

# GREAT LAKES FISH HEALTH COMMITTEE

## Annual Agency Reports 2009

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DFO (Central and Arctic) Fish Health Activities Overview: Since August 2009 meeting

1) National Aquatic Animal Health Program (NAAHP)

Laboratory renovations essentially complete at Freshwater Institute, Winnipeg. Level 2 containment. A few minor details being finished.

Staffing complete.

Development of QA/QC program ongoing with goal of ISO 17025 accreditation. Implementation date uncertain. Implementation and training on supporting software (Q-Pulse) ongoing.

Participation in development and implementation of LIMS (laboratory information management system) ongoing jointly with other DFO labs and Thermo Fisher (private contractor). Tentative implementation

date of April 01, 2011.

VHSV surveillance work done on a total of 105 fish (Walleye, Sauger, and Yellow Perch) from Lake Temiscamingue, Quebec. All -ve by QPCR.

2) Fish Health Protection Regulations (FHPR) Certification Program

Four private hatcheries in Ontario inspected under FHPR hatchery certification program. Aeromonas Salmonicida detected in 1 of 5 brook trout brood stock tested from one hatchery. BKD screening by IFAT

of one of these four hatcheries ongoing at this time.

3) Title 50 Certification

In July virus screening was done on 150 eighteen month old lake trout originating as eggs from Big Sound Lake, Ontario and being held at Chatsworth Fish Hatchery quarantine unit, Ontario. Testing was -ve

and a US Title 50 Certificate was issued for the fish to go to the Sullivan Creek National Fish Hatchery, Michigan.

Andy Dwilow, DFO, Winnipeg

# Illinois

## Department of Natural Resources

### Fish Health Report

### for Production Year 2009

This report is a summary of all diagnostic cases carried out by the fish pathology lab on salmonids for production year 2009. This includes routine casework, health check evaluations, fluorescent antibody testing (FAT) and BKD ELISA results. Fish inspected include Chinook salmon (FCS), Coho salmon (CHO), Rainbow trout (RBT), Steelhead Trout (STT), and Brown trout (BNT). Each of these groups will be discussed individually.

Health check evaluations are comprised of 60 fish sampled from the population at random. These fish are necropsied and evaluated for bacterial pathogens. A portion is also pooled and sent to the USFWS LaCrosse Fish Health Center for evaluation of viral pathogens.

Enzyme Linked Immuno-Sorbent Assay (ELISA) testing or Direct FAT for *Renibacterium salmoninarum* (R. sal.), the etiologic agent in Bacterial Kidney Disease (BKD), is performed on a separate group of 60 fish. The kidney and spleen of each fish is sampled aseptically, diluted, and processed to ensure individuality. A portion of each sample from the ELISA sampling is also preserved for Fluorescent Antibody Testing (FAT) if required.

#### CHINOOK SALMON:

The FCS production began with collection of 960,596 eggs from the Root River Weir by personnel of the WI DNR on October 2008.

The fingerling health check exam took place on January, 2009. FCS production fingerlings were negative for all viral and cultured bacterial pathogens. The ELISA sampling for *R. salmoninarum* was done on analyzed February 2009. The results were a **0.0% incidence of BKD**.

#### COHO SALMON:

The CHO production began October 2008 with collection of two lots of CHO. A total of 148,434 eggs were collected at the Platte River Weir, Honor , Michigan and 346,738 from Kettle Moraine, WI. The fingerlings received a health check examination in February 2008, no pathogens were isolated on bacteriologic culture media. Virology results were negative. The FAT testing for *R. salmoninarum* occurred on April 2009 and resulted in a **0.0% incidence of BKD**.

## **RAINBOW TROUT:**

Production of RBT began with the receipt of one lot of eyed eggs. One lot of 170,842 was received in December 2008. These eyed eggs were received from the Erwin National Fish Hatchery, TN. After hatch, no diagnostic cases involving RBT fingerlings were initiated. The health check examination was performed in February 2009. Virology was negative for all pathogens tested. Bacteriology produced no remarkable results. Sixty fish were sampled for *R. salmoninarum* by FAT in April 2009 no positives were detected resulting in **0.0% incidence of BKD**.

## **STEELHEAD TROUT:**

In January 2009, a total of 109,728 eggs were received from the Bodine SFH, Indiana. The fingerling health examination was performed on June 2009. Virology was negative for all pathogens tested. No bacterial pathogens were isolated. In August 2009 sixty were fish sampled for *R. salmoninarum* by FAT no positives were found, resulting in **0.0 % incidence of BKD**.

## **BROWN TROUT:**

Production of BNT (Plymouth Rock strain) began with one lot of eyed eggs. This lot of 206,470 was received in November 2008. These eyed eggs were received from the Saratoga NFH, Wyoming. The fingerling health check examination was performed in May 2009. No bacteria were cultured. All viral samples tested negative. FAT sampling for *R. salmoninarum* occurred in May 2008 with a result of **0.0% incidence**.

VHS Testing :

All susceptible species produced by the IDNR Fish Hatchery System were sampled for VHS prior to stocking in 2009. No positives were found.

## HATCHERY CLASSIFICATION REPORT

**Report Period: !/01/09 - 12/31/09**

**Report Date: 1/06/09**

Hatchery Name

Location

Pathogen Acronym

Jake Wolf SFH

Topeka, Illinois

B - BK ( BF )(VB)(ESC)

Report Prepared by:

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### EMERGENCY FISH DISEASES

<u>Disease</u>	<u>Disease Pathogen</u>	<u>Disease</u>	<u>Pathogen</u>
viral hemorrhagic septicemia	virus	VHS	VE
infectious hemopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i>		
	protozoan	CS	SC
proliferative kidney disease	sporozoan	PKD	SP

### RESTRICTED FISH DISEASES

whirling disease	<i>Myxobolus cerebralis</i>		
	protozoan	WD	SW
infectious pancreatic necrosis virus		IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i>		
	bacterium	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i>		
	bacterium	BF	BF
enteric redmouth	<i>Yersinia ruckeri</i> bacterium	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL

## SALMONID IMPORTATION REPORT

Agency: Illinois Department of Natural Resources

Reporting period: 1/01/09 - 12/31/09

I. A. **Known importations since last report.**

<u>Source</u>	<u>Species/Number</u>	<u>Fish/Eggs Size</u>	<u>Fish Health Status</u>	<u>Certification Date</u>	<u>Certifying Official</u>	<u>Lake Basin</u>
<u>1.Bodine SFH, IN</u>	<u>STT/148,340</u>	<u>Eggs</u>	<u>B – BF,BK</u>	<u>1/09</u>	<u>T. Lin</u>	<u>L. Michigan</u>
<u>2.Saratoga SFH, WY</u>	<u>BNT/209,587</u>	<u>Eggs</u>	<u>A</u>	<u>5/13/09</u>	<u>Crystal Hudson</u>	<u>L. Michigan</u>
<u>3.Erwine NFH, TN</u>	<u>RBT/170,842</u>	<u>Eggs</u>	<u>A</u>	<u>4/22/09</u>	<u>Norm Heil</u>	<u>L. Michigan</u>
<u>4.Platte River,MI</u>	<u>CHO/1,046,976</u>	<u>Eggs</u>	<u>B - BK</u>	<u>10/09</u>	<u>M. Faisal</u>	<u>L. Michigan</u>
<u>5.Manistee MI</u>	<u>FCS/1,090,836</u>	<u>Eggs</u>	<u>B- BK,BF</u>	<u>10/09</u>	<u>M. Faisal</u>	<u>L. Michigan</u>
<u>6.Flowers FF,MO</u>	<u>CCF/100,000</u>	<u>Fingerlings</u>	<u>N/A</u>			<u>N/A</u>
<u>7.KeoFF,AR</u>	<u>HSB/300,000</u>	<u>Fry</u>	<u>N/A</u>			<u>N/A</u>

B. **Proposed importations.**

<u>Source</u>	<u>Species/Number</u>	<u>Fish/Eggs Size</u>	<u>Fish Health Status</u>	<u>Certification Date</u>	<u>Certifying Official</u>	<u>Lake Basin</u>
1.						
2.						
3.						
4.						

II. Lab Findings:

III Other:



**2009  
Indiana Fish Health Report  
To The  
Great Lakes Fish Health Committee**

One program pathogen was detected in production fish in 2009 among Indiana's cold-water production facilities. That pathogen was *Renibacterium salmoninarum*. No viral infections were detected in any of Indiana's cool or warm-water hatcheries as well as wild walleye, Muskie and steelhead broodstock. Surveillance of wild populations for VHSV detected no viral agents. Six bodies of water were inspected using APHIS grant money. Iodine was used for the third year during water hardening of summer-run steelhead trout and was used for the second time to surface disinfect walleye and Muskie eggs after water hardening. UV disinfection equipment was installed at one hatchery and allowed the transport of wild caught Skamania steelhead across the Indiana-Michigan state line.

*Renibacterium salmoninarum* was detected at three of five facilities. These stations were Bodine State Fish Hatchery, Curtis Creek Trout Rearing Station and Mixsawbah SFH. At Bodine, young-of-year summer-run steelhead and y-o-y Coho salmon tested positive. At Curtis Creek, y-o-y rainbow trout tested positive. At Mixsawbah, y-o-y summer-run steelhead and y-o-y winter-run steelhead tested positive. Of 15 lot inspections that looked for *R. salmoninarum*, five were positive. Range of prevalence for the positive cases was 2 of 60 to 3 of 60. None of these lots exhibited clinical signs of disease.

This was the third year for VHSV testing in Indiana's cool and warm-water hatcheries and of walleye and Muskie wild broodstock. All tested negative for viral agents.

Wild populations of Muskie and walleye are very valuable to Indiana's anglers. There is only one viable broodstock source for each in Indiana. Webster Lake is the Muskie source and walleye adults are used from Brookville Lake. The decision was made to not sacrifice adults for VHSV screening. Tissue samples were only sent if adult mortalities occurred during the spawning process. This only happened with eight Muskie. Ovarian fluid is difficult to collect from walleye and Muskie. Only three ovarian fluid samples were collected from Muskie. Milt was collected from 60 walleye males. All were negative for VHSV.

As an alternative to sampling adult Muskie, susceptible species of other fish were sampled from Webster Lake. A total of 60 fish representing six species were collected during spawning operations. No VHSV was found.

Surveillance efforts examined 1,404 fish representing 16 species from 13 cases. Six of these cases were funded with an APHIS grant. No VHSV or Largemouth Bass virus was found.

Summer-run steelhead trout (Skamania) green eggs were water-hardened in iodine for the third year representing 17 spawning events at five or six per year. The 50 ppm iodine solution was pH adjusted with hydrochloric acid to be between 7.2 and 7.4. There was a noticeable drop in eye-up the first two years. Eye up improved this last year with only a few percentage points below a 14 year average.

Green walleye and Muskie eggs were treated with iodophor for the second time this year. Walleye

eggs are collected from wild caught adults from Brookville Lake in Franklin County. Muskie eggs are collected from wild caught adults from Webster Lake in Kosciusko County. The eggs are stripped on site and transported to a hatchery. Given logistical problems of getting pathogen free water to the spawn sites, the decision was made to only surface disinfect eggs in iodophor when the eggs got back to the hatchery and after the eggs are treated with formalin to kill zebra mussel veligers. So far there have been no negative impacts to eye-up. Walleye eye-up has essentially remained the same and Muskie eye-up may have gone up a little.

Two Trojan ultra violet reactors were installed at the Bodine State Fish Hatchery. They were positioned in series on the drain lines from the steelhead broodstock tanks. Both will operate simultaneously, providing backup to each other. Large uninterruptible power supplies were installed to keep the units functional in the event of a power failure.

Bodine is a recirculation hatchery with the exception of water flowing to the brood tanks. It is wasted directly to the St. Joseph River, a major tributary to Lake Michigan. Five fish ladders allow free passage of migratory fish 63 miles up the river from Lake Michigan. The broodstock discharge is above the first impassable barrier.

The reactors were installed for two reasons. One was to protect the section of the river not accessible to migratory fish from any Great Lakes pathogen, particularly VHSV, which may be shed from the broodstock. Second was to satisfy APHIS in classifying the broodstock tanks as a quarantine system. This opened the door for transporting wild caught adult steelhead from Michigan waters of the St. Joseph River and transporting them across the state line without having any VHSV screening of the wild population.

To get the fish across the state line was a coordinated effort. A veterinarian working for APHIS or Michigan's Department of Agriculture had to witness the loading of fish onto the transport truck. When finished the tanks were sealed and completion of APHIS VS Form 1-27 was initiated. At the other end when the truck arrives, a veterinarian working for APHIS or Indiana's Board of Animal Health (IBOAH) had to be present to break the seals and witness the removal of fish from the truck. When finished, the disinfection of the transport truck had to be initiated and the Form VS 1-27 was completed. An added stipulation by IBOAH was that all mortalities be inspected for VHSV. As of this writing, 196 mortalities from adults collected from June through September of 2009 have been inspected and all were negative.



STATE OF MICHIGAN

JENNIFER M. GRANHOLM  
GOVERNOR

DEPARTMENT OF NATURAL RESOURCES  
LANSING

REBECCA A. HUMPHRIES  
DIRECTOR

January 7, 2010

TO: Great Lakes Fish Health Committee

FROM: Michigan Department of Natural Resources, Fisheries Division (MDNR) and  
Michigan State University Aquatic Animal Health Laboratory (MSU-AAHL)

SUBJECT: 2009 Fish Health Report

In 2009, MDNR continued the partnership with MSU Colleges of Veterinary Medicine and Agriculture and Natural Resources (Aquatic Animal Health Laboratory) to provide aquatic animal health services for Michigan. All lots were examined and tested for reportable diseases per the Great Lakes Fishery Commission model program. A summary of their findings is below.

### **A. Spring 2009 Inspections**

#### Pre-Stocking

Twenty-nine lots of fish (60 fish per lot) from six State of Michigan Fish Production Facilities and the Lake Superior State University Aquatic Research Laboratory (LSSU-ARL) were tested prior to stocking in spring 2009. This included eight lots of brown trout, five lots of rainbow trout, four lots of Chinook salmon, one lot of Atlantic salmon, one lot of coho salmon, three lots of lake trout, five lots of brook trout, and two lots of splake. No reportable diseases were found, with the exception of *R. salmoninarum*, (detected using quantitative ELISA assay, Q-ELISA). In addition, at least one representative lot using the most susceptible species from each of the six hatcheries was examined for *Myxobolus cerebralis* (whirling disease). No *M. cerebralis* could be detected. Skin and gill scrapings detected monogeneans, ciliates, and protozoans at low prevalence and intensity. Other bacteria of non-reportable significance were detected, such as *Shewanella* sp., *Carnobacterium maltaromaticum*, and motile and non-motile *Aeromonas* spp.

#### Captive Broodstock

Gamete samples from captive broodstock at Oden State Fish Hatchery (OSFH) and Marquette State Fish Hatchery (MSFH) were submitted to MSU-AAHL for testing after spawning was completed for all captive broodstocks, in January 2009.

OSFH: Samples from 440 brown trout and rainbow trout broodstock were submitted for virology testing. Infectious Pancreatic Necrosis Virus (IPNV) was detected at very low titer

in two Gilchrist Creek brown trout lots from OSFH during one test but not in subsequent testing. The initial detection was confirmed by the USFWS-LaCrosse Fish Health Laboratory. In addition, gamete samples from all remaining fertile Gilchrist Creek brown trout at OSFH were submitted for continued IPNV monitoring and were negative for IPNV. No other viruses were found during inspections. Given the conflicting test results, MI DNR will maintain these broodstock fish and continue to test them. If sequential tests for IPNV continue to show positive results, MI DNR will destroy the affected broodstock lot. Consequently, fingerling progeny from these two lots were tested 2-3 months post-hatch and all tested negative for IPNV. These progeny will be tested again prior to stocking and if found to be positive, will be destroyed.

MSFH: Gamete samples from 508 lake trout broodstock were submitted for virology and *R. salmoninarum* testing. A low titer level for *R. salmoninarum* was detected in 2 of 508 fish tested. No viruses were detected.

#### Feral Broodstock

Steelhead, Little Manistee River Weir: Excellent health conditions were observed in feral steelhead inspected with no reportable pathogens found.

### **B. Fall 2009 Inspections**

#### Pre-Stocking

Thirteen lots of fish (60 fish/lot) from State of Michigan Fish Production facilities were inspected prior to stocking in fall 2009. These included steelhead trout and muskellunge at Wolf Lake State Fish Hatchery (WLSFH); Assinica brook trout and lake trout at MSFH; steelhead and Wild Rose brown trout at Thompson State Fish Hatchery (TSFH); Wild Rose brown trout and Eagle Lake rainbow trout at OSFH; coho salmon at Platte River State Fish Hatchery (PRSFH); Atlantic salmon at LSSU-ARL, and channel catfish from St. Mary's State Fish Hatchery, Ohio. All lots were examined for reportable diseases as per the Great Lakes Fishery Commission (GLFC) model program. Low and medium titer levels of *R. salmoninarum* were found in lots from LSSU, OSFH, TSFH, and MSFH; however, the prevalence did not exceed 10% except in one lot of Atlantic salmon from LSSU-ARL. Erythromycin treatment as per the FDA-INAD was recommended. No other reportable diseases were found. Non-reportable bacteria detected include *F. columnare*, Motile *Aeromonas* spp., and *C. maltaromaticum*, as well as other members of the family Flavobacteriaceae. Skin and gill scrapings revealed no parasites or fungus except from LSSU-ARL, OSFH, and channel catfish from St. Mary's Ohio, which exhibited the presence of multiple species of motile and sessile ciliates.

#### Captive Broodstock

##### Inspections:

Prior to spawning, the FDA approved vaccine Furogen® (Aqua Health, LTD) was administered to broodstock lots at OSFH and MSFH. This treatment and vaccination regime was used to reduce *Aeromonas salmonicida* and has been very effective. From MSFH, two lots of Assinica strain brook trout, two lots of Iron River strain brook trout, and three lots of

Lake Superior strain lean lake trout were inspected. From OSFH, 8 lots of Gilchrist Creek strain brown trout, two lots of Seeforellen strain brown trout, two lots of Sturgeon River strain brown trout, four lots of Wild Rose strain brown trout, and two lots of Eagle Lake strain rainbow trout were inspected. *R. salmoninarum* prevalence was 10% or less in Iron River brook trout and Gilchrist and Wild Rose brown trout lots, and 10% and 30% in the Seeforellen brown trout lots. *R. salmoninarum* was not detected in the Assinica brook trout, Lake Superior lake trout, Sturgeon River brown trout, or Eagle Lake rainbow trout samples. No other reportable pathogens were detected. Non-reportable bacteria detected include motile *Aeromonas* sp., *Carnobacterium* spp., *Flavobacterium* spp., and *S. putrefaciens*.

#### Broodstock Screening:

Gametes collected from four lots of broodstock at OSFH and MSFH were tested for the presence of *R. salmoninarum* using Q-ELISA to minimize vertical transmission and incidence in hatchery stocks. This screening is done in addition to water hardening eggs in erythromycin, which is standard for all salmonid eggs. Gametes were collected from 1,660 fish and tested for *R. salmoninarum* in fall 2009. These included 356 Iron River brook trout, 420 Assinica brook trout, and 534 Lake Superior lake trout from MSFH; and 350 Sturgeon River brown trout from OSFH. Eggs from individual pairings were kept separate until Q-ELISA testing was completed. Only those fertilized eggs that tested negative for *R. salmoninarum* antigens were kept for development of future broodstock and production.

#### Feral Broodstock

Chinook salmon, Little Manistee (LMRW) and Swan River (SRW) Weirs; Coho salmon, Platte River Weir (PRW): Prevalence for *R. salmoninarum* was 2% for LMRW, 8% for SRW, and 4% for PRW. Prevalence for *A. salmonicida* was 60% for LMRW, 1% for PRW, and was not detected at SRW. *Yersinia ruckeri* was not detected during inspections at any of these weirs in 2008 or in 2009. Non-reportable bacteria isolated include motile *Aeromonas* spp. and *F. columnare* from salmon at all three weirs; multiple *Flavobacterium* spp. from SRW, and *Serratia* sp. and *Carnobacterium* sp. from PRW.

Atlantic salmon, St. Mary's River, LSSU: *A. salmonicida* was detected in three out of sixty adult Atlantic salmon examined from LSSU-ARL in 2009. Additional pathogens found included motile *Aeromonas* spp. and *S. putrefaciens*.

#### **C. Coolwater Broodstock Inspections**

Full and non-lethal inspections were conducted on coolwater broodstock populations in the spring of 2009. These included northern pike from Sanford Lake and Little Bay de Noc; walleye from the Muskegon River, Tittabawassee River, and Little Bay de Noc; and muskellunge from Lake Hudson, Thornapple Lake, and Lake St. Clair. Viral Hemorrhagic Septicemia virus (VHSV) was detected in Lake St. Clair muskellunge, and *Y. ruckeri* was detected in Little Bay de Noc northern pike. Fish were negative for *Heterosporis* sp. External skin and gill parasite infestations included *Trichodina* sp., *Apiosoma* sp., *Epistylis* sp., *Ergasilus* sp., and *Argulus* sp.

#### **D. Private Aquaculture Farms and Bait Fish**

A total of 2,535 brook trout, rainbow trout, brown trout, walleye, bluegill, red ear sunfish,

emerald shiners, spottail shiners, smallmouth bass, largemouth bass, and yellow perch from private aquaculture farms were inspected for health certifications, including viral and whirling disease screenings. IPNV was detected in samples from one facility, and *Myxobolus cerebralis*, the infectious agent of whirling disease, was detected in samples from two facilities.

#### **E. Response to Reports of Fish Kills**

Fish kills were reported during May and June from Lake Charlevoix, Barron Lake, Lake St. Clair, and Duck Lake in Michigan. VHSV and *F. columnare* were detected in smallmouth bass samples from Lake St. Clair. VHSV was confirmed by both US Geological Survey (USGS) and US Department of Agriculture (USDA) laboratories.

#### **F. VHSV Surveillance**

The Michigan DNR VHSV surveillance initiated in 2006 continued in 2009 with 122 cases (6,614 fish) submitted to the MSU-AAHL for testing. Brown bullhead samples examined under this initiative from Baseline Lake, Washtenaw Co. were positive for VHSV, the only location where VHSV was found during surveillance efforts. These findings were confirmed by both USGS and USDA laboratories.

#### **G. Diagnostisc**

Eighteen cases (397 fish) were submitted by State of Michigan Fish Production facilities for clinical diagnoses following episodes of elevated mortalities, erratic swimming, or other behaviors suspect for disease. Findings included motile *Aeromonas* spp., *Flavobacterium* spp., *R. salmoninarum*, *Carnobacterium* spp., *Pseudomonas* sp., *Saprolegnia* spp, *Trichodina* sp., *Epistylus* sp., *Gyrodactylus* sp., and *Dactylogyrus* sp. Antibiotic sensitivity testing was performed as appropriate, and Investigational New Animal Drugs (INAD) or other approved treatments were recommended.

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cc: Jim Aho  
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## HATCHERY CLASSIFICATION REPORT

**Report Period:** 01-01-08 to 12-31-09      **Report Date:** 01-7-10

HATCHERY NAME	Location	Pathogen Acronym
Harrietta SFH	Harrietta	B-BK
Marquette SFH	Marquette	B-BK
Oden SFH	Oden	B-BK, VP?
Platte River SFH	Beulah	B-BK
Thompson SFH	Thompson (Manistique)	B-BK
Wolf Lake SFH	Mattawan	B-BK
LSSU-ARL	Sault Ste. Marie	B-BK

Report Prepared by: Martha Wolgamood  
 Title: Hatchery Manager  
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**EMERGENCY FISH DISEASES**

<u>Disease</u>	<b>Disease Pathogen</b>	<b>Disease Acronym</b>	<b>Pathogen Acronym</b>
viral hemorrhagic septicemia	virus	VHS	VE
infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i> protozoan	CS	SC*
proliferative kidney disease	sporozoan	PKD	SP*

**RESTRICTED FISH DISEASES**

<u>Disease</u>	<b>Disease Pathogen</b>	<b>Disease Acronym</b>	<b>Pathogen Acronym</b>
whirling disease	<i>Myxobolus cerebralis</i> protozoan	WD	SW
infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i> bacterium	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i> bacterium	BF	BF



## HATCHERY CLASSIFICATION REPORT

**Report Period:** 01-01-08 to 12-31-09      **Report Date:** 01-7-10

FERAL STOCKS	Location	Pathogen Acronym
Coho salmon (MI)	Platte River Weir, Beulah	B-BK, BF
Chinook salmon	Little Manistee River Weir	B-BK, BF
Chinook salmon	Swan River Weir, Rogers City	B-BK
Steelhead trout	Little Manistee River Weir	B-(BK)
Lake trout (lean)	Lake Superior	B-BK, BF

Report Prepared by: Martha Wolgamood  
 Title: Hatchery Manager  
 Phone Number: 269-668-2696

EMERGENCY FISH DISEASES

<u>Disease</u>	<b>Disease Pathogen</b>	<b>Disease Acronym</b>	<b>Pathogen Acronym</b>
viral hemorrhagic septicemia	virus	VHS	VE
infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i> protozoan	CS	SC*
proliferative kidney disease	sporozoan	PKD	SP*

RESTRICTED FISH DISEASES

<u>Disease</u>	<b>Disease Pathogen</b>	<b>Disease Acronym</b>	<b>Pathogen Acronym</b>
whirling disease	<i>Myxobolus cerebralis</i> protozoan	WD	SW
infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i> bacterium	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i> bacterium	BF	BF
enteric redmouth	<i>Yersinia ruckeri</i> bacterium	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL**

\* Inspectors within the Great Lakes basin do not need to include these pathogens unless importations of  
 \*\*

## SALMONID IMPORTATION REPORT

Agency State of Michigan

Reporting Period 01/01/09 – 12/31/09

I. A. Known importations since last report.

	<u>Source</u>	<u>Species/Number</u>	<u>Fish/Eggs Size</u>	<u>Fish Health Status</u>	<u>Certification Date</u>	<u>Certifying Official</u>	<u>Lake Basin</u>	<u>Imported to:</u>
1.	Sullivan NFH Brimley, MI	Lake trout Seneca 350,000	7,800/L	A	08/05/2008	Becky Lasee	Lake Superior	MSFH
2.								
3.								

B. Proposed importations:

	<u>Source</u>	<u>Species/Number</u>	<u>Fish/Eggs Size</u>	<u>Fish Health Status</u>	<u>Certification Date</u>	<u>Certifying Official</u>	<u>Lake Basin</u>	<u>Imported to:</u>
1.	Sullivan NFH Brimley, MI	Lake trout Seneca 450,000		A	July 28, 2009	Ken Phillips John Whitney	Lake Superior	MSFH

II. Lab Findings

III. Other

# New York State Department of Environmental Conservation

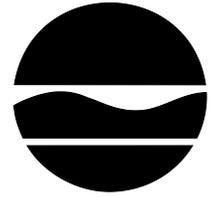
Division of Fish, Wildlife & Marine Resources

Rome Field Station, Fish Disease Control Unit

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Alexander B. Grannis  
Commissioner

January 4, 2010

## Agency Report to the Great Lakes Fish Health Committee for 2009

### Wild Fish Pathogen Inspection Program

Two separate pathogen surveillance programs of wild fish are underway in New York. The first is an ongoing statewide survey to identify waters where regulated pathogens may be present in fish populations. Cornell University performs the second through a program to investigate diseases in wild fish populations.

For the statewide survey, a wide range of fish species were collected from 30 locations (1,968 fish) and clinical testing was done at the USFWS fish health center in Lamar, PA. No program pathogens were identified from any collection. In addition, lake trout were collected from Lake Erie and Cayuga Lake for the presence of *Nucleospora salmonis* and EEDV and those tests were negative.

For the wild disease investigation program, 26 cases were submitted for diagnostic evaluation and a wide range of common pathogens were isolated. Most notably, KHV was isolated from common carp in the Hackensack River and Esopus creek in southeastern New York. Cornell researchers additionally sampled fish in Lake Ontario and the St. Lawrence River for VHS using QRT-PCR and found VHS infection prevalence of 19% in 2010 fish sampled.

### Hatchery Inspection Program

The DEC's Fish Disease Control Unit (FDCU) annually inspects all lots of fish in DEC culture programs, both domestic and from wild sources. In 2009, our inspections included domestic trout cultured in our hatcheries, plus various species of wild fish used in egg collections intended for hatchery propagation. In all, we conducted 63 inspections totaling 4,010 fish. For the first time in many years, no program pathogens were detected in any DEC inspections.

*A. salmonicida* is usually isolated from chinook or coho adults during egg collections at the Salmon River State Fish Hatchery, but not this year. The hatchery at Connetquot State Park was recently depopulated due to the recurrence of IPN and mitigation efforts are underway.

### INAD Projects

The DEC participates in two INAD projects, Chloramine T (INAD 9321) two treat for bacterial gill disease and Oxytetracycline (INAD 10-321) to treat an assortment of bacterial diseases. A number of our hatchery culture programs have predictable BGD epizootics that include tiger muskellunge and South Otselic, walleye at Oneida, steelhead salmon at Salmon River and domestic trout at several hatcheries. In most cases, Chloramine T trials have been effective. Our

Oxytetracycline trials have mostly addressed *F. columnare* and *F. psychrophilum* epizootics in a number of hatcheries. Columnaris epizootics have been difficult to address because they often occur when water conditions become unfavorable in the summer. For example, Columnaris events at our Salmon River hatchery often coincide with dramatic changes in water temperature resulting from dam discharge at the hatchery water source location. Conversely, bacterial cold water disease trials have been largely successful. In a number of hatcheries, we have successfully been able to isolate *F. psychrophilum* from the cranium of brown trout in weeks prior to visceral infection and onset of clinical disease. So, in treating with OTC during cranial infection, we can resolve the infection before observable disease occurs.

### **Ongoing Studies**

The predictable occurrence of the cranial form of bacterial coldwater in hatchery brown trout fry suggests that transmission occurs either very soon after fertilization or may be vertically transmitted from infected adults. In the fall of 2010, tissues and ovarian fluid from spawning adults will be assessed for *F. psychrophilum* to determine if vertical transmission occurs.

The Fish Disease Control Unit collaborated with George Ketola (USGS, Tunnison) to identify nutritional components that may enhance immunological protection against a wide range of pathogens. In 2009, we concluded a study to identify essential oils having beneficial qualities to protect salmonids from bacterial pathogens. The manuscript has been submitted for publication.

Andrew D. Noyes  
Pathologist 2 (Aquatic)

# New York State Fish Hatchery Disease Classification Report

Report Period: Jan 1, 2009 to Dec 31, 2010

Hatchery	Location	Classification
Adirondack	Saranac Lake, NY	A-2
Bath	Bath, NY	A-2
Caledonia	Caledonia, NY	A-2
Catskill	Livingston Manor, NY	A-2
Cedar Springs	Caledonia, NY	A-2
Chateaugay	Chateaugay, NY	A-2
Chataqua	Mayville, NY	A-2
Oneida	Constantia, NY	A-2
Randolph	East Randolph, NY	A-2
Rome	Rome, NY	A-2
Salmon River Culture Facility	Altmar, NY	A-2
Salmon River Spawning Station	Altmar, NY	B-BF (10/09)
South Otselic	South Otselic, NY	A-2
Van Hornesville	Van Hornesville, NY	A-1
<b>Wild Broodstock</b>		
Coho Salmon - Lake Ontario	Altmar, NY	B-BF (10/09)
Chinook Salmon - LakeOntario	Altmar, NY	B-BF (10/07)
Steelhead Salmon- Lake Ontario	Altmar, NY	A-2
Walleye-Oneida Lake	Constantia, NY	A-2
LLS - Little Clear Lake	Saranac Inn	A-2
Lake Trout - Cayuga Lake	Cayuga Lake	A-2
Lake Trout - Raquette Lake	Raquette Lake	A-2
Rainbow Trout	Cayuga Lake	A-2
Round Whitefish	Little Moose Pond	A-2
Brook Trout	Twin Ponds	A-2
Brook Trout	Boot Tree Pond	A-2
Brook Trout	Big Hill Pond	A-2
Brook Trout	Mountain Pond	A-2
Brook Trout	Deer Pond	A-2
Brook Trout	Fish Brook	A-2
Cisco	Lake Ontario	A-2
Sturgeon	St. Lawrence River	A-2

Report Prepared by: Andrew D. Noyes, Pathologist 2 (Aquatic)  
 Phone: 315-337-0910 Report Date: Jan 4, 2010

Classification Designation:

- A-1 Closed water supply, free of fish, no serious infectious disease
- A-2 Open water supply, fish present, no serious infectious disease
- B One or more serious infectious diseases present
- C No inspection or clinical disease data available for the last twelve months

Disease Identification (acronym):

- VP Viral infectious pancreatic necrosis (IPN)
- VH Viral hemorrhagic septicemia (VHS)
- WD Whirling Disease
- BF Bacterial furunculosis
- BK Bacterial kidney disease (BKD)
- BR Bacterial redmouth disease (ERM)

Example:

**B-BF (11/01):** Furunculosis detected within the last 12 months and date of isolation in parentheses. Above example applies to classifications in 2002 when BF was isolated in most recent inspection.

**A-2 (BF)(11/01):** Furunculosis not present during previous inspection, but present within last three inspections. Above example applies to 2003 and 2004 classifications **IF** BF was not detected . If no BF was isolated in 2005, parenthetical disease acronyms and dates are dropped and hatchery is upgraded to A-2.

**B-BF-T:** A hatchery with an 'A' classification is downgraded to **B-BF-T** if it receives fish from a hatchery classified as B-BF. Note that a B-BF facility may transfer disinfected eggs to an 'A' facility without downgrading the receiving hatchery classification.



## Ohio Division of Wildlife Annual Report to Great Lakes Fish Health Committee December 24, 2009

Ohio has not experienced any fish die-off's attributed to VHSV during 2009.

A significant fish kill of Carp occurred in June at Deer Creek Res.. No pathogens were isolated from sample collected (total 46 fish tested).

VHS detected at Clear Fork in April from Bluegill and Black Crappie.

Ohio has entered into an agreement with Ohio State University to use facilities in Columbus Ohio for isolation of wild fish collected for brood use at State Hatcheries. This will allow us to collect a group of fish and hold them well waiting for test results before bringing them into a state hatchery. This facility is fenced and all effluent water will be chlorinated before being sent to a city water treatment plant.

Ohio plans to collect Walleye and White bass eggs from the Lake Erie basin in the spring of 2010 for use state wide. All eggs will be water hardened for 30 minutes in 50 ppm of iodine and surface disinfected and at the receiving hatchery for 10 minutes in 100 ppm iodine solution.

### Hatcheries

London SFH	A-2 (disinfected eggs from VHSV positive fish received 4/08)
Castalia SFH	A-2
Kincaid SFH	C- (A-2) 05/16/06 Golden Shinner virus 6/23/09
St. Mary's SFH	Suspect Aquareovirus no confirmation available 5/09
Senacaville SFH	No virus's detected
Hebron SFH	No virus's detected 09 Bluegill virus suspect detected 4/08

Submitted

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**HATCHERY CLASSIFICATION REPORT**  
Ohio Division of Wildlife

**Report Period: Jan.-Dec., 2009**

**Report Date: 12/24/09**

HATCHERY NAME	Location	Classification-Pathogen Acronym
Castalia SFH	Castalia, OH	A-2
Kincaid SFH	Latham, OH	C-(A-2) 05/16/06 Golden shiner virus 6/23/09 in fathead minnows
St. Mary's SFH	St. Mary's OH	5/19/09 Suspect Aquareovirus no confirmation available
Senacaville SFH	Senacaville, OH	No virus's detected
Hebron SFH	Hebron, OH	No virus's detected in 2009 Bluegill virus suspect detected 4/8/08
London SFH	London, OH	A-2 (disinfected eggs from VHSv positive fish received 4/08)

Report Prepared by: David A. Insley  
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**EMERGENCY FISH DISEASES**

Disease	Disease Pathogen	Disease Acronym	Pathogen Acronym
viral hemorrhagic septicemia	virus	VHS	VE
infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i> protozoan	CS	SC*
proliferative kidney disease	sporozoan	PKD	SP*

**RESTRICTED FISH DISEASES**

Disease	Disease Pathogen	Disease Acronym	Pathogen Acronym
whirling disease	<i>Myxobolus cerebralis</i> protozoan	WD	SW
infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i> bacterium	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i> bacterium	BF	BF
enteric redmouth	<i>Yersinia ruckeri</i> bacterium	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL**

\* Inspectors within the Great Lakes basin do not need to include these pathogens unless importations of fish from enzootic areas are known to have been made.

\*\* Field diagnostic test not available.



## HATCHERY CLASSIFICATION REPORT

**Report Period: 2008**

**Report Date: January 09, 2009**

FERAL STOCKS	Location	Pathogen Acronym
Carp	Rocky Fork	NO virus's
Sauger	Ohio River	NO virus's
Walleye	CJ Brown Res.	NO virus's
Walleye	Berlin Res.	NO virus's
Walleye	Mosquito Res.	NO virus's
	Maumee River Tested but no egg	
Walleye	collection 2007 & 2008	NO virus's
Musky	Salt Fork Res.	NO virus's
Musky	Clear Fork Res.	VHSv Type IVb
White Bass	C J Brown Res.	NO virus's

Report Prepared by: David A. Insley  
 Title: Hatchery Supt.  
 Phone Number: 419-684-7499

### EMERGENCY FISH DISEASES

Disease	Disease Pathogen	Disease Acronym	Pathogen Acronym
viral hemorrhagic septicemia	virus	VHS	VE
infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i> protozoan	CS	SC*
proliferative kidney disease	sporozoan	PKD	SP*

### RESTRICTED FISH DISEASES

Disease	Disease Pathogen	Disease Acronym	Pathogen Acronym
whirling disease	<i>Myxobolus cerebralis</i> protozoan	WD	SW
infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i> bacterium	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i> bacterium	BF	BF
enteric redmouth	<i>Yersinia ruckeri</i> bacterium	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL**

\* Inspectors within the Great Lakes basin do not need to include these pathogens unless importations of fish from enzootic areas are know to have been made.

\*\* Field diagnostic test not available.

## 2008 SALMONID IMPORTATION REPORT

Agency Ohio Division of Wildlife

Reporting Period 2009

I. A. Known importations since last report.

	Source	Species/Number	Fish/Eggs _Size_	Fish Health _Status_	Certification _Date_	Certifying Official _____	Lake Basin	Imported To
1.	Saratoga NFH	Brown Trout/52,090	EGGS	A	10/06/09	Crystal Hudson	Ohio River	London SFH
2.	Trout Lodge	Rainbow Trout/80,000	EGGS	A	8/21/09	Jim Parsons	Lake Erie/Ohio River	London SFH
3.								
4.								
5.								
6.								

B. Proposed importations in 2009

	Source	Species/Number	Fish/Eggs _Size_	Fish Health _Status_	Certification Date	Certifying Official	Lake Basin	Imported To
1.	Saratoga NFH	Brown Trout/50,000	Eggs				Ohio River	London SFH
2.	Trout Lodge	Rainbow Trout/51,000	Eggs				Lake Erie/Ohio River	London SFH
3.								
4.								
5.								
6.								

II. Lab Findings

III. Other

## 2009 Annual Report to the Great Lakes Fish Health Committee

### ONTARIO MINISTRY OF NATURAL RESOURCES

The Ontario Ministry of Natural Resources (OMNR) runs nine provincial fish culture stations (FCS) located throughout Ontario. Fish health monitoring is undertaken annually on a facility level basis for fish reared in each fish culture station (Fig. 1) and for wild egg collections. Testing is completed at the University of Guelph, using a long standing partnership with the Fish Health Laboratory under the supervision of Dr. R. Stevenson. A tenth facility, Ringwood Fish Culture Station was leased to the Ontario Federation of Anglers and Hunters in 2006 using a Memorandum of Understanding. Fish health testing continues for fish held at Ringwood FCS under the OMNR contract with the Fish Health Laboratory at the University of Guelph.

The OMNR established a direct phone line for public reporting of fish die-offs and will respond to many reports using site visits and sample collections when possible. Samples collected from fish die-offs were sent to the University of Guelph using a partnership with the Fish Pathology Laboratory under the supervision of Dr. J. Lumsden. Where possible, surveillance sampling was done on lakes where die-offs had occurred in previous years. The surveillance samples were tested at the Fish Pathology Laboratory. In 2009, there were fewer large die-offs and no reportable diseases were associated with die-offs.



Figure 1. Location in Ontario of nine Ministry of Natural Resources hatcheries and Ringwood Fish Culture Station run by the Ontario Federation of Anglers and Hunters.

## Emergency and Restricted Fish Pathogens / Schedule II Detections

### *Aeromonas salmonicida*

*Aeromonas salmonicida*, the causative agent of furunculosis, was detected in one of sixty wild Chinook salmon collected from the Credit River in fall 2009. This is the first detection of *A. salmonicida* in this population in three years. *Aeromonas salmonicida* was also detected in wild coho salmon from Cobourg Creek (in one of eight fish) and from the Credit River (in thirteen of thirty fish). The Credit River and Cobourg Creek are tributaries to Lake Ontario.

### Koi Herpesvirus (KHV)

There were detections of koi herpesvirus (KHV) in carp from two lakes in the Kawartha Lakes region of Ontario. Carp that tested positive for KHV were collected in routine MNR trapnet surveys and were not from die-offs. KHV has been previously reported from carp in the Kawartha Lakes region of Ontario. Large die-offs of carp on Buckhorn Lake and Chemong Lake occurred in 2007 so the 2009 detections are not considered to be range extensions for KHV in Ontario.

Six carp were collected on May 26, 2009 in a trapnet survey of Buckhorn Lake. Two of the Buckhorn Lake carp had no signs of disease, three carp had mottled discoloration and one carp had hemorrhages. KHV was detected in two of the six fish. Testing was done at the University of Guelph Fish Pathology Lab by PCR. Of the fish that were positive, one fish had mottled discoloration and the other had hemorrhages. Sequencing was positive for KHV.

Seven carp were collected on June 3, 2009 in a trapnet survey of Chemong Lake. Only one fish had mottled discoloration and the other six showed no signs of disease. The positive detection of KHV was made from one of the fish with no obvious signs of disease. These fish were tested at the University of Guelph Fish Pathology Lab by PCR. Sequencing was positive for KHV.

### Viral Hemorrhagic Septicemia (VHS)

The only detection of Viral Hemorrhagic Septicemia (VHS) was from a yellow perch that was captured in a commercial gill net on October 6, 2009 in the west-central basin of Lake Erie. The site depth was 21.8m and water temperature was 16-17°C. The yellow perch was 244mm long and 169g round weight. It had a large lesion on the left side near the anal fin. Fewer than 0.5% of yellow perch in this area were reported to have similar lesions. VHS testing was done at the University of Guelph Fish Pathology Lab by PCR and lesions were consistent with VHS. It is also likely that this fish had a secondary bacterial infection. VHS has been previously reported from yellow perch in Lake Erie, although MNR has not tested fish from this location before.

### Unidentified virus - Chinook salmon

In the fall of 2008, a replicating, filterable agent was isolated from wild adult Chinook salmon from the Credit River, a tributary to Lake Ontario, during fall egg collections. Tissues from 60 carcasses were pooled for testing. Tests indicated that between 8 and 45 adult fish were positive for this virus. Eggs collected in 2008 were disinfected during water hardening and surface disinfected when brought into Ringwood FCS prior to the detection of the unidentified virus. Testing of stressed and non-stressed fry from each of the two days in which the virus was detected in adult Chinook salmon was done and no virus was detected. Testing was also done on

coho salmon fry that were held in very close proximity to the Chinook salmon fry and no virus was detected. There were no unusual mortalities in fry from these collections nor were there unusual mortalities in adult salmon in the Credit River or in Lake Ontario in 2008

In the fall of 2009, 79 Chinook salmon were collected from the Credit River and tested for this unidentified virus. No replicating agents were detected. Progeny from this collection will be tested for the unidentified virus since not all adults used for egg collection were submitted for viral testing. There were no reports of unusual mortality of Chinook salmon from Lake Ontario or the Credit River in 2009.

Testing for the unidentified virus was also done on a total of 25 wild Chinook salmon from the Beaver River, Saugeen River and Sydenham River, all tributaries to Lake Huron. No replicating agents were detected. Coho salmon from two Lake Ontario tributaries were also screened for the unidentified virus. Test results are pending for eight coho from Cobourg Creek and 30 coho collected from the Credit River.

To date, the virus has not yet been identified but work is ongoing. The virus is an RNA enveloped bacilliform rhabdovirus approximately 45nm X 128-140nm in size. Several genome segments of the virus were amplified and sequenced with no significant homology to any published viral genome. PCR testing showed this virus is not Infectious Hematopoietic Necrosis (IHN) virus, Spring Viremia of Carp (SVC) virus, or Viral Hemorrhagic Septicemia (VHS) virus. This virus does produce reproducible cytopathic effects (CPE) on RTG-2 cells but does not produce CPE on either CHSE-214 or EPC cell lines at 15°C. At higher temperatures (25°C or greater), CPE has been induced on EPC cells.

Small laboratory challenge experiments using rainbow trout fingerling given virus by IP injection produced no signs of disease or mortality. Mortalities did occur in coho salmon fry exposed to the virus by bath immersion, but no mortalities occurred with Chinook salmon fry exposed in the same way. The virus was isolated from dead and moribund coho salmon fry.

#### Unidentified virus - Atlantic salmon

A replicating agent was detected in reproductive fluids collected on October 20, 2009 from one family of Atlantic salmon from Lac Saint Jean, Quebec (female from Rivière-aux-Saumons and male from the Ashuapmushuan tributary to the Rivière-aux-Saumons). The eggs from this family were destroyed. The replicating agent was detected in cell culture using both CHSE-214 and EPC cell lines. PCR results were negative when the unidentified Atlantic salmon virus was compared with Infectious Pancreatic Necrosis (IPN) virus, Infectious Hematopoietic Necrosis (IHN) virus, Infectious Salmon Anemia (ISA) virus, Viral Hemorrhagic Septicemia (VHS) virus and the unidentified Chinook salmon virus. Preliminary investigation of this virus using electron microscopy suggests the virus is icosahedral shaped approximately 100nm, therefore it is not a rhabdovirus. Work to identify this virus is ongoing.

## Notifiable Agents

### Bacterial Gill Disease (BGD):

*Flavobacterium branchiophilum* was found in bacterial gill disease outbreaks at the following OMNR fish culture stations in 2009: Blue Jay Creek, Dorion, Hill's Lake, Harwood, and Normandale. For most outbreaks Halamid® was an effective treatment. There were outbreaks of bacterial gill disease at the OMNR Codrington Research Station in May and July. Hydrogen peroxide was effectively used to treat the outbreaks.

Severe outbreaks of BGD took place at Harwood FCS and Normandale FCS in young Atlantic salmon in 2009 with very high mortalities. Once the fish were heavily infected with *F. branchiophilum* it was difficult to treat the fish to bring the outbreaks under control. Thus, early identification of mild BGD and proper treatment is critical to reducing losses. It is apparent that gill tissue in Atlantic salmon is easily damaged and recovery is slow particularly in recurring outbreaks.

### *Renibacterium salmoninarum* and Bacterial Kidney Disease (BKD):

*Renibacterium salmoninarum* is considered to be endemic in Ontario and in OMNR fish culture facilities at low levels. Routine facility level monitoring is conducted annually using IFAT and detections are reported in Table 2 for 2009. There were no signs of bacterial kidney disease in fish with low to moderate numbers of bacteria.

It is unusual for high numbers of *R. salmoninarum* to be detected during routine monitoring of fish in the Ontario fish culture system. In 2009, there were high levels of bacteria detected at two stations with no gross pathology typical of bacterial kidney disease and no unusual mortality. Detections at Dorion FCS were made in January where 1 fish from each of 2 lots of lake trout brood fish had high numbers detected (each lot had low numbers detected in 2 fish) and in September in 2 fish from 1 lot of brook trout brood fish. At North Bay FCS detections were made in March in 8 of 32 rainbow trout (another 7 fish from the same lot had low numbers of bacteria).

An outbreak of bacterial kidney disease (BKD) occurred in spawning Atlantic salmon at Harwood FCS in the fall of 2009. Four lots of brood fish had high mortalities and lesions were observed in a few of the fish. Most of the mortalities were female. High levels of *R. salmoninarum* were detected in kidney and skin lesion samples. Surplus fish were culled. Remaining fish were treated with oxytetracycline (Oxysol-440) to reduce mortalities and antibiotic treatment will be ongoing as needed to prevent disease outbreaks and reduce the risk of transferring the bacteria to future offspring.

Adult fish are screened for *Renibacterium salmoninarum* by IFAT during wild egg collections each year. Low numbers of bacteria were detected in wild adults tested in October and November 2009 (Table 3).

Table 2: *Renibacterium salmoninarum* detections by IFAT in 2009.

<b>Fish Culture Station</b>	<b>Date</b>	<b>Species</b>
Blue Jay Creek	February	Lake trout
	September	Walleye
Chatsworth	January	Lake trout, brown trout
	November	Lake trout <sup>1</sup>
Chatsworth substation	January	Lake trout
Dorion	January	Lake trout <sup>2</sup> , brook trout, rainbow trout, splake
	September	Brook trout <sup>3</sup> , lake trout
	December	Lake trout
Harwood	January	Rainbow trout <sup>4</sup>
	February	Atlantic salmon
	October, November	Atlantic salmon*
Hills Lake	February	Aurora trout
Normandale	March	Rainbow trout <sup>4</sup>
	June, July	Atlantic salmon <sup>5</sup>
North Bay	March	Brook trout, rainbow trout <sup>6</sup>
	July	Rainbow trout
Tarentorus	February	Lake trout
	August	Splake, brown trout
White Lake	March	Walleye
	December	Splake, walleye
Ringwood	February	Coho salmon

\*Outbreak of bacterial kidney disease with clinical signs of disease and high mortality in four lots of spawning Atlantic salmon.

<sup>1</sup> Fish had moderate numbers of bacteria present.

<sup>2</sup> In addition to fish with low numbers of bacteria, there was one fish in each of 2 lots with high numbers of bacteria. There were no unusual mortalities or signs of disease.

<sup>3</sup> In addition to fish with low numbers of bacteria, there was one fish with high numbers of bacteria. There were no unusual mortalities or signs of disease.

<sup>4</sup> Fish had low to moderate numbers of bacteria present.

<sup>5</sup> Detected in one fish in quarantine unit.

<sup>6</sup> 8 of the 32 fish with *R. salmoninarum* had high numbers of bacteria present in June. There were no unusual mortalities or signs of disease.

Table 3: *Renibacterium salmoninarum* detections in low numbers by IFAT in 2009 wild adults used for egg collections.

<b>Wild broodstock population</b>	<b>Date</b>
Lake trout, Lake Simcoe	October
Lake trout, Michipicoten Island, Lake Superior	October
Lake trout, Charleston Lake	November
Coho salmon, Credit River	November
Lake whitefish, Lake Simcoe	November

### Miscellaneous Observations

#### Coldwater Disease/Fungal Infection:

A disease outbreak caused by concurrent infections of fungus and coldwater disease was diagnosed in spawning brown trout at Tarentorus FCS in December. Both diseases were extensive. Fish with severe fungus and lesions were culled. The remaining fish were treated with oxytetracycline (Oxysol-440) to reduce mortalities. The fungal infections were treated using Parasite-S. Antibiotic treatment for the coldwater disease is being considered.

#### Fungal Infection:

In addition to the severe fungal infection at Tarentorus FCS noted above, problematic fungal infections also occurred at Harwood FCS in Atlantic salmon in July and September and at Hill's Lake FCS in rainbow trout in October.

#### Chlamydia-like Organisms (CLO):

Chlamydia-like Organisms (CLO) continue to be a problem for fish Ontario fish culture stations. Atlantic salmon with CLO were diagnosed in July at Harwood FCS. Fish were isolated until the infection was no longer present. Very high losses of four month old hybrid brook trout diagnosed with CLO occurred at Tarentorus FCS in May. CLO was also diagnosed in young of the year brook trout at Tarentorus FCS in May. Three month old lake trout with fusion of gill filaments typical of CLO at Blue Jay Creek FCS experienced higher than normal mortalities beginning in March and continuing into May. It is likely these fish were infected with CLO. Rainbow trout at Blue Jay Creek FCS were diagnosed with CLO in August. There is no known treatment for CLO although work continues in collaboration with the University of Guelph Fish Pathology Lab to better identify and find an effective treatment for CLO.

#### Nodular Gill Disease:

Nodular gill disease was diagnosed and treated at Blue Jay Creek FCS (lake trout in January) and at Harwood FCS (Atlantic salmon in July).

## SALMONID IMPORTATION REPORT - 2009

### Imports of Salmonid Eggs into Great Lakes Basin from January 1-December 31, 2009

	Source	Species	Number	Age/Size	Health Status	Certification Date	Official	Lake Basin
1	Washington, USA.	Rainbow trout	360,000	Eyed eggs	A	2008.10.21	K.R. Snekvik	Huron
2	Washington, USA.	Rainbow trout	290,000	Eyed eggs	A	2008.10.21	K.R. Snekvik	Huron
3	Washington, USA.	Rainbow trout	600,000	Eyed eggs	A	2008.12.05	K.R. Snekvik	Huron
4	Washington, USA.	Rainbow trout	150,000	Eyed eggs	A	2008.12.05	K.R. Snekvik	Huron
5	Washington, USA.	Rainbow trout	200,000	Eyed eggs	A	2008.12.05	K.R. Snekvik	Erie
6	Washington, USA.	Rainbow trout	67,000	Eyed eggs	A	2008.12.05	K.R. Snekvik	St. Lawrence River basin
7	Washington, USA.	Rainbow trout	13,000	Eyed eggs	A	2008.12.05	K.R. Snekvik	St. Lawrence River basin
8	Prince Edward Island, Canada	Atlantic salmon	750	Juvenile (0.3-1.0gr)	A	2008.09.19	A.-M. MacKinnon	Erie
9	Washington, USA.	Rainbow trout	100,000	Eyed eggs	A	2008.12.05	K.R. Snekvik	St. Lawrence River basin
10	Washington, USA.	Rainbow trout	600,000	Eyed eggs	A	2008.12.05	K.R. Snekvik	Huron
11	Washington, USA.	Rainbow trout	410,000	Eyed eggs	A	2009.06.12	K.R. Snekvik	Huron
12	Washington, USA.	Rainbow trout	300,000	Eyed eggs	A	2009.06.12	K.R. Snekvik	Huron
13	Washington, USA.	Rainbow trout	600,000	Eyed eggs	A	2009.06.12	K.R. Snekvik	Huron
14	Washington, USA.	Rainbow trout	450,000	Eyed eggs	A	2009.10.02	K.R. Snekvik	Huron
15	Saint-Felicien, Quebec	Atlantic salmon	34,884	Green eggs	*			

\* Uncertified eggs were imported into the quarantine unit at Normandale FCS with approval by Fisheries and Oceans Canada pursuant to Section 4 of the *Fisheries Act* for Canada using two Import Permits. Eggs were imported in October.

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## OMNR FISH CULTURE STATION CLASSIFICATION REPORT – 2009

**Report period: January 1-December 31, 2009**

Hatchery	Location	Pathogen Acronym: Emergency and Restricted Detections
Blue Jay Creek Fish Culture Station Sandfield substation	Tehkummah	B2-BK(12/09), BF-T(7/08), BR-T(7/08) B2-BK(12/09), BF-T(7/08), BR-T(7/08)
Chatsworth Fish Culture Station Substation 3 Quarantine Units	Chatsworth	B2-BK(12/09) B2-BK(12/09) C
Dorion Fish Culture Station Substation	Dorion	B2-BK(12/09) B2-BK(12/09)
Harwood Fish Culture Station	Harwood	B2-BK(12/09)
Hill's Lake Fish Culture Station	Englehart	B2-BK(12/09)
Normandale Fish Culture Station Substation 3 Quarantine Units	Vittoria	B2-BK(12/09) B2-BK(12/09) C
North Bay Fish Culture Station	Redbridge	B2-BK(12/09)
Tarentorus Fish Culture Station	Sault Ste. Marie	B2-BK(12/09), BF(7/08), BR(7/08)
White Lake Fish Culture Station	Sharbot Lake	B2-BK(12/09)
Ringwood Fish Culture Station	Stouffville	C1(12/08)-BK(12/09)

### Restricted Fish Diseases

<b>Disease</b>	<b>Causative Pathogen</b>	<b>Pathogen Acronym</b>
Bacterial kidney disease	<i>Renibacterium salmoninarum</i>	BK
Furunculosis	<i>Aeromonas salmonicida</i>	BF
Enteric redmouth	<i>Yersinia ruckeri</i>	BR

Report prepared by: Elizabeth Wright  
Title: Coordinator, Fish Health and Aquaculture  
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## Pennsylvania Fish and Boat Commission

### Annual Hatchery Classification and Importation Report

January 1, 2009 – December 31, 2009

Due to limited staff, annual fish health inspections were not completed at all Pennsylvania Fish and Boat Commission hatcheries in 2009.

As of 12/31/2009 annual fish health inspections have been completed at nine of Pennsylvania's 14 state fish hatcheries (SFH). Inspections were conducted at all PFBC facilities that stock fish into the Great Lakes Basin.

No emergency pathogens were detected in any wild or production fish in 2009.

#### Restricted Pathogens

*Aeromonas salmonicida* with varying antibiotic resistance was confirmed at five PFBC hatcheries while conducting diagnostic examination and fish health inspections. These findings however did not result in a change in hatchery classification since the restricted pathogen was already known to be present. Vaccination, improved biosecurity, and changes in hatchery SOPs should help to control mortality due to *Aeromonas salmonicida*

**Infectious pancreatic necrosis** was detected at four PFBC hatcheries in 2009. Diagnostic examination found clinical levels of IPNV at the Huntsdale SFH. Mortalities were minimal and the outbreak appeared to be linked to *Flavobacter columnare* epizootic. Fish were treated for Columnaris and the mortalities decreased. Historically, IPNV at the Huntsdale hatchery has been controlled through pair spawning; this process along with an increased emphasis on biosecurity should in theory help to prevent future IPNV outbreaks.

*Myxobolus cerebralis* spores were detected using Pepsin-Trypsin digest procedure at the Tylersville SFH and Benner Spring SFH, confirmation using PCR is ongoing. No mortality was attributed to the presence of *Myxobolus cerebralis*.

*Renibacterium salmoninarum* was detected at two PFBC hatcheries. Detection was made using indirect FAT, during routine monitoring. No mortalities were attributed to BKD at any PFBC facilities. *Renibacterium salmoninarum* was also detected in the Lake Erie STT wild brood fish.

**Epizootic Epitheliotropic Disease virus (EEDv)** was detected in all lots of production lake trout at the Pleasant Mount State Fish Hatchery (SFH). The hatchery is located in the upper Delaware River Basin. In October of 2009 the PFBC was notified that the Wyoming Game and Fish Department (WGFD) Story Hatchery had been confirmed positive for EEDv. This notification was later distributed to GLFHC members via e-mail on November 9, 2009. The PFBC has been receiving eyed eggs from WY since 1998. Following notification, the PFBC collected samples from three lots of LAT at its Pleasant Mount

hatchery. Samples were sent to the UC Davis lab to be analyzed by Dr. Hedrick and his staff. Results confirming the presence of EEDv were received on November 27, 2009. A decision regarding the fate of these fish is pending. In response to the EEDv detection the PFBC suspended all shipments of LAT eggs from WY. The PFBC plans on monitoring its Lake Erie LAT population for EEDv. In addition the PFBC plans on testing all Pennsylvania waters outside of the Great Lakes basin that have historically received LAT stockings.

### **PFBC Cooperative Nurseries.**

Viral monitoring was completed at seven PFBC cooperative nurseries within the Lake Erie drainage and a complete fish health inspection was conducted at one nursery site. No fish reportable pathogens were detected at these cooperative nurseries.

### **Lake Erie Winter Steelhead**

Ovarian fluid and milt samples were collected from 995 Lake Erie winter steelhead broodstock spawned at the Fairview State Fish Hatchery. Samples were analyzed at the Penn State University Animal Diagnostic Laboratory (PSUADL). All samples were negative for IPNV and other viral fish pathogens. In addition, kidney and spleen tissues were sampled from 60 adult Lake Erie winter steelhead brood fish as part of the Fairview SFH annual fish health inspection. Samples were analyzed for viral pathogens at the USFWS Northeast Fish Health Center. No viral pathogens were detected in these samples. Whirling disease assay results are pending. PFBC Fish Health Unit staff detected *Renibacterium salmoninarum* in 10 of the 60 (16.7 %) Lake Erie winter steelhead broodstock using direct fluorescent antibody test (FAT). All Lake Erie steelhead brood examined in 2008 were negative for *Renibacterium salmoninarum*, and the restricted pathogen was detected in 1 of 60 (1.6%) Lake Erie steelhead brood sampled in 2007.

### **Wild Brood Monitoring**

Depending on the species and availability of fish, lethal or non-lethal sampling techniques were employed to monitor for viral pathogens in all lots of wild brood fish used for production by the PFBC. To date, wild broodstock monitoring has taken place in seven bodies of water located in the Delaware River drainage, the Ohio River drainage and the Lake Erie drainage. Species sampled include steelhead trout, walleye, yellow perch, white crappie, bluegill, muskellunge, northern pike, smallmouth bass, fathead minnow, American shad, and golden shiner. Except for steelhead, the other species sampled were collected from waters outside of the Lake Erie drainage. However, since either these fish and/or their eggs are being brought into the PFBC production system, this preventative activity is applicable to this report. No viral pathogens have been detected.

## Disease Prevention Activities

Currently, all PFBC hatcheries involved in the production of cool/warm water species are following the GLFHC Basinwide Coolwater Egg Disinfection Protocol.

In June 2009, The PFBC Administrative policy # 2009-001 was placed into affect. The policy addressed biosecurity measures for commission operations, facilities and equipment. Included in the policy are protocols developed to reduce the threat presented by aquatic invasive species for its field operations, fish production and disease monitoring procedures.

## Salmonid Importation 2009

Source	Species/Number	Fish/Egg Size	Fish Health Status	Certification		Lake Basin
				Date	Official	
USFWS N.E. Fisheries Center Lamar, PA	BKT 16,000 RBT 28,000	Yearling	BF, VP	08/07/2009	John Coll	Inland
NY state hatchery Catskill	BNT 100,000	Eggs	A	9/2/09	A. Noyes	Erie
Erwin National Fish Hatchery	RBT 140,000	Eggs	A	4/22/09	Norman Hiel	Inland

## Proposed Salmonid Importation 2010

Source	Species/Number	Fish/Egg Size	Fish Health Status	Certification		Lake Basin
				Date	Official	
USFWS N.E. Fisheries Center Lamar, PA		Yearling	BF, VP	08/07/2009	John Coll	Inland
NY state hatchery Catskill	BNT	Eggs	A	9/2/09	A. Noyes	Erie
Erwin National Fish Hatchery	RBT 140,000	Eggs	A	4/22/09	Norman Hiel	Inland

**Pennsylvania Fish and Boat Commission  
2009 GLFHC Hatchery Classification report**

Hatchery	Location	Disease Classification	Date
Bellefonte SFH	Bellefonte	C- BF08 <sup>TMR,ROR</sup> ,BK08, SW 05, VP08	5/14/2008
Benner Spring SFH	State College	C- BF09 <sup>ROR</sup> ,BK08, VP09, SW09	5/19/2009
Corry SFH	Corry	C- BF09,BK06, VP09	7/8/2009
Fairview SFH	Fairview	B- (BK09), (VP08)	2/4/2009
Huntsdale SFH	Huntsdale	C- BK08, VP09	9/15/2008
Linesville SFH	Linesville	B- (BK09), (VP08)	1/5/2009
Oswayo SFH	Oswayo	C- BF08, BK08, VP08	8/19/2008
Pleasant Gap SFH	Pleasant Gap	C- BF09 <sup>TMR,ROR</sup> , BK08,VP08	9/2/2008
Pleasant Mount SFH	Pleasant Mount	B- VL09	7/23/2009
Reynoldsdale SFH	Reynoldsdale	C- BF09 <sup>TMR</sup> , SW06, VP08	4/29/2008
Tionesta SFH	Tionesta	B- (BK09), (VP08)	7/29/2009
Tylersville SFH	Tylersville	C- BF09 <sup>ROR</sup> ,BK09, VP09, SW09	9/15/2009
Union City SFH	Union City	C	7/29/2009
Van Dyke SFH	Van Dyke	C	5/20/2009

**Cooperative Nurseries**

Eagley 3CU	Fairview	C	2/4/2009
Mitchel 3CU	Girard	C	2/4/2009
Ro-Ze 3CU	Girard	C	2/4/2009
Saures 3CU	Sterretania	C	2/10/2009
Mission 3CU	Girard	C	2/4/2009
Peck 3CU	Fairview	C	2/10/2009
Wesleyville	Wesleyville	C	2/10/2009

**Wild Brood**

Steelhead trout	Lake Erie	C - BF07, BK09, VP08	2/10/2009
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Disease	Pathogen	Abbreviation
Whirling disease	<i>Myxobolus cerebralis</i>	SW
Infectious Pancreatic Necrosis	IPN virus	VP
Bacterial Kidney Disease	<i>Renibacterium salmonarum</i>	BK
Epizootic Epitheliotropic Disease	<i>EED virus</i>	VL
Furunculosis	<i>Aeromonas salmonicida</i>	BF

TMR -Terramycin Resistant,-ROR Romet Resistant

Report Prepared By: Coja Yamashita  
 Title: Fisheries Biologist  
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## State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor  
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11 January 2010

### Annual Report to the GLFHC for the year 2009

We had mostly good news for 2009. No new isolations of VHS from Lake Michigan occurred, but we have consistently isolated VHSv in the smallmouth bass population in the Sturgeon Bay area during the spring each year since 2007. There has never been an epizootic; viral isolations were made from 44 SMB collected for surveillance and two diagnostic cases where fish had external signs of disease.

We again participated in the USDA-APHIS VHS surveillance program and tested fish in 27 locations (170 fish per site) in 2009, including Lake Winnebago and no virus was detected by tissue culture. We plan to test archived kidney and spleens from the drum and walleye collected from Lake Winnebago for VHSv using the real time PCR method. Since 2007 there have been no VHS outbreaks in Lake Winnebago in any species. Lake trout and lake whitefish from Lake Superior tested negative for VHS in Fall 2009. In 2010, we will participate in the APHIS surveillance project again, testing fish from 27 sites (150 per site) and plan to include testing of wild baitfish species as part of the project. We have hired Nick Legler as a one year project person to coordinate the APHIS project and manage the WDNR's baitfish harvest permit system.

Our furunculosis vaccination program continues to work very well to control this disease at two of our rearing stations. We have vaccinated fish for the past 14 years. The vaccination uses a 30 second dip in an autogenous vaccine made for us by Microtechnologies in Richmond Maine. As long as the skin and fins are not eroded or abraded, we get excellent protection from infection by *A. sal* in vaccinated fish. In 2009 we did not isolate *A. sal* from the Thunder River hatchery, but did detect it in one pond of brown trout at the Brule hatchery and the isolate was resistant to TM. Although the number of fish reared at Brule was reduced from 2008, it was still higher than in previous years when no *A. sal* was detected.

For the second year, we have not isolated or detected *R. sal* in Coho reared at our new Wild Rose hatchery. I feel that this is related in part to rearing the fish under less crowded conditions during early rearing and having a very fast water velocity (short turnover times) during grow out, which may reduce the contact time between the bacteria and the fish, and thus impede successful infection of the fish.

The prevalence of *A. sal* and *R. sal* in adult Coho at our spawning weirs decreased markedly in 2009 from past years. In some years, prevalence of *A. sal* has been as high as 25% and *R. sal* has ranged from 10-50% based on culture. *A. sal* and *R. sal* were not isolated from Chinook salmon at Strawberry Creek spawning weir. In general, adult fish were slightly larger than they have been in recent years. We continue to see a moderate amount of Ich at the Besadny Spawning facility on the Coho and less intensity at the Root River.

We tested the kidney and spleen homogenates collected for routine virology to test spawning Chinook, Coho, lake trout, lake whitefish, brook trout and brown trout from Lake Michigan and Lake Superior and inland streams for *Nucleospora salmonis* using the improved PCR assay. *N. sal* DNA was not

detected in any group. The Wisconsin Veterinary Diagnostic Lab ran the test for us, and Dr Hui-Min Hsu commented that some groups of fish produced a series of extra bands, one of which was very close to the size of the N sal. positive control band. She and others who have used the assay agree that although some of the problems with the N sal PCR assay have been resolved, there is still a need to keep working on this so that consistent results can be obtained among labs.

Ron Hedrick's research on EEDv to develop a PCR assay for EEDv has been completed, and as is often the case, more questions about the pathogen, its etiology and improvements to the PCR assay (q PCR!) have arisen. We hope that he will be able to continue this work collaborating with the La Crosse and Lamar Fish Health Centers. Ron and his lab are terrific to work with and a lot of fun, too.

Having the EEDv PCR assay available has offered us the chance to test several groups of fish for the virus. Ovarian fluids, kidneys and fin snips were collected from lake trout and splake from the Les Voigt hatchery, spawning lake trout from the Apostle Islands, spawning lake whitefish from Lake Superior and spawning lake trout from Trout Lake WI for testing by the new EEDv PCR method at the La Crosse Fish Health Center. When the results are reported, I will send everyone a summary by e-mail. We are currently doing a small experiment that compares detecting EEDv DNA in lake trout fry at the Les Voigt hatchery from two groups. One group of fry was hatched from lake trout eggs that were water hardened in 75 ppm iodophor for 1 hour. The second group of fry was hatched from lake trout eggs that were water hardened in well water and surface disinfected with 100 ppm iodophor for 15 minutes. Eggs from both groups were given a second surface disinfection (100 ppm 15 minutes) at the hatchery before the eggs were put up. The eggs were collected and spawned individually from 10 females and 10 males and the eggs from each pair were divided between the two test groups. We have ov fluids and milt from each of the parents to test for EEDv so we will know that at least some of the parents were infected. I will report on the results from this comparison by e-mail later this year.

We imported the Arlee strain of rainbow trout from the Erwin NFH in Erwin TN. In the past, we obtained Arlee RBT eggs from Ennis MT, but due to concerns about cutthroat trout virus and Nucleospora, we chose not to get eggs from Ennis in 2008. We were very happy to obtain eggs from Erwin NFH- the Arlee RBT provide a really nice nearshore fishery for anglers with smaller boats, or those who fish from the piers.

We again provided Chinook eggs and milt from our weir at Strawberry Creek for genetic studies at the Western Fisheries Research Center in Seattle. The gametes will be used in a study to see if there is a genetic basis for tolerance/resistance to R sal infections in Lake Michigan Chinook vs Pacific West Coast Chinook. Maureen Purcell and Diane Elliott are the co-PI's for the study funded by the GLFT. Over the past 10 years or so, the Seattle lab has repeatedly observed that progeny of Lake Michigan Chinook survive R sal challenges far better than West Coast progeny. Experiments to create siblings and half siblings of different strains of Chinook and challenge them with R sal will hopefully show whether certain genes are responsible for this observation (and much more besides). Maureen and her co-authors received an AFS journal award for their preliminary paper on this topic, which I have attached.

Respectfully submitted,

Susan Marcquenski

Forwarded by Maureen Purcell/BRD/USGS/DOI on 06/24/2009 09:46 AM -----

From: "Gail Goldberg" <ggoldberg@fisheries.org>  
To: <mpurcell@usgs.gov>  
Cc: <Linda\_Beck@fws.gov>  
Date: 06/24/2009 09:38 AM  
Subject: AFS Best Paper Award

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Dear Maureen,

Congratulations on being selected to receive an American Fisheries Society 2008 Publications Award. Each year one outstanding paper is selected from each of the society's journals to receive this award. Your publication, "*Decreased Mortality of Lake Michigan Chinook Salmon after Bacterial Kidney Disease Challenge: Evidence for Pathogen-Driven Selection?*" in the Journal of Aquatic Animal Health was selected. I am writing regarding the details of your award and meeting logistics.

This year the 139th Annual Meeting of the American Fisheries Society will be held in Nashville, Tennessee. I hope that you will be able to attend the meeting and receive your award in person. The award will be presented during the business meeting session, Tuesday, September 1, 2009, from 3:30 p.m. to 5:30 p.m. in the Grand Ballroom of the Renaissance Hotel. You are also invited to attend the award winner's luncheon that same day at noon in the Ryman room, Renaissance Hotel.

At your earliest possible convenience, please contact Gail Goldberg ([ggoldberg@fisheries.org](mailto:ggoldberg@fisheries.org)) to let her know if you will be able to attend. Please also submit a digital photograph that AFS may use for publicity purposes.

Sincerely,

Bill Franzin  
President, American Fisheries Society

**Gail S. Goldberg**  
Unit Services Coordinator  
5410 Grosvenor Ln. Ste 110  
Bethesda, MD 20814  
301-897-8616 X201

Join us in Nashville for science, fun, and friendship. Register for the 2009 Annual AFS Meeting on <http://www.fisheries.org/afs09/reg.html>

**HATCHERY CLASSIFICATION REPORT**  
**Wisconsin- Wild Broodfish**

**Report Period:** January 1 to December 31 2009      **Report Date:** January 11, 2010

Hatchery Name	Location	Pathogen Acronym
BAFF	Kewaunee	B-BF, BK
Root River	Racine	B-BF
Strawberry Creek	Sturgeon Bay	B-(BK)
Lake Superior	Apostle Islands	B-(BK) VL

**Report Prepared by:** Susan Marcquenski  
**Title:** Fish Health Specialist  
**Phone Number:** 608.266.2871

**EMERGENCY FISH DISEASES**

Disease	Disease Pathogen	Disease Acronym	Pathogen Acronym
viral hemorrhagic septicemia	virus	VHS	VE
infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i>	CS	SC*
proliferative kidney disease	sporozoan	PKD	SP*

**RESTRICTED FISH DISEASES**

whirling disease	<i>Myxobolus cerebralis</i>	WD	SW
infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i>	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i>	BF	BF
enteric redmouth	<i>Yersinia ruckeri</i>	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL**

\* Inspectors within the Great Lakes basin do not need to include these pathogens unless importations of fish from enzootic areas are known to have been made.

\*\* based on UC-Davis EEDv PCR assay

## HATCHERY CLASSIFICATION REPORT Wisconsin

**Report Period:** January 1 to December 31 2009      **Report Date:** January 11, 2010

Hatchery Name	Location	Pathogen Acronym
Les Voigt (formerly Bayfield)	Bayfield	B-VL
Brule	Brule	B-BF TM resistant A. sal
Kettle Moraine Springs	Adell	B-(BK)
Lake Mills	Lake Mills	B-(BK)
Lakewood	Lakewood	A-2
Langlade	White Lake	Not in operation 2009
Nevin	Fitchburg	A-1
Osceola	Osceola	A-1
St. Croix Falls	St.Croix Falls	A-1
Thunder River	Crivitz	A-2
Wild Rose (new hatchery)	Wild Rose	C, A-1

**Report Prepared by:**     Susan Marcquenski    

**Title:**     Fish Health Specialist    

**Phone Number:**     608.266.2871    

### EMERGENCY FISH DISEASES

Disease	Disease Pathogen	Disease Acronym	Pathogen Acronym
viral hemorrhagic septicemia	virus	VHS	VE
infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i>	CS	SC*
proliferative kidney disease	sporozoan	PKD	SP*

### RESTRICTED FISH DISEASES

whirling disease	<i>Myxobolus cerebralis</i>	WD	SW
infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i>	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i>	BF	BF
enteric redmouth	<i>Yersinia ruckeri</i>	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL**

\* Inspectors within the Great Lakes basin do not need to include these pathogens unless importations of fish from enzootic areas are known to have been made.

\*\* based on UC-Davis EEDv PCR assay

# SALMONID IMPORTATION REPORT

## WISCONSIN

Agency: WI Department of Natural Resources

Reporting Period: January 1 to December 31 2009

### I A.. Known importations since last report.

	<u>Source</u>	<u>Species/Number</u>	<u>Fish/Egg Size</u>	<u>Fish Health_ Status</u>	<u>Certification Date</u>	<u>Certifying Official</u>	<u>Lake Basin</u>
1.	Erwin NFH TN	Arlee RBT 176,000	eggs	SPF	October 2009	Norm Heil	Michigan
2.	Fleming College Ontario	spotted musky 324	6 inch fish	SPF	October 2009	Steve Lord	Michigan
3.							
4.							
5.							

### B. Proposed importations for 2009

	<u>Source</u>	<u>Species/Number</u>	<u>Fish/Egg Size</u>	<u>Fish Health_ Status</u>	<u>Certification Date</u>	<u>Certifying Official</u>	<u>Lake Basin</u>
1.	Erwin NFH TN	Arlee RBT 176,000	eggs	SPF	October 2009	Norm Heil	Michigan
2.							
3.							
4.							

**U.S. Fish and Wildlife Service—Midwest Region**  
**2009 Agency Report to the**  
**Great Lake Fish Health Committee**  
(Prepared: January 11, 2010)



The La Crosse Fish Health Center (LFHC) provides fish health and diagnostic services for the U.S. Fish and Wildlife Service's (USFWS) Midwest Region, covering eight states. The center processed 261 cases in 2009, including fish health inspections at federal and tribal fish hatcheries, post-mortem diagnostics, assistance to state agencies, and wild fish sampling as part of the National Wild Fish Health Survey.

### **HATCHERY INSPECTIONS**

**Federal Facilities.** Historically, the LFHC has conducted two fish health inspections annually at the six National Fish Hatcheries (NFH) in the Midwest Region. This continued in 2009. More than 6000 fish tissue and fluid samples were screened at the La Crosse Fish Health Center for nine certifiable fish pathogens as listed in the USFWS Aquatic Animal Health Policy and the Great Lakes Fish Disease Model Program. No certifiable fish pathogens were detected in 2008, allowing each facility to maintain Class A status. The Iron River NFH (Iron River, WI), Jordan River NFH (Elmira, MI), Pendills Creek (Brimley, MI), and Sullivan Creek NFH (Brimley, MI) are located within the Great Lakes Basin, while the Genoa NFH (Genoa, WI) and Neosho NFH (Neosho, MO) are located outside of the Great Lakes Basin.

Four hundred forty-six (446) fish tissue samples were collected from fish captured in the streams supplying water to Iron River NFH (Schacte Creek), Jordan River NFH (5 & 6 Tile), Pendills Creek (Videan's Creek) and Sullivan Creek NFH (Sullivan Creek) and screened for seven (7) pathogens listed in the USFWS Aquatic Animal Health Policy and the Great Lakes Model Program. No pathogens were detected.

For the third consecutive year, the LFHC conducted a fish health inspection on walleye reared at the Rydell NWR in Eskine, MN. No pathogens were detected. Walleye reared at Rydell NWR are primarily stocked into tribal waters of Minnesota.

**Tribal Facilities.** The LFHC conducted a fish health inspection at each of the following tribal fish hatcheries in 2009: Grand Portage (Grand Portage, MN), Keweenaw Bay (L'Anse, MI), Lac du Flambeau (Lac Du Flambeau, WI), and Red Cliff (Bayfield, WI). Fish pathogens were not detected during the fish health inspections at the tribal hatcheries in 2009. The Keweenaw Bay, Lac Du Flambeau, and Red Cliff facilities maintained their Class A status. Because the fish health inspection at the Grand Portage TFH was only the facility's second (the first inspection occurred in 2008), an additional fish health inspection in 2010 will be required for the hatchery to attain Class A status under USFWS and GLFHC guidelines.

In 2008, the center assisted the Lac Courte Orielles (WI) tribal fish hatchery with screening walleye for viral hemorrhagic septicemia virus (VHSv). Fertilized eggs from Big Lac Courte Orielles Lake were received at the Northern Aquaculture Demonstration Facility (Bayfield, WI),

Genoa NFH and Lac Courte Orielles TFH (Hayward, WI). Prior to stocking as fry into tribal waters, the walleye were screened at each facility. Viral hemorrhagic septicemia virus was not detected during the screening.

## DIAGNOSTIC CASES

Five (5) disease outbreaks at federal, state and county rearing facilities were investigated by La Crosse FHC staff and involved the following species: bluegill, brook trout, lake sturgeon, lake trout, and walleye. The La Crosse FHC also assisted with the investigation of 10 fish kills in wild populations including the following species: black crappie, bluegill, channel catfish, common carp, northern pike, largemouth bass, northern pike, rock bass, and yellow perch. Nutritional deficiencies, parasites, or the bacteria *Aeromonas hydrophila* were the most common the cause of mortality. Of the pathogens identified by the La Crosse FHC in 2008, the microsporidean parasite *Nucleospora salmonis* as the cause of lake trout fry mortality at the Jordan River NFH in Elmira, MI was the most significant. As required in the GLFHC Model Program, the La Crosse FHC reported these findings to Gary Whelan (GLFHC chair) and Beth Wright (GLFHC vice-chair) in a letter dated September 29, 2008. A description of the Jordan event follows.

**Nucleospora salmonis at Jordan River NFH and Follow-Up.** Although the *N. salmonis* is believed to be ubiquitous world-wide, the identification of *N. salmonis* at Jordan River NFH was the first report within the Great Lakes basin. In North America, *N. salmonis* has been detected in hatchery-reared and wild fish from the Pacific Northwest, including Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*O. mykiss*) from the Pacific Northwest.

The first detection of the microsporidean in the Great Lakes Basin was at Jordan River NFH, a lake trout (*Salvelinus namaycush*) hatchery located near Elmira in Lower Michigan. *N. salmonis* was initially diagnosed in lake trout fry at Jordan River NFH in June, 2004, and again in fry in April of 2008. A slight increase in mortality was observed during the 2004 event; the mortality in 2008 was more significant. All lots of lake trout at Jordan River NFH tested positive for *N. salmonis*, but the outbreak appears to be stress related. The sub-lot of Lewis Lake-strain lake trout that was significantly affected in 2008 was initially reared in an outside metal building and was subjected to poor rearing conditions, including second-pass water from the main hatchery building and high densities. This sub-lot of fish was destroyed to limit possible transmission to other fish at the hatchery. Mortality was not observed in fish reared inside the main building. Jordan River NFH has a history of bacterial gill disease. It is likely that *N. salmonis* was present at Jordan River NFH prior to the initial diagnosis in 2004, but had been diagnosed as bacterial gill disease, or bacterial gill disease may have been a concurrent disease.

Jordan River NFH receives eggs from Iron River NFH (WI), Saratoga NFH (WY), and Sullivan Creek NFH (MI). The Five-tile and Six-tile springs serve as the source of water for Jordan River NFH. *Nucleospora salmonis* was not detected in tissue samples collected from Saratoga NFH. However, *N. salmonis* was detected in tissue samples collected from Iron River NFH and Sullivan Creek NFH lake trout brood stock. *Nucleospora salmonis* was also detected trout collected from the water supplies at Iron River NFH, Jordan River NFH, and Sullivan Creek NFH.

Pendills Creek NFH is a lake trout production facility located near Brimley in the Upper Peninsula of Michigan that receives lake trout fry from Iron River NFH and Jordan River NFH. Videans Creek is the water source for Pendills Creek. Two lots of lake trout were transferred to Pendills Creek NFH from Jordan River NFH in the summer of 2008. Because of raceway construction at Pendills Creek NFH, the fish were being reared in crowded conditions. One lot of lake trout had shown a slight increase in mortality and tested positive for *N. salmonis*; the remaining lot of lake trout from Jordan River was not tested. Lake trout lots had not been received from Iron River NFH at the time of testing. Tissue samples for *N. salmonis* testing were not taken from Videan's Creek.

## WILD FISH HEALTH SURVEY

The La Crosse FHC collected tissue and fluid samples from more than 2,300 warm, cool, and cold water fish. The fish were collected from 27 different sites in the Great Midwest Region. These numbers do not include wild carp samples collected as part of the LFHC's SVCv surveillance program, or tissue samples collected by partners and sent to the center for analysis.

**Viral Hemorrhagic Septicemia Virus in Sea Lamprey.** In June, 2008, 60 sea lamprey specimens were euthanized at the U. S. Geological Survey Hammond Bay Biological Station and shipped on ice overnight to the La Crosse FHC. The animals were collected during routine sea lamprey trapping operations in the Cheboygan River, Green Creek, and the Ocqueoc River in Michigan. Five-fish pools (12 samples) of kidney tissues were collected from the lamprey and processed according to the U.S. Fish and Wildlife Service and American Fisheries Society Fish Health Section (AFS-FHS) Standard Procedures for Aquatic Animal Health Inspections (2007 edition). Tissue samples were limited to kidney because lamprey lack spleens and lamprey liver tissue contains high levels of bile salts, which are toxic to VHSV. Replicate samples were incubated on EPC and CHSE-214 cell lines at 15°C. Cell culture results were confirmed using PCR. Although the USDA- Animal Plant Health Inspection Service (APHIS) National Veterinary Services Laboratory (NVSL) in Ames, IA confirmed the La Crosse FHC results, they were unable to culture the virus from the original tissue samples. For that reason, APHIS chose not to add sea lamprey to the VHSV-IVb susceptible species list.

**Spring Viremia of Carp Virus.** In 2006, the USFWS began a joint effort with USDA to determine the distribution of spring viremia of carp virus (SVCv) in the United States. The La Crosse FHC is responsible for efforts in the Midwest Region. Kidney, spleen, and serum samples were collected from more than 1900 common carp, big head carp, silver carp, and grass carp as part of the surveillance effort by the La Crosse FHC in 2008. SVCv was not detected in the 8-state Midwest Region in 2008.

## ASSISTANCE TO STATES

Primarily through reimbursable agreements, the La Crosse FHC provided laboratory support state natural resource agencies in Illinois, Minnesota, Ohio, and Wisconsin. State personnel send fish tissue samples to the La Crosse FHC to screen for bacterial, viral, and/or parasitic fish pathogens as required by the applicable policies, including the USFWS Aquatic Animal Health Policy, Great Lakes Model Program, and numerous individual state policies.

Assistance from the La Crosse FHC to state agencies resulted in the following pathogen isolations: VHSV-IVb from Lake Michigan (IL) rockbass (*Ambloplites rupestris*) and round goby (*Neogobius melanostomus*) Clear Fork Reservoir (OH) muskellunge (*Esox masquinongy*), Lake Michigan (WI) yellow perch (*perca flavescens*). Clinical disease was not observed in the species sampled. However, round goby mortality was observed in the Wisconsin waters of Lake Michigan in the vicinity of where the yellow perch were collected.

The isolation of VHSV-IVb from Clear Fork Reservoir (OH) muskellunge was significant because it was the first isolation of the virus outside of the Great Lakes Basin. The Clear Fork Reservoir drains to the Ohio River via the Clear Fork, Mohican and Muskingum rivers. VHSV was not detected during follow-up sampling in the drainage. However, the Lamar FHC detected SVCv in bluegill and largemouth bass from the Pleasant Hill Reservoir.

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# HATCHERY CLASSIFICATION REPORT

## U.S. FISH AND WILDLIFE SERVICE

### MIDWEST REGION

**Report Period:** January 1, 2009 to December 31, 2009 **Report Date:** 01/11/2010

<b>Hatchery Name</b>	<b>Location</b>	<b>Classification</b>
Genoa NFH	Genoa, WI	Class A (08/1/2009)
Genoa Isolation Facility (East)	Genoa, WI	NA (received eggs Fall 2009)
Genoa Isolation Facility (West)	Genoa, WI	NA (07/30/2009)
Grand Portage TFH	Grand Portage, MN	NA <sup>2</sup> (10/13/2009)
Iron River NFH	Iron River, WI	Class A (08/03/2009)
Jordan River NFH	Elmira, MI	Class A (09/01/2009)
Neosho NFH	Neosho, MO	Class A (10/20/2009)
Pendills Creek FH	Brimley, MI	Class A (07/29/2009)
Lac Du Flambeau TFH	Lac du Flambeau, WI	Class A (07/14/2009)
Keweenaw Bay TFH	L'Anse, MI	Class A (10/06/2009)
Sullivan Creek NFH	Raco, MI	Class A (07/28/2009)
Red Cliff TFH	Red Cliff, WI	Class A (03/03/2008)
Rydell NWR (Rearing Pond)	Erskine, MN	NA <sup>3</sup> (08/15/2009)

<sup>1</sup>Classification based on fish transferred out in summer 2008; facility was disinfected. Fertilized eggs from wild stock received in fall 2008; currently does not have a classification.

<sup>2</sup>First fish health inspection; additional fish health inspections in 2009 and 2010 will be required for the hatchery to attain Class A status under USFWS and GLFHC policy.

<sup>3</sup>Second fish health inspection; an additional inspection in 2009 will be required for the hatchery to attain Class A status under USFWS and GLFHC policy.

### **EMERGENCY FISH DISEASES**

<b>DISEASE</b>	<b>DISEASE PATHOGEN</b>	<b>DISEASE ACRONY M</b>	<b>PATHOGEN ACRONYM</b>
viral hemorrhagic septicemia	virus	VHS	VE
Infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<u>Ceratomyxa shasta</u> protozoan	CS	SC*
Proliferative kidney disease	sporozoan	PKD	SP*

### **RESTRICTED FISH DISEASES**

whirling disease	<u>Myxobolus cerebralis</u> protozoan	WD	SW
Infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<u>Renibacterium salmoninarum</u> bacterium	BKD	BK
Furunculosis	<u>Aeromonas salmonicida</u> bacterium	BF	BF
enteric redmouth	<u>Yersinia ruckeri</u> bacterium	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL**
Largemouth bass virus	iridovirus	LMB	LMBV

- \* **Inspectors within the Great Lakes basin do not need to include these pathogens unless importations of fish from enzootic areas are known to have been made.**
- \*\* **Field diagnostic test not available.**

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## USFWS MIDWEST REGION FISH IMPORTATION REPORT

**Report Period:** January 1 to December 31, 2008    **Report Date:** 01/07/2009

I. A. Known importations since last report.

Source	Species	Fish/Egg Numbers	Fish Health Status	Certification Date	Certifying Official	Lake Basin
1. Genoa NFH (Genoa, WI)	BKT	1500 (F)	Class A	03/17/2008	C. Puzach	Lake Michigan
2. Genoa Isolation Facility (Genoa, WI)	LAT	1800 (F-broodstock)	Class A	03/16/2008	C. Puzach	Lake Superior
3. Saratoga NFH (Saratoga, WY)	LAT	2.4 M (E)	Class A	10/06/2008	C. Hudson	Lake Michigan, Lake Huron
4)						
5.						

B. Proposed Importations

- 1.
- 2.
- 3.

II. Lab Findings

III. Other



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

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### **2009 Annual Report to the Great Lakes Fish Health Committee from Fish and Wildlife Service Northeast Region; Region 5**

**January 8, 2010**

In the fall of 2005, infectious pancreatic necrosis virus (IPNV) was isolated at Allegheny NFH. The facility has been de-populated and disinfected. Following installation of some biosecurity structures (raceway covers, re-vamping water supply aeration tower, and possible water supply UV disinfection), a complete station disinfection and fish re-introduction will occur. Until Allegheny restarts lake trout production for the Great Lakes program, two USFWS Region 5 Atlantic salmon facilities have made accommodating space for lake trout. Surplus eggs and fish from several sources have been obtained. White River NFH, located in Vermont has received SLW lake trout eggs from NYDEC, Seneca domestic from VT DFW, as well as rearing fingerlings from Superior Klondike Wild strain lake trout eggs from USFWS Region 3 Sullivan Creek NFH (2007). Berkshire NFH, located in western Massachusetts, received Seneca strain future broodstock from the isolation facility at Genoa NFH located in Wisconsin. These future broodstock are 06 yearclass and are doing well at 0.58 / lb and over 16 inches in length. It is planned that these fish (following disinfection and sentinel rearing /testing) will be transferred to Allegheny when that facility is ready. USFWS Contracting and Engineering reports that final construction bids for Allegheny NFH will be received in 4 to 5 weeks.

Both White River and Berkshire are inspected in compliance with the Great Lakes Fish Disease Control policy and Model Program. As depicted on the Hatchery Classification Report, these hatcheries are A-2 facilities, and the progress of these lots will be monitored on future Great Lakes Hatchery Classification and Salmonid Importation Reports.

The U.S. Fish and Wildlife Service continues to perform pathogen surveillance as part of the National Wild Fish Health Survey. The Lamar Fish Health Center has performed many investigations throughout the Northeast for listed fish pathogens, including

emerging diseases such as largemouth bass virus, spring viremia of carp virus, infectious salmon anemia virus, and most applicable to the Great Lakes Basin, viral hemorrhagic septicemia. The Great Lakes watershed proper for Region 5 consists of a small area in extreme northwest Pennsylvania and the northern border of New York. Since most of Pennsylvania's (and a great deal of New York's) waters do not flow into the basin, surveillance efforts have been directed to attempt to demonstrate VHS-free "zones", as well as track the movement of this pathogen in the Great Lakes. More states in the Northeast Region have developed an interest in providing samples for the USFWS National Wild Fish Health Survey, VHS surveillance is probably a major reason. This fiscal year (10/08-9/09) over 90 sites have been sampled, representing over 3,000 fish. Among the species on the VHS susceptible species list, Black crappie, bluegill, brown bullhead, brown trout, emerald shiners, gizzard shad, largemouth bass, muskellunge, northern pike, pumpkinseed, rainbow trout, smallmouth bass, walleye, white perch, and yellow perch were tested. Additional species include brook trout, golden shiner, lake trout, and fathead minnow. For the second year in a row, no positive VHS findings occurred this year from routine fish collections in the Northeast.

Following the report of *Nucleospora salmonis* in USFWS facilities, the Lamar FHC conducted screening for this microsporidean at federal and state fish culture stations as well as from several feral stocks in the Northeast. A rapid testing of over 350 samples from 6 hatcheries and 8 watersheds yielded negative results. These findings led to cancelling the transfer of eggs from known positive facilities and the clearance for stocking waters of New England with Atlantic salmon broodstock. Continued surveillance from additional fish collections and ovarian fluids have not yielded any *Nucleospora* positive results. This molecular test (PCR) continues to be refined and additional surveillance will continue. Another PCR assay has been developed (also at University of Cal-Davis) for EEDv, the herpesvirus causing mortalities in many upper lake hatcheries in the 1980s. Surveillance of wild lake trout for this agent is also planned and preliminary tests have been done on some recently provided samples (inland PA and Lake Eire, all negative).

Although coolwater fish have been added to the Model Program, no USFWS facility participating in the Great Lakes program in the Northeast, cultures these species. The Pennsylvania Fish and Boat Commission has been sampling wild warm and cool water broodstocks and their offspring for our lab to run viral testing. Additionally, cold, cool, and warm water fish are tested in the National Wild Fish Health survey.

2009 HATCHERY CLASSIFICATION REPORT

Report Period Jan. 1, 2009– Dec 31, 2009 Report Date: Jan 8, 2010

Hatchery Name Location Pathogen Acronym

Allegheny NFH Warren, PA \*\*\*  
 \*\*\* facility is presently de-populated & disinfected  
 await construction(new aeration tower & water supply line); & disinfection

White River NFH Bethal, VT A-2  
U-V treated

Berkshire NFH Great Barrington, MA A-2

Report Prepared by: John A. Coll

Title: Project Leader, Lamar Fish Health Center

Phone Number: 570-726-6611 x 221

**EMERGENCY FISH DISEASES**

Disease	Disease Pathogen	Disease Acronym	Pathogen Acronym
viral hemorrhagic septicemia	virus	VHS	VE
infectious hematopoietic necrosis	virus	IHN	VH
ceratomyxosis	<i>Ceratomyxa shasta</i> protozoan	CS	SC*
proliferative kidney disease	sporozoan	PKD	SP*

**RESTRICTED FISH DISEASES**

whirling disease	<i>Myxobolus cerebralis</i> protozoan	WD	SW
infectious pancreatic necrosis	virus	IPN	VP
bacterial kidney disease	<i>Renibacterium salmoninarum</i> bacteria	BKD	BK
furunculosis	<i>Aeromonas salmonicida</i> bacterium	BF	BF
enteric redmouth	<i>Yersinia ruckeri</i> bacterium	ERM	BR
epizootic epitheliotropic disease	virus	EED	VL**

\* Inspectors within the Great Lakes basin do not need to include these pathogens unless importations of fish from enzootic areas are known to have been made.

\*\* Field diagnostic test not available.

## 2009 IMPORTATION REPORT

Agency USFWS – Northeast Region

Reporting Period January 1, 2009– December 31, 2009

I. A. Known importations since last report.

Source	Species/Number	Fish/Eggs Size	Fish Health Status	Certification Date	Certifying Official	Lake Basin
1. White River NFH, Bethel, VT	LAT 516,400	Fish	A-2	03-24-09	Barbash / Coll USFWS Lamar FHC	Erie&Ontario
2.						
3.						
4.						

B. Proposed Importations

Source	Species/Number	Fish/Eggs Size	Fish Health Status	Certification Date	Certifying Official	Lake Basin
1.						
2.						
3.						
4.						

II. Lab Findings – None

III. Other-

- Since rearing of these stocks occur outside the Basin, this 2009 Importation Report depicts the stocking of lake trout to Lake Erie and Lake Ontario