

Upper Midwest Environmental Sciences Center November 2011 Activity Report

Aquatic Ecosystem Health

Hydrogen Peroxide and Hatchery Discharge Water

- Students from Western Wisconsin Technical College (*La Crosse, WI*) collaborated with UMESC scientists to assess the effects of intermittent doses of hydrogen peroxide on survival, growth and reproduction of *Daphnia magna*. Hydrogen peroxide is presently approved to control mortality from certain diseases in fish reared by public and private fish hatcheries. The information from this study will help understand potential environmental effects associated with intermittent hydrogen peroxide discharges by hatcheries.

Biodiversity Monitoring

USGS Initiative

- Barry Johnson participated in the USGS Strategy Workshop on Implementing a Monitoring Framework at USGS Headquarters in Reston, VA, December 1-2. This meeting was held to generate some initial discussion and ideas on what a national biodiversity monitoring framework could look like, and what could be done to support its creation.

Geospatial Science & Technology

Wildlife Counts and Digital Imagery

- Larry Robinson processed, orthorectified, and mosaicked 440 high-resolution digital images in support of the U.S. Fish and Wildlife Service (FWS) Region 3's Integrated Waterbird Survey. During the fall, each week the FWS collects digital photography of selected waterfowl migration stopover sites on Mississippi River navigation Pools 5, 6, and 8, at a resolution of 2- to 3-inches per pixel. Once mosaicked, these images are used to assess vegetation conditions, waterfowl use, and to compare waterfowl counts collected in the field to those generated from photography. The images Robinson processed were collected on November 7, at an elevation of 1,500-feet above water level, using a 60-mm natural color lens, which resulted in 2-inch per pixel digital photos.

Wisconsin Activities

- John (JC) Nelson attended the ESRI Wisconsin Users Group meeting November 9-10 in Green Bay, WI, to highlight UMESC's involvement in state GIS projects.

Great Lakes Restoration Initiative (GLRI)

Project #73, Avian Botulism in Distressed Great Lakes Environments

- Kevin Kenow presented, "Migration Movements and Foraging Patterns of Common Loons Breeding in the Upper Midwest United States" at the annual meeting of [The Waterbird Society](#) in Annapolis, MD, November 10. The presentation reported on an ongoing study on the migratory movements and foraging patterns of sentinel fish-eating waterbirds while migrating through the Great Lakes, in association with a USGS/Great Lakes Restoration Initiative ([GLRI study on avian botulism](#)).

Project #80, Birds as Indicators of Contaminant Exposure

- Tom Custer and Chris Custer presented a poster on [their research activities](#) and participated in the [Wisconsin Areas of Concern Meeting](#) in Green Bay, WI, November 3-4. While in the Green Bay area the Custers also plan to evaluate Fox River sampling sites within the Green Bay Area of Concern, November 1-2, for Great Lakes Restoration Initiative ([GLRI Project 80, Birds as Indicators of Environmental Contaminants in the Great Lakes](#)).

Project #82, Characterization of Habitat and Foodweb Structures across Great Lakes Rivermouth Estuaries

- William Richardson participated in the Wisconsin Areas of Concern (AOC) state-wide meeting November 3-4 in Green Bay, WI, interacting with managers and researchers on the role the Great Lakes Restoration Initiative Project 82 can play in AOC restoration.

Mississippi River

Upper Mississippi River Basin Association

- Mike Jawson and Barry Johnson participated in the quarterly meetings of Upper Mississippi River partners, specifically the [Upper Mississippi River Basin Association](#) and the Environmental Management Program-Coordinating Committee, November 15-16, in Moline, IL. The meetings addressed a variety of issues including; the Inland Waterways Trust Fund, Asian carp, adaptive management, and research in landscape patterns.

Native Mussels

Future Freshwater Mussel Research

- Teresa Newton traveled to the University of Iowa's Institute for Hydraulic Research November 14-15 to meet with collaborators and plan two upcoming research projects. One study, recently funded by the Lucille A. Carver Institute, will develop a biosensory network using native mussels to understand the nitrogen cycle. The second study, led by doctoral research candidate Jeremy Brill, will integrate an ecological model with computational fluid dynamics to predict the effects of native freshwater mussels on nitrate concentrations in a reach of the Upper Mississippi River.

Outreach Activities

Asian Carp

- Terrance Hubert was interviewed, November 24, by freelance outdoor writer Mike Yurk, regarding the spread of Asian carp in the Mississippi River basin, the threat of invasion into the Great Lakes, and the efforts to develop methods to control the spread of the carp. The article is expected to appear in the January issue of [Midwest Outdoors](#).

Environmental Nutrients

- William Richardson gave an invited presentation for a Winona State University ecology class titled, "Nitrogen in the environment: The good, bad, and the ugly," Winona, MN, November 30.

Wildlife Ecology

Bat Conservation

- Wayne Thogmartin published a letter to the editor in the fall issue of Bat Research News.
 - Thogmartin, Wayne E. 2011. Substitutability of bats in agricultural systems: why ecosystem valuation is not likely to sway agricultural interests. Bat Research News, 52(3):41-44.

Methylmercury Toxicity and Common Loons

- Kevin Kenow (*UMESC*), Michael Meyer (*WI DNR*), Ronald Rossmann (*EPA*), Annette Gendron-Fitzpatrick (*UW-Madison*), and Brian Gray (*UMESC*) presented the invited poster, "A Field Egg Injection Study to Evaluate Methylmercury Toxicity in Common Loons" as part of a session on "Advances in Egg Injection and Embryo Toxicity Studies in Birds and Reptiles" at the [Society of Environmental Toxicology and Chemistry](#) (SETAC) North American [32nd Annual Meeting](#) in Boston, MA, November 16.

The Wildlife Society's Annual Conference

- Wayne Thogmartin helped coordinate, and participated in, [The Wildlife Society's](#) 18th Annual Conference, held November 4-11 in Waikoloa, HI.

Conference Logistics

- Wayne Thogmartin served on the Program Committee's Symposium Sub-committee.
- Wayne Thogmartin (*UMESC*), Lyman McDonald (*WEST, Inc*), and Falk Huettmann (*University of Alaska, Fairbanks*), hosted the symposium "Location-Only and Use-Availability Data: Analysis Methods Converge." The symposium was established to demonstrate the conceptual and mathematical commonalities between telemetry data and the various forms of survey data revealing only presences of an animal in a landscape. The organizers and authors intend to follow up the symposium with a review article synthesizing these developments.

Oral Presentations

- "Future land use around the U.S. Fish and Wildlife Service National Wildlife Refuges," by Wayne Thogmartin (*presenter*), C. Hamilton, V. Radeloff, A. Pidgeon (*University of Wisconsin-La Crosse*), and Patrica Heglund (*U.S. Fish and Wildlife Service*). The authors describe increased isolation of wildlife refuges within the next 50 years as a consequence of increased exurban development, and constraining adaptation of wildlife resources to a changing climate.
- "Models and maps for conservation planning: spatial considerations when modeling North American Breeding Bird Survey counts," by Wayne Thogmartin. In this invited presentation, Thogmartin describes the role the North American Breeding Bird Survey plays in Strategic Habitat Conservation, in particular Conservation Design.
- "The science and practice of working together," by P. Heglund (*presenter*), D. Granholm, R. Nelson, M. Olson, and Wayne Thogmartin.

Poster Presentations

- "A prototypical modeling framework for integrated harvest and habitat management of North American waterfowl: case-study of northern pintail metapopulation dynamics," by Wayne Thogmartin, B. J. Mattson, M. C. Runge, J. H. Devries, G. S. Boomer, J. M. Eadie, D. A. Haukos, J. P. Fleskes, D. N. Koons, and R. J. Clark. This poster covers research soon to be released in the journal *Ecological Modelling* (*in press*).
- "Can colonization and extinction be accurately estimated? Assessing the performance of dynamic occupancy models through simulation," by Patrick McKann, Brian R. Gray, and Wayne E. Thogmartin.
- "The effects of climate versus habitat and landscape factors on avian abundance in the Midwestern United States," by Wayne Thogmartin, J. LeBrun and J. Millspaugh (*University of Missouri*), and F. Thompson, III (*U.S. Forest Service*).

Other

Acronyms

AOC – Area Of Concern

FWS – U.S. Fish and Wildlife Service

GIS – Geographic Information System

GLRI – Great Lakes Restoration Initiative

SETAC – Society of Environmental Toxicology and Chemistry

UMESC – Upper Midwest Environmental Sciences Center

USGS – U.S. Geological Survey