

Upper Midwest Environmental Sciences Center

October 2010 Activity Report

Aquaculture Chemicals & Drugs

eSubmitter

- Jeff Meinertz, Theresa Schreier, and Maren Tuttle-Lau (*UMESC*) participated in a U.S. Food and Drug Administration (FDA) public workshop, to present the beta-release of the electronic submission tool eSubmitter, October 21. eSubmitter is a tool for the regulated animal health industry to submit new animal drug information electronically to the FDA Center for Veterinary Medicine's Office of New Animal Drug Evaluation.

Fish Sedatives

- ScanAqua AS (*a veterinary drug sponsor in Norway*) notified USGS's Upper Midwest Environmental Sciences Center (*UMESC*) that the European Union recently established a maximum residue limit for isoeugenol (*a compound used to sedate fish*) in fin fish of 6 mg/kg. The declaration of a maximum residue limit allowed the European Union to set a withdrawal time (*the time between when a fish is exposed to the drug and when it is safe for human consumption*) for isoeugenol exposed fish of 1 day, markedly shorter than the withdrawal times of other sedatives (*the only approved U.S. fish sedative has a 21-d withdrawal period*). The study that led to the declaration hinged on the analytical method for determining isoeugenol in fish edible fillet tissue which was developed by *UMESC*. ScanAqua AS validated the method in their laboratories and the combined data set was used in the European Union approval process. The method developed by *UMESC* will now become part of the official analytical method used by the European Union regulatory agencies to monitor for isoeugenol residues in salmon and other fish species to ensure safe farmed fish products are delivered to consumers. The *UMESC*, along with other federal agencies, are developing a similar compound, eugenol, as an immediate release sedative for use in fishery management in the U.S.

Aquatic Invasive Species

Presentations

- Terrance Hubert (*UMESC*) gave two presentations at the Great Lakes Fishery Commission (GLFC) Sea Lamprey Integration Committee meeting (*Ann Arbor, MI, October 19-21*). The bi-annual meeting assists the GLFC in the development and implementation of strategies and policies related to the control of sea lamprey for the management of Great Lakes fish communities.

Outreach

- Mark Gaikowski, Steve Gutreuter, Terrance Hubert, Jon Amberg and Jim Luoma (*UMESC*) were interviewed by Tim Gihring (*Minnesota Monthly magazine*) regarding Asian carp and aquatic invasive species research, October 1. Gihring learned about the ecological and biological control research being conducted by *UMESC* and other USGS science centers. The story is scheduled for release in March 2011.

Climate Change

Meetings

- Barry Johnson (*UMESC*) participated in a meeting of the Science Council for the Wisconsin Initiative on Climate Change Impacts in Madison, WI, November 1. The meeting focused on revisions to the Council's report on predicted effects of climate change in Wisconsin and strategies for adapting to those changes. The report is scheduled for release February 2011.

Project Updates

- Jennifer Sauer (*UMESC*) is collaborating with the National Park Service (*NPS, Saint Croix Falls, WI*) and U.S. Fish and Wildlife Service (*FWS*) Region 3 to retrieve and redeploy temperature

loggers that were placed in native mussel beds in the Saint Croix and Upper Mississippi Rivers. The loggers are obtaining sediment temperatures to input into a model looking at the response of imperiled freshwater mussels to changes in water temperature, habitat, and flow. The loggers were placed in the rivers in July 2010 and will collect data until September 2011. The modeling study involves individuals from the USGS, FWS, NPS, North Carolina Wildlife Resources Commission, and North Carolina State University. For additional information contact Teresa Newton, tnewton@usgs.gov.

Great Lakes Restoration Initiative

Project #80, Birds as Indicators of Environmental Contaminants

- Tom Custer and Chris Custer (*UMESC*) held a conference call with AXYS Analytical Services, Inc. (*Sydney, BC*) to discuss analytical and data reporting procedures for the analysis of organic contaminants in samples collected for GLRI Project #80. Biological samples collected this year were shipped to AXYS Analytical Services, Inc. for organic contaminant analysis. Plans have been made to select additional sampling sites for next year.

Project #72, Avian Botulism in Distressed Great Lakes Environments

- Steve Houdek, Kevin Kenow (*UMESC*) and Brian Lubinski (*FWS*) conducted aerial waterbird surveys of selected areas of Lake Michigan October 7-8. The surveys are designed to document the distribution and abundance of waterbirds.

Mississippi River

Meetings

- Mike Jawson (*UMESC*) attended the Water Salon Series-Part III, Engaging the Public for River Sustainability and Liveable Communities, at the National Great Rivers Museum in East Alton, IL, October 25. The participants discussed how public engagement (*bottom-up planning*) and new technological and internet tools can give citizens an authentic voice in local, regional, and national river policy.

Outreach

- Mike Jawson and Barry Johnson (*UMESC*) attended the dedication ceremony for the [National Great Rivers Research and Education Center Confluence Field Station](#) in Alton, IL, October 26. The new facility houses scientists from the University of Illinois, Illinois Natural History Survey, and Lewis and Clark Community College, as well as the Long Term Resource Monitoring Program's Great River's Field Station, allowing for increased collaboration on river ecology and management activities.
- Jeff Houser and Randy Hines (*UMESC*) were interviewed by Jeni Grouws (*KDEC, FM 100.5 and AM 1240*) regarding the effects of September flooding on the Upper Mississippi River water quality and wildlife, October 1. This interview was pre-recorded for use in the weekly "Green Street" program which aired October 2 and 3, for listeners in Iowa, Minnesota and Wisconsin.

Project Updates – Floodplain Mapping

- Janis Ruhser (*UMESC*) completed the 2010 aerial photo stereomodels for Mississippi River Navigation Pool 13 (*Bellevue to Clinton, IA*). The stereomodels allow the aerial photos to be viewed and photointerpreted in 3D using specialized computer hardware and GIS software.

Project Updates – Waterfowl Avoidance Areas

- Kevin Kenow, Pete Boma, Steve Houdek, Luke Fara (*UMESC*), and Jessica Larson (*FWS*) began monitoring boater compliance within the Lake Onalaska Voluntary Waterfowl Avoidance Area (VWAA), Mississippi River navigation Pool 7, October 12. The VWAA was established on Lake Onalaska in 1986, to reduce boating disturbance to migratory waterfowl. This area is one of the most important feeding and staging locations on the Upper Mississippi River, within the Upper Mississippi River National Wildlife and Fish Refuge. Boaters are encouraged to avoid an area of approximately 1,310 ha (*marked with buoys*) from October 15 through mid-November. Boater compliance with the VWAA program was monitored by *UMESC* in 1986-88,

1993, 1997, and 2004. This work will contribute to measuring long-term effectiveness of the program and provide Refuge personnel with information used in targeting public education efforts.

National Park Mapping

UMESC activities related to the creation of geospatial data sets (i.e., layers), for the National Park Service's (NPS) Vegetation Inventory Program (VIP).

Appalachian National Scenic Trail (APPA)

- Andrew Strassman and Kevin Hop (*UMESC*) created field verification polygons for Tom Govus (*NatureServe*). The polygons are for the southern portion of the Southern Blue Ridge (SBR) Ecoregion. These polygons are meant to test the accuracy and usability of the field key and the accuracy and practicality of the mapping classification. Tom Govus spent one week in the field collecting site data for the APPA Project, used to further refine both the field key and mapping classification.
- Kevin Hop (*UMESC*) delivered map data, for testing the vegetation key developed by NatureServe and the preliminary vegetation map data produced by UMESC for the APPA in Georgia and southern North Carolina. Using the results of this verification, adjustments will be made to the vegetation key and mapping rules, which will improve the precision of the key and map to ground conditions. In addition, Hop is developing classification codes for the map classes developed for the APPA vegetation mapping project.

Cuyahoga Valley National Park (CUVA)

- Larry Robinson (*UMESC*) and Brian Lubinski (*FWS*) collected 6-inch/pixel stereo digital aerial photography for the 33,000-acre Cuyahoga Valley National Park (CUVA) during peak fall color, October 14-15. This imagery will be used to create a detailed baseline vegetation inventory of Park-owned or managed land. Photointerpretation of CUVA vegetation will employ stereo models developed from this aerial photography and be performed on 3D-enabled LCD monitors using specialized GIS software and hardware. Almost 1,500 frames of color infrared imagery were collected.

Sleeping Bear Dunes National Lakeshore (SLBE)

- Kevin Hop (*UMESC*) concluded the review of the vegetation map layer for the Sleeping Bear Dunes National Lakeshore (SLBE) vegetation mapping project. In addition, Hop continues collaboration with NatureServe to move the SLBE vegetation classification into its final organization, which is key in building the final products.

Renewable Energy

Meetings

- Eileen Kirsch (*UMESC*) participated in a USGS workshop (*Reston, VA*) on the Impacts of Wind Energy Development on October 27-28. The workshop focused on the ecological impacts of wind energy development in the context of current USGS activities, as well as potential activities under the FY 2011 Energy Resources Program initiative.

Wildlife Ecology

Publications

- Custer, C.M., T.W. Custer, and P.M. Dummer. 2010. Patterns of organic contaminants in eggs of an insectivorous, omnivorous, and piscivorous bird nesting on the Hudson River, NY, USA. *Environ. Toxicol. Chem.* 29(10):2286-2296.

Multivariate statistical analyses indicated among species differences in the concentration and composition of polychlorinated biphenyl (PCB) congeners, polychlorinated dibenzo-p-dioxin and dibenzofuran (*PCDD-F when combined with the dioxins*) congeners, and chlorinated pesticides. Total PCB concentrations followed the typical food chain biomagnification paradigm, higher concentrations in piscivorous bird

eggs and lower concentrations in eggs of species that feed at lower trophic levels. Contrary to the accepted food-chain paradigm, the sum of PCDD-F concentrations and the sum of their toxic equivalents were higher in swallows than in either sandpipers or kingfishers. Metabolic pathway differences in the respective food chains of the three species probably accounted for the differences observed.

- Holland, M.D., G. Meeden, and B.R. Gray. 2010. A finite population Bayes procedure for censored categorical abundance data. *Journal of the Indian Society of Agricultural Statistics* 64 (2): 171-175.

This paper describes an improved method of estimating true abundance categories from categorical abundance data that may be misclassified. As example, frog population abundances may be assessed using a multicategory index (*no frogs heard, individual calls not overlapping, some overlapping calls, a continuous chorus of calls*). The proposed method, which requires repeated visits to sites, improves current methods for correcting for classification errors. A classification error occurs when, for example, an observer records 'some overlapping calls' for a site but the true abundance category for that site corresponds to that associated with a continuous chorus.

Other

- UMESC hosted tours of the Center's Geospatial Lab for individuals being considered for the vacant Cartography Professor position at the University of Wisconsin-La Crosse, October 5, 12, and 19. UMESC has worked with the University for 20+ years, providing geospatial internship opportunities. John (JC) Nelson (*supervisor of UMESC's Geospatial Lab*) hosted the tours. Nelson has assisted the University by teaching an advanced geospatial science course, and is an adjunct faculty.

Acronyms

APPA – Appalachian National Scenic Trail
CUVA – Cuyahoga Valley National Park
FDA – U.S. Food and Drug Administration
FWS – U.S. Fish and Wildlife Service
GLFC – Great Lakes Fishery Commission
GLRI – Great Lakes Restoration Initiative
NPS – National Park Service
PCB – Polychlorinated Biphenyl
PCDD-F – Polychlorinated Dibenzo-P-Dioxin and Dibenzofuran
SLBE – Sleeping bear Dunes National Lakeshore
TFM – 3-trifluoromethyl-4-nitrophenol (*a lampricide*)
UMESC – Upper Midwest Environmental Sciences Center
VWAA – Voluntary Waterfowl Avoidance Area