

👉 **07hr_SC-ENR_Misc_pt03a**



👉 **Informational Hearing - 11/07/2007**

(FORM UPDATED: 08/11/2010)

**WISCONSIN STATE LEGISLATURE ...
PUBLIC HEARING - COMMITTEE RECORDS**

2007-08

(session year)

Senate

(Assembly, Senate or Joint)

**Committee on ... Environment and Natural
Resources (SC-ENR)**

COMMITTEE NOTICES ...

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... **HR** ... **bills and resolutions** (w/Record of Comm. Proceedings)
 - (**ab** = Assembly Bill) (**ar** = Assembly Resolution) (**ajr** = Assembly Joint Resolution)
 - (**sb** = Senate Bill) (**sr** = Senate Resolution) (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

**Hearing Notes
November 7, 2007**

Call Public Hearing to Order and ask Clerk to call the roll

- ROLL CALL

Informational Hearing on VHS in Wisconsin

To Testify:

- Dr. Kathy Kurth, Chief of Virology, Wisconsin Veterinary Diagnostic Laboratory, UW-Madison;

Dr. Hui-Min Hsu, Veterinarian Specialist, AFS Certified Fish Pathologist, Wisconsin Veterinary Diagnostic Laboratory, UW-Madison;

- Dr. Robert Ehlenfeldt - State Veterinarian Wisconsin Department of Agriculture, Trade, and Consumer Protection;

Dr. Myron Kebus – State Fish Health Veterinarian Wisconsin Department of Agriculture, Trade, and Consumer Protection;

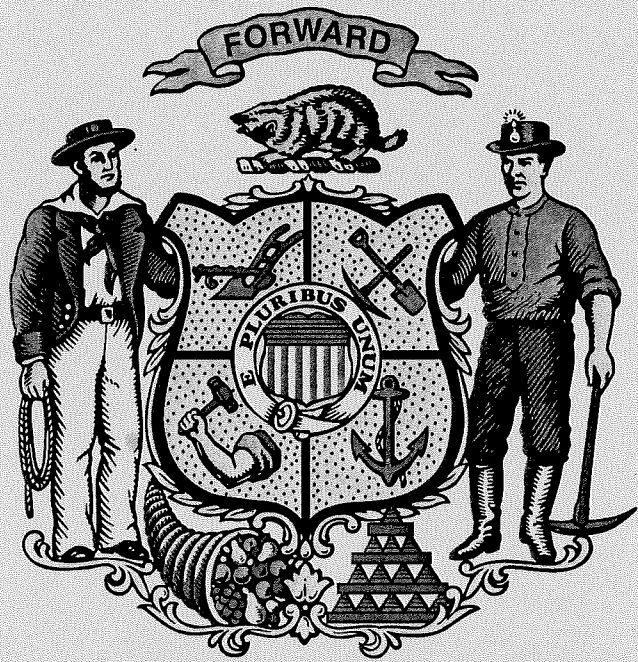
Mike Staggs – VHS Response Team Leader Wisconsin Department of Natural Resources;

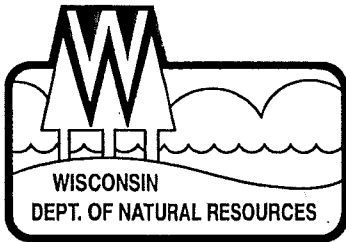
- David Robinson – Wisconsin Fish and Bait Dealers Association;

- Dave Gollon, Jr. - Wisconsin Aquaculture Association

Informational Hearing concludes, adjourn meeting.

-Distribution From Dr. Michael Dutcher
USDA - APHIS





State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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Matthew J. Frank, Secretary

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Joint Legislative Hearing on Viral Hemorrhagic Septicemia November 7, 2007 Testimony of the Wisconsin Department of Natural Resources

Overview

The discovery of the fish disease Viral Hemorrhagic Septicemia (VHS) in Wisconsin's waters represents a significant fish health issue. While VHS is not a human health concern, this disease has demonstrated the potential to cause large fish kills and long term reductions in wild fish populations, and severe economic losses for aquaculture operations. Regardless of the impacts on Wisconsin's fisheries, VHS is an internationally reportable disease subject to state and federal regulations to prevent its movement, and these regulations have the potential to seriously impact Wisconsin's aquaculture, bait and live fish industries.

Even the perception that VHS may have had an impact could be very costly for Wisconsin. The US Fish and Wildlife Service and the US Census Bureau recently released their newest survey of fishing activity in the US. In 2006, there were 1.4 licensed million anglers who fished 21 millions days in Wisconsin. That effort generated \$2.9 billion in economic activity, supported 31,350 jobs and contributed \$203 million in state income and sales taxes. Wisconsin continues to rank 2nd in the nation in the number of non-resident fishing days (trailing only Florida). If anglers perceive that fishing has declined in Wisconsin – whether it has or not – they could choose to fish in other states with difficult economic consequences.

Since VHS was identified in Wisconsin waters in April, 2007, the Wisconsin Department of Natural Resources has worked closely with the Wisconsin Department of Agriculture, Trade and Consumer Protection, the Wisconsin Aquaculture Association, the Wisconsin Fish and Bait Dealers Association, and other concerned members of the public to develop a comprehensive program to help prevent the spread of VHS in Wisconsin's public waters and aquaculture operations. This task has not been easy because VHS can be easily spread by the movement of infected live fish – including bait fish, and contaminated water, boats and fishing equipment. Also there are literally millions of people affected. Wisconsin has approximately 1.4 million licensed anglers, 625,000 registered boats, 2,200 registered fish farms, 800 registered bait dealers, and 85 permitted wild bait harvesters participating in activities that could spread or be seriously impacted by the disease.

We are still learning about VHS. While we do have a long history of dealing with European and marine strains of the VHS virus dating back to the 1930s, we first observed the VHS virus strain that is currently affecting Great Lakes and Wisconsin fishes in 2003. While we believe many of its effects will be similar, we have already observed that this new strain is different in that it affects many more species and may operate at warmer water temperatures. It will likely be a decade before we have a more definitive understanding of the long term effects of VHS on Wisconsin's fisheries, and surveillance programs will always represent only a sample of Wisconsin's many lakes and streams at any given time. A major challenge has been to balance the known short term social and economic consequences of potential VHS control measures with the less certain long term consequences of its spread into other Wisconsin waters.

We have concluded that effectively controlling the spread of VHS will require an *integrated* program that ultimately requires that all affected citizens understand and take personal responsibility for making sure

their activities are not spreading diseases and invasive species. *Regulations* are an important component but must be complemented by *surveillance and monitoring* programs to track VHS in Wisconsin, implementing fish disease *biosecurity best management practices* in Wisconsin's fish farms and fisheries operations, improving *quality control in Wisconsin's bait fish industry*, conducting needed *research* on the effects of the disease and ways to manage it in the wild and in fish farms, and perhaps most important, significant *public education and outreach* programs. All components of the integrated program are important if we hope to be successful in controlling the spread of VHS.

Background on the VHS virus

Viral Hemorrhagic Septicemia (VHS) is caused by a rhabdovirus previously unknown in the Great Lakes. The World Health Organization for Animal Health (OIE) lists VHS as a notifiable disease, meaning that outbreaks are to be reported immediately to that organization and others. The virus has killed large numbers of cultured rainbow trout and turbot in Europe and caused large-scale mortality in wild Pacific herring and pilchard populations along the Pacific coast. It has been confirmed in several species on the Atlantic coast and in Japan.

A form of the VHS virus was recently discovered in the Great Lakes for the first time. It was diagnosed as the cause of fish kills in Lake Huron, Lake St Clair, Lake Erie, Lake Ontario and the St Lawrence River in 2005 and 2006. Thousands of muskies, walleye, lake whitefish, freshwater drum, yellow perch, gizzard shad, redhorse, and round gobies died in 2005 and 2006 in the lower Great Lakes. Many chinook salmon, white bass, emerald and spottail shiners, smallmouth bass, bluegill, black crappie, burbot and northern pike were infected with VHS virus and showed clinical signs of disease but did not die in large numbers. This is the first time any virus has affected so many different fish species from so many fish families in the Great Lakes. Since the adoption of the first of our emergency orders, the VHS virus has been documented in the Lake Winnebago system and in Wisconsin waters of Lake Michigan.

We do not know how many species of Wisconsin fish are susceptible to the virus. The following Wisconsin species are listed as susceptible to VHS virus by the World Organization for Animal Health (OIE), the Merck Veterinary Manual, and/or the US Department of Agriculture's Animal and Plant Health Inspection Service (APHIS): black crappie, bluegill, bluntnose minnow, brook trout, brown bullhead, brown trout, burbot, channel catfish, chinook salmon, coho salmon, emerald shiner, freshwater drum, gizzard shad, largemouth bass, lake trout, muskellunge, northern pike, pumpkinseed, rainbow trout, redhorse, rock bass, round goby, smallmouth bass, walleye, white bass, white perch, lake whitefish, yellow perch. Because this list reaches across many distinct families of fish, we cannot assume that any fish species is not susceptible.

We do not know how it was transported to the Great Lakes or exactly how it has been spread. Possible vectors include migrating fish from the Atlantic Coast, ballast water from ships, and frozen Pacific herring imported for use as cut bait. Infected fish shed the virus in their urine and reproductive fluids. Because the virus has been detected in baitfish species such as emerald and spottail shiners in Lake Ontario and Lake St Clair, we believe that wild harvested baitfish may be one way that the virus is quickly spread across large geographic areas.

Virus particles in the water infect gill tissue first, and then move to the internal organs and the blood vessels. The blood vessels become weak, causing hemorrhages in the internal organs, muscle and skin. Fish can also be infected when they eat an infected fish. Fish that survive the infection will develop antibodies to the virus. Antibodies will protect the fish against new VHS virus infections for some time. However, the concentration of antibodies in the fish will decline over time and the fish may start shedding the virus again. This may create a cycle of fish kills that occurs on a regular basis. VHS virus can remain infective up to 14 days in water. The virus reproduces best in fish when water temperatures are

37-54°F. Most infected fish will die when water temperatures are 37- 41°F, and rarely die above 59 °F. Stress is an important factor in VHS outbreaks. Stress suppresses the immune system, causing infected fish to become diseased. Stressors include spawning hormones, poor water quality, lack of food, or excessive handling of fish.

DNR Regulations

On January 25, 2007, the Michigan Department of Natural Resources announced the discovery of VHS in samples of chinook salmon, whitefish, and walleyes in northern Lake Huron including some samples that had originally been collected in 2005. Prior to that announcement, VHS had not been detected any further upstream in the Great Lakes than Lake St Clair. With that announcement, however, we concluded that there was a very strong probability that VHS was already in Lake Michigan and asked the Natural Resources Board to consider emergency rules to help control the spread of the disease.

On April 4, 2007 the Natural Resources Board (NRB) adopted Order FH-22-07(E) to control the spread of VHS virus in Wisconsin by limiting the movement of live fish, bait, and water among already-infected and uninfected waters of the state. Provisions of that rule were clarified and expanded in NRB Order FH-25-07(E), adopted on April 25, 2007. At the time those rules were adopted, VHS virus had caused fish kills in the lower Great Lakes, but had not been documented west of Lake Huron. Department biologists believed it was probably already in Lake Michigan, and possibly in Lake Superior and the Mississippi River which are directly connected to Lake Michigan.

On May 11, the University of Wisconsin Veterinary Diagnostic Lab informed the department that samples of freshwater drum taken from Little Lake Butte des Morts had tested positive for the VHS virus. For purposes of controlling the spread of the disease, it was then reasonable to regard Lake Winnebago and the majority of the Fox/Wolf River system as infected, and prudent to assume that the virus might appear in any inland water. Accordingly, Order FH-28-07(E) was adopted on May 17, 2007, expanding the geographic applicability of the emergency rules to include the Lake Winnebago and the Fox/Wolf River system. Subsequently, VHS was confirmed in freshwater drum in Lake Winnebago itself, and in brown trout, smallmouth bass and whitefish in Lake Michigan.

On June 27, 2007 the NRB authorized public hearings on a proposed permanent rule, Order FH-30-07 which was largely identical to the cumulative emergency rules.

To date, the Department of Natural Resources held 11 formal public hearings on its emergency and permanent rule making:

Emergency rules:	May 3, 2007 – La Crosse
	May 10, 2007 – Ashland
	May 17, 2007 – Milwaukee
	June 11, 2007 – La Crosse
	July 11, 2007 – Madison
Permanent rules:	August 14, 2007 – Fitchburg
	August 15, 2007 – La Crosse
	August 16, 2007 – Milwaukee
	August 20, 2007 – Green Bay
	August 23, 2007 – Wausau
	August 23, 2007 – Superior

And the Natural Resources Board has publicly met on these rules 5 times:

- April 4, 2007 – initial emergency rules
- April 25, 2007 – “housekeeping” changes to emergency rules
- May 17, 2007 – revised emergency rules after VHS found in Lake Winnebago
- June 27, 2007 – authorized public hearings on permanent rules
- October 24, 2007 – considered final permanent rules

At the last meeting on October 24, 2007, the NRB approved new emergency rules FH-40-07(E) which were similar cumulative emergency rules except that all provisions of the rule would apply statewide rather than some provisions just applying to known affected waters. Those rules were published and went into effect on November 3, 2007. The NRB will consider final permanent rules at its December 5, 2007 meeting.

The following is a summary of the current emergency rules:

- ✓ No person may leave any inland or outlying water with ANY live fish (including left over minnows) – with certain exceptions: exports in compliance with USDA rules; fish that have tested negative for VHS under DATCP standards; with written DNR approval, or bait dealers with a valid wild bait harvest permit.
- ✓ Anglers and boaters must drain ALL water from bilges, ballast, live wells, bait buckets and other containers when they leave the water or when entering the state – except with written DNR approval (does not include any potable water or beverages).
- ✓ Licensed bait dealers may harvest and transport wild bait after receiving a water and time specific permit from the DNR. No permits may be issued on waters where VHS is suspected to be present, all gear must be disinfected when moving between waters, and DATCP fish health testing requirements must be followed before distributing fish.
- ✓ No person may use or possess as bait any live fish obtained outside of Wisconsin unless the fish have been imported in compliance with DATCP regulations.
- ✓ No dead fish or fish parts can be used as bait with certain exceptions: on Lake Michigan or Green Bay, on the same water from which they are collected, or if they are preserved by a method that does not require freezing or refrigeration.
- ✓ Crayfish and turtle trappers may not use live fish or fish parts for bait unless purchased from a licensed WI bait dealer, fish are from the same water, or with written DNR approval.
- ✓ DNR may deny non-standard gear permit requests if use will spread VHS or other diseases.

The emergency regulations are consistent with what we know about the current behavior and distribution of the disease. The rules target only the highest risk activities - movement and use of potentially infected fish and contaminated water. They allow for continued wild bait harvesting under a new permit system with additional biosecurity conditions. DNR rules are complemented by DATCP regulations that significantly improve fish health surveillance in the aquaculture and wild bait industry. Both regulatory efforts have been and will be supported by extensive public education and outreach efforts and increased surveillance of wild fish populations, farm raised fish and bait fish being imported or sold in Wisconsin.

Surveillance and Monitoring

The Department has established an active program of monitoring and surveillance for the virus.

- Since the fall of 2006, with assistance from the USFWS La Crosse Fish Health Center and the Wisconsin Veterinary Diagnostic Lab, DNR has tested 107 groups of wild fish as part of our VHS

surveillance program, investigated 18 fish kills, and examined over 40 diagnostic cases of fish with lesions that were caught by anglers.

- All wild broodstocks used by DNR as a source of eggs for state hatcheries and coop ponds are tested for viruses during the spawning period. Testing of trout and salmon dates back to the 1980s, testing of other species began on a limited basis in 2006 and was greatly expanded in 2007 (most samples taken before the discovery of VHS in Wisconsin waters).
- Fish reared at DNR hatcheries are tested for VHS virus and would not be stocked if VHS were to be detected (so far it has not been detected in any DNR hatchery).
- With the assistance of a \$30,000 grant from the US Department of Agriculture, the Department will expand monitoring in the spring of 2008 to include 30 additional sites from the Wisconsin River basin and 15 additional high risk sites from around the state.
- In cooperation with our Bureau of Law Enforcement we have used the existing WDNR hotline (800-TIP-WDNR) to collect fish kill reports from the public. We will continue to do so in 2008 and follow through with investigations and testing if necessary.

Based on this sampling, we do not believe that VHS is widespread in Wisconsin at this time and was not present prior to 2007. The only confirmed cases are from 2007 in the Lake Winnebago system and northern Lake Michigan. Extensive sampling of hatchery broodstocks and hatchery production fish has found no evidence of VHS in the DNR hatchery system in 2007 or earlier years. There have been no suspicious, unexplained fish kills in earlier years that could have been attributed to VHS. Even in Lake Winnebago and Lake Michigan, the disease was found only in a few species suggesting the disease has not had time to spread widely. While we cannot guarantee that VHS is not present in some other waterbodies in Wisconsin, there is no evidence that it is common at this time.

Biosecurity

DNR has a long and successful history of regulating and managing fish health in Wisconsin. The Department employs fish health inspectors and pathologists that meet national and state certification standards to manage the fish health programs under its jurisdiction. Prior to 1998, Wisconsin DNR had primary regulatory authority over all fish health issues, and since 1998 has continued to meet or exceed all applicable fish health standards in all of its hatchery and field operations.

Even before the discovery of VHS in Wisconsin, DNR had increased biosecurity in its hatchery and field operations to cover the contingency that VHS was in the Great Lakes. Trout and salmon eggs have been routinely disinfected, and brood and production fish routinely tested for viruses since the 1980s. With the obvious advance of VHS, disinfection and testing was expanded to other species for the 2007 season. The DNR also cancelled all spawn collections for coolwater species from the Great Lakes since there is not a generally acceptable egg disinfection protocol for these species. The latter action included both DNR hatchery operations and private interests collecting sucker spawn under cooperative agreements.

After the discovery of VHS in Lake Winnebago waters, the DNR completed a comprehensive review of hatchery and field operations to make sure fish disease biosecurity procedures and best management practices still minimized the risk of spreading VHS. That review was conducted following a complete moratorium on the movement of live fish enacted on or before May 16, 2007. The completed plan was reviewed by DATCP and approved by the Secretary on June 25, 2007 before resumption of field operations. Improved hatchery biosecurity measures included quarantines of hatcheries which received spawn from potentially infected sources and disease testing of all hatchery broodstock, large fingerlings, forage minnows purchased from outside vendors, and open hatchery water supplies. To date there have been no positive VHS tests of any fish associated with the DNR hatchery system. The complete 2007 plan can be found on the DNR website at:

http://dnr.wi.gov/fish/documents/VHS%20Hatchery%20Plan%20v06_27_2007.pdf

For 2008, we are developing an operations plan which will contain a similar high level of disease testing, and additional long term measures to deal with the permanent presence of VHS in Lake Michigan such as universal egg disinfection during all spawning operations, raising fish from Lake Michigan sources only in the Lake Michigan watershed and stocking fish from Lake Michigan sources only into Lake Michigan or other known VHS positive waters. Also, we have in place internal policies requiring proper disinfection of all boats and sampling gear used by Wisconsin DNR personnel after use on all Wisconsin waters.

The Department of Natural Resources also participated in 6 meetings and conference calls with representatives from the Department of Agriculture, Trade, and Consumer Protection, University of Wisconsin – Extension aquaculture outreach program, Wisconsin Aquaculture Association, and the Wisconsin Fish and Bait Dealers Association during the summer of 2007 to review and develop appropriate fish health rules that were later implemented by DATCP.

Bait Fish

We recognize that bait minnows are a popular and economically important part of Wisconsin's \$3 billion sport fish industry as well as a critical potential vector for the spread of VHS. The virus has been found in popular bait species such as emerald shiners, spottail shiners and bluntnose minnows, though to date has not been found in the wild in the most popular Wisconsin bait species which are fathead minnows, white suckers, and golden shiners. Wild bait harvest has been prohibited in the Great Lakes and tributaries for a number of years in a proactive attempt to stop the spread of invasive species, and this prohibition was expanded to all affected waters by emergency rules in April 2007.

Because the Department of Agriculture, Trade and Consumer Protection (DATCP) has substantial statutory authority in the area of fish health, we are working closely with that agency to improve the fish disease quality control in the bait minnow supply in Wisconsin. DATCP establishes fish health standards for all imported fish, all stocked fish (including those stocked by the Department), and all fish farms. Recently they have developed standards for fish harvested from wild sources and distributed for use as bait. Currently DATCP is developing emergency rules modifying those standards to address VHS. The emergency rules were scheduled to go into effect on November 1, 2007.

The two sets of regulations will be complementary in two important ways. First, there are both practical and economic limitations to any wild bait-fish disease testing program. Since current rules do not permit the harvest and transport of wild bait away from waters known to be infected with VHS or connecting waters up to the first barrier impassible to fish, that removes a critical source of potentially infected fish and allows the DATCP rules to require a more reasonable testing protocol of other sources of bait minnows. Second, current rules also require that wild bait cannot be sold, bartered or given away unless it meets DATCP standards. This not only provides seamless authority, but allows for coordinated enforcement of the rules.

However, recognizing the importance of the wild bait fish industry, DNR and DATCP have worked closely with industry representatives to streamline the permit process. Current rules for example expanded the duration of the normal bait harvest permit from 14 to 30 days, and allowed for longer durations for special combined stocking and harvest permits in controlled access situations.

Research

Wisconsin DNR is cooperating with other agencies and the public to identify, conduct or support necessary research to help better understand VHS and how it affects fish and fish operations in the wild

and aquaculture operations. During 2007, for example, the DNR Bureau of Integrated Science Services worked with DNR Fisheries Management staff to study the effects of common virus disinfection practices on coolwater species fish eggs. Although a common practice for coldwater trout and salmon species, much less was known about the effects of disinfection on walleye, pike, musky or sucker eggs. We continue to actively participate in the interjurisdictional Great Lakes Fish Health Committee which has been developing research and disease management recommendations. Wisconsin DNR will also be hosting a workshop on VHS for affected state and federal agencies at the December, 2007 Midwest Fish and Wildlife Conference being held in Madison, Wisconsin.

A critically important question concerns the long term impact of VHS on Wisconsin fish populations. VHS has caused some large die offs in adult fishes – most notably a large die off of freshwater drum, yellow perch, walleyes and other species in Lake Erie in 2006. It has also caused smaller fish kills involving muskellunge, gizzard shad, emerald shiners, and gobies, and has been found in many other species. The long term impacts of VHS on fish populations in Wisconsin may not be known for 5-10 years. While VHS does kill adult fish, it is the smaller fish that are likely most vulnerable. If VHS disrupts the hatches of popular game fishes in Wisconsin, we could see long term population declines such as has been seen for Pacific Herring – an important commercial species in Prince William Sound. There is some very preliminary evidence that VHS may have noticeably affected 2005 and 2006 recruitment of walleye and yellow perch in Lake Erie, and adult muskellunge populations in the St. Lawrence River. The DNR has a good long-term sampling program for adult and young fishes on Lake Winnebago, so we will be able to monitor any impacts on that system.

Public Outreach

The lives of millions of people would be affected by the uncontrolled spread of VHS, but our efforts to control the disease will not be successful unless the public understands the significance of the disease and supports those efforts. Wisconsin has approximately 1.4 million licensed anglers, 625,000 registered boats, 2,200 registered fish farms, 800 licensed bait dealers, and 88 permitted wild bait harvesters participating in activities that could spread or be seriously affected by the disease, so the importance of a public education and outreach component to this effort cannot be overemphasized.

During 2007, the Department took unprecedented steps to alert the public to the threat of VHS and deliver a short but consistent message on steps that they could take to control its spread.

- Posted information signs at all major boat and fishing access points on affected waters in Great Lakes, Mississippi River and Lake Winnebago system. These have been translated into Spanish and Hmong.
- Developed a comprehensive information web page (<http://dnr.wi.gov/fish/pages/vhs.html>)
- Produced radio and TV public service announcements and distributed to stations across Wisconsin.
- Purchased approximately \$70,000 worth of radio and TV airtime for PSA announcements
- Developed informational posters and distributed to all bait dealers for posting.
- Developed other brochures, posters, FAQ sheets, kids cards and other information for distribution and posting on the website.
- Coordinated with other Department aquatic invasive species outreach programs including the growing DNR and volunteer boat inspection program.
- Made countless informational presentations to media, angling and conservation groups, and anglers across the state
- Encouraged anglers to retain fish that show possible signs of VHS and contact their local fisheries biologist. The DNR TIP line protocol has been modified to accept reports of fish kills and angler caught fish that may display signs of VHS. Contact information will be routed to the appropriate fisheries biologist.

We plan to continue many of these activities into 2008 with the hope of continuing to raise public awareness of this issue and continue to deliver a consistent message on the personal actions that people can take to participate in this integrated attack on VHS.

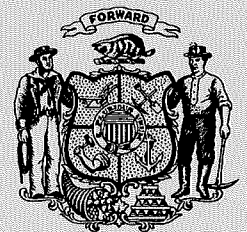
Summary

VHS poses a difficult management challenge for Wisconsin. Its long term effect may not be known for many years, yet there are significant short term costs to the actions that must be taken to control its spread. Future generations will likely judge us poorly if we expend significant resources and the effects turn out to be minimal. Yet those same future generations will judge us more harshly if we allow it to spread and VHS turns out to have serious impacts on Wisconsin's fisheries. Given what's at stake – a \$3 billion dollar sport fishing industry – the Wisconsin Department of Natural Resources has committed to taking the necessary steps to minimize the spread of this potentially dangerous disease now.

Presented by:
Michael Staggs
Director, Bureau of Fisheries Management



WISCONSIN STATE LEGISLATURE





WISCONSIN VETERINARY DIAGNOSTIC LABORATORY

445 Easterday Lane, Madison, WI 53706-1253
 608-262-5432 Toll free 800-608-8387 Fax 847-574-8085

November 7, 2007

Kathy Toohey-Kurth PhD; Chief of Virology

Viral Hemorrhagic Septicemia Virus

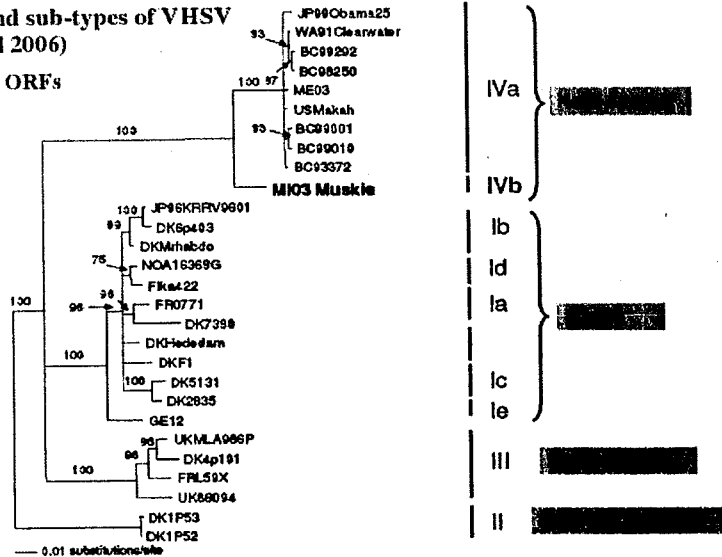
- 1938 VHS disease was first described in rainbow trout in Europe. A virus was identified as the etiologic agent in 1963. Surveillance indicated that there is widespread marine reservoir for the virus. Introduced to farmed trout by feeding marine fish such as herring.
- 1988 VHSV isolated in the Pacific Northwest in marine salmonids.
- 2000-2004 VHSV was isolated in marine fish off the North Atlantic coast.
- 2005-2006 VHSV was isolated in Lake Ontario region in freshwater drum. (First isolate was from muskellunge in Lake St. Clair but not identified until 2005.)
- 2007 VHSV was isolated from freshwater drum collected from Little Lake Butte des Morts in May.

VHS Molecular Biology

- VHSV is a member of the rhabdovirus family. Other members of the rhabdoviruses include spring viremia of carp and the familiar mammalian virus, rabies.
- There are 4 genotypes (strains) of VHSV separated by geographic location (European, United Kingdom, North Sea/Baltic, and North American strains). The strain found in Wisconsin has been identified as the North American genotype IVb and is very closely related to other VHSV isolates from the Great Lakes.

Genotypes and sub-types of VHSV
 (Elsayed et al 2006)

1521 nt Full G ORFs

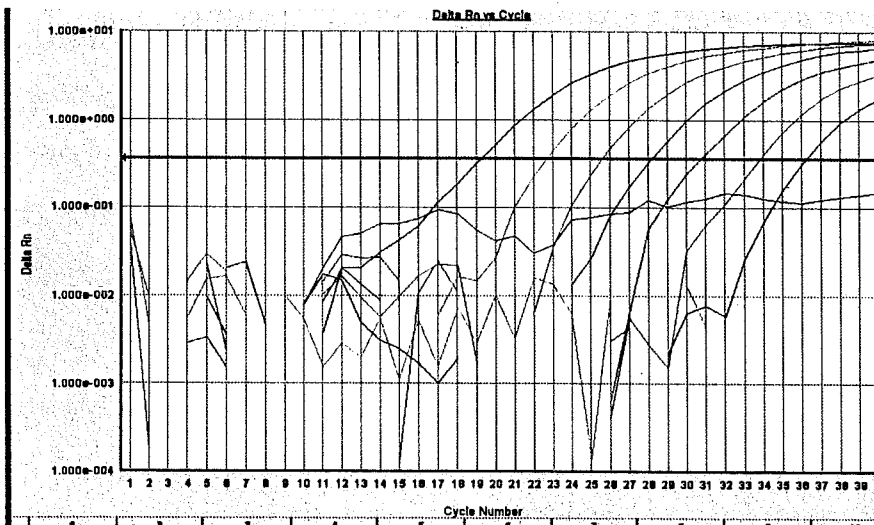


Diagnostic Assays

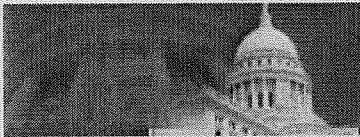
- **Virus isolation** is currently the only approved method for detection of the virus. This technique is time consuming and expensive.
- Viruses must replicate within cells. Up to 4 weeks of incubation is required before a culture can be called negative.
- The presence of a virus is detected by disruption of the monolayer.



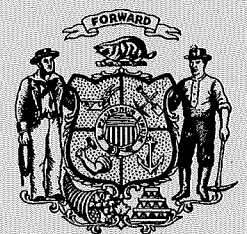
- **Conventional PCR** the presence of the virus is confirmed by conventional PCR. This technique selectively amplifies a target in a culture.
- **Real-time PCR**- version of PCR that is very rapid and specific. This technique can be used on samples and will eventually replace virus isolation and conventional PCR. Real-time PCR has replaced virus isolation for the detection of avian and mammalian diseases of high consequence such as highly pathogenic avian influenza.

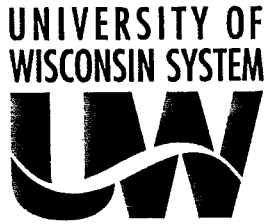


Example of VHSV Real-time PCR results.
3-4 hours from extraction to answer.



WISCONSIN STATE LEGISLATURE





WISCONSIN VETERINARY DIAGNOSTIC LABORATORY

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 608-262-5432 Toll free 800-608-8387 Fax 847-574-8085

VIRAL HEMORRHAGIC SEPTICEMIA

Hui-Min Hsu
 Veterinarian Aquatic Specialist
 November 07, 2007

VHS Distribution in Wisconsin Waterways in 2007

- Little Lake Butte des Morts, freshwater drum
- Lake Winnebago, freshwater drum
- Lake Michigan, smallmouth bass, lake whitefish, and brown trout
- Virus has not been detected outside of these Wisconsin waterways.

Susceptible Species

- A striking feature of VHS virus is its ability to infect many different species of saltwater as well as freshwater fish.
- All ages of fish have been shown to be susceptible.

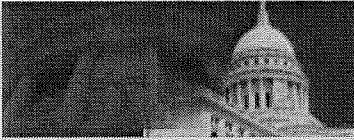
Wisconsin Freshwater Fish Susceptible to VHS	
<i>Centrarchidae</i> - Sunfish family	Bluegill, Pumpkinseed, Black crappie, Rock bass, Smallmouth bass, Largemouth bass
<i>Serranidae</i> – Sea bass family	White bass, White perch
<i>Esocidae</i> -Pike family	Muskellunge, Northern Pike
<i>Percidae</i> - Perch family	Walleye, Yellow perch
<i>Cyprinidae</i> - Minnow family	Bluntnose minnow, Emerald shiner
<i>Salmonidae</i> - Salmon family	Chinook salmon, Coho salmon, Pink salmon, Chum salmon, Whitefish, Brown trout, Rainbow trout
<i>Ictaluridae</i> – Freshwater catfish family	Channel catfish, Brown bullhead
<i>Gadidae</i> - Cod family	Burbot
<i>Clupeidae</i> - Herring family	Gizzard shad
<i>Catostomidae</i> - Sucker family	Redhorse sucker, White sucker
<i>Sciaenidae</i> - Drum Family	Freshwater drum, Round goby
Complete list of susceptible species found at http://www.aphis.usda.gov/vs/aqua/	

Transmission of Virus

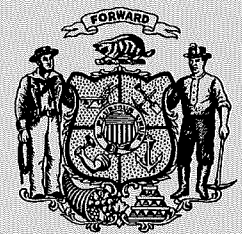
- Horizontal transmission occurs via water or infected fish.
- Infected fish shed virus in urine.
- Dead or dying fish release virus into water.
- Virus can survive in water for at least 14 days, and up to one month.
- Virus infects fish via entry into gill tissues.

Disease Signs

- The lesions may vary by fish species and the severity of infection; in the range from no symptom to wide spread hemorrhages.
- Clinical signs may include; unusual behavior, bulging eyes, bloated abdomens, and hemorrhages in eyes, skin, or base of fins.
- Internal lesions usually include hemorrhages and necrosis of internal organs.
- Other fish diseases may exhibit similar clinical signs and lesions.
- Surviving fish become asymptomatic carriers.



WISCONSIN STATE LEGISLATURE



Robinson Wholesale, Inc.

P.O. Box 338

Genoa City, WI 53128

262-279-6888

www.robinsonwholesaleinc.com

November 7th, 2007

I. INTRO: DAVID ROBINSON

THANKS TO: REPRESENTATIVE SCOTT GUNDERSON & SENATOR MILLER

II. HISTORY:

Robinson Wholesale, located in Genoa City, WI became involved in the live bait business in the 1940's. Today, live bait and fishing tackle sales are predominantly to a Midwest market. We employ approximately 50 people between our live bait, tackle and fish hatchery. Our fish hatchery, Keystone Hatcheries, is located just across the state line in Richmond, IL. Robinson Wholesale is family owned and operated. I am here today representing our company, and Wisconsin Fish and Bait Dealer Association (WFBDA) of which I am a founding member.

III. IMPORTANCE OF FISHING TO WISCONSIN

- ↳ In 2006, THE DEPARTMENT OF TOURISM ECONOMIC IMPACT REPORT identified 12.8 billion dollars spent by travelers in Wisconsin.
- ↳ 12.7% of the time spent by vacationers in Wisconsin was for fishing.
- ↳ The Department of Tourism recognizes the importance of fishing in their strategic plan and includes in their objectives programs to enhance the fishing experience for tourists.
- ↳ 2 million hunting and fishing licenses were sold producing 87.6 million dollars in revenue. Of this, 24.4% is spent on fisheries equating to 24 million dollars. Of this, only 6% of the fish and wildlife account, or 5.4 million dollars, is spent on rearing and stocking fish.

IV. IMPORTANCE OF LIVE BAITFISH TO WISCONSIN.

People have been fishing with live bait since biblical times. It is true that the majority of the people catch the minority of the fish. It is also true the majority of these people use live bait because it increases their odds of catching a fish. Ice fishing relies primarily on live bait. Live bait, including minnows, is the backbone of the fishing industry in Wisconsin sustaining manufacturers of live bait related tackle to members of WFBDA whom harvest and distribute live bait. A loss of live bait use in Wisconsin will directly relate to a loss of tourism dollars spent in our state.

V. Emergency Order

My number one concern relating to the emergency rule passed by the Natural Resources Board (NRB) is diminished live baitfish sales due to a perception that minnows may be unsafe to use. In fact, minnows are safer to use now than ever before. Comprehensive testing requirements of bait fish producers and distributors mandate that all baitfish entering the state of Wisconsin be tested prior to importation. Baitfish shown to be susceptible to Viral Hemorrhagic Septicemia virus (VHS) must be tested and proven to be VHS free. While more rules are being promulgated including DATCP's soon to be released emergency rules, requirements already in place help ensure a safe baitfish product for Wisconsin anglers.

A. Support of the Order

- ↳ The objective of this emergency rule I agree with, as does WFBDA. That being "For the Control and Prevention of VHS in Fish in Waters OF the State." VHS is probably the single most important fish disease in the world today so it does deserve our attention. However, I think it is also important that we do not overreact. VHS will spread regardless of our actions or re-actions. Birds will spread VHS.
- ↳ WFBDA strongly supports section 5 of the order, which allows for harvest of wild minnows from non-VHS infected waters. A statewide ban of wild harvest would not have any benefit ecologically or economically. Also, a wild harvest ban would jeopardize an out of state supply Wisconsin relies on if it too is considered wild harvest. The result of this would be product shortages, higher prices, and loss of jobs. WFBDA also supports the extension of wild bait harvest permits from 14 days to 30 days, and recommends an annual permit. The department has the authority to rescind a permit at any time, so why not make it an annual event.
- ↳ Also, WFBDA members would not be opposed to participating in a Sea Grant HACCP type program for training in recognizing invasive species and preventing their spread in the wild harvest activity.

B. OBJECTIONS TO THE ORDER:

- ↳ WFBDA and Robinson Wholesale object to section 4 of the order, which, among other things, requires draining of live wells and dumping baitfish out before leaving any Wisconsin waterway. This prohibition is overly restrictive, unreasonable and unnecessary. Anglers will understand this requirement in VHS-infected waters, but not in VHS free zones. DNR cannot reasonably enforce this statewide, and this regulation will only discourage anglers from using baitfish. Wardens could have bait harvesters removing baitfish and water from a boat ramp, while having to cite an angler for not dumping out his bait. Rather, anglers and retail outlets selling minnows should be encouraged or required to use products like Sure-life Labs Catch and Release. Disinfectants in this formulation effectively kill VHS isolates in water in a 5 - 10 minute contact period. Use of chemicals like Catch and Release remove the risk of VHS and other viruses like LMBv from spreading in the water, thus negating the

pg. 3

need to dump live baitfish out. Section 4 should be changed to apply only to VHS positive waters.

- ✉ I object to Section 9 of the order in reference to importation of fish, including minnows, regardless of the exemptions. The lead agency for import and export of fish in Wisconsin is DATCP. DATCP already has comprehensive regulations governing importation, which include fish health certificate and import permit requirements. I believe DNR's basis for authority in this arena is based on the status of VHS as an invasive species. It is a stretch to consider a single strand RNA organism as an invasive species. VHS is a fish pathogen, and DATCP holds the authority over fish health.

VI. Personal Recommendations to improve fish health and fish stocks in Wisconsin:

- ✉ Any importers of live fish into Wisconsin participate in a semi-annual facility inspection which includes viral testing including VHS.
- ✉ Increase the percentage spent on rearing and stocking fish in the Fish and Wildlife account for three reasons:
 1. To rear and stock more fish
 2. To protect valuable brood stock from exposure to VHS.
 3. To develop VHS resistant strains of game fish.
- ✉ Continue to improve relations and communication between agencies to avoid industry from being caught in the cross hairs. DATCP will need additional staffing to process the increased load of permitting and certification brought on by the age of VHS. One of the biggest concerns I hear about is whether processing of import permits and fish health certificates can be done in a timely manner. Open lines of communication between industry, DATCP and DNR will be mandatory to accomplish this.

Closing:

I'd like to close by leaving you with some idea of the costs of doing business Dave Gollon and I deal with all the time.

Diesel Fuel: \$3.50/gallon

Import Permits: \$50.00 each

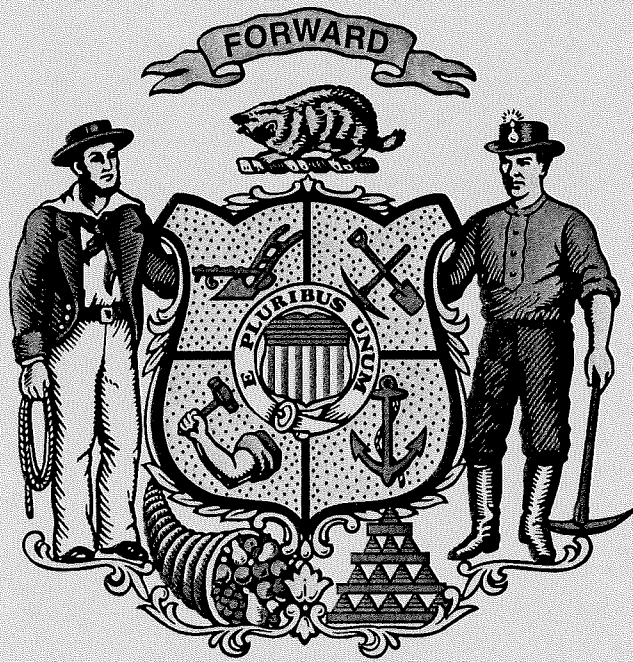
Standard Veterinary Fish Health Assessments: \$300.00

Single species VHS testing: \$900.00

Going into a bait shop and buying a bucket of minnows to take a kid fishing: Now that's priceless.

Respectfully,

David Robinson
Robinson Wholesale Inc.
WFBDA



Statement of Dr. Michael Dutcher
U.S. Department of Agriculture, Animal and Plant Health Inspection Service
Wisconsin Area Veterinarian in Charge
Before the Wisconsin Senate Environment & Natural Resources Committee and
Assembly Natural Resources Committee
November 7, 2007

Viral hemorrhagic septicemia (VHS) is a serious viral disease of fish that causes internal hemorrhaging and death in a large and diverse number of fish species. Dead and diseased wild fish have been reported in the St. Lawrence River and in Lake Erie, Lake Huron, Lake Michigan, Lake Ontario and Lake St. Clair. Outbreaks of VHS have also been reported in inland lakes in Michigan, New York and Wisconsin. The disease does not pose a risk to people, but it has been found to adversely affect many different species of fish, including several commercially farm-raised species in the United States not previously known to be susceptible to the disease.

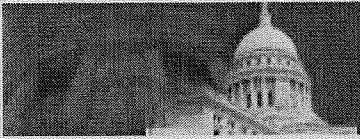
On Oct. 24, 2006, APHIS issued a Federal Order to immediately prohibit the importation of 37 susceptible species of live fish into the United States from Ontario and Quebec, Canada, which have also reported VHS outbreaks. The order also prohibited the interstate movement of the same fish species from eight states in the United States (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin) that have reported incidences of VHS in wild fish or that are at immediate risk of acquiring the disease because they share watershed areas with states in which the disease has been detected.

APHIS amended the order on Nov. 14, 2006, to allow for movement and importation of susceptible fish species under conditions that mitigate the risk of spreading VHS; and on May 4, 2007, to allow for catch-and-release fishing activities. Restrictions under the Federal Order will continue until APHIS publishes an interim rule establishing appropriate VHS-related fish importation and interstate movement criteria.

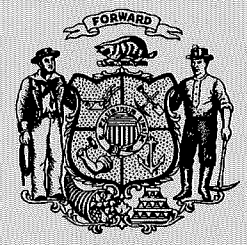
On September 27, 2007 the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) announced that \$1.5 million in contingency funds has been made available for activities related to the control of VHS. Such control activities include confirmatory testing, surveillance and compliance, and education and outreach efforts.

These activities will help to prevent the spread of VHS into aquaculture facilities. The contingency funding that APHIS is providing will be used for surveillance and compliance activities and other VHS-related efforts. These include: laboratory upgrades to USDA's National Veterinary Services Laboratories to support confirmatory testing; and an educational campaign that promotes biosecurity efforts and addresses human-related activities which—though not easily regulated—could spread the disease.

Surveillance activities will be risk-based and focus on states in the Great Lakes watershed and those states in surrounding watersheds. APHIS will develop cooperative agreements with state departments of natural resources, state departments of agriculture, tribal agencies and other appropriate agencies for surveillance and compliance efforts. Surveillance data collected in the coming months will give APHIS more information on VHS to better target future surveillance and regulatory actions.



WISCONSIN STATE LEGISLATURE



Briefing Document for Viral Hemorrhagic Septicemia
Natural Resources Committee 11-7-07

Dr. Kebus

Viral Hemorrhagic Septicemia (VHS) was first reported in Wisconsin on May 11, 2007 after the Wisconsin Veterinary Diagnostic Laboratory confirmed positive samples from freshwater drum, or sheepshead, in Little Lake Butte des Morts, part of the Lake Winnebago system. It has since been found in Lake Winnebago, and in Lake Michigan near Green Bay and Algoma. Since this time the DATCP, DNR, the Wisconsin Aquaculture Association have met several times to discuss the appropriate response.

DATCP VHS activities prior to May 11, 2007 DATCP Activities on VHS

1998

- DACTP receives responsibility for VHS and other fish disease regulation from the Wisconsin Legislature
- DATCP fish rules apply to DNR activities, private fish farmers and others.
- DATCP develops the Fish Health Medicine Certificate Program – the first training course for veterinarians that includes VHS training.

2005

- DATCP modifies FHC to require VHS negative test for imports from states/provinces known to have VHS

2006

- March, 2006 WDNR requested an exemption on importing muskies from Ontario – DATCP denied the exemption on grounds of emerging VHS concerns and the inability to identify a safe holding pond where fish could be tested on arrival.
- DATCP participates in National Forum on VHS in Minneapolis, August 8-9, 2006
- DATCP is the first state agency to adopt import requirements to reduce the risk of importing VHS (October 2006)
- DATCP distributes over 2,000 copies of its VHS Fish Health Advisory, June 2006
- DATCP is Recognized by USDA APHIS on November, 2006 as the state of Wisconsin's Competent Fish Health Authority
- DATCP presents VHS issues to the DATCP Board, November 15, 2006
- DATCP State Veterinarian, Dr. Robert Ehlenfeldt, and DATCP Aquaculture Veterinarian, Dr. Myron Kebus participate in decision –making process at the USDA APHIS meetings in Washington D.C. on October 31, and November 1, 2006
- DATCP's Dr. Kebus is consulted by the Center for Epidemiology and Animal Health – National Surveillance Unit within USDA APHIS as the lead national expert on the veterinary/economics VHS disease in the Great Lakes Region, December to present.

2007

- DATCP State Veterinarian, Dr. Ehlenfeldt participates in USDA APHIS meeting on VHS and the National Aquatic Animal Health Plan, January 2007
- DATCP gave a presentation at Aquaculture America, San Antonio 2007 on VHS, February 2007.
- DATCP is chosen as one of the primary reviewers for the U.S. VHS Surveillance Plan, January to present

- DATCP is chosen to participate on the North Central Regional Aquaculture Center, VHS committee for USDA, February 2007
- DATCP is selected to provide USDA APHIS with input on Fishing Tournaments and potential impact on VHS spread.
- VHS Sample Collection Training for Veterinarians, May 25, 2007
- VHS Biosecurity Session, at the Northern Aquaculture Demonstration Center, June 14, 2007
- Cool Water Egg Disinfection Workshop, Wisconsin Veterinary Diagnostic Laboratory, August 9, 2007
- USDA APHIS Aquaculture Liaison Training, Madison, September 11-13, 2007

After May 11, 2007, DATCP performed the following activities in response to VHS:

- Immediately sent bait dealers, bait harvesters and fish importers, a notice reminding all of them that the import requirements include testing for VHS.
- Sent registered fish farms a fish health advisory on VHS and appropriate biosecurity measures
- Communicated with DNR to harmonize VHS press release information
- Communicated and discussed VHS risk with DNR fisheries and fish hatchery staff.
- To prevent the potential spread of VHS, quarantined three DNR hatcheries which obtained fish eggs from known VHS-affected waters. DNR had previously issued an internal stop movement order from these hatcheries. Some of the fish were released into waters of the state prior to the confirmation of VHS. DNR has voluntarily depopulated some of the fish. Some of the fish have been stocked into VHS-affected waters after negative VHS testing. Quarantines were lifted September 26th, on all DNR facilities.

Dr. Ehlenfeldt

As Dr. Kebus stated DATCP has placed restrictions on fish from known VHS areas for the past two years.

Since the discovery of VHS in Wisconsin DATCP worked with DNR Fisheries staff, UW-Extension Northern Aquaculture Demonstration Facility, Wisconsin Aquaculture Association and Wisconsin bait industry representatives to determine an effective and measured response to VHS. This resulted in a DATCP board approved a VHS emergency rule on October 10th. The rule was effective on November 1st.

This emergency rule is based on testing the highest risk fish and activities.

- Primary issue is wild source fish and fish eggs
- Second is *known VHS-susceptible species* identified by the USDA
- VHS test is required on susceptible species collected from a wild source in any state within the preceding 12 month
- VHS test is required on susceptible species kept on a fish farm that received fish or fish eggs of *any* species collected from a wild source in any state within the preceding 12 months
- Testing covers the following movements of susceptible species:
 - Fish or fish eggs stocked into Wisconsin public waters.
 - Fish or fish eggs moved between Wisconsin fish farms.
 - Fish or fish eggs distributed by a bait dealer for use as bait. At this time the only commonly used susceptible species of bait is emerald shiners. A retail bait dealer is not required to conduct duplicate tests on fish previously tested by a wholesale bait dealer.

Effect on Private Fish Farm Operators

The best estimate is that private fish farms are a \$10-15M industry in WI that contributes to a \$2B sport fishery. However the average gross revenue for these private fish farms in WI is approximately \$70,000 many provide only supplemental income to the owner.

DATCP estimates that this rule will affect 30-40 private fish farms, not counting DNR “cooperator” fish farms.

Fish farmers in WI have two options for VHS testing. The AFS test costs approximately \$500 per lot. A single fish farm might need to test from 1-30 lots per year, depending on the source and species of the fish, the number of separate fish lots kept on the fish farm, and purposes for which the fish are kept and distributed. The OIE test costs \$1,600.00-2,100.00 covers multiple species but is a semi-annual test. The bottom line is that VHS testing will have a significant economic impact on most farms.

Some of those affected fish farmers are already performing VHS tests in order to meet federal requirements for shipping fish in interstate commerce.

Effect on Bait Dealers

This rule applies only to bait species that are known to be susceptible to VHS. Of the major bait species in Wisconsin only one species (emerald shiner) is currently known to be susceptible to VHS. Emerald shiners are obtained exclusively by wild harvesting, while other major bait species can be hatched and raised on farms. At this time, DATCP estimates that emerald shiners represent less than 10% of the overall bait market in Wisconsin (the market for wild-harvested emerald shiners has already diminished as a result of federal VHS testing requirements for emerald shiners moved in interstate commerce).

Wisconsin bait dealers are licensed by DNR. DATCP estimates that approximately 25 Wisconsin bait dealers are currently harvesting emerald shiners from the wild and may need to test 6 lots of wild-harvested emerald shiners each year at an approximate cost of \$500 per lot.

That figure does *not* include added costs to hold the emerald shiners for 4 weeks while testing is completed. It is extremely difficult to hold emerald shiners for extended periods, so it may not even be possible for most bait dealers to hold them for the required 4 weeks. These costs may limit or eliminate the use of emerald shiners however, those bait dealers may still be able to harvest and sell other types of bait that are not affected by this rule.

Funding

USDA – APHIS announced funding available for wild source fish testing and compliance for 19 states (8 Great Lakes and 11 high risk). Most of the money is for wild fish surveillance to determine the prevalence of VHS before any changes are made nationally. This is expected to take up to 24 months. Up to 50% of the states allocation may be used for compliance activities related to VHS state and federal rule enforcement.

- DATCP will receive up to \$48,500 for overtime and hiring one field inspector to monitor fish interstate movement and complaint follow-up.
- DNR will receive up to \$38,500 for VHS surveillance activities in wild fish.

Why does DATCP need the federal funding? Wisconsin has arguably the best fish health program in the US well ahead of the rest of the country. However, the program is dependent upon voluntary compliance due to insufficient staff resources. This was a problem even before VHS was found in the Eastern US.

At present DATCP does not have the internal resources available to ensure compliance with the rules that have been created in order to prevent the spread of VHS. There are 1.5-2 positions available for aquaculture work depending upon other priorities in the field. AH is currently responsible for supporting the health of a \$34 billion dollar livestock industry with 7 full-time animal health inspectors, 4 compliance officers, and 5 district veterinarians spread throughout the state and a total staff of 37. We've got TB in adjacent states. It showed up in 4 new states this year. We had pseudorabies to deal with. There's AI, BSE, Brucellosis, CWD, SVC, Johne's, Newcastle, monkey pox and who knows what else we missed in the past 5 years.

Long Term

As more information is gathered on the distribution and prevalence of VHS, DATCP will adapt its movement restrictions accordingly to support control and mitigation of the disease in the wild and prevent introduction of the disease to fish farms. Eradication in the wild is a highly improbable scenario.

In the event that a VHS-positive is isolated on a fish farm facility, DATCP will pursue eradication of the disease in that facility and will conduct the necessary epidemiological investigation to ensure all potentially exposed facilities are tested, and dealt with appropriately. Prevention of spread, as well as disease eradication and facility disinfection in a contained environment is possible. Lack of indemnity may slow eradication and reduce reporting of possible outbreaks.

Ongoing Issues:

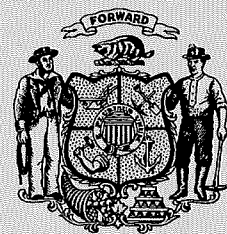
- Lack of resources and funds at DATCP
- Lack of resources and funds for fish farmers
- In the event of the quarantine and condemnation of fish on a fish farm, indemnification will be an issue. Current statutory indemnity authority, sec. 95.31(3), allows for indemnity to be paid on livestock, which is defined as animals of species raised primarily to produce food for human consumption, including farm – raised deer.

This definition would not allow for the department to pay indemnity to a majority of Wisconsin fish farms. This may be a possible deterrent for a fish farm operator to report suspicion of a disease, for fear of losing his fish farm without compensation. It could also mean extensive and expensive litigation in the event of a condemnation order being issued.

- Laboratory testing is at capacity.
- Development and validation of protocols on disinfection of eggs.
- Development of restocking protocols.
- Should facilities in affected areas be handled differently than other facilities?



WISCONSIN STATE LEGISLATURE





► To _____

► Date _____ Time _____

► M Alby Shafer

of USDA-APHIS

► Phone 202-720-3474

- Telephoned
- Called to See You
- Returned Your Call
- Please Call
- Rush
- Will Call Again

Message _____

*forwarded
request
- not available
- prepared statement
- follow-up quest*

Party Receiving Call