



La Crosse Fish Health Center January 2009 Monthly Highlights

The La Crosse Fish Health Center (LFHC) is located in Onalaska, Wisconsin and is responsible for fish health management within the Big Rivers/Great Lakes region of the upper Midwest. Primary responsibilities include inspection, certification and diagnostic services for federal hatcheries, providing inspection and laboratory services for state, federal and tribal agencies, surveillance of target pathogens as part of the National Wild Fish Health Survey, providing training in fish health management, monitoring use of drugs and chemicals for national fish hatchery use, researching fish health management and assisting in design and implementation of surveillance, and control of invasive aquatic pathogens in cooperation with state, tribal, federal and non-governmental agencies.

Aquatic Species Conservation and Management

Iodophor Disinfectant Prevents Transmission of VHSv in Fish Eggs Fact Sheet Release (Ken Phillips & Becky Lasee)

U.S. Geological Survey (USGS) researchers Mark Gaikowski and Maren Tuttle and La Crosse Fish Health Center (USFWS) Microbiologist, Ken Phillips release Fact Sheet on fish egg disinfectant treatments to prevent transmission of Viral Hemorrhagic Septicemia Virus (VHSv). VHSv is responsible for large kills in wild populations of fish in the Great Lakes region. It has been reported from more than 25 species and is considered a serious threat to wild and propagated species of fish. Joint research by USGS and the La Crosse Fish Health Center showed that iodophor disinfection effectively eliminated VHSv from fertilized walleye and northern pike eggs. More information on this research can be found in the USGS Fact Sheet at <http://pubs.usgs.gov/fs/2009/3107/>. This study will be repeated in the spring using northern pike and yellow perch eggs.

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Evaluation of the Efficacy of Iodophor Disinfection of Walleye and Northern Pike Eggs to Eliminate Viral Hemorrhagic Septicemia Virus

By M.T. Tuttle-Lau¹, K.A. Phillips² and M.P. Gaikowski¹

Background
Viral hemorrhagic septicemia virus (VHSv) is a serious fish pathogen that has been responsible for large-scale fish kills in the Great Lakes since 2005 (Elmeyer and others, 2006; Elmeyer and others, 2007; Gonzalez and others, 2007; Stanton and others, 2007). The virus is a member of the family Rhabdoviridae, which includes other highly virulent fish pathogens such as infectious hematopoietic necrosis and spring viremia of carp virus (Winton and others, 2008), and it is listed by the World Organization for Animal Health as a reportable pathogen (Animal and Plant Health Inspection Service, 2006; World Organization for Animal Health, 2007). The virus causes high mortality and resulting outbreaks have severe economic consequences for aquaculture. Direct losses in aquaculture facilities can occur from quarantines of affected fish, depopulation and disinfection, and facility closures following detection of VHSv (Beak, 1995).

Genetic analysis of the Great Lakes VHSv isolate indicated that it was distinct from genotypes previously isolated in Europe, North America, Japan, or Korea. It was, therefore, subsequently classified as Genotype IV (Winton and others, 2008; Brown, 2009). By 2007, VHSv had been isolated from 25 fish species (for example, muskellunge, blue muskellunge, and brook stickleback, *Aplocheilichthys grammus*) from the St. Lawrence River, Lake Ontario, Lake St. Clair, Lake Huron, and Lake Michigan (near Green Bay, Wis.), as well as from inland waters in Michigan, New York, and Wisconsin. Viral hemorrhagic septicemia virus was also isolated from wild muskellunge collected as broodstock from Clear Fork Reservoir, Ohio in 2008 and from sea lamprey, *Petromyzon marinus*, from northern Lake Huron.

External clinical signs of a VHSv infection include hemorrhaging ("redness") of the skin, swollen abdomen, or exophthalmia ("pop-eye"; Fig. 1). Hemorrhages can also be present internally in the liver, spleen, intestines, or musculature (Fig. 2). Outbreaks of VHSv in the Great Lakes raised concerns regarding VHSv introduction to public hatcheries and private fish farms as well as inland water bodies and outside the Great Lakes region. In response, the U.S. Department of Agriculture Animal Plant Health Inspection Service (APHIS) implemented an interim rule in October 2006 that restricted the transfer of fish out of Great Lakes States (APHIS, 2006). Species affected by the APHIS rule included muskellunge, northern pike, bass, largemouth bass, yellow perch, *Perca flavescens*, walleye, slender vitreum, round goby, *Neogobius melanostomus*, and others known to be susceptible to VHSv (Brown, 2009). The interim rule sought to reduce transmission of VHSv via fish shipments from Great Lakes States to elsewhere in the United States.

Since the 1970s, iodophor disinfection of salmonid eggs has been a standard hatchery practice used to reduce the risk of pathogen transfer through ovarian or external fluids during gamete collection ("spawning") operations. This long history of effective use has made iodophor disinfection a leading candidate for reducing VHSv transmission during and after gamete collection from non-salmonid fishes. However, before iodophor egg disinfection is incorporated as a standard practice in gamete collection from non-salmonid fishes, the safety and effectiveness needs to be evaluated. The primary objective of this study was to assess the efficacy of iodophor disinfection for eliminating VHSv (genus IV) from fertilized eggs of walleye and northern pike substantially challenged with VHSv following egg fertilization. A secondary objective was an assessment of the survival (hatch) of walleye and northern pike eggs following iodophor egg disinfection.

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U.S. Department of the Interior
U.S. Geological Survey

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The cover page of the USGS fact sheet 2009-3107

“Spring Cleaning” Comes Early at the La Crosse Fish Health Center (Beka McCann)

The arrival of winter brings blowing snow and cold temperatures and, along with that, a bit of a slow down in the workload for the staff at the La Crosse Fish Health Center. Without hatchery inspections and our usual load of wild fish samples, this time of year presents the perfect opportunity to concentrate on lab maintenance and housekeeping. One of those jobs is the annual acid wash for all of the glassware in the virology lab. Each piece of lab glassware, everything from Erlen-

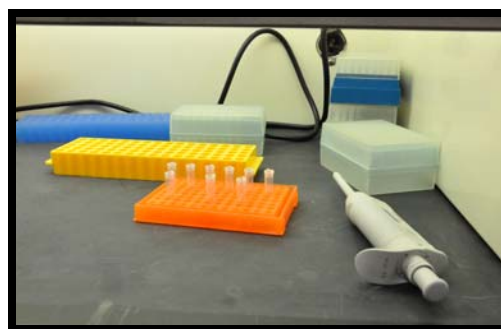


Beka McCann removing large pieces of glassware from the acid bath (Photo: S. Bauer)

meyer flasks to graduated cylinders and media bottles, takes a long soak in a nitric acid bath, followed by thorough cleaning and baking. This ensures that each piece of glassware is properly and thoroughly sterilized and ready for use in the lab. This is an important job, as it is essential to maintain complete sterility in the virology lab as a first step in avoiding sample contamination.

Quality Assurance/Quality Control at the La Crosse Fish Health Center (John Whitney)

The La Crosse Fish Health Center has implemented a Quality Assurance/Quality Control (QA/QC) program. The purpose of this program is to monitor laboratory activities and assure all the data generated is scientifically valid and of a known precision and accuracy. The LFHC has a staff of 7 permanent, 6 temporary, and 2 volunteers. With a staff of this size, at any given time, numerous projects are going on at the same time. Field activities, report writing, and laboratory activities all have to be precise and accurate and the QA/QC program will perform internal audits to insure this. U.S. Fish & Wildlife Service and American Fisheries Society QA/QC guidelines will be used when conducting these audits.



Fish Health Participates in Great Lakes Fish Health Committee Meeting (Ken Phillips)

Eric Leis and Ken Phillips attended the Great Lakes Fish Health Committee (GLFHC) meeting held January 20 and 21 in Toledo, OH. The GLFHC is a bi-national committee that develops fish health policy recommendations for the Great Lakes Fishery Commission and its member agencies. The GLFHC meets in January and August each year, allowing members to discuss fish health issues and research pertinent to the Great Lakes region. Ken Phillips serves as vice-chair of the committee.

Highlights of the meeting included a presentation by Eric Leis regarding detection methods for *Nucleospora salmonis*, a protozoan parasite that has recently been detected in the Great Lakes, an overview of the U.S. National Aquatic Animal Health Plan by Gary Egrie, Fred Bourgeois (USDA—APHIS) and Ray Brunson (Olympia Fish Health Center), and research updates from Diane Elliot (Western Fisheries Research Center, Seattle, WA) and Mohamed Faisal (Michigan State University) regarding bacterial kidney disease and viral hemorrhagic septicemia, respectively.

