

Upper Midwest Environmental Sciences Center January 2011 Activity Report

Aquaculture Chemicals and Drugs

Immediate-Release Aquatic Sedatives

- Jeff Meinertz, Upper Midwest Environmental Sciences Center (UMESC) submitted a project completion report to the Association of Wildlife Agencies for eugenol, an immediate-release aquatic sedative under review for use in the US. There is a critical need in US public aquaculture and fishery management programs for the use of an immediate-release sedative (*i.e.*, a compound that would safely and efficiently sedate fish allowing for their release immediately after regaining normal swimming activity). An immediate-release sedative could be used during any field procedures involving the handling of fish (*e.g.*, spawning and tagging). AQUI-S® E (active ingredient, eugenol; AQUI-S New Zealand Ltd., Lower Hut, New Zealand) is being pursued for US approval as an immediate-release sedative. As part of the approval process, a study to characterize the depletion, distribution, and identity of eugenol residues in fillet tissue from exposed fish will need to be conducted. However, before the characterization study can be initiated, a method to determine eugenol residue concentrations in fillet tissue had to be developed. This report describes the development of that method.
 - Meinertz, J.R., T.M. Schreier, and K.R. Hess. 2011. Development of an analytical method to determine eugenol concentrations in freshwater fish fillet tissue. Final report submitted to the Association of Fish and Wildlife Agencies, January 19, 2011. 51 pages.

Presentations

- Mark Gaikowski and Steve Redman (UMESC) attended the Coolwater Fish Culture Conference in Kalamazoo, MI, January 25-26. Gaikowski presented an overview of drug research and development studies that support public coolwater aquaculture.

Aquatic Invasive Species – Asian Carp

Meetings

- William Richardson (UMESC) participated in a research review and planning workshop at The Nature Conservancy's (TNC) Emiquon Reserve, Havana, IL, January 27-28. Richardson gave an update on his research with Brent Knights to assess the effect of Asian Carp on backwater food webs, studying the distribution and flux of lipids from floodplain lakes into birds, by way of emergent insects. The project compares backwater lakes with and without Asian Carp in the Illinois and Upper Mississippi River floodplains. Preliminary results show that floodplain lakes are a substantial source of essential lipids for surrounding ecosystems. Also, the "carp lakes" relative to "non-carp lakes" contain phytoplankton rich in lipids, but the insects emerging from these lakes, as well as the particle-feeding fish (*e.g.*, gizzard shad), exhibit reduced lipid content. More complete analysis of the data is needed to determine mechanisms for this effect. This work was funded by USGS Science Excellence funds in collaboration with TNC and the University of Illinois.

Climate Change

Wisconsin Initiative on Climate Change Impacts

- Barry Johnson (UMESC) participated in a meeting of the Wisconsin Initiative on Climate Change Impacts (WICCI), in Madison, WI, February 8. The meeting included the WICCI Science Council, Advisory Committee, Outreach Committee, and various Working Groups. The Science Council's new report, "Wisconsin's Changing Climate: Impacts and Adaptation," was presented, and the future direction of the WICCI discussed.

Great Lakes Restoration Initiative (GLRI)

Project #73, Avian Botulism in Distressed Great Lakes Environments

- Kevin Kenow, Steve Houdek (*UMESC*), and Brian Lubinski (*FWS*) conducted aerial waterbird surveys of selected areas of Lake Michigan, January 12-14. The work is part of an effort to document the distribution and abundance of wintering waterbirds. Background information on winter waterbird concentrations on Great Lakes is of interest to resource managers as they deal with several priority conservation issues, including impact assessment of near-shore and off-shore wind turbine placement, and characterization of sea duck wintering distribution and population status.

Large Rivers

Mississippi

- Ken Lubinski, Barry Johnson, and 40+ scientists and engineers from federal and state agencies, universities, and non-governmental groups participated in a workshop to build conceptual models needed to support Mississippi River side channel restoration activities during the next decade, January 10-13, Cape Girardeau, MO. The goal was to develop conceptual models of side channels as habitat resources within larger rivers with emphasis on the unimpounded portion of the Mississippi River. The model(s) will be used to assess uncertainties and data deficiencies regarding the function of side channels, then determine potential research or adaptive management experiments that can be implemented and evaluated to reduce uncertainty and help choose among management alternatives. Lubinski presented the paper, "Conceptual Modeling in Support of Side Channel Adaptive Management."
- Mike Jawson and Barry Johnson participated in the quarterly meetings of the Upper Mississippi River Basin Association (UMRBA), the Environmental Management Program Coordinating Committee (EMP-CC), and the Navigation and Ecosystem Coordinating Committee (NECC), February 15-17, St. Louis, MO. These organizations provide inter-agency coordination for monitoring and navigation and environmental improvement projects on the Upper Mississippi River System.

Yangtze River, China

- Background information for a USGS/UMESC science exchange project with TNC's Great Rivers Partnership program was recently highlighted in the December TNC China Program newsletter. UMESC scientists associated with the Upper Mississippi River's LTRMP and TNC have been working with the Chinese government on the establishment of a fish monitoring program for the Yangtze River. The December newsletter featured preliminary results from a fish tagging project studying the effects of overfishing, pollution, and dam construction. For additional information contact Yao Yin or Randy Hines (yyin@usgs.gov or rkhines@usgs.gov).

Wildlife Ecology

Publications

- Wayne Thogmartin published the results from a modeling project that use bird counts, environmental variables, and hierarchical models applied at multiple scales to create predictive abundance maps for conservation planning. The long-held notion for golden-winged warblers, a species of conservation concern, was that they were a species abundant in edge environments, benefiting from forest fragmentation. Thogmartin identified contradictions between these long-held perceptions of field-level golden-winged warbler habitat ecology with those learned from landscape-scale studies. Thogmartin's findings suggest the species is

most abundant in edge habitat embedded in a forested matrix, and less abundant in less forested landscapes with abundant edge habitat. These cross-scale differences in habitat associations highlight the importance of multi-scaled perspectives in studies of species-habitat relationships.

- Thogmartin, W. E. 2010. [Modeling and Mapping Golden-winged Warbler Abundance to Improve Regional Conservation Strategies](#). Avian Conservation and Ecology 5 (2): 12.

Other

Acronyms

DNR – Department of Natural Resources
EMP-CC – Environmental Management Program Coordinating Committee
EPA – U.S. Environmental Protection Agency
FIFRA – Federal Insecticide, Fungicide, and Rodenticide Act
FWS – U.S. Fish and Wildlife Service
GLFC – Great Lakes Fishery Commission
GLRI – Great Lakes Restoration Initiative
LTRMP – Long Term Resource Monitoring Program
NECC – Navigation and Ecosystem Coordinating Committee
TFM – a type of lampricide
TNC – The Nature Conservancy
UMESC – Upper Midwest Environmental Sciences Center
UMRBA – Upper Mississippi River Basin Association
USACE – U.S. Army Corps of Engineers
WICCI – Wisconsin Initiative on Climate Change Impacts