

**WRITTEN STATEMENT ON VIRAL HEMORRHAGIC SEPTICEMIA
AND ASSOCIATED RULES PROMULGATION**

William E. Lynch Jr.
Program Specialist, Aquatic Ecosystem Management
The Ohio State University Extension Program

&

Co-Owner and Manager
Millcreek Perch Farm, LLC
Marysville, Ohio

I thank the USDA's APHIS Program for allowing me the opportunity to submit a written statement on VHS as I am unable to attend either of the January 10 meetings in Michigan and Pennsylvania. I'm probably an oddity in terms of my background as compared to other individuals that will provide oral and written comments to APHIS. I essentially wear two "hats", representing two somewhat divergent aspects of aquatic entities. First, I do co-own a yellow perch aquaculture facility and currently serve as Chair of the Industry Advisory Council of the USDA's North Central Regional Aquaculture Center – thus I feel I have a pulse on the North Central Region's aquaculture industry. Second, I essentially function as Ohio's "private waters biologist and ecologist" thru my position with OSU's Extension Program, extensively working with private pond and lake owners throughout our state. I regularly interact with Ohio's agencies charged with managing state waters, as activities on private waters can impact public waters.

APHIS no doubt will receive impassioned, and maybe even hostile, testimony from many owners of businesses and industry representatives who feel they could be adversely impacted by APHIS and State rules concerning VHS. Wearing my two "hats" and having read everything I can find on VHS, I want to take this written opportunity to provide to you my "friendly" concerns that I'd like APHIS (and the States) to take into consideration as you move thru your rules process.

The aquaculture industry in the North Central Region (including six of the 8 states in the Oct. 24, 2006 Federal Order) is highly diverse, being dominated by many "family owned and operated" fish farms. Many of these are akin to today's small family farms, where family members work off-farm by day and grow beans and corn by evening and weekend. Nowhere is this more apparent than in Ohio, where an OSU South Centers study on the Ohio aquaculture industry found that, of the 225+ operations, only 14.4% indicated their aquaculture operation was the primary source of family income. While small, the profit generated by many of these small aquaculture operations supplements family income, allowing those families to ease debt burden, supplement retirement income, and establish college funds for their children and grandchildren.

Many of the aquaculture operations in the North Central Region are not solely food-fish operations, but rather grow a variety of fish species for live stocking into the region's lakes and ponds. Again referencing the OSU study, at least 75% of Ohio's small aquaculture operations sell to pond and lake owners, including fee-fishing operations and sportsmen clubs. Many of these Ohio sales, as well as sales in other Midwest states, cross state borders. Mandatory VHS testing will be a real cost to many of these small operations. Annual testing will in of itself place a burden on these small operators, but twice annual or quarterly testing (under consideration) may well prove too heavy a cost burden and force some "family" and small aquaculture operations to cease. Related to this issue is that some states are considering requiring testing of every lot that enters the state. This eliminates the small family operations from that state's fish stocking market as they simply cannot afford those repeated tests.

While most aquaculturists are grateful that a goal of APHIS's VHS Federal Order is to protect the aquaculture industry from VHS, the rules that have been promulgated to date and those under consideration may be akin to "We can cure you of your illness, but the remedy/drug may very well kill you". I urge APHIS to be cognizant of the costs incurred to aquaculture operations, particularly small operations, if extensive, repeated VHS testing is to be required.

If I may switch "hats" and share my concerns about the ecological spread of VHS in the coming years. I have come full circle in my professional career in regards to invasive species. Early on I was supportive of expending large sums of money and promulgating rules to check the spread of invasive species. Now I've come to the realization that once an invasive is well-established, there is no stopping it. No criticism of APHIS intended, but we simply fail every time in eradicating an invasive species once it has become established on a widespread basis. We now have purple loosestrife in many Great Lakes wetlands, zebra mussels are now in the Ohio and Mississippi River drainages, Gobies are throughout much of the Great Lakes, and emerald ash borer is continuing it's march thru Ohio, Michigan and Indiana. A most sobering thought is that we can see the above invasive species and still cannot stop them. How are we going to stop a water-borne virus that is considered highly infectious by experts and that already has been documented in fish populations in Lake St. Clair, Lake Erie, and Lake Ontario and has been confirmed, via testing, in 40 fish species. My belief, based on the literature and experience, is that VHS will quickly spread throughout the Great Lakes Region and into the major river drainages, much like zebra mussels have.

The recent Federal Order has focused on rules concerning the live hauling of fish within the Great Lakes region and to other regions of the U.S. The implicit argument within the current rules is that transporting live fish is the major source of spread, which points the thumb squarely at the aquaculture and bait industries – even if that was not intended. While I acknowledge transport of fish could indeed be a VHS vector of spread, I am more concerned about other vectors that I feel will be responsible for it's quick spread.

Natural Fish Movements - This will likely be the most prominent method of spread thru the Great Lakes. Numerous management agencies surrounding the Great Lakes have

long documented the interchange of fish among the Great Lakes. Gary Whelan of the Michigan DNR, noted in his 2006 briefing paper, it is highly likely the virus will enter Lakes Huron and Michigan in the next 2-4 years. I would not at all be surprised at a quicker timetable.

“Recreational” Ballast Water - Much has been made that ship ballast water is the likely vector that introduced the problematic VHS type into the Great Lakes. What I have not yet seen mentioned is the potential of bilge and live well water in recreational boats to be a major vector for spread. Research has indicated that the virus can persist in water for up to 24 hours at 20 C and for up to 5 days at 4 C. In Lake Erie, many recreational boats, particularly those used for fishing, are used interchangeably between Lake Erie and inland Ohio, Indiana, and Michigan reservoirs and lakes. Bass fishermen routinely fish Lake Erie tournaments on the weekend and then fish their club tournaments on inland reservoirs on the following weeknights. This occurs as early as April 1. This also holds true for walleye fishermen. Given the optimum temperature for replication and subsequent virus shedding is 14-15 C, I would expect this vector to be most likely to occur beginning in mid-April and continuing thru May. As for ship ballast, all it takes is one fishing boat to pick-up the virus in May while fishing Lake Erie, go fish a reservoir in the Ohio River drainage within a few days, and we may very well see fish mortality inland from Lake Erie shortly thereafter. Given the thousands of boats who likely fish in this manner, this is a real likelihood. Zebra mussels serve as a prime example of this scenario.

Riverine Water - Once the virus has been transported to water body outside the Great Lakes watershed, it will likely move quickly throughout the new watershed. For example, if VHS becomes present in Alum Creek Reservoir in Ohio, the Scioto River watershed is now at risk, followed by the Ohio River watershed, and then followed by the Mississippi watershed. This is where the recreational boater described above can really play a role in the virus’s spread.

Fish-Eating Bird - It has been documented that the grey heron of Eurasia (closely related to our great blue heron) can mechanically transport the virus thru transport of infected fish and then losing or regurgitating that fish over or in uninfected waters. Thankfully, it appears the VHS virus is inactivated in the digestive tract, which minimizes, in my opinion, the likelihood of this vector occurring on a widespread scale. If the virus is found to survive or becomes able to survive the bird digestive tracts, this vector increases in importance given the migratory nature of most fish-eating birds. Candidate birds for this type of vector is not restricted to the great blue heron, but needs to include smaller herons, egrets, various duck species, and even the diminutive kingfishers.

Fish Carcasses – While APHIS has expressed concerns over the proper disposal of slaughtered fish carcasses from aquaculture facilities, we must acknowledge the huge number of fish caught in the Great Lakes by recreational anglers, transported home on ice, filleted or gutted upon arrival, and carcasses disposed of in a manner we cannot ascertain. Research has shown the virus can persist in freshly dead and dying fish. We

can only hope those carcasses make it to a landfill or buried in the family garden. I don't consider this a likely vector but may occur on the occasional basis.

It is well accepted (see Whelan's 2006 Michigan DNR briefing paper, the Australian Aquatic Veterinary Emergency Plan for VHS) that once a pathogen becomes established in wild fish communities, it is impossible to eliminate the pathogen and control becomes problematic. The typical response by management and regulatory agencies at that point is to develop strategies to slow its spread, which is what APHIS and some states are attempting to do. Unfortunately, our track record at even slowing the spread of an invasive species is poor at best, with the best results being attained with highly visible species having larger body size (we can see them) and lower reproductive potential (few offspring or seeds). We all witnessed how fast zebra mussels spread because we were unable to see them for several years, the offspring are microscopic, and zebra mussels have a very high reproductive potential.

I would encourage APHIS and state agencies to ask themselves three questions as they proceed thru their rule making process.

One, is VHS firmly established in the Great Lakes wild fish community and have we passed the point of being able to eliminate it from the Great Lakes?

I know of no one who would answer no to any portion of this question. Being prevalent in the two, lower Great Lakes is evidence of establishment and there are no cost effective ways to eliminate it from large ecosystems.

Two, is there a reasonable chance we can slow the spread of VHS or will potential vectors be so effective at spreading the virus that no strategy can realistically be expected to slow the spread?

APHIS and some states believe the spread of VHS can be slowed considerably by tightly regulating the transport of live fish and requiring aquaculture facilities to be certified VHS free. They, to my knowledge, have not made known their views on the effectiveness of other vectors at spreading the VHS virus outside of the Great Lakes watershed. Some states and many in the aquaculture industry believe some of the vectors I described will be able to so effectively spread the virus, that the rules associated with the Interim Federal Order will ultimately be a mute point.

Three, do the current rules associated with the Interim Federal Order or rules currently under consideration place an undo economic burden on the aquaculture industry?

This is the one million dollar question that ultimately APHIS and state regulatory agencies will have to answer and defend. As a part of this deliberation, will APHIS and the states require annual VHS testing once a year, quarterly, or is lot testing going to be required. Many believe the family-oriented and small aquaculture facilities of the North

Central Region will suffer considerable economic hardship if anything more than an annual facility VHS-free test is required and they must pay for it.

There is the distinct possibility that rules promulgated by APHIS and some states will not slow the spread of VHS and simultaneously put a severe economic burden on many aquaculture operations. The real travesty to this would be the cessation of many aquaculture businesses before APHIS and the states realize the futility of the rules and begin to rescind them. Aquaculture start-ups may decline drastically as potential start-ups realize the costs associated with the rules. Given most aquaculture operations start small, these rules may very well stymie aquaculture industry growth in the North Central Region and possibly elsewhere.

I strongly urge APHIS and the States to:

1. Answer the three questions I've posed above, paying particular attention to the economic impact on the aquaculture industry. Weigh the likelihood of realistically slowing the spread of VHS against the damage that could potentially be done to the aquaculture industry – particularly the small and family operations.
2. Develop sampling protocols ASAP and the necessary funding to determine in 2007 the actual distribution of the VHS virus. Random sampling of aquaculture facilities should be included as well as natural waters.
3. If VHS testing is required, minimize costs to the aquaculture industry. Consider having Congress reimburse aquaculture operations for testing for two years until completion of item 2 indicates a continued need for future testing or not. This will reduce the cessation of small operations during the period it takes to fully document the magnitude of the outbreak.
4. If VHS testing is required, adopt OIE fish health guidelines.
5. An unwelcome outcome of the past two months is the creation of vastly different rules among the states in response to the VHS outbreak. During the two-year period described in item 3, APHIS should organize and convene meetings to bring standardization to the health documentation requirements among the states.
6. And last but not least, educational / extension programs should be developed, funded, and provided to all affected industries and groups to minimize their risk to VHS infestation. Effective fish husbandry practices should be central to these efforts, as well as training of veterinarians in fish health to work with the aquaculture industry.

Thank-you.

Bill Lynch