

### What were the findings of the study?

Researchers at Cornell University's College of Veterinary Medicine used a new experimental technique that detected Viral Hemorrhagic Septicemia (VHS) in three fish from the Wisconsin waters of western Lake Superior near Duluth.

### What are the practical implications of the findings?

If the findings are confirmed by the U.S. Department of Agriculture's National Veterinary Services Laboratory, this will mark the first time VHS has been detected in Lake Superior. Lake Superior is the last remaining Great Lake without this fish disease. If confirmed, this discovery will not affect Minnesota anglers as Lake Superior is already listed as an "infested waters" due the presence of several invasive exotic species. As such, anglers are already subject to regulations designed to prevent the spread of fish disease or invasive species.

### How did the disease enter Lake Superior?

That's impossible to determine, but possible vectors are the movement of fish or water associated with recreational or commercial activities or the natural movement of fish. The disease was first discovered in the eastern Great Lakes and has been spreading to the west.

### Where were the fish found in Lake Superior?

Using a new experimental technique, researchers found evidence of VHS at two sites in Wisconsin and two sites in Michigan. Of the 31 fish that tested positive, 28 were from the far eastern part of Lake Superior near Paradise and Skanee, Michigan (about 40 miles west of Sault Ste. Marie). Three fish from Wisconsin waters tested positive, one from St. Louis Bay (the Duluth Harbor) and two fish taken from Superior Bay (the most-western arm of Lake Superior that stretches southwestward from the Apostle Islands and Split Rock Lighthouse to Duluth/Superior). While the U.S. Department of Agriculture (USDA) considers the research findings as evidence of the VHS virus in fish samples, the federal agency also states that the "gold standard" of virus isolation in cell culture has not yet been met, and thus the findings are not confirmed. USDA's Animal and Plant Health Inspection Service is continuing the testing of samples at the National Veterinary Services Laboratory.

### What has the DNR done to manage VHS?

DNR Fisheries has taken the following actions to minimize the potential spread of VHS and other harmful organisms associated with state operations:

- 1) Starting in 2007, discontinued the walleye spawning egg take in the St. Louis River (now use Pike River strain for stocking).
- 2) Began surveillance testing for VHS in Lake Superior (St. Louis River estuary) annually in 2007. Conducted state surveillance testing for VHS through USDA APHIS grants in 2008, 2009, and now in 2010. Surveillance includes targeting high-use recreational water bodies, such as the large walleye lakes, and our eastern border waters with Wisconsin including the Mississippi River. Other surveillance includes testing fish from state and private fish production facilities and ponds used to raise fish for stocking into state's waters.
- 3) Discontinued use of French River Hatchery for short term holding of trout before stocking in northeast Minnesota in 2007.
- 4) Discontinued hatching white sucker eggs at the Duluth hatchery in 2007.
- 5) Prepared and obtained passage of VHS legislation to require testing of fish before stocking of fish in Minnesota waters. Legislation enacted in 2008 affected all movement of fish from the aquaculture industry, bait industry, commercial fishermen, and the MN DNR. All fish species that are susceptible to VHS now must be certified disease free before they can be stocked into lakes and streams of Minnesota

6) In 2009, walleye, musky, and northern pike that were spawned were tested for VHS and their eggs were disinfected with iodine prior to entering the state hatcheries (VHS prevention).

7) Tested all northern pike, walleye, and muskie from state production for VHS before stocking in 2009. VHS testing has become a routine procedure prior to moving fish for stocking and fish production purposes.

9) Further surveillance will be done to further attempt to track any further virus out breaks.

#### What is the DNR doing right now?

We have initiated conversations with natural resource leaders in Wisconsin and Michigan on the best way to manage this issue. We will work cooperatively with these states.

#### What is VHS?

Viral hemorrhagic septicemia (VHS) is an extremely serious viral disease of fresh and saltwater fish. It has been identified in the Great Lakes of the US and Canada. The disease has a history of large scale fish kills.

#### What are the symptoms?

At a low level of infection, fish might not display any symptoms. Infected fish will display widespread hemorrhages (bleeding) throughout the body surface (eye, skin, and fins) and internally (swim bladder, kidney, and intestine). Sick fish will often be listless, swim in circles, and found at the lake or stream's surface.

#### What fish species are affected by VHS?

To date, VHS has caused large-scale mortality in black crappie and bluegill in Budd Lake (Michigan); common carp in Lake Ontario; freshwater drum in lakes Ontario, Erie and Winnebago (New York); great lakes muskellunge in Lake St. Clair; gizzard shad in Lake St. Clair, St. Clair River and Lake Erie; round goby in Lake Ontario; white bass in Lake Erie and yellow perch in Lake Erie and Lake St. Clair. VHS has also been confirmed in smaller fish kills of black crappie, bluegill, lake whitefish, rock bass, smallmouth bass and walleye.

#### Will the virus affect humans?

No, the virus has not any impact on humans through direct contact or by fish consumption.

#### How does the disease spread?

- Moving infected fish from water body to another.
- Moving infected water and equipment from one water body to another.
- Stocking or releasing infected fish or water.
- The natural migration and movement of infected fish.

#### What steps should anglers take to prevent the spread?

- Do not move live fish or water between water bodies.
- Dispose of baitfish and fish parts in the trash when leaving a lake infected with VHS.
- Spray or dry your boat after leaving infected waters (Power wash boat hulls 140 degrees F and dry for 12 hours).

#### What should anglers report?

- Any diseased fish should be placed in a clean plastic bag and kept in an iced cooler or refrigerator (do not freeze).
- Call a local DNR office or the DNR Pathology Lab at 651-259-5096.
- Do not risk spreading of the virus by bringing diseased fish to our fish hatcheries or offices.

## VHS and Lake Superior

Lake Superior is a potential gateway for VHS to enter Minnesota. Minnesota DNR has taken steps to prepare for this with changes in fisheries management activities, surveillance, and legislation. With the possible entry of VHS into Minnesota waters of Lake Superior and other parts of the state, it is incumbent upon all users of the state's waters to remember to follow existing requirements:

- remove all visible plants for your boat before leaving a water access;
- drain water for your boat, motor, livewell, and bait containers;
- dispose of unwanted bait in the trash; and
- spray, rinse, or dry boats and recreational equipment before transporting to another water body

Assuming all users of Lake Superior follow preventive measures as those listed above, no additional changes for recreational or commercial fishermen are likely at this time. However, smelt and baitfish like smelt taken from Lake Superior or its tributaries must be labeled as such and may not be used for bait in any other waters of the state.

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