epa.state.il.us/water/conservation/vlmp

Lake Education Assistance Program (LEAP) Grants

This Illinois EPA grant program provides funding (up to $500 per application period) for lake and lake watershed related educational field trips, seminars or workshops, projects, or activities. Projects and activities must have stated goals and involve the enhanced lake or lake watershed education of teachers, students, organizations or the community. LEAP is a reimbursement grant. Application deadlines are September 30 and January 31. Only one application per school or organization for each application period will be accepted.

For more information, visit http://www.epa.state.il.us/water/conservation/leap.html.

~Greg Ratliff, LEAP Contact

Illinois Lake Management Association's 29th Annual Conference

The 2014 conference will be held on April 10th thru the 12th at the Timber Creek Inn & Suites in Sandwich, Illinois. ILMA's mission is "To promote understanding and comprehensive management of lake and watershed ecosystems." The conference is very informative and lots of fun. Check out the ILMA website for more details.

www.ilma-lakes.org

I hope to see you there!

~Greg Ratliff