Poster Descriptions & Presenter Information

Wednesday, April 10, 2013

11:00a.m. – 12:00p.m.

KI Convention Center - Exhibit Hall

TOPIC: Aquatic Invasive Species

Aquatic Invasive Species Disinfection Guidelines for Recreational Water Users

Erin Vennie-Vollrath, Wisconsin Department of Natural Resources (WDNR)
(608) 266-9252 / Erin.VennieVollrath@wisconsin.gov

Whether you are a boater, angler, paddler, seaplane pilot, SCUBA diver, waterfowl hunter, researcher/consultant, or service provider, you have a very important role to play in keeping Wisconsin's waters free of aquatic invasive species (AIS). We can unintentionally move AIS with us as we move from one body of water to another. Wisconsin has a well-established set of prevention steps to stop the spread of AIS (Inspect, Remove, Drain, and Never Move live fish). However, there are some cases in which further actions should be taken for decontamination. In the fall of 2012, an ad-hoc committee was assembled to develop a set of guidelines for equipment decontamination for recreational water users. This poster presents the decontamination guidelines and encourages public feedback concerning the issue.

Aquatic Invasive Species Monitoring Systems

Scott Van Egeren, WDNR
(608) 264-8895 / scott.vanegeren@dnr.state.wi.us

The Wisconsin DNR, regional and county partners and citizen volunteers have recently stepped up our collective aquatic invasive species (AIS) monitoring efforts. DNR recently started a new statewide baseline AIS monitoring project in 2011 and citizen volunteers and regional partners are monitoring more than ever before. It is crucial to Wisconsin's AIS Partnership planning to monitor with statewide coverage so that a statewide AIS assessments can made. This will be used to track the effectiveness of our education and outreach efforts to recreational boaters. As part of the DNR effort the number of new infestations will be tracked over time to gather baseline information on the distribution of AIS and to answer the question: Are we slowing the spread? Results from the first two years of the baseline monitoring program will be illustrated. Early results suggest that more lakes than expected contain an AIS, but that prevalence rates for any given species are not high across the state.

Aquatic Invasive Species Projects

Kaycie Stushek, Golden Sands Resource Conservation & Development (RC&D) Council, Inc
(715) 343-6278 / Kaycie.Stushek@goldensandsrcd.org

Golden Sands Resource Conservation & Development Council has been providing technical assistance, lake surveys, outreach and education, invasive species removal, and early detection for residents of Central Wisconsin through their Regional Aquatic Invasive Species (AIS) Program since 2003. The program, which is funded by a grant through the Department of Natural Resources, has expanded to cover five counties over the years. Some project highlights involving outreach for the past few years has been involving the development of Eurasian watermilfoil manual removal, trial and error with Japanese knotweed removal methods, and an expansion of purple loosestrife biological control volunteer program.

Highlighted in this display is how these specific projects developed and grew through the years, with lessons learned, and knowledge gained throughout the process.

Boat Inspection Program

Hans Bremer, Wisconsin Sea Grant
(312) 952-6989 / hans.bremer@uwc.edu

This poster will display information regarding the summer boat inspection programs done by Sea Grant and Clean Boats, Clean Waters. It will have information on the inspection program itself and the data collected over the past several summers. It will also potentially have some ideas for the future of the inspection program.

Clean Boats Clean Waters Clean Grants: Streamlining Watercraft Inspection Projects in Wisconsin

Pamela Toshner, WDNR
(715) 635-4073 / Pamela.toshner@wisconsin.gov

Thanks to your feedback, preventing the spread of aquatic invasive species in Wisconsin recently got easier. Since the Clean Boats Clean Waters initiative was launched back in 2003, diligent volunteers and paid staff have inspected hundreds of thousands of boats and educated over one million people about healthy boat hygiene. Fortunately, the legislature segregated funds that enable DNR to provide AIS grants to support watercraft inspection efforts. Unfortunately, volunteer burn-out is high, and some groups may not even apply for the funds because of the perception that the grant application process and competition are too challenging. The DNR response to public feedback that there must be an easier way to fund watercraft inspection projects was to Lean-Government it. We will share the new simplified grant process for watercraft inspection funds and identify priority areas for these projects.

Development of a Volunteer Monitoring Program for Invasive Aquatic Plants: Challenges and Lessons Learned in Michigan

Jo A. Latimore, Michigan State University, Dept. of Fisheries and Wildlife
(517) 432-1491/ latimor1@msu.edu

In 2007, a new "Exotic Aquatic Plant Watch" program was piloted within Michigan's volunteer Cooperative Lakes Monitoring Program (CLMP), in response to public concern about nuisance plant growth. The training session was immediately popular, but enrollment in the monitoring program was extremely low in 2007 and 2008. The enrollment goal of 20 lakes was reached in 2009 after the participation fee was reduced, volunteer experience requirements were relaxed, and program promotion increased. Unfortunately, many of the enrolled lakes did not submit data. In 2010, the protocol and training were updated to emphasize the importance of reporting negative results, and the requirement to use GPS and online mapping to report species locations was relaxed. That year, the target number of lakes completed the survey. In 2011, the Exotic Aquatic Plant Watch was formally added to the CLMP. Challenges related to quality assurance and volunteer follow-through continues to be addressed.

Factors of Invasibility in Northern Wisconsin Lakes

Katrina Punzel, Carthage College
(608) 921-2465 / kpunzel@carthage.edu

Lake ecosystems are valuable as a source of human resources and are susceptible to invasive species. Understanding how invasion success is affected can lead to new strategies of lake restoration and invasive control. Prior work has focused on two mechanisms: excess resources and interspecific facilitation. However, no model yet focuses on the interactions between these mechanisms or on aquatic macrophytes. A third model was then proposed for further research. Data on water quality parameters and invasives species were taken from the early 1970s to the present from the Wisconsin Department of Natural Resources database and compared to the number of invasive species and the number of years since the initial invasion event. Significant correlation was found between the total number of invasive species and the length of time since the first invasion. It was concluded that interspecific interactions significantly impact invasive success.

Ice Angler Outreach Project

Michele Sadauskas, Oneida County Land & Water Conservation Dept.
(715) 365-2750 / msadauskas@co.oneida.wi.us

In 2012, Oneida County Land & Water Conservation Dept. (LWCD) debuted their Ice Angler Outreach project. For four weekends, a team member from the aquatic invasive species (AIS) program traveled to ice fishing tournaments and/or area lakes that experienced heavy ice fishing pressure. Along with receiving AIS outreach material, ice anglers were asked to participate in a nine-question survey to help the Oneida County LWCD understand this demography. In 2013, LWCD was awarded a Wisconsin Environmental Education Board (WEEB) grant for the continuation of their Ice Angler Outreach Project. This grant funded an AIS Shack (with heater), two outreach flags, employee wages and mileage. On seven weekends during the months of January and February, an AIS assistant collected survey data and discussed AIS with ice anglers. This poster details the project, survey results, and the future of ice angler outreach in Oneida County.

The Impacts of Granular 2, 4-D Herbicide on Non-Target Plants When Used to Control Eurasian Watermilfoil in Wisconsin Lakes

Chad Cason, Cason & Associates, LLC
(920) 361-4088 / chad@casonassociates.com

This poster will present research on the species selectivity of granular 2,4-D herbicide when used to control Eurasian watermilfoil (EWM). This research was recently published in The Journal of Invasive Plant Science and Management. A total of 24 pre- and post-treatment plant frequency data sets were analyzed from 15 Wisconsin lakes treated with granular-2,4-D BEE herbicide. Six data sets from four untreated control lakes were also analyzed. Analysis of pre- and post-treatment changes in frequency of occurrence for 46 species of aquatic plants indicated that EWM was the only species to show significant declines in all the surveys. Point-intercept plant survey data showed that EWM declined an average of 58.0% at application rates of 100 lbs/acre, and an average of 76.5% at rates of 150 lbs/acre. EWM increased in the untreated control lakes an average of 77% in year one and 24% in year two. Northern watermilfoil exhibited significant declines at higher application rates, but most other native aquatic plants were unaffected or exhibited increases following treatments. The high degree of species selectivity to EWM shown by granular 2,4-D BEE suggests that this herbicide may be an important tool for restoring habitats degraded by EWM.

Management of Eurasion Watermilfoil with Granular 2, 4-D in the Legend Lake System, Menominee County, WI

Alex Brauer, Cason & Associates, LLC
(920) 420-0495 / alex@casonasssociates.com

The Eurasian watermilfoil treatments conducted on the Legend Lake System are one of the largest of their kind ever conducted in the state of Wisconsin. Granular 2,4-D was the chosen herbicide for this multi-year, ongoing project. Extensive monitoring and analysis have taken place since the first treatment, tracking any changes the lake has undergone. The monitoring efforts included: pre and post-treatment point-intercept aquatic plant surveys, water quality monitoring, dissolved oxygen monitoring, 2,4-D residual sampling, Eurasian watermilfoil mapping surveys, and DNA analysis of milfoil. These monitoring efforts were perhaps the most extensive ever conducted following a milfoil treatment. The purpose of this case study is to present the results of the treatments and monitoring efforts, and show the effectiveness of granular 2,4-D as a Eurasian watermilfoil management tool.

Rapid Response and Control of Policemans Helmet (Impatiens glandulifera)

Jon Motquin, Shawano County Land Conservation
(715) 526-4626 / jon.motquin@co.shawano.wi.us

The first known Wisconsin occurrence of Policemans helmet (Impatiens glandulifera) has been reported in the Town of Richmond, Shawano County. Since its discovery, it has proven to be an aggressive invasive species. Originally planted by landowner as an ornamental from seeds procured in the United Kingdom, it quickly escaped cultivation on the parent parcel. Strong evidence of deer herbivory and transport has been documented. An early detection and eradication program was undertaken by a diverse collaboration of public and private entities due to the close proximity of Wisconsin State Natural Areas and tribal forests. Response protocols were uniformly implemented within three miles of the infestation site. A direct mailing with species identification materials was sent to all landowners, roadside plant surveys were performed, and walk-through property inspections were performed where permission could be obtained. All observed plants were hand pulled and composted in August 2012. Additional surveys will be performed in 2013 to evaluate the effectiveness of the treatment.

Squash Lake Association: Pulling Together to Get to the Root of the Problem

Stephanie Boismenue, Squash Lake Association
(715) 493-0008 / stephboismenue.squashlake@hotmail.com

Without using a single herbicide, the Squash Lake Association has been extremely successful at significantly reducing and managing the volume of Eurasian water milfoil (EWM) from Squash Lake. This poster presentation will walk you through each step of the Association's thriving EWM hand-harvesting project and explain how the combined efforts of 1) a phenomenal crew of SCUBA divers, who harvest each plant by the root mass and 2) a dedicated team of Volunteer Milfoil Monitors, have made this project a success. The Squash Lake Association, located in Oneida County, hopes to inspire your lake group to "Pull together to get the root of the problem" and Just Say No the herbicides!

TOPIC: Lake Habitat & Biology

A Comparison of Historical Changes in Lake Morphology of Six Inland Lakes in WI

Christine Koeller, UW-Stevens Point
(715) 252-2819 / ckoel220@uwsp.edu

The morphology of lake bottom changes over time was assessed in six central Wisconsin Lakes. Original bathymetric surveys were conducted with ice-grid surveys in cut holes through ice at intersections of perpendicular transects that were equally spaced over a lake surface. Contours were hand-drawn based on survey depths. The second generation of maps were produced with graphing sounders to traverse manually across perpendicular grid transects. Contour maps were hand-drawn after graphing sounder transects were manually stitched together. In this study, bathymetry maps were created with GPS/Sonar technology with sub-meter accuracy for comparison with historical maps. ArcMap 10 software was used to rectify and build 3D models for comparisons of lake depth and volume changes within lakes over time. Reasons for changes in lake depth and volume were attributed to inaccuracy in historical survey methods, sedimentation and scouring, and rectification errors. This study points out the present need for well-defined base maps with precise (<1cm) elevations so future studies can clearly define bottom changes that may be attributed to natural and anthropogenic factors.

Feasibility of Restoring Nongame Fish Populations to Lake Ripley

Paul Dearlove, Lake Ripley Management District
(608) 423-4537 / ripley@oaklandtown.com

During the 1970s, Lake Ripley supported diverse nongame fish populations based on nearshore surveys performed at that time. The surveys were replicated in 2004 and later expanded in 2012. The findings demonstrated that many environmentally intolerant and regionally rare species had disappeared from the lake. These losses coincided with numerous changes in the lake, including loss of nearshore habitat linked to development (i.e., piers), Eurasian watermilfoil infestation, large-scale herbicide treatments, and declining water quality. Since the early 1990s, the Lake Ripley Management District has taken a progressive approach to lake restoration, including watershed-scale nutrient management, mechanical harvesting of EWM and nearshore habitat restorations. As a result, water quality and the native aquatic plant community have both improved. As perhaps the last stage of lake restoration, the District is conducting a feasibility study designed to re-introduce extirpated nongame fish species and recapture some of the biodiversity lost from the lake.

Lake Habitat Mapping with Side-Scan Sonar and the Relation to Fish Diversity in Eleven Wisconsin Lakes

Christine Koeller, UW-Stevens Point
(715) 252-2819 / ckoel220@uwsp.edu

Lake habitat features such as substrate, coarse woody habitat, depth, and vegetation are important components of the ecosystem, and are used by fish and other aquatic organisms for foraging, refuge, and spawning. Traditionally, habitat has been measured manually using quadrats and transects, and depth maps for the study area were constructed without GPS/Sonar technology. Side-scan sonar technology has more recently been used to map underwater habitat features such as substrate and coarse woody habitat; however, this technology has not been employed for habitat mapping of inland Wisconsin lakes. Our main objectives were to determine the accuracy of sonar interpretation for lake habitat mapping for 11 Eastern Marathon County kettle lakes with glacial origin, the accuracy of new depth maps created from sonar depth readings, and to see if different habitat combinations can be used to predict fish diversity. The Lowrance HDS5 side-scan (or structure scan) was used to collect data from 11 lakes in the study area, from the shoreline to 30.5 meters perpendicular around the entire perimeter. This data was compared to manually measured ground truth data collected from random sampling points within each habitat type (n=30) and fish diversity collected from electroshocking surveys. If there is a strong relation between manually measured habitat features and predicted habitat features interpreted from sonar data, this method could provide a quick, cheap alternative for fish biologists to use when measuring lake habitat for future projects.

Making Aquatic Plant Point- Intercept Survey Data Available in SWIMS and on DNR Websites

Elizabeth Haber, WDNR
(608) 266-2212 / Elizabeth.Haber@Wisconsin.gov

Since 2005, the DNR and UW Extension partners have been collecting data about the aquatic plant communities in lakes statewide using the point-intercept method. We have compiled an amazing wealth of detailed information about the plant communities in Wisconsin's lakes. Now the data will be available for viewing and use by all Wisconsin citizens. The data is part of the DNRs SWIMS database and is making its way to the DNRs lakes and aquatic plant websites. Some of the reports generated from plant survey data will be species lists, Floristic Quality Index (FQI) and Aquatic Macrophyte Community Index (AMCI) calculations, pie charts of the most commonly observed species, and distribution maps of selected species in individual lakes. Be sure to check the DNRs lakes websites for updates to this long-awaited data deployment!

TOPIC: People, Policy, & Politics

Midwest Glacial Lakes Partnership- a partnership for fish and fish habitats

Katherine Haws, Midwest Glacial Lakes Fish Habitat Partnership
(218-) 833-8618 / katie.haws@state.mn.us

Midwest Glacial Lakes Partnership is one of 18 nationally recognized Fish Habitat Partnerships in the US. Midwest Glacial Lakes partnership includes portions of 8 states, and the lakes of glacial origin within these eight states, and activities are coordinated by Natural Resource agencies and non-profits within the eight state geography. These partnerships, funded and supported by the National Fish Habitat Partnership initiative provide a novel broad approach to collaboration on lake management issues. Recently, an assessment was completed where lakesheds were delineated throughout the partnership geography, which will help to understand regional differences in lake characteristics, and also help guide future lake restoration efforts. Habitat improvement projects have been completed in six states which illustrate lake restoration methods. This partnership hopes to attract additional partners/participants and is seeking input on its Strategic Plan update.

Wisconsin Invasive Species Regulations NR 40 Update

Mindy Wilkinson, WDNR
(608) 266-6437/ Melinda.wilkinson@wisconsin.gov

Chrystal Schreck, WDNR
(608) 264-8590/ chyrstal.schreck@wisconin.gov

In 2009, the Wisconsin Department of Natural Resources (DNR) developed Chapter NR 40, the Invasive Species Identification, Classification and Control Rule. This created a comprehensive, science-based system with criteria to classify invasive species into two categories: Prohibited and Restricted. In 2011, the process to revise the rule was initiated and the regulated species list is being updated along with the rule language. The Wisconsin Invasive Species Council is advisory to the DNR and took the lead on bringing together groups of invasive species experts to participate in Species Assessment Groups to review species recommended to the DNR for listing. The timeline for the official rule change process by DNR will include extensive public input and is scheduled to conclude by the end of 2014. Proposed changes to the rule along with the Councils recommendations are presented.

TOPIC: Scientific Lake Research

Bathymetric Mapping of Pine Lake: Employing New Technologies

Phillip Rynish, University of Wisconsin-Eau Claire
(920) 595-0443/ rynishpp@uwec.edu

A new generation of digital sounder was used to collect bathymetric data on Pine Lake in New Auburn, Wisconsin in October, 2012. This replaced the more labor intensive "gameboy" method that was used by the researchers to generate the data for previous Pine Lake maps. Poster offers a brief history of lake mapping techniques and a comparison between new cloud-based geoprocessing Kriging and GIS TIN and GRID techniques for 3D lake model generation.

Early Season 2, 4-D herbicide and harvesting treatment effects on Eurasion watermilfoil in Turville Bay Lake Monona, Dane County

Martha Barton, WDNR
(608) 221-6350/ martha.barton@wisconsin.gov

The Turville Bay Research project was designed at the request of the Dane County Aquatic Plant Management Committee to evaluate the efficacy of early season herbicide treatments and early season mechanical harvesting on aquatic plant control. We sought to scientifically evaluate treatment impacts while increasing selectivity of non-native target species and minimizing negative effects on native species. The herbicide 2,4-D (2,4-Dichlorophenoxyacetic acid) is believed to be semi-selective, targeting dicots like Eurasian watermilfoil (EWM), coontail and water marigold, and mechanical harvesting is considered non-selective. Analysis of results show that both management methods can be effective in reducing EWM over the short-term with minimal impacts to native species, but also indicate that managing invasive species is a long term commitment which requires adaptive management and quality data collection.

Effects of in-lake and shoreland variables on Eurasian Watermilfoil (Myriophyllum spicatum L.) and milfoil weevils (Euhrychiopsis lecontei Dietz) in Wisconsin Lakes

Paul Skawinski, UW-Stevens Point College of Natural Resources
(715) 498-3381/ pskaw387@uwsp.edu

This poster discusses implications of various in-lake and shoreland habitat characteristics and how these data related to density of both Eurasian watermilfoil (Myriophyllum spicatum L.) and milfoil weevils (Euhrychiopsis lecontei Dietz) in a set of 14 Wisconsin lakes. Intensity of shoreland development was strongly correlated with EWM abundance, while weevil density was most strongly correlated with density of emergent vegetation.

Fatty Acid Concentrations in Wisconsin Sport Fish: Preliminary Implications for Consumption Advice

Meghan C. Weaver, WDNR
(608) 267-9665/ Megahan.weaver@wisconsin.

WI Departments of Natural Resources (DNR) and Health Services (DHS) have analyzed fish tissues for contaminants (mercury, PCBs) and issued warnings about eating fish since the 1970s. DHS recently received a Great Lakes Restoration Initiative grant for improving fish consumption advice and analysis of beneficial long-chain polyunsaturated omega fatty acid concentrations in commonly eaten fish species. Fillets from DNRs annual fish collection were analyzed by the WI State Lab of Hygiene. We found that a 0.5-lb serving of most species sampled provided the Recommended Daily Intake of beneficial fats. However, a serving of most species sampled also exceeded the recommended daily intake limit of mercury for men and older women; all species exceeded the mercury daily intake limit for young women and children. Advice for consuming fish from PCB and mercury-contaminated sites should still be followed, although choosing species with high fatty acids may provide increased benefits of fish consumption.

TOPIC: Water Quality & Groundwater

12 years of phosphate monitoring in Little Sturgeon Bay: The Groundwater Connection

Peter Sigmann, Little Sturgeon Area Property Owners Association
(920) 824-5193 / peter@sigmann.net

We have tested water quality in our bay since 2001.
High phosphate concentrations occurred in the outer bay intermittently from 2003 to early 2009. Spot checking suggested that the littoral current of Green Bay was the source. Beginning in 2008 we recorded intermittent elevations of phosphate at the back-bay locations with increasing frequency. Additional sampling on subsequent days indicated that these elevations were of short duration. Sampling closer to shore and at the mouths of feeding creeks showed less phosphate content. When we added measurements of phosphate content in shallow domestic wells adjacent to the bay we found that the values moved parallel with the phosphate content at the sampling spots on the bay. Intensive but intermittent phosphate loading enters the bay by way of a superficial aquifer.

Minimizing the Effects of a Drained Wetland and Agriculture on Rock Lake: Source Investigation and Mitigation Strategies

Nelson Institute for Environmental Studies- University of Wisconsin-Madison
Katie Van Gheem, (920) 427-3357 / kvangheem@wisc.edu
Heather Davis, (608) 228-7734 / heathersumnerdavis@yahoo.com
Ian Anderson, (715) 797-1192 / ianderson2@wisc.edu

A small drainage ditch, near a designated sensitive area in Rock Lake, is a significant source of sediment, phosphorous, and bacteria to this pristine lake. The watershed is comprised of a glacial landscape with agricultural lands and private residences located on drumlins and a drained wetland in the lowlands. Previously, residents have funded dredging of the inlet as a short term solution to lake sedimentation. A collaboration of the Rock Lake Improvement Association (RLIA), Jefferson County Land and Water Conservation Department (LWCD), Montgomery and Associates-Resource Solutions (MARS), and the University of Wisconsin-Madison was formed to address these issues.

We isolated probable sources of phosphorous, bacteria and sediment and identified potential solutions. The high percentage of sand from sediment cores in the inlet indicate transport primarily occurs during storm events. Elevated phosphorous concentrations upstream relative to downstream indicates an upstream source, diluted by groundwater inputs. Anthropogenic sources of bacteria were ruled out based on low nitrate concentrations; however, increased concentrations downstream are indicative of natural sources. Optimal mitigation strategies include best management implementation at source areas and local shallow marsh restoration.

Sediment, Phosphorus, and Bacteria: Identifying Sources and Determining Solutions

Patricia Cicero, Jefferson County Land & Water Conservation Department
(920) 723-2728 / patriciac@jeffersoncountywi.gov

This presentation will highlight the investigation of a small ditch that delivers large amounts of sediment, phosphorus, and bacteria to Rock Lake. The watershed is home to agriculture, residential, and natural areas. The large number of potential pollution sources made the study challenging: manure storage, farm fields, manure spreading, septic systems, manicured lawns, wildlife, or ditch bank erosion. The investigations were done in partnership with the Rock Lake Improvement Association, the Jefferson County Land and Water Conservation Department, Montgomery Associates Resource Solutions, and University of Wisconsin-Madison Water Resources Management Program graduate students. Project partners will explain various techniques used in the study including water quality sampling of surface and groundwater, sediment deposition analysis, modeling of water flow, bacteria sampling, obtaining historic information, and consulting with various experts. In addition, the public participation component will be covered. The chosen practice(s) to control the pollution will be explained including design aspects, maintenance requirements, potential funding sources, and the necessary involvement by private citizens.