U.S. FISH AND WILDLIFE SERVICE

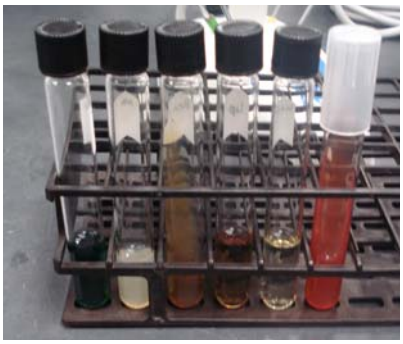
LA CROSSE FISH HEALTH CENTER

June Station 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.

LABORATORY TESTING SERVICES

The La Crosse Fish Health Center provided laboratory testing services in June to: Lake Michigan (Winthrop Harbor) (Illinois Department of Natural Resources), the Ohio River (Ohio Department of Natural Resources (ODNR)), Lake Erie (ODNR), Castalia State Fish Hatchery (ODNR), London State Fish Hatchery (ODNR), Ohio State University (ODNR), Senecaville State Fish Hatchery (ODNR), Muskigum River (Devola Tailwater) (ODNR), Muskigum River (McConnelsville Tailwater) (ODNR), Muskigum River (below Pleasant Hill (Coshcocton) (ODNR), Clear Fork River (Ohio Division of Wildlife), Reservoir) (ODNR), Lake Erie (United States Fish and Wildlife Service (USFWS)), the Genoa National Fish Hatchery Wisconsin River (below Petenwell Dam) (USFWS), the Mississippi River (Caruthersville) (USFWS), the Mis- (Manistique) (USFWS), Lake Michigan Lake/Wisconsin River Huron (USFWS), Castle Rock (Joliet) (USFWS), the Illinois Ship and Sanitary Canal (USFWS), Lake Superior (USFWS), the Illinois River (Starved Rock) (USFWS), the Illinois River (Stratton Park/Morris) (USFWS), the Mississippi River (Hastings) (USFWS), the Upper Mississippi Environmental Sciences Center (United States Geological Service), Lake Michigan (near Milwaukee) (Wisconsin Department of Natural Resources (WDNR)), Governor T. Thompson State Fish Hatchery (WDNR), Lake



Lake Michigan (Sturgeon Bay) (WDNR), the Yellow River (Washburn County) (WDNR), Neenah Creek (Colombia County) (WDNR), Sugar Creek (WDNR), Prairie Lake (WDNR), Lake Superior (WDNR), Madeline Lake (WDNR), Lake Michigan (Racine) (WDNR), the Wolf River (WDNR), Lake Winnebago (WDNR), Big Chetac Lake (WDNR), Little Saint Germaine Lake (WDNR), Red Cedar Lake (WDNR), and Lake Michigan (Little Sturgeon Bay) (WDNR). (by Julie Teskie)

AQUATIC SPECIES CONSERVATION AND MANAGEMENT

On June 24 and 25, staff from the La Crosse Fish Health Center (LFHC) coordinated sampling efforts for surveillance of the Great Lakes strain (IVb) of viral hemorrhagic septicemia virus (VHSv-IVb). Samples were taken from the Clear Fork, Mohican, and Muskingum rivers in Ohio, with assistance from the Ohio Division of Wildlife (ODW). The surveillance was conducted as part of the LFHC's response to the isolation of VHSv-IVb from samples taken from the Clear Fork Reservoir in late April of this year.

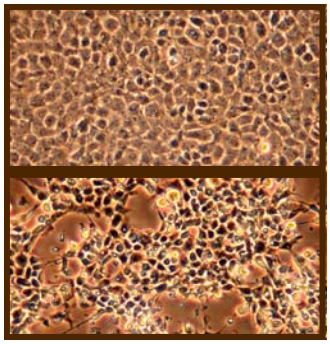
Ovarian fluid sample (LFHC)

In late April of this year ovarian fluid samples were collected from muskellunge in the Clear Fork Reservoir (OH) by the Ohio Division of Wildlife (ODW).

The samples were taken as part of a routine check for disease that is conducted before eggs are transferred to a hatchery. They were sent to the La Crosse Fish Health Center (LFHC) for screening to ensure that no disease that could threaten the hatchery population was present. Staff at the LFHC isolated and identified VHSv-IVb from the samples, indicating the first incidence of the disease outside of the Great Lakes Basin. Subsequent testing at the US Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) National Veterinary Services Laboratory (Ames, IA) substantiated the findings of the LFHC.

Sarah Bauer isolating viruses in the lab. (Jessica Mollison LFHC)

Top: a layer of healthy cultured fish cells as seen under microscope. **Bottom**: cells infected with VHSv showing areas of cell death. (Sarah Bauer USFWS)



The Great Lakes strain of VHSv was first isolated in the spring of 2005 from a freshwater drum kill in the Bay of Quinte, Lake Ontario (Ontario Canada). In December 2005, a previously unidentified virus archived at Michigan State University was positively identified as VHSv, indicating that the virus was present in Lake St. Claire (MI) muskellunge as early as the spring of 2003. Subsequently, VHSv was classified as an emerging pathogen in the Great Lakes Basin.

Since the drum kill in 2005, VHSv has been responsible for numerous fish kills in lakes Erie, Huron, Michigan, and Ontario. The virus has also been the cause of fish mortality in several inland lakes in the states of Michigan, New York, and Wisconsin. Twenty-eight (28) species of Great Lakes fish are now known to be susceptible to VHSv, including: black crappie, Chinook salmon, emerald shiner, freshwater drum, lake whitefish, muskellunge, walleye, and yellow perch. To prevent the further spread of the disease, APHIS issued a Federal Order (October 24, 2006) prohibiting the movement of VHSv-susceptible species out of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin. The importation of these species from the Canadian provinces of Ontario and Quebec into any of these states is prohibited as well. Many Great Lakes states themselves have adopted emergency rules concerning the movement of fish.

In response to the isolation of VHSv from the Clear Fork Reservoir, a coordinated surveillance effort by the La Crosse Fish Health Center and Ohio Division of Wildlife was conducted in the Clear Fork, Mohican, and Muskingum rivers in late June. Nine hundred forty-four (944) fish representing 12 species were collected by ODW crews from six sites via electrofishing. Species sampled included bluegill, brown trout, emerald shiner, freshwater drum, gizzard shad, muskellunge, largemouth bass, rock bass, shorthead redhorse, smallmouth bass, white bass, and yellow perch.

The fish were transported to the ODW Woodburry Wildlife Area office for processing. In addition to the VHSv testing, tissue samples were also collected to screen for additional pathogens. Additional viruses screened for include ns screened for include *Aeromonas salmonicida* (furunculosis), *Edwardsiella ictaluri* (enteric septicemia) and *Yersina ruckeri* enteric redmouth). The parasite which causes whirling disease (*Myxobolus cerebralis*) was also screened for. The La Crosse Fish Health Center was further assisted with sample collection by staff from the Columbia (MO) National Fish and Wildlife Conservation Office and the Lamar (PA) Fish Health Center.

Walleye, one of 28 species affected by VHSv. (LFHC)

Samples from 4 of the 6 sites are being processed at the La Crosse Fish Health Center and the samples from the remaining two sites are being processed at the Lamar (PA) Fish Health Center. Results are pending, but should be available by early August.

The disease caused by VHSv was first reported in European rainbow trout in 1938, but it was not until 1963 that a virus was identified as the causative agent. Since that time, three VHSv genotypes have been isolated from fish in Europe, and a fourth from marine fishes in the Pacific Northwest. One of the European genotypes significantly affects freshwater salmonids and pike; the remaining two European genotypes infect marine fishes. VHSv is a pathogen of international concern and is monitored by the World Organization for Animal Health (OIE). (by Ken Phillips)

Contact Ken Phillips at:
(608)783-8444

PUBLIC USE

On June 19th Ken Phillips, Microbiologist at the La Crosse Fish Health Center, provided a presentation to the "Zoophonics" course. Zoophonics is a summer course offered at Coon Valley (WI) Elementary School and is comprised of students that will be entering the first or second grade. The course uses learning about animals to expand the students' vocabularies. Discussion focused on different types of habitat where fish are found, different types of fish, comparing and contrasting fish with other animals, and what fish eat. The presentation also included an aquarium with live fish containing a lake sturgeon, brown trout, rainbow trout, bluegill, channel catfish, and yellow perch. At the end of the presentation, each student was presented with a copy of the "ABC's of Fishing" coloring book. (by Ken Phillips)