Poster Titles & Presenter Information
Thursday, March 31st
3:30 – 5:00pm
Holiday Inn Convention Center Commons

TOPIC: Aquatic Invasive Species

Cattails (Typha spp.): How Volunteers Can Track their Presence and Identification
Joy Marburger, Purdue University North Central
jmarburg@frontier.com

Cattails (*Typha spp.*) have become a dominant plant group in wetlands and freshwater coastlines across North America during the past 150 years. There are three recognized species in North America: *Typha latifolia* L. (broadleaf cattail), *T. domingensis Pers*. (southern cattail), and *T. angustifolia L.* (narrowleaf cattail). Recent studies have shown that hybridization of the *T. latifolia* and *T. angustifolia* has occurred throughout the Midwest. *T. angustifolia* is considered to have entered the east and west coast of the U.S. via ship ballast during the mid-1800s. The hybrids spread more rapidly than either of the species. A citizen science website was established with the USGS for volunteers to track the presence of all cattail taxa. Volunteers can enter data, locations, photos, and morphological data that can be assessed for determining management strategies.

Changes to Chapter NR 40, Wisconsin Administrative Code
Amy Kretlow, Wisconsin Department of Natural Resources
Amy.Kretlow@Wisconsin.gov

The State of Wisconsin revised its invasive species identification, classification, and control rule (chapter NR 40, Wis. Admin. Code) in 2015. Significant changes to the law include: delisting two species, listing 49 new prohibited and 32 new restricted species, split-listing (prohibited/restricted) two species, changing the regulated status of five species, and creating a phase-out period for restricted plants to minimize impacts to the nursery industry and facilitate compliance. Other changes clarify rule language and streamline implementation. The intent is to prevent invasive species from becoming established in Wisconsin and prevent already-established species from spreading within the state. The law seeks to prevent ecological and economic impacts associated with invasive species by prohibiting and restricting the introduction, possession, transfer, and transport of certain plants and animals.

Creating Boot/Wader-Cleaning Stations to Prevent Spread of Aquatic Invasive Species
Kaycie Stushek, University of Wisconsin –Madison
stushek@wisc.edu

Throughout 2014 and 2015, partners from around the state came together to reach out with the message of invasive species to an often-forgotten user group: waterfowl hunters. By reforming stations that River Alliance had provided to Anglers in trout streams, a project was born that created boot/wader-cleaning stations with informative signs geared toward hunters. These stations were to

provide aquatic invasive species (AIS) prevention steps and cleaning methods right at their fingertips, or boot tips, rather.
In fall of 2015, educators across the state built these stations and placed them at high-trafficked landings. Partnerships with River Alliance, Wisconsin Department of Natural Resources, Great Lakes Restoration Initiative, UW- Extension, Wisconsin Waterfowl Association, and multiple County AIS coordinators made these stations possible.
This presentation highlights educator feedback, partnerships made in building the stations, and next steps towards measuring usage.

Flowering Rush: Impacts and Management
Chris Hamerla, Golden Sands Resource Conservation and Development Council, Inc.
chris.hamerla@goldensandsrcd.org

Flowering Rush: Impacts and Management - "Flowering Rush is an invasive, emergent and submersed plant that is threatening to damage Wisconsin lakes. This presentation will aim to give viewers the following:
- Identification of Flowering Rush in comparison to native grasses and rushes
- Flowering Rush life cycle and biological characteristics
- Ecological impacts
- Management options and removal techniques
- Proper disposal after removal"

Great Lakes Nuisance: Invasive Common Reed (*Phragmites australis* ssp. *australis*)
Jacob Cerminar, University of Wisconsin – Stevens Point
jcerm567@uwsp.edu

The invasive common reed (*Phragmites australis* ssp. *australis*) is a serious nuisance in much of the Great Lakes region. In addition to removal of the species, restoration of former Phragmites-dominated sites is key to re-instating their natural ecosystem services. The objective of our study was to determine the composition of plants that would naturally germinate from the existing seedbank after 35 years of Phragmites cover and two applications of the herbicide Imazapyr. Our second objective was to determine the germination rate of native, wild-collected seed in soil samples from this site. Early results show 19 plant species successfully germinating from the seed bank, and several additional species germinating from sown seeds.

Hand Removal of Yellow Floating Heart (*Nymphoides peltata*) Lake Gordon, Forest County
John Preuss, Lumberjack Resource Conservations and Development Council, Inc.
johnpreuss@frontier.com

Yellow floating heart (*Nymphoides peltata*) was discovered in two locations on Lake Gordon August 14th during a GLRI Early Detection lake survey. Lake Gordon is a 51 acre lake located in Forest County in the middle of the national forest. It is the first natural lake in Wisconsin to get this NR 40 prohibited invasive species. On August 17th Chris Hamerla and John Preuss hand pulled the two populations. This poster will cover identifying characteristics, native look a likes, hand pulling considerations,

obstacles to consider, way of introduction and current 2015 results. This eradication effort of yellow floating heart strictly used hand removal with no chemicals used during the process.

Interns & Volunteers Monitoring with Beaver Creek Reserve Citizen Science Center
Emily Lind, Beaver Creek Reserve
emily@beavercreekreserve.org

Beaver Creek Reserve Citizen Science Center summer interns monitored the Lower Chippewa River from Eau Claire to the Mississippi River using River Alliance of Wisconsin's Project RED (Riverine Early Detectors) protocol. They trained 20 citizen scientists to help them with their efforts. Five invasive species were documented, one of which was a pioneering population of Japanese knotweed that the Citizen Science Center is now working to control. Summer interns also participated in Clean Boats, Clean Waters, sharing the Stop Aquatic Hitchhikers message with Chippewa River users. Their findings were shared at the Celebrate the Chippewa River Conference in Chippewa Falls, Wisconsin in August, 2015.

The Milfoil Weevil (*Euhrychiopsis lecontei*) as a Biological Control
James Miazga, University of Wisconsin – Stevens Point
jmiaz964@uwsp.edu

The milfoil weevil (*Euhrychiopsis lecontei*) is widespread in Wisconsin lakes and is a strong candidate for biological control of Eurasian watermilfoil (*Myriophyllum spicatum*). The purpose of the current study was to test weevil growth and development success on three groups of milfoil plants: northern watermilfoil, hybrid northern x Eurasian watermilfoil, and three populations of pure Eurasian watermilfoil. During summer of 2015, plants and weevils were collected from northern Wisconsin lakes for use in laboratory experiment conducted at 25°C. Individual milfoil weevil adults were isolated to oviposit eggs on individual milfoil plants from each of the five milfoil groups, with five replicate plants in each group. Each host plant with eggs was then isolated in separate cylindrical tubes to closely monitor development time of weevils from egg to adult. Although sample sizes were not sufficient to detect statistically-significant differences among groups, patterns in the data suggest differences among plant groups in percent eggs hatching and percent of milfoil damaged and no discernible differences among plant groups in fecundity or time to oviposition. These data are consistent with the observation of large differences in density of natural populations of the milfoil weevil.

Milfoil Weevils (*Euhrychiopsis lecontei*) Study Results
Amy Thorstenson, Golden Sand Resource Conservation & Development Council, Inc.
amy.thorstenson@goldensandsrcd.org

Milfoil weevils (*Euhrychiopsis lecontei*) have been shown to be effective in impacting Eurasian watermilfoil when in high enough numbers. Artificial stocking of weevils may help to reach population densities capable of control. Since 2011, collaborative research between Wisconsin Department of Natural Resources and Golden Sands Resource Conservation & Development Council, Inc. has been developing methods for volunteers to raise their own weevils for stocking and tracking what happens

in the lake after the weevils are released. Entering into the final year of this research, find out what we have learned so far.

Rapid Response Actions Following the Discovery of Round Gobies in Little Lake, Butte des Morts
Michelle Nault, Wisconsin Department of Natural Resources
michelle.nault@wisconsin.gov

In August 2015, the invasive round goby (*Neogobius melanostomus*) was caught by an angler below the Neenah Dam in Little Lake Butte des Morts (Winnebago Co.), which is located at the outlet of Lake Winnebago. This confirmed report is the furthest upstream record of this non-native fish species in the Fox River system, and it is hypothesized that the species was introduced into the system via an illegal bait bucket transfer. This poster will highlight the rapid response actions taken in lieu of this unfortunate finding, and the steps which have occurred to prevent further upstream spread of this species into the Lake Winnebago system and beyond. We will summarize outreach and monitoring efforts which occurred after the initial discovery, and discuss future monitoring, management, and outreach efforts planned for 2016 and beyond.

Rapid Response in the Discovery of Water Lettuce (*Pistia stratiotes*)
Susan Graham, Wisconsin Department of Natural Resources
Susan.graham@wisconsin.gov

In late July 2015, the NR40 prohibited species, water lettuce (*Pistia stratiotes*) was discovered in University Bay of Lake Mendota, Dane County. The discovery triggered the WDNR's AIS Rapid Response protocol and utilized both WDNR staff and volunteers to quickly survey the bay and adjacent areas while removing all of the plants that could be found. Their efforts provide an example that we hope will help others dealing with new invasive species detections.

Rapid Response to the Aquatic Invasive Species Starry Stonewort (*Nitellopsis obtuse)*
Tim Plude, Wisconsin Department of Natural Resources
timothy.plude@wi.gov

This poster will summarize the activities that were prescribed to rapidly respond to the new invader of WI waters, starry stonewort, *Nitellopsis obtusa*. Since the September 2014 discovery in Little Muskego Lake there has been a flurry of activity to monitor many other area lakes to detect the species and to also manage the containment of any populations in WI. Unfortunately, the 2015 monitoring effort identified five other lakes with populations of starry stonewort. This poster will include details on the rapid response actions taken by each of these newly infested lakes.

Richland County Willow Creek Watershed Japanese Knotweed Removal Project
Don Barrette, Southwest Badger Resource Conservation and Development Council, Inc.
don.barrette@swbadger.org

This poster is a 5 year project that represents 5 individual phases of coordinating, surveying (monitoring), planning and implementing a large scale project designed to control a Japanese

Knotweed population on the Willow Creek Watershed in Richland County. The Knotweed was discovered in 2011 and we are currently in phase 5 of the project. The poster is also representative of cooperation between county staff, local municipalities, private landowners, natural resource users (Trout Unlimited Members) and private citizens who were helpful in AIS monitoring and project completions to remove/control an invasive species on a state classified trout stream.

Spiny Water Fleas: Trouble for Freshwater Systems
Aaron O'Connell, University of Wisconsin – Platteville
oconnella@uwplatt.edu

My talk will go over some of the basics of what Spiny Water Fleas are and why they are such a nuisance in freshwater systems. I will discuss how they are so easily transferred from system to system (i.e. morphological characteristics) and what can be done to help prevent spread. Also, I will go into some of my research I conducted this summer on Trout lake looking at the early effects of Spiny Water Fleas on a lake system. In conclusion, I will point out some easy techniques that can be conducted in order to check for/monitor the invasive cladoceran in lakes. I would like my audience to take-away how detrimental Spiny Water Fleas can be to a system, ways to prevent spread, and what they can do to join the effort.

WI Trappers: Invasive Species Partners on Land, in Water, and All Points In-between
Chris Hamerla, Golden Sand Resource Conservation and Development Council, Inc.
chris.hamerla@goldensandsrcd.org

Trappers typically cover many miles, reusing equipment in numerous waterbodies and properties. Trappers have a good knowledge of habitat and can be very useful eyes on the landscape. While many are aware of invasive species, prevention steps can be an oversight or perhaps not even thought of. This poster encourages trappers to prevent the spread of invasive species by cleaning equipment and footwear. It also gives educators a checklist of things to cover when engaging the trapping community and potentially opens doors to new partnerships and volunteers.

TOPIC: Citizen Science

15,000ft^2 Shoreland Buffer Restoration Project
Molly McKay, Langlade County
MMcKay@co.langlade.wi.us

The proposed poster will display the process and success of the 15,000ft^2 shoreland buffer restoration that took place along the shoreline of Lake Mohawksin during the summer of 2015. The restoration was funded through a DNR Lake Protection Grant and took place at SARA Park within the City of Tomahawk. The only vegetation within this area prior to the restoration was turf grass. Runoff from the Park would flow over this area and straight into the lake. Langlade County, Lincoln County, and the City of Tomahawk offered their time and staff to restore this area with native plants to

reestablish a natural buffer area. One of the deliverables of the Lake Protection Grant is to display a poster of this project at the Wisconsin Lakes Partnership Convention.

Digital Observation Technology Skills (DOTS) program – Youth Education
Dr. R. Justin Hougham, Marc Nutter, Alex Nussbaum, Taylor Riedl, and Sarah Burgess, University of Wisconsin-Extension, Upham Woods Outdoor Learning Center
marc.nutter@ces.uwex.edu

Wisconsin 4-H Youth Development Environmental Education and Upham Woods Outdoor Learning Center offers educators, youth, and volunteers the Digital Observation Technology Skills (DOTS) program. The DOTS program is an outdoor STEM lesson that uses modern mobile technology tools to connect today's students to the outdoors in new and innovative ways. This inquiry-based program navigates the basics of the scientific method and focuses on the importance of good scientific communication. Specifically, the observation equipment in this project can allow students to collect data for many different citizen science initiatives around the state of Wisconsin. Participants use the technology tools found in the DOTS kits to make observations, take measurements, explore the micro and macro details of their environment, and learn how to embrace their inner scientists. Topics enhanced through this method included food and agricultural systems, climate science, natural resources, riparian ecology, and citizen science.

Lake Level Monitoring: Fluctuating Water Levels – Historical Data
Anne Kretschmann, North Lakeland Discovery Center
anne@discoverycenter.net

Historical data indicate that surface water levels in northern Wisconsin are fluctuating more now than in the recent past. In the northern highland lake district of Vilas County, concern about record low lake levels in 2008 spurred local citizens and lake associations to form a lake level monitoring network comprised of citizen scientists which is the first of its kind in Wisconsin. The network is administered by the North Lakeland Discovery Center (NLDC) in partnership with the Lac du Flambeau Tribal Natural Resources Department and with technical guidance from limnologists at UW-Madison Trout Lake Research Station. Citizen scientists install geographic benchmarks and staff gauges. The retention rate for lakes monitored is 100% and the program has expanded from 4 lakes to 40 lakes in 2016. Local interest and participation is high, perhaps due to the value that citizens place on lakes and concerns about water levels and long-term trends.

Statewide Volunteer Lake-level Monitoring Program
Joshua Wied, Wisconsin Department of Natural Resources
joshua.wied@wisconsin.gov

To address the growing concern for the health of aquatic life in surface waters affected by drought, climate change, and groundwater withdrawals, the Wisconsin Department of Natural Resources (WDNR) and the University of Wisconsin-Extension developed a statewide volunteer lake-level monitoring program. This effort builds upon the existing network of volunteers in the Citizen Lake Monitoring Network (CLMN). In a state with over 15,000 lakes, partnerships with local volunteers, nonprofit groups, and county staff are crucial for filling gaps in water level records. In 2015, 17 lakes

were selected across northern Wisconsin to have staff gauges installed and were monitored by CLMN volunteers throughout the year. Building on the success of the first year of the program, WDNR is expanding to monitor more lakes in 2016. This poster outlines the monitoring protocols, quality assurance plan, and training workshops developed for citizens participating in the lake level monitoring program.

Volunteer Data to Lesson Plans

John Preuss, Lumberjack Resource Conservation and Development Council, Inc.
Sandy Wickman, University of Wisconsin - Extension Lakes
sandra.wickman@wisconsin.gov

There is a wealth of water quality data that is available to the public - data collected by volunteers, resource professionals and consultants. We would like to explore the possibility of making this data available to teachers for lesson plans and for curriculum.
We would like to explore the development of lesson plans that would include information on water quality, graphing, basic limnology principles as well as biocontrol for purple loosestrife and monitoring of native and non-native aquatic plants.

Water-related Volunteer Opportunities in Wisconsin

Paul Skawinski, University of Wisconsin - Extension Lakes
Paul.Skawinski@uwsp.edu

This poster will provide an overview of the many citizen volunteer monitoring programs across Wisconsin that relate to water.

TOPIC: Ecology

Aeration's Effect on Algae: A Review of Success and Failures

Patrick Goodwin, State University of New York
patrick.goodwin@vertexwaterfeatures.com

A review of success and failures - "Bottom aeration is a restoration tool commonly used for improving multiple aspects of lake health, including the occurrence of algal blooms and the quality of algal assemblages.
The intense mixing brought about by artificially aerating a lake can affect an algal community by: (i) increasing dissolved oxygen concentrations and changing the lake's water chemistry (pH, carbon dioxide and alkalinity), which can lead to a more desirable shift in an algal community; (ii) reducing levels of internal nutrient cycling within a lake, which reduces the large amount of nutrients used to sustain algal blooms; (iii) decreasing the amount of solar energy available for photosynthesis; (iv) favoring algal species that tend to sink quickly and need mixing currents to remain suspended in the upper water column (e.g. diatoms); and (v) mixing algae-eating zooplankton into deeper, darker waters, thereby reducing their predation by sight-feeding fish, and increasing their ability to graze on algae cells.

This presentation discusses the current literature regarding aeration's effect on lake algal communities and outlines successes and failures associated with this lake management approach, along with the major factors that tend to influence the outcome of any aeration based management strategy.

TOPIC: Education

Developing and Sustaining a Lakeshore Habitat Restoration Training for Professionals in Wisconsin
Patrick Goggin, University of Wisconsin - Extension Lakes
pgoggin@uwsp.edu

The Wisconsin Lakes Partnership embarked on offering a three-day certification program on "Lakeshore habitat restoration training for professionals" in 2014. Sixty+ people have been certified in the program over the first two years as part of Crews 1 & 2. Participants experienced a two-day classroom session that reviewed state standards and regulations, permitting, designing and implementing conservation practices, strategies for forming partnerships and working effectively with lakefront property owners on projects, and basics of restoring habitat along lakeshores including soils ID, native plant selection, and other site analysis steps. Cost-share funding and grant resources that support lakeshore restoration were featured as well, as were Green Industry and county partner profiles, monitoring and maintenance strategies, and a primer on erosion control assessment and techniques. The third day of the training involved taking an exam and participation in a field day as part of the North American Stormwater and Erosion Control Association-Wisconsin Chapter's fall field day at the American Excelsior lab in Rice Lake, Wisconsin. Field day participants were taken through assorted field stations that demonstrated erosion control products and allowed attendees to speak with product representatives.
Partakers also were shown various bmp's properly and improperly installed and other habitat restoration techniques in a hands-on forum. Future directions of the program include refining the course materials, widening participation by green industry and tribal partners, and bolstering web resources that support practitioners of lakeshore habitat restoration in Wisconsin.

Wisconsin Geographic Names Council (WGNC) – Name That Lake
David Winston, Wisconsin Department of Natural Resources
david.winston@wisconsin.gov

There are 6,598 named lakes and reservoirs in Wisconsin. Have you ever wondered who named them? The Wisconsin Geographic Names Council (WGNC) is a little known intra-agency council that plays an important role in establishing the authoritative official state name of lakes, rivers, islands, and other geographic features in the state. Established originally as the Wisconsin Geographic Board in 1931 and modeled after the United States Board on Geographic Names, the WGNC has been in charge of state names for 85 years. Learn about the history of this Council and other fun facts about geographic names in Wisconsin.

TOPIC: Lake Management

New Method for Measuring Dissolved Nutrients

Don K Button, Big Sand Lake Preservation Association
dkbutton@alaska.edu

The concentration of dissolved nutrients such as phosphorus are a key factors for understanding anthropogenic pollution when high, and in determining aquatic system productivity when low. For oligotrophic systems such as headwater lakes, these concentrations are critical when small. The available are difficult to determine because they are dilute and include microbes too small for facile removal and add unavailable nutrients. This method targets the true concentration of dissolved nutrients. It depends on the uptake rate of added radioactive nutrient to samples together with a progression of added nutrients that is unlabeled. Uptake of the radioactivity is slowed by competition with unlabeled nutrient, both added and naturally present. The mathematics of competitive inhibition allow evaluation of this endogenous fraction from the radioactive and the unlabeled. The associated formulations provide new technology for evaluating important processes such as the amount that anticipated warming will slow microbial activity.

Wisconsin's New Healthy Lakes Initiative: Technical Assistance & Funding for Lakeshore Best Practices

Patrick Goggin, University of Wisconsin - Extension Lakes
pgoggin@uwsp.edu

The Wisconsin Lakes Partnership recently implemented a new statewide initiative providing technical assistance and funding for simple and relatively inexpensive shoreland habitat and runoff and erosion control best practices. "Healthy Lakes" is the outcome of a lean government project to streamline the administrative process for grant funding while simultaneously simplifying technical information for lakeshore property owners and lake groups, municipalities, and other partner organizations. Launched in late 2014, Healthy Lakes has already received positive feedback and widespread geographic interest. Public participation and lessons learned from social marketing studies shaped Healthy Lakes and will continue to be the keys to its success. Next steps include a user-friendly, autonomous website, program and best practice evaluation, and integrating the initiative into long-term administrative code. This session will include an overview of Healthy Lakes, including the five best practices being promoted.

TOPIC: Native Plants & Animals

How to Identify Common Macroscopic Algae in Wisconsin's Lakes

Gina LaLiberte, Wisconsin Department of Natural Resources
gina.laliberte@wisconsin.gov

They're not just "seaweed" or pond scum – algae are critical members of lake food webs, and they can tell you something about what is going on in your lake. Learn to identify some of the common macroscopic algae that we find growing in Wisconsin's lakes, and learn what they reveal about lake conditions. Fresh and preserved specimens will be available for closer examination.

Non-native Aquatic Macrophytes Pose Many Different Threats to the Biological Diversity and Stability of Freshwater Ecosystems

Nicholas McCarney, George Williams College of Aurora University
nmccarney01@aurora.edu

Non-native aquatic macrophytes pose many different threats to the biological diversity and stability of freshwater ecosystems. Geneva Lake, Wisconsin is a popular tourist destination and is consequently exposed to invasion and establishment of non-native aquatic macrophytes. In order to inventory the aquatic macrophyte population, a Point Intersect survey was conducted during the summer of 2015. For assessing the survey's results, the lake was divided into separate zones based upon location and natural breaks. Using a Simpson Diversity Index, the collection data was evaluated for diversity, richness, and frequency of non-native aquatic macrophytes relative to the native aquatic macrophyte community. In areas with lower biodiversity, larger populations of non-native aquatic macrophytes are present. Relationship between human activities and lack of biodiversity is suspected in several areas. The analyzed data constructs an adaptable framework for monitoring and possible methodology for the management of native aquatic macrophyte populations.

TOPIC: Research

Conservation of Genetic Resources is a Vital Component of Walleye (*Sander vitreus*) Management in Wisconsin

Michael Vaske, University of Wisconsin – Stevens Point
Michael.F.Vaske@uwsp.edu

Conservation of genetic resources is a vital component of Walleye *Sander vitreus* management in Wisconsin. Maintaining genetic diversity is especially important within the propagation program. Our objectives were to (1) compare the genetic diversity within Wisconsin's feral Walleye broodstock with genetic diversity levels in other naturally recruiting, Wisconsin Walleye populations; and (2) determine if varying levels of sampling effort influence measured genetic diversity levels. Genetic diversity within the broodfish was comparable to other northern Wisconsin populations. Some broodstock populations were not genetically representative of the regional genetic stock, suggesting alternative broodstock populations should be used. Results also suggest that increased temporal sampling should be conducted to obtain larger numbers of broodfish and increase genetic diversity within progeny. Results from this research will be used to develop a genetic broodstock management plan to help ensure that the Wisconsin DNR is operating using the best possible management practices.

Evaluation of Large-scale Low-dose 2,4-D Treatments for Eurasian and Hybrid Watermilfoil Control Across Multiple Wisconsin Lakes

Michelle Nault, Wisconsin Department of Natural Resources
michelle.nault@wisconsin.gov

Twenty-two lakes were studied pre- and post-treatment to monitor large-scale and low-dose (73-500 µg/L) 2,4-D dissipation and degradation patterns, and determine the efficacy and selectivity of these treatments for lakewide Eurasian watermilfoil (*Myriophyllum spicatum*; EWM) and hybrid watermilfoil (*Myriophyllum spicatum* x M. *sibiricum*; HWM) control. Herbicide monitoring results revealed slow 2,4-D degradation rates and long exposure times with many of these treatments. Milfoil control ranged from 4-100%, with sustained multi-year control observed in some lakes. In comparison to pure EWM populations, reduced control was observed in many of the lakes with confirmed HWM populations. Several native plant species also showed significant declines post-treatment, with variation in recovery observed over time. Although milfoil control was achieved with some of these treatments, variation in herbicide persistence, observations of reduced control in some hybrid genotypes, non-target impacts to certain native plants, and uncertain long-term biotic and abiotic effects demonstrate the need for additional research, monitoring and field studies.

Identifying Spatial and Temporal Patterns of Anthropogenic Nitrogen Deposition and the Influence on Aquatic Community Change in Wisconsin Lakes

Krista Slemmons, University of Wisconsin - Stevens Point
kslemmon@uwsp.edu

The health of aquatic primary producers, on which all species depend, is vital to the function and services provided by freshwater. Over time, stark changes in primary producers, particularly diatom abundance and community composition, can indicate that these communities have reached an ecological threshold. This is apparent in regions where elevated levels of nitrogen are associated with ecological shifts. We examined sediment cores from Wisconsin Lakes along a nitrogen gradient to identify the point at which diatom communities changed. We conducted nitrogen isotopic analysis to identify the source of nitrogen and whether shifts in the source of nitrogen correlate to aquatic community change. We present our preliminary findings from Crampton, Boulder and Pike Lakes. These results have direct implications to the wise management of the water on which we depend and can lend suggestions to the establishment of critical nitrogen thresholds to diminish ecological change as a result of pollutants.

Secchi Depth Data Collected by Citizen Lake Monitoring Network (CLMN) Volunteers Provides the Foundation for the Operational Remote Sensing of Water Clarity

Daniela Gurlin, Wisconsin Department of Natural Resources
Daniela.Gurlin@wisconsin.gov

Secchi depth data collected by Citizen Lake Monitoring Network (CLMN) volunteers provides the foundation for the operational remote sensing of water clarity at the Wisconsin DNR. The on-the-ground Secchi depth data is collected when the satellites from the NASA/USGS Landsat Program are overhead and used to calibrate a model for the satellite retrieval of water clarity. The calibrated model is used to produce satellite retrieved summer water clarity maps and average summer water clarity

values for lakes across Wisconsin. The 2014 statewide water clarity composite represents a combination of four of these summer water clarity maps and was derived from 16 Landsat 7 ETM+ and Landsat 8 OLI images. We plan to provide access to this product through the Lakes and Aquatic Invasive Species (AIS) Mapping Tool this spring and would like to invite the public to a preview of our latest water clarity product with this poster.

Shoreline and Benthic Aquatic Debris Research– Geneva Lake
Christopher Wells, George Williams College of Aurora University
cwels@gwc.aurora.edu

George Williams College of Aurora University and Geneva Lake Environmental Agency collaborated on two research projects that studied the amount, type and impact of aquatic debris (persistent human-made solid material) on Geneva Lake's shoreline and benthic (bottom) communities. The shoreline study investigated the nine-mile stretch of shoreline between the George Williams College campus and the city of Lake Geneva. A smartphone application, Marine Debris Tracker, was used to record the types, quantities and locations of debris that was found. The benthic study investigated five locations on the lake, some having a variety of use such as mooring and fishing and others having relatively low-use. A diver marked out underwater transects, and a remotely operated vehicle (ROV) was used to inspect the lake bottom for aquatic debris along those transects. The Town of Linn Fire Department graciously assisted the work by taking the researchers out on the fireboat The Guardian that served as a platform for conducting the benthic research.

TOPIC: Rivers, Streams & Watershed

"Impaired Waters" Appears Sometimes in Media Reports, But They Never Really Explain What That Means
Reesa Evans, Adams County
revans@co.adams.wi.us

The term "impaired waters" appears sometimes in media reports, but they never really explain what that means. This poster will address the EPA requirements, what criteria might be used to declare a water body "impaired" and how that designation affects what may happen in the water body in the future.

The Lower Fox River and Green Bay are Impaired by Excessive Loadings of Phosphorus and Sediments
Scott Heinritz, Fox Valley Technical College
heinrits@fvtc.edu

The Lower Fox River and Green Bay are impaired by excessive loadings of phosphorus and sediments. A portion of these loadings may originate from non-point sources that discharge into thirteen tributary streams to the Fox River. This project is an extension of the well-established WAV program and asks volunteers to collect and submit surface water samples from all thirteen tributary streams for analysis

of total phosphorus, dissolved reactive phosphorus, total suspended solids and transparency. In addition, stream flow and macroinvertebrate samples were collected.

Riparian Zones are Important Filtration Systems that are Often Overlooked

Ricardo Jaimes, Ripon College
Jaimesr@ripon.edu

In the summer of 2015 a stream survey on Silver Creek in Fond du Lac County (WI) flowing into Green Lake (Green Lake County, WI) was conducted. The survey was part of the collective effort from the Fund du Lac County, Green Lake County, and Green Lake Association to survey the Green Lake watershed. The goal is to survey the entire watershed in order to have data on the stream banks to better assess erosion and to control phosphorus levels. The data from the Silver Creek survey includes over 500 different point on the creek that have been observed for erosion, bank stability, riparian zone health, invasive species and nutrient enrichment present.