

Viral Hemorrhagic Septicemia in the Great Lakes Region

Viral hemorrhagic septicemia (VHS) is a highly contagious disease of fresh and saltwater fish. VHS was first detected in Lake Ontario in 2005 and has been found in Lake St. Clair, Lake Erie, Lake Huron, Lake Ontario, Lake Michigan, the St. Lawrence River, and inland lakes in Michigan, Ohio, and Wisconsin. In the United States and Canada, recent outbreaks of this emerging disease are responsible for die-offs in many freshwater species in the Great Lakes watershed. It is not known how the virus arrived there.

Due to its high death rate and severe economic consequences, VHS is classified as a notifiable disease by the World Organization for Animal Health (OIE). In the past, VHS was thought to be a concern only for trout and a few other species of freshwater fish raised for commercial aquaculture in Europe. However, the recent outbreaks in the Great Lakes region appear to be a new strain of the virus. It is believed that the saltwater-adapted strain has mutated into a strain now affecting new host fish species in new environments within the United States and Canada. No detections have been found in commercially raised fish in the United States.

Before being detected in the Great Lakes area, VHS had been limited in North America to saltwater finfish from the Atlantic and Pacific oceans. For a list of species regulated for VHS, please visit http://www.aphis.usda.gov/animal_health/animal_dis_spec/aquaculture/.

VHS is easily transmitted among fish of all ages. Most deaths occur at low water temperatures between 37 and 54 degrees Fahrenheit. Some fish show no external signs of disease, while others show signs that include bulging eyes, bloated abdomens, inactive or overactive behavior, and hemorrhaging in the eyes, skin, gills, and at the base of the fins. Infected fish may also have lesions that look like those caused by other fish diseases. Therefore, laboratory testing is necessary to determine whether a fish is infected with VHS virus.

VHS can be spread by infected fish, contaminated water sources, and by items in contact with either of these sources, including fishing equipment, bilge water, buckets, and boats.

What Anglers and Boaters Can Do

Anglers and recreational boaters are asked to use good biosecurity practices while fishing or boating in waters where VHS has been found. Specifically, they should:

- Thoroughly clean and dry fishing equipment, bait buckets, boats, and trailers before using them in a new body of water.
- Not transfer fish from one body of water to another.
- Empty all water from equipment before transporting.
- Remove all visible mud, plants, and aquatic life from equipment.

What Aquaculture Facilities Can Do

While VHS has not yet been detected in aquaculture facilities, individuals responsible for the movement of VHS-regulated species originating in areas known to be affected by VHS must follow the requirements of the U.S. Department of Agriculture's (USDA) interim rule published in September 2008.

Additionally they should take these steps to protect their facilities:

1. Use appropriate biosecurity measures within the facility to prevent the spread of VHS and other infectious pathogens. Some elements of a biosecurity plan include:
 - Cleaning and disinfection
 - Controlling the movements of people, animals, vehicles, and equipment
 - Isolating new and returning (e.g., brood stock) fish
 - Controlling effluent discharges
 - Conducting audits to evaluate implementation and effectiveness of the biosecurity plan.
2. Stay alert for more information about the disease, particularly the names of species newly found to be susceptible. A list of species can be found at http://www.aphis.usda.gov/animal_health/animal_dis_spec/aquaculture/downloads/vhs_regulated_spp.pdf.
3. If VHS is suspected, immediately report all findings to the State veterinarian.

What USDA Is Doing

USDA's Animal and Plant Health Inspection Service (APHIS) published an interim rule in September 2008 that establishes interstate movement and import requirements for certain fish species that originate from States and Canadian Provinces regulated for VHS. As of the publication of the VHS interim rule, the regulated U.S. States are: Illinois, Indiana,

Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin. The regulated Canadian Provinces are Ontario and Quebec.

Additionally, working in conjunction with stakeholders involved with fisheries and aquaculture, APHIS is conducting a public outreach and education campaign about VHS to alert anglers and boaters about VHS and what they can do to prevent its transmission and spread.

Additional Information

If you would like more information about VHS and the VHS outreach and education campaign, contact:

Dr. Gary Egrie

Telephone: (301) 734-0695

E-mail: Paul.G.Egrie@aphis.usda.gov

Or, please visit the following APHIS Web page:

http://www.aphis.usda.gov/animal_health/animal_dis_spec/aquaculture/.

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