

# WAA - The CREEL

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September 2007

2007 Aquaculture Field Day

## Aquaculturists gather with VHS on their mind

By Chad Daily, Staff Writer, The Daily Press, Ashland, June 15, 2007



Dave Gollon discusses biosecurity for fish hauling trucks at NADF

### Fish Stocking Conference Calls

By Ron Johnson, Aquaculture Outreach Specialist

On June 15, 2007 in Bayfield, Wisconsin Dr. Myron Kebus, State Fish Health Veterinarian DATCP, Dr. Robert Ehlenfeldt, State Veterinarian DATCP, Mike Staggs, DNR Fishery Director, several representatives from the Wisconsin Aquaculture Association and staff from NADF met for breakfast to discuss how to reestablish fish stocking into Waters of the State. Fish stocking was halted in May due to the confirmation of the VHS virus in the Lake Winnebago system and Lake Michigan. What grew out of the meeting was a willingness by both regulatory agencies to work with members of the Wisconsin Aquaculture Association to define risks, look at hatchery and rearing management, fish health questions, economic issues and appropriate levels of testing. It was decided that UW-Extension Aquaculture Outreach Specialists, Ron Johnson and Sarah Kaatz, would host and facilitate a series of Fish Stocking Conference Calls using Wisline. Since then, there have been six conference calls, each about a week apart. Besides the above mentioned agency people, Bill West, President WAA, and Dave Gollon, Chairman of the Board WAA, were part of the conference call committee; the final two calls included Dan Hilger and Dave Robinson, members of the Wisconsin Fish & Bait Dealers Association.

During this same time, DNR staff was reviewing their *cont pg 4*

Fish  
Stocking  
Fact  
Sheet  
page 4

Bayfield— While fish farmers, state officials and other experts gathered in Bayfield on Thursday to discuss the entire field of aquaculture, the only things on the minds of many was a deadly fish virus that threatens the entire industry.

The virus, viral hemorrhagic septicemia (VHS), which causes fatal internal bleeding in several species of fish, is making its way across the Great Lakes after starting out in the St. Lawrence Seaway.

It was most recently detected in the Lake Winnebago system near Green Bay, and has spurred a number of emergency regulations from the state Department of Natural Resources in an attempt to contain the virus.

Yet, along with trying to stop the spread of the disease, state officials and aquaculture experts agree that sport fisheries, fish farmers and others will eventually have to live with it.

“This (virus) has been in Europe for many decades and it’s still a problem; it still kills fish,” said Dr. Myron Kebus, the state’s Department of Agriculture, Trade and Consumer Protection’s fish veterinarian. “We’ll be dealing with it just like they are.”

Kebus said Wisconsin is a step ahead of other states in terms of testing fish farms through DATCP, which also requires import permits and record keeping at the state’s 2,200 fish farms.

The agency also plays a role in educating some of its staff in aquaculture so that they, in turn, can take a more active role inspecting farms and raising awareness among farmers about VHS and other diseases.

It’s not an easy task when about 1,700 of the 2,200 registered fish farms are considered “hobby farms” that might raise fish or allow fishing, but do not sell them commercially. The remaining farms are commercial.

“There’s a lot of effort just to keep track of people raising fish,” Kebus said.

But there is just as much effort put into attempts to understand the disease itself. Despite its existence for decades in Europe, the virus threw scientists for a loop when it mutated from its European form.

“We have to couch our answers about this, because it’s a different strain, with new behavior and survival,” said Dr. Michele Walsh, a veterinarian who works with Maine-based Micro Technologies to help aquaculturists with biosecurity on their farms. “This is a new strain that’s affecting new species, so it’s very hard to say ‘This is what’s happening.’”

It was originally thought that VHS could not survive in fresh water, and that some species were not susceptible.

Both of those assumptions were wrong: *cont on page 10*

**The CREEL**

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WISCONSIN AQUACULTURE ASSOCIATION

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The CREEL is published quarterly, March, June, September and December; serious and/or good humor letters and other submissions received by the first week of the preceding month WILL be printed. WAA welcomes input and involvement from all interested parties. Technical information, humor, stories, recipes, artwork, criticism, etc., are all requested.

Unless otherwise indicated, all articles are authored by *The CREEL* editor and/or WAA editorial committee. Editorial comments pertinent to other submissions are italicized and noted in parenthesis (ed.)

All opinions expressed in *The CREEL* are those of the contributor/author and not necessarily those of the Wisconsin Aquaculture Association, its officers or directors.

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1/8 page: \$30; 1/4 page: \$40; 1/2 page: \$60; Full page: \$100

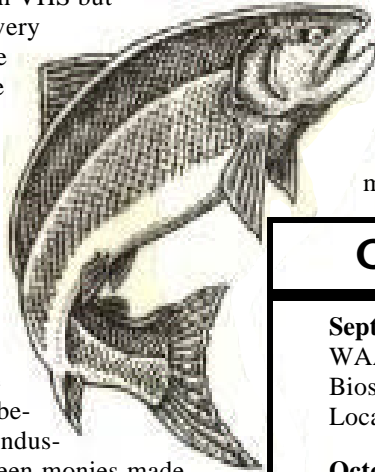
# President's Message

Bill West - Blue iris fish farm

There has been a tremendous amount of activity in the aquaculture industry in the past year. Much of the activity has been spawned by the advent and presence of viral hemorrhagic septicemia (VHS). I would venture to say that at the beginning of the year I would have guessed that Wisconsin (the State and the aquaculture industry) had about two years to decide how to deal with VHS but that all changed in early spring with the discovery of VHS on inland lakes. Because of that, we no longer have a two year grace period (if we really ever did) and we have been spurred on to action. What this really means is that we cannot afford to get complacent about our vigilance about establishing biosecurity measures for each of our farms and, in general, our industry.

But I do want the readers to understand what is really going on behind the scenes. You should be aware that, because of VHS, there has been the first real collaboration in years between WDNR, DATCP and the aquaculture industry on solving problems. Second, there has been monies made available through the North Central Regional Aquaculture Center (NCRAC) for the development of programs specifically geared toward assisting the aquaculture industry. Moreover, three programs were awarded to facilities which are located in Wisconsin. These include:

- Development of fish health training modules for fish farmers, which was originally proposed and will be developed by Dr. Myron Kebus of WDATCP
- Development of a VHS extension and training program which will be spearheaded for the most part, by representatives of the Northern Aquaculture Demonstration Facility and UW-Extension Studies to evaluate the safety and efficacy of iodine treatments for disinfection



of non-salmonid fish eggs infected with VHS

There are a host of other activities going on just in Wisconsin and this Creel is filled with information on these activities as well as planned training sessions, workshops, etc. Please feel free to contact Cindy Johnson ([Cindy@wisconsinaquaculture.com](mailto:Cindy@wisconsinaquaculture.com)) to keep abreast of the latest developments in key areas and, by all means, to keep informed. Cindy has started a new list serve for Wisconsin Aquaculture Association members in the hope to provide an information source which will keep you up to speed on important developments.

## CALENDAR OF EVENTS

### September 7

WAA Board meeting and WAIAC meeting  
Biosecurity Workshop  
Location: Country Springs Hotel, Stevens Point

### October 11

Permits and Rules—What You Need to Know to Stay Compliant  
Location: East Side Club, Madison

### October 26

HAACP Training for Fish Farms  
Location: TBA

### Date/Location: TBA

Trout Production

### December 7

WAA Board meeting and WAIAC meeting  
Location: TBA

## Wisc. Aqua. Association committees

WAA Committees report directly to the Board of Directors and are essential in performing the groundwork in achieving association goals. Members wishing to contribute or having a problem are encouraged to deliver their input through committees. The committees are the mechanism for members to address issues; new committees will be created as needs are identified. When in doubt, contact with any officer or board member (see p.2) will work.

### WAA/DNR Working Gp Legislative Committee Conference Committee Outreach/Extension Membership/Promotion Organizational, Policy & Procedures (OPPS)

Chair: Bill West; Members: Dave Gollon, Dan Gruendemann, Fritz Gollon  
Chair: Dave Gollon; Members: Bill West, Ruby Kettula, Dan Gruendemann.  
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Chair: Cindy Johnson; Members: Bill West, Jim Pierce

### Nominating:

Chair: Bill West; Members:

### Finance:

Chair: Jim Pierce; Members: Bill West, Dave Gollon

### Baitfish:

Chair: Brad Tork; Members: Bill West, Ruby Kettula, Cindy Johnson

### Perch/Sunfish:

Chair: Ben Gollon; Members: Dave Gollon, Fritz Gollon, Bill West

### Fish Health:

Chair: Dan Gruendemann; Members: Bill West, Brad Tork, Mike Heilman

Chair: Dave Gollon; Members: Dan Gruendemann, Bill West, Mike Heilman, Dr. Myron Kebus  
Ruby Kettula, Jeff Taylor

### Marketing & Sales:

Chair: Jim Pierce; Members: Bill West, Brad Tork, Jeff Taylor, Ron Johnson

## Fish Stocking Conference Calls, cont from page 1

own hatchery and stocking management protocols while DATCP staff was reviewing fish health certificates, quarantine, indemnification, testing protocols and risk management; all associated with the VHS outbreak. The task to reestablish stocking in Wisconsin is complex, has far-reaching implications, has the attention of many and varied stakeholders, has the potential for large economic consequences, is a moving target, and there are no other state models for guidance. I believe everyone on the conference calls understood the importance of establishing new protocols quickly, but at the same time, making sure everyone understood each others' concerns and difficulties. The committee explored the extremes, complex scenarios, short and long range management with VHS, bottlenecks were uncovered and, in the end, consensus on each section was agreed upon by all. It was acknowledged that as VHS becomes more widespread within the state, protocols may change and other states or USDA APHIS may or may not accept what Wisconsin is doing. Some issues, not related to fish stocking into Waters of the State, were left as business decisions for farmers: deciding whether to test if selling intrastate and what type of VHS test (Blue Book or OIE) to use, is a business discussion best handled by the farmer and their veterinarian.

It should also be noted that the committee understands that with the changes there will be questions and concerns; i.e. some people will have completed some testing but not on all species and therefore will be required to do more. To address these, please see the Wisconsin Fish Stocking Fact Sheet below for details, helpful hints and frequently asked questions.

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## Wisconsin Fish Stocking Fact Sheet

### August 2, 2007

The Viral Hemorrhagic Septicemia (VHS) virus was confirmed in the Winnebago Pool lakes system and in Lake Michigan in May 2007. Although the Mississippi River and Lake Superior have not been confirmed for VHS they are being treated as suspected to have the virus because of direct connection to waters that are positive. Both Wisconsin's Department of Agriculture Trade and Consumer Protection (DATCP) and the Department of Natural Resources (DNR) have taken measures to slow the spread of the disease through emergency rule changes, with a moratorium on fish stocking and review of fish health certification and testing. There is joint responsibility with DNR and DATCP regarding fish stocking in Wisconsin. DNR is responsible for management of Wisconsin's fishery and DATCP is responsible for fish health in the state.

The Northern Aquaculture Demonstration Facility (NADF) Extension Aquaculture Outreach Specialists facilitated a series of conference calls with DNR, DATCP, members of the Wisconsin Aquaculture Industry Advisory Council's (WAIAC) Fish Health Committee, Wisconsin Aquaculture Association (WAA) and the Wisconsin Fish & Bait Dealers Association to establish a consensus on requirements to reestablish fish stocking into Waters of the State by looking at risks, economic impacts and appropriate level of testing. The results will be reflected in a change to the **Fish Health Assessment (FHA)** [formerly called VHA] and on a new form called the **Fish Health Certificate (FHC)** where results like VHS tests and other required tests are listed.

The following information is meant to be used as a guideline to help people applying for a DNR Fish Stocking Permit or who may be supplying fish for stocking into Waters of the State. Wisconsin

Statutes (Chapter 281.01 (18)) define "Waters of the State" to include "those portions of Lake Michigan and Lake Superior within the boundaries of this state, and all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, water-courses, drainage systems and other surface water or groundwater, natural or artificial, public or private, within this state or its jurisdiction.

**All** fish being stocked into Wisconsin -Waters of the State will require a current FHA. This includes **all** species of fish requiring a stocking permit, not just USDA APHIS susceptible listed species. **All** fish being stocked into Wisconsin - Waters of the State will require a current negative test for VHS as verified on the FHC. **All** bait fish sold in Wisconsin will require an FHA, and all bait fish listed as susceptible to VHS by USDA-APHIS (see list at [http://www.aphis.usda.gov/vs/aqua/pdf/vhs\\_susceptible\\_species.pdf](http://www.aphis.usda.gov/vs/aqua/pdf/vhs_susceptible_species.pdf)) will also have to be tested for VHS and results listed on the FHC. That means fish being distributed for sale in Wisconsin will need accompanying fish health documentation.

**Farm to farm** transfers of fish (DATCP registered fish farms) within Wisconsin (intrastate) will require a current FHA but no VHS testing at this time.

Fish Stocking Permit Applications can be obtained from the DNR service centers and need to be completed in full, include supporting fish health documentation, and then sent to the fish biologist in the region where stocking will take place. The DNR central office will review all applications to insure completeness and compliance with the new requirements before approving the stocking permit. Incomplete applications or applications that do not have matching fish health documentation will be delayed or denied until all information is provided.

### Helpful Hints:

Make sure all species on your stocking permit are included on FHA and VHS tests results on the FHC.  
Make sure all lots (species & size) match your fish health documentation.  
Make sure all fish health documentation is current and has not expired.  
Make sure application is complete and all information requested is provided.

### Frequently Asked Questions:

**(Q)** When do I need to get a stocking permit?

**(A)** Wisconsin Statutes (Chapter 29.736) require that you get a stocking permit from the DNR to introduce, stock, or plant any fish in any Waters of the State. Waters lawfully registered with DATCP as fish farms are not considered Waters of the State.

**(Q)** Fathead minnows are not on the USDA APHIS list of susceptible species; do I need a VHS test for stocking them as forage into a lake?

**(A)** Yes, all species of fish being stocked into Waters of the State need a current negative VHS test (which will be listed on the FHC) including fathead minnows.

**(Q)** I sell fathead minnows to bait shops to be used as bait for fishermen; do I need a VHS test to sell them to the bait shop?

*Cont next page*



## Stocking Fact Sheet, cont from page 4

(A) No, fatheads sold as bait do need a FHA but do not need a VHS test because the risk is higher with stocking large quantities of fish into one water body.

(Q) I am applying for a stocking permit with multiple species, have a current FHA and had done VHS testing done on susceptible species; do I still need to get another VHS on brook trout?

(A) Yes, the new requirement includes all fish species, not just USDA APHIS susceptible species.

(Q) I want to stock 6" largemouth bass this fall and had a FHA done on my broodstock; do I need another FHA or VHS on the young hatched this year?

(A) Yes, you will need a FHA and VHS test that matches the "lot" and size of fish you are stocking. Lots are specific to a group of fish in a specific pond, raceway or tank and can not be transferred to other fish.

(Q) I have fish from several locations in one pond and did a FHA on some and a VHS test on others; can I use this documentation for my stocking permit?

(A) No, if you co-mingle fish from various lots, a new FHA and VHS test will be required. However, if all fish have a current FHA and VHS test done but with different dates, the fish in that pond can use the first date and all will expire one year from that date. Be sure to include all documentation when applying for the stocking permit.

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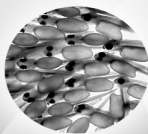
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These join two other aerating fountains and a pond aerator introduced this spring which were designed for larger ponds. For more details see [KascoMarine.com](http://KascoMarine.com) or call 715-262-4488

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## How much of the seafood consumed in the U.S. comes from China?

According to statistics provided by NOAA Fisheries:

### Shrimp:

90% of the total US supply of shrimp is imported  
11.5% of the total US imports of shrimp is from China  
9.6 % of the total US shrimp supply is imports from China  
100% of imported shrimp from China is aquacultured

### Catfish:

2% of the total US supply of catfish is imported  
99% of the total US imports of catfish is from China  
1.9 % of the total US supply of catfish is imports from China  
100% of imported catfish from China is aquacultured

### Basa:

100% of US supply of basa is imported  
8% of the total US imports of basa is from China  
8% of the total U.S. basa supply is imports from China  
100% of imported basa from China is aquacultured

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## UPCOMING WORKSHOPS FOR SEPTEMBER AND OCTOBER

**September 7, 2007**

### Biosecurity Workshop

In conjunction with the September WAA & WAIAC meetings there will be a Biosecurity Workshop to bring together parties to develop an outline for a Biosecurity Plan for Wisconsin fish farmers. The June Workshop provided an excellent opportunity to discuss the concepts and Dr. Michelle Walsh did a biosecurity audit as part of the workshop. Also see her article and audit form elsewhere in the Creel. This will be a working meeting to bring together ideas and suggestions to develop a plan that Wisconsin farmers can follow.

## From The Editor - Cindy Johnson

From the feed back we have received, the Aquaculture Field Day and Annual Fish Fry was a success. When we originally were planning this and trying to estimate numbers, I thought maybe we would have 40 attendees, then more people started showing interest and we ended up with 69 people for the workshops and between 80-90 for the picnic. The picnic has always been a much anticipated affair and the success of both these events is due to all of you who participated. Thanks go out not only to the vendors who sent materials for our attendees, but also to those vendors who made the trip and brought their products along. I would especially like to thank those who unselfishly pitched in and helped - Jeff & Leann Malison, Bill West, Georg Eccleston, Connie & Allan Pribnow, Larry Nelson, Bev Simonds, Dave & Vicky Solin, Susan Gollon, Tim Gollon, Mike & Barb Kelm, the staff at NADF (Greg, Kendall, Dan, Abby & Ryan), and the Aquaculture Outreach Specialists (Ron, Sarah & Jim). Plans are already in the works to come back to northern WI for the 12th and 13th of next June. The cruise has been reserved for a full 2 hour tour—so mark your calendars and plan for another great workshop and a good time to socialize and relax.

WAA has added another benefit for its members. A list serve program has been established. It has allowed us to alert our members when urgent, time sensitive issues/information have come up. Recent items have been the letters of support for the 2007-09 Biennial Budget Conference Committee, notification of the Egg Disinfection Workshop, NADF Brook Trout for sale, and DATCP Fee Proposal and public hearing locations. If you would like to be on our list, please email me ([Cindy@wisconsinaquaculture.com](mailto:Cindy@wisconsinaquaculture.com)) with your email address.

We have had several new classified ads posted on our website. If you have anything aquaculture related to buy or sell, these ads are free. To submit an ad, just go to [www.wisconsinaquaculture.com](http://www.wisconsinaquaculture.com) and click on "WAA Classified", "Add Your WAA Classified". It then comes to me and I activate it.

We are in the process of organizing our 2008 conference for next spring. With Easter coming early next year, dates and locations are challenging, but updates will be posted on the web so you can make plans to attend.

There are also several workshops for this fall that are in the works - these include biosecurity guidelines, learning the new permits so you can stay compliant, HAACP training for fish farms and a possible trout workshop. Again, these will be posted and updated on the WAA website. See "Calendar of Events" page 3 and article on page 26.

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**October 11, 2007**

### New Rules Training Workshop

There will be an all day training workshop with the DNR & DATCP to go over new rules that are being implemented due to the VHS outbreak in Wisconsin. This workshop will be held at the East Side Club, 3735 Monona Drive, Madison, Wisconsin from 9:00 am to 4:00 pm. Staff from both DNR & DATCP will be there to go over rules and explain what fish farmers will need in order to stay in compliance. Private Veterinarians will also be there to help explain the timing of when FHA's and VHS testing are needed.

More details will be available on the WAA website shortly.

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## New Aquaculture Minor at UW – Stevens Point

Sarah Kaatz, Aquaculture Outreach Specialist- Extension, Central

As reported in the June issue of the Creel, a new aquaculture/fish culture curriculum minor has been approved in the Department of Biology at UWSP. Starting this fall, students can enroll in the new program, which covers a broad area of topics from Ecology to Entrepreneurship. Aquaculture programs from across the United States were looked at as models, and the program developed at UWSP offers a variety of class choices that can be tailored to a career in either the private or public aquaculture setting. Please refer to the minor requirements below, and for more information contact: Dr. Chris Hartleb at (715) 346-3228 or CHartleb@uwsp.edu.

### University of Wisconsin Stevens Point Aquaculture Minor

Total credits required: 27 minimum

Courses required (17 credits):

BIO 386 (3 cr) Principles of Aquaculture/Fish Culture

BIO 375 (3 cr) Fisheries Ecology

OR WATR 481 (3 cr) Limnology

BIO 374 (4 cr) Ichthyology

WATR 480 (4 cr) Water Chemistry and Analysis

BUS 320 (3 cr) Principles of Management

Choice of the following courses (10 credit minimum):

BIO 333 (4 cr) Microbiology

BIO 361/WATR 361 (3 cr) Aquatic Invertebrate Zoology

BIO 362 (4 cr) Animal Parasitology

BIO 499 (1-4 cr) Internship in Biology

WATR 338 (4 cr) Phycology

WATR 387 (3 cr) Aquatic Insects

WATR 494 (3cr) Environmental Toxicology and Risk Assessment

WATR 496 (2cr) Environmental Toxicology

WLDL 322 (2cr) Techniques of Captive Wildlife Management

WSTE 488 (3 cr) Water and Wastewater Treatment

OR WLDL 360 (3 cr) Wetlands Ecology and Management

BUS 321 (3 cr) Entrepreneurship

BUS 330 (3 cr) Principles of Marketing



From Greg Fisher, NADF - Here are some photos of a quick fish hauler we rigged up to move some brook trout out of the hatchery over to the raceways. I though they made some interesting photos and a good idea that other hatchery/fish farms might be able use. We put a tarp in the bed of the truck filled with water and hauled fish a short distance. You need to be careful you don't go too fast or hit the brakes hard or the fish slosh out!!!!



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## Aquaculturists gather, cont from page 1

The virus has been found in all of the Great Lakes except Superior, along with inland lakes; and more than 30 species of fish - including muskie, brown trout, whitefish and yellow perch - are susceptible to this particular strain of VHS.

Brood stock can pass the virus along through eggs, and even if a fish farm is entirely self-contained, it's possible that a bird carrying an infected fish through the air could drop a chunk in a rearing pond, effectively infecting the water.

While state officials would ideally like test results as quick as possible, growing the virus in a lab to determine whether a sample fish is infected takes up to 28 days, Walsh said, although a positive test might come back sooner.

"This is not a phone call in the morning and results in the afternoon," Walsh said. "But part of that is because no state - or even the federal government - has a standardized way to test these fish."

One of the fish farmers who attended Thursday's discussion asked how early a farmer might start testing. This being Wisconsin, farmers have a limited growing season and, with such a long testing period, a farmer could be out of business by the time results come back.

Walsh said she's tested fish smaller than 4 centimeters by chopping off the head and tail and basically mashing up the body, whereas just the kidney and/or spleen would be removed in bigger fish.

Farmers were also told that, even if a particular pond or group of fish is quarantined for testing, they would still be allowed to continue feeding these fish in the hope that the tests are negative.

Fritz Gollon, owner of Wisconsin Fish Farms, asked Kebus, Walsh and others what types of recourse is available for fish

farmers who find their stocks inadvertently infected.

Bill West, president of the Wisconsin Aquaculture Association, said the group plans to vote on Friday for a resolution calling for indemnification or some sort of financial safety net should farmers suffer a loss because of VHS.

The resolution calls for \$600,000 a year for DATCP, along with placing five or six more people within DATCP to specifically deal with aquaculture.

West said he'd like to see DATCP and DNR be more proactive, rather than reactive, with emergency rules that may not be effective such as the placement of DNR wardens at boat landings.

"We need to use what we know now as a springboard for the future," he said.

## NEWS, ANNOUNCEMENTS AND UPDATES

**DNR Secretary Hassett Resigns** - In a letter dated July 16, 2007, Secretary Hassett turned in his resignation, effective September 1, 2007. Gov Jim Doyle named Correction Secretary Matt Frank to fill the position.

**DATCP language changes** - VHA (Veterinary Health Assessment) is now FHA (Fish Health Assessment) and the certificate that fish farmers receive is a FHC (Fish Health Certificate)

**UW/NADF listserv now available** - Aquaculture news, information, NADF project updates and current industry topics. To join please email [Aquaculture-request@listserv.uwsp.edu](mailto:Aquaculture-request@listserv.uwsp.edu) and type subscribe in the email. If you have news or topics to share, please contact Chris Harleb at [CHartleb@uwsp.edu](mailto:CHartleb@uwsp.edu) or Jeff Mailson at [JMailson@wisc.edu](mailto:JMailson@wisc.edu)

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WAA, in conjunction with UW/NADF, has been continuing with workshop programs this summer. In June, a one day workshop was held in Bayfield and at NADF on biosecurity, VHS and other diseases, and a Fish Health Assessment demonstration. This was followed by a Feed Training Workshop in July at Lake Mills and Cool Water Farms. The following are summaries of these workshops. For further information, please contact the Aquaculture Outreach Specialist in your area.

## Overview of Yellow Perch Feed Training Workshop

Sarah Kaatz, Aquaculture Outreach Specialist - Extension, Central

On July 12<sup>th</sup>, a yellow perch feed training workshop was held at the Lake Mills DNR Fish Hatchery, and Cool Water Fish Farm in Cambridge. The goal of the workshop was to demonstrate different aspects of yellow perch culture: seining techniques and draining methods for pond harvest, fingerling sorting and grading, feed training techniques, and returning fish to ponds for grow out. Jim Held, aquaculture extension, southern, taught the half-day workshop.

The workshop was low key and hands on and participants were able to interact and ask questions. The first part of the workshop was held at Lake Mills where practices were demonstrated, and then moved to Cool Water Fish Farm to see a working yellow perch farm that uses the techniques demonstrated and discussed. Following is the workshop handout.

### Jim's Notes on Feed Training

Jim Held, Aquaculture Outreach Specialist, Southern

Feed training is one of the most critical steps in the production of yellow perch, and has shown promising results for the production of advanced (6-8") fingerling walleye, northern pike and muskie. In general, the fish are harvested from the ponds at 1-2" total length, stocked into tanks so that they are isolated from their natural prey, and introduced to formulated feeds. The choices for the fish are limited: eat the formulated feed, eat one of your cohorts, or starve to death. Of course, it is to the producer's advantage to maximize the number of fish habituated to formulated feed and minimize losses to starvation and cannibalism. The tips and techniques described here have been developed over the past 20 years and are proven effective for yellow perch, walleye, sauger and northern pike. I have not had personal experience with muskie but feel confident these methods will provide a good starting point for muskie culture.

#### Pond Harvest

Several methods can be used to harvest fingerlings from production ponds. The individual pond usually dictates the preferred method of harvest. I think the important things to keep in mind are minimizing stress and mechanical injury during harvest. If possible, drain harvest is the best method. In-pond or out-of-pond harvest basins or net pens can hold the fish in a relatively low-stress environment as long as water temperature, dissolved oxygen and protection from predators can be maintained. My next choice would be the use of a seine. Fingerlings can be corralled or cradled

and quickly dip-netted into hauling tanks for transfer to training tanks with relatively low mechanical losses. For small perch (e.g. 1") seines can be used in combination with lights for harvesting at night with excellent results using the following technique: Lights are placed along a shoreline of a pond at night to attract the small perch and a seine is slipped behind the fish and brought to shore. This technique eliminates the need for dragging a seine through a weedy or large pond but becomes less effective as the fish grow past 2 inches and become less photopositive. Light traps (using light to lure small perch into a drop-side net pen) can also be effective with small fish but is less so with larger fingerlings or fish like walleye that exhibit photo negativity.

#### The Fish

I have successfully trained perch as small as 12mm (0.5"), but I wouldn't recommend it. The losses incurred during harvest and subsequent tank cleaning can be significant. These small fish are very fragile and have very low protein reserves. If they do not accept the feed within the first 5 or 6 days they are probably doomed to die. My preferred size to start feed training is 25-35mm (1-1.5"). Perch at this size are fairly resistant to harvest and mechanical stress and have adequate protein reserves to last 10-14 days before they starve to death. As fish size increases, the training period becomes longer. In one study completed over a decade ago we found that 17 mm perch took about 14 days to complete the training interval, 33 mm perch took 35 days and mortalities in 43 mm perch did not end until about day 47 (more on this when we talk about how to tell when the fish are trained). Keep in mind that this study was conducted in the days when we considered 60% habituation a roaring success. As a comparison, this year's 31 mm fish completed the training interval in about 17 days and resulted in over 95% successful habituation. Another important consideration in choosing when to begin the habituation process is body condition. *Plump healthy fish will train much more successfully than starving emaciated fish.* Given a choice, I would much rather harvest the fingerlings a little early than to wait until the pond runs out of food and the fish begin to lose body condition. This is especially true of walleyes where the starving weak fish quickly become victims of cannibalism.

**"Good workshop. Casual and nice to attend."**

**"Good field knowledge."**

#### Culture Conditions

I've been most successful in circular, center-drain tanks but that's not to say that other designs will not work. The advantage to these types of tanks is that you can establish a circular current to sweep excess food and feces to the middle of the tank for easy cleaning as well as keep the fish swimming in the same direction (which reduces cannibalism). Rectangular tanks can be modified with a center panel to make a long oval where directional flow can be induced. Directional flow can be set-up using the water input as well as small airlift pumps.

Tank size and depth are more of a consideration for cleaning rather than the actual training process. *Scrupulous cleanliness is a must!* Dead fish, feces and uneaten food should be removed on a daily basis. If left in the tank they will become sources *Cont on pg 12*



## Notes on Feed Training, cont from page 11

for fungal infection with catastrophic results. External standpipes, venturi drains and correctly sized drain screens can also be a huge benefit when it comes to keeping the tanks clean.

Stocking density is dependant on fish species and size. I usually stock 1" perch at about 20 fish/gal, 2" perch at about 15 fish/gal, and cannibalistic fish like walleyes, sauger and pike at 10 fish/gal. Size uniformity within the cohort is important. Remember, *big fish eat small fish!*

I habituate the fish at a water temperature of 18°C (65°F), slightly cooler than what I would consider optimal culture temperature. In small (30 gal) tanks I try to provide one water change every 1-2hr. In larger tanks lower flow rates may be possible depending on water quality and D.O. levels. Continuous, subdued overhead lighting seems to work well for the species I train. Shadows and movement near the tanks can frighten the fish and should be avoided as much as possible especially when training walleye or sauger.

### Feed and Feeders

We are currently conducting studies on several feeds and combinations of feed to optimize habituation success. To date the data do not support any conclusions so I will describe my feeding protocol for the past several years with the caveat that my opinion may change when the results of this study are analyzed.

I start the feed training with 3 days of crumbled freeze-dried krill. Krill products are available from numerous sources. What I look for is whole freeze-dried *Euphausia pacifica*. Some suppliers will refer to this species as freeze-dried plankton. The other type of krill *E. superba* is larger in size and usually more expensive. I have purchased krill from Argent (who had a shortage of product this year) and Jehmco.com (this year it cost \$125 for a 4kg bag). I crumble or rub the krill by hand to break up the big pieces. For large amounts a food processor works well but don't over-process and turn it into powder (it's kind of fun to watch the fish fight over the big pieces). After three days of krill I start mixing in formulated feed. The feed I use is either Epac CW (Inve Aquaculture Nutrition) or Salmon Starter (Silver Cup). Both diets have worked well for me. I prefer the Inve because it seems to stay cleaner in the tank and doesn't breakdown or fungus like the Silver Cup (although if you are cleaning your tanks like you should be this shouldn't be a problem). For perch I use the Inve 0.6/0.8mm size or Silver Cup #2, for walleye Inve 0.8/1.2mm or Silver Cup #2, for pike Inve 0.8/1.2mm or Silver Cup #3. The transition from all-krill to all-feed lasts for about 7 days. By this time most of the fish should exhibit a strong feeding response. Walleye and pike will begin to accept a larger pellet sooner than the perch. I transition to a 1.0mm Silver Cup steelhead diet as soon as they will take it. Perch will probably need 2 weeks of the crumble before they will accept the pelletized feed (just about the time they are ready to go back into the pond). I would like to remind the reader at this point that I do not necessarily endorse the feeds described here, it's just what I happen to use. Other feeds may perform as well as those mentioned and for reasons of cost or availability may be preferred.

During the training period automatic sweep-type feeders continuously supply feed. Additionally the fish are hand-fed several times daily. This hand feeding provides a "blizzard of feed" so smaller less aggressive fish get an opportunity to eat. If hand feeding is not provided the bigger fish in the tank will congregate by the feeder and keep the little ones away from the food. I have not found any commercially available feeders that satisfy my needs. The feeders I use were modified from

Lifeguard brand automatic fish feeders. I added bigger food plates, a sweep-arm structure and adjusted the feeders to complete 1 rotation every 24 hours. Similar feeders could be built using rotary light timers. For bigger tank applications (like at Coolwater Farms) the impeller feeders I designed for use on the ponds seem to work well. Other vibrating type feeders (e.g. Sweeney SF7) can also be used but they tend to be expensive. Fingerlings get conditioned to the vibration set-up by the feeders as an indicator that food is coming, this can be very useful when transitioning the fish back to the grow-out pond where impeller or vibrating feeders are used.

### Cannibalism and Disease

*If the first rule of fish is big fish eat little fish, the second rule is if you can fit it in your mouth you get to eat it.* Perch have a relatively small mouth gape and a compressed body form. This means that perch of similar size cannot eat each other. Unless there is a large discrepancy in size, perch will not cannibalize. In contrast, walleye, sauger, pike and muskie have a large mouth gape and a fusiform body shape. In these species, fish of similar size can eat each other. Successful cannibalism comes from face-to-face confrontation. One way to help control cannibalism is to get the fish to all swim in the same direction. Regardless of the control, cannibalism will occur while training game fish. On a large scale, fish may need to be size graded to remove the cannibals. Cannibals should be removed when observed. These fish *can* be trained to accept feed but the process is long. It seems that once these fish go piscivorous it is hard to get them back on feed.

Most diseases that I have encountered during feed training have been the result of either harvest stress (white tail) or water quality issues (gill fungus). It has been my experience that once fish are stressed (by high temperature or low D.O.) during the harvest and exhibit "white tail syndrome" they will never perform up to expectations. We currently have studies underway to characterize this syndrome (which seems to be a closing down of the tail vasculature) but to date no definitive pathology has been confirmed. Fish exhibiting white tail at harvest will grow at a reduced rate and be hypersensitive to handling stress throughout their lives. They may survive but they will never thrive. Gill fungus usually comes from piles of dead fish or feed in the tanks. It is probably exacerbated by "high stress" confined culture conditions, and little can be done for the fish once the disease displays. A flow through bath of 0.7% NaCl will ease the stress levels and may help the healthy fish to fight off the infection. In my way of thinking, it is better to remove the sick fish rather than try to save them.

### Are They Done Yet?

It's a surprisingly easy task to determine if the fish have completed the feed training interval. I keep daily records of the number of mortalities in each tank. When graphed, this data will usually show a sharp increase and decline over a 4 or 5-day period. Assuming the fish started the training at a uniform size and body condition, the fish that did not accept the formulated feed will all starve to death within a few days of each other. If for no other reason this demonstrates the importance of size grading prior to stocking fish into tanks for feed training. There may be a few lingering deaths after the peak mortality has passed, but for the most part the fish are now trained and can be returned to the production pond for grow out.

**"Everything was covered nicely."**

**"Gave a lot of insight as to what is done and how it's done on a fishery."**

**"There isn't much more you could add to make it better."**

*cont on next page*

## Notes on Feed Training, cont from page 13

Returning the fish to the pond should be done in a step-wise fashion or they may revert to natural prey. One way is to section off a corner of the pond with a seine keeping the newly trained fish confined and well fed for a few days. Another successful method is the use of microponds (as seen at Coolwater Farms) to provide the fish with a transitional phase of limited freedom and acclimation to impeller or vibrating feeders. Either way the fish should be frequently fed small amounts to accustom them to seeking formulated feed in the pond.

### In-Pond Training

Feed training can be accomplished in the pond using automatic feeders with or without lights. I will start feeding perch when they reach 0.75", this is just after they change from transparent to striped. I use a mix of 10% crumbled krill with the appropriately sized Inve or Silver Cup. Feeders are activated in short bursts during 15 min intervals between dusk and midnight and then again for 2 hours at dawn. Lights are used to attract the small photopositive fingerlings to the area below the feeders. The idea is provide many opportunities for feeding while limiting the total amount of feed going into the pond. At most I would feed about 10 lbs of feed per acre per day. If no lights are available I feed at dawn and dusk relying on the vibration of the feeders to attract the fish. Within a week or two the fish will respond to the vibration of the feeders. This can be observed by running an empty feeder and watching the fish gather for their meal. After a few weeks feeders can be set to feed for several hours in the morning and evening. A strong feeding response should be observed. In-pond training has a tendency to set-up social hierarchies where the bigger, earlier trained fish will keep the smaller fish away from the feeders. To avoid this, fingerlings should be removed from the pond about 6 weeks after training has started and the big fish should be size graded off and placed in a separate pond. Over the course of the next 6 weeks a new group of big fish will arise and those fish should be graded off. If the grading protocol is not followed the big can grow large enough to cannibalize the small and the producer will end up with some big fish and a few small fish when harvesting the pond in fall. The In-pond technique is also an excellent way to pre-train fish headed for tank training and to supplement pond food levels while fingerlings are waiting for training space to become available.

### Summary

- Feed training is one of the most critical stages in fish production
- Use methods of pond harvest that reduce stress and injury
- Start training with uniform size fish
- Choose fish with good body condition for training
- The larger the fish, the longer the training period will last
- Scrupulous cleanliness is a must
- Krill works like magic
- Supplement auto feeders with hand feeding several times daily
- Control cannibalism, especially in "game fish"
- Use transitional techniques to return fish to grow out ponds
- In-pond training can work but size grading is important

## BIOSECURITY FOR FISH FARMERS

### A PROACTIVE APPROACH TO DISEASE PREVENTION AND PATHOGEN MANAGEMENT

BY MICHELE WALSH, D.V.M.  
STAFF VETERINARIAN, MICRO TECHNOLOGIES, INC.

Micro Technologies, Inc., an aquatic animal health diagnostic laboratory in Richmond, Maine, has worked with fisheries, growers, state aquaculture coordinators and fish health officials affected by a 2006 emergency USDA-APHIS Federal Order issued after the identification of Viral Hemorrhagic Septicemia virus (VHSV) in the Great Lakes region in 2005. The USDA Order, as amended May 4, 2007, prohibits interstate movement from defined affected and at-risk states and Canadian provinces of certain (known VHSV-susceptible) species unless the fish are tested and certified to be free of VHSV. Some of the species on the known susceptible VHSV list may be required to be certified free of other pathogens, like the muscle parasite *Heterosporis* and additional viruses, to gain access to live fish markets in other states and provinces. Micro Technologies' USDA-approved laboratory was well-equipped to tackle a fish health and import/export emergency like this one – the firm has been performing biosecurity audits, certification, fish health screening and diagnostic testing for VHSV and other aquatic pathogens in North America for more than a decade.

VHS is a serious viral disease of finfish worldwide. Until the late 1980s, this virus, which causes affected fish to bleed internally and die, was thought to be a problem mainly for trout in freshwater systems in Europe. However, different strains of VHSV have since been discovered in many marine and anadromous fish species in both the Pacific and Atlantic oceans, and now the virus has been blamed for some die-offs of additional freshwater species (including muskellunge, freshwater drum, gizzard shad, round goby, emerald shiners and yellow perch) in the Great Lakes watersheds.

Fisheries managers and aquaculturists throughout the United States and Canada are concerned about the spread of this lethal virus from populations of wild freshwater fish in the Great Lakes into the aquaculture industry, as such an occurrence could lead to additional, large-scale, direct losses from disease and further trade restrictions. To lessen this threat, many agencies in both countries have placed restrictions on the movement of fish or fish products that could encourage the spread of VHSV beyond the known geographic range. The new regulations vary by state and province, however, and are sometimes prohibitively expensive for growers and fish dealers. As testing requirements evolve, the aquaculture industry must adapt its practices accordingly to maximize fish health and minimize pathogen transmission, starting at the farm level.

One of the most affordable and effective things fish culturists can do to preserve the health of their fish and their investment is to construct and implement a *Cont on page 14*

sound biosecurity program on the farm. For the purposes of this article, biosecurity for aquaculture is the prevention, control and eradication of aquatic animal disease – at the farm level. Note that biosecurity programs are designed to protect your operation from ALL types of pathogens, not just VHSV, although this is an important motivator. Fish farmers need to develop best management practices (BMP) specific to their facilities, consulting with fish health experts, which may include specially trained veterinarians, local university extension agents with aquaculture experience, and others. If biosecurity is a new concept on the farm, this can be a daunting task. To start, fish farmers should consider the following areas as priorities for evaluation, and use the sample Biosecurity Audit Questionnaire at the end of this article to identify places on the farm where there's room for biosecurity-related improvement. Once problem areas have been identified, you can work with a local and/or a recommended fish health specialist to design a program that suits your facility and maximizes the fish health and production capacity of your farm.

### ESSENTIAL ELEMENTS OF A BIOSECURITY PROGRAM:

1. **Employee education & written record** – discuss the changes (new footbaths, dedicated equipment locations, disinfection protocols, etc) with ALL workers. The most effective biosecurity programs are written down as part of the permanent Standard Operating Procedures of the facility. Workers should be expected to memorize any biosecurity protocols relevant to their areas, but a written reference should be readily available to remind anyone of the agreed-upon procedures.
2. **Knowing the needs of your operation** – any biosecurity plan should be tailored to YOUR facility – the species you collect or grow, your water source, your market (import/export regulations,) etc. \*SEE SAMPLE BIOSECURITY AUDIT QUESTIONNAIRE, below.\*
3. **Surveillance** – Know what might be present on your farm. *“It's not just a good idea, it [may be] the law!”* From a regulatory standpoint, the level of surveillance may be species dependent – e.g. federal level (U.S. Fish & Wildlife Service): sets surveillance requirements on fish coming into the country under terms of 50CFR Section 16. For salmonids, these requirements are known as Title 50 certification. Prior to the identification of VHS in the Great lakes, IMPORTATION OF MOST ORNAMENTALS and NON-SALMONIDS was NOT FEDERALLY REGULATED. States have the option to be more restrictive than the feds, but not less restrictive. BE PROACTIVE – protect yourself by having regular check-ups on your facility.
4. **Quarantine & Restrictive Access** – Keep new fish in separate containers, and ideally on a separate water source to prevent introduction of pathogens or parasites. There is al-

ways the chance, particularly if surveillance at the source facility is a new phenomenon, that the new fish may be carrying something. Transport and handling are stressful for fish, so fish that normally appear healthy but carry a pathogen (“carriers”) may show signs of illness after arrival at a facility. LENGTH OF QUARANTINE? Recommendations are based on incubation times for a disease – new arrivals should be placed in quarantine for a minimum of 14 days, though 21-28 days is recommended. Require visitors to your facility to leave vehicles in an area remote from the fish and wear clean, protective clothing (provided and maintained by you) on site, and/or require visitors to disinfect their vehicles, clothing, hands, footwear and any equipment brought from off-site at a disinfection station at the entry point to the farm.

5. **Disinfection** – POSSIBLE VECTORS (routes of transmission) ABOUND: from holding unit to holding unit via infected fish or infected water; via shared equipment; by personnel. DISINFECT: materials, containers, hands, protective clothing, equipment.
6. **Appropriate fish husbandry** – Clean water, clean tanks, **appropriate density** (depends on species and size of fish), timely removal of dead fish & uneaten food, separation of equipment between tanks/rearing units, good quality nutrition, etc.
7. **Disease treatment** – Establish a relationship with aquatic animal veterinarian, and consult her/him for diagnosis of problem. Treat only with approved product(s) and consider vaccination for certain conditions (if available and effective.) Remember that many diseases are “treated” or minimized with good husbandry practices.
8. **Consistency** – establish biosecurity standards and practice them – always!
9. **Accountability**- In culture facilities, the ability to avoid disease introduction and control disease transmission IS UNDER YOUR CONTROL. Know what's out there (on your farm), screen your population at least annually, but ideally every six months to rule out diseases, address problems as they arise, and only bring in stock from reputable growers or designated (specific disease-free) areas.
10. **Good communication** - Provide an environment where your workers feel comfortable giving feedback about how the animals are doing – daily records, weekly fish health meetings, whatever it takes. Communication with local fish health folks – extension agents, fish health officials, veterinarians – about questions or concerns you may have.

SAMPLE BIOSECURITY AUDIT QUESTIONNAIRE  
CONTINUED ON PAGE 15

“Folks, you are not in business to raise fish. You are in business to make money.”

Leo Ray, owner Fish Breeders of Idaho



## Biosecurity 2007

# HATCHERY BIOSECURITY AUDIT QUESTIONNAIRE –

A sample to help identify biosecurity “holes” at your facility

Hatchery name \_\_\_\_\_

Location \_\_\_\_\_

Date of audit \_\_\_\_\_

Primary contact person at site \_\_\_\_\_

Auditor \_\_\_\_\_

### General Background

SECTION SUMMARY: *Interview facility manager to obtain information about employee numbers & qualifications/experience; and to determine whether or not any kind of biosecurity is practiced at the facility, and if so, to what level.*

#### Sample questions:

- Is someone specifically designated at the hatchery to develop and implement biosecurity-related protocols? If yes, who?
- Does the facility participate in a formal (state, regional, federal or internationally required) fish health surveillance program? Define the type and frequency of fish health surveillance program (e.g. OIE facility-level inspections, semi-annual; annual inspection consistent with 2007 New York state regulations for salmonids, etc.)

### Physical Plant

SECTION SUMMARY: *Questions about year the facility was built, types of tanks and other equipment or housing types used, as well as amount of money allocated for facility maintenance gives auditor a sense of what level of biosecurity could be practiced at the facility. Plant diagrams are helpful, especially if the auditor is not conducting an on-site visit. In addition, this section helps determine the ability of a facility to effectively separate (physically, as well as by water source) fish lots is a fundamental piece of good biosecurity.*

#### Sample questions:

- Age of hatchery \_\_\_\_\_
- Construction type \_\_\_\_\_
- Annual maintenance budget for facility \_\_\_\_\_
- Number of species at hatchery \_\_\_\_\_
- Number of Lots \_\_\_\_\_
- Is a facility blueprint available?

### Disinfection

SECTION SUMMARY: *Detailed information about products used for disinfection and what protocol are used (concentrations, contact time, etc.) are essential elements to evaluate and revise if necessary.*

#### Sample questions:

Disinfection protocols \_\_\_\_\_  
Disinfectant type(s) \_\_\_\_\_  
Disinfectant changed how often? \_\_\_\_\_  
Are footbaths dirty/contain organic material? \_\_\_\_\_  
How is disinfectant concentration measured? \_\_\_\_\_

### Water Specifics

SECTION SUMMARY: *Water source and quality play key roles in fish health and facility biosecurity. Questions should be asked to identify all possible water sources – and possible contamination of those sources with pathogens (e.g. from wild fish, from terrestrial animals if surface runoff used, etc.) – on a facility. Bear in mind that elements of water quality, including temperature, pH and mineral content, can greatly influence fish health and pathogen survival/proliferation.*

#### Sample questions:

Water Source(s) \_\_\_\_\_  
Runoff gradients nearby \_\_\_\_\_  
Water Quality Parameters  
Temperature \_\_\_\_\_  
PH \_\_\_\_\_  
DO \_\_\_\_\_  
Hardness (Total alkalinity) \_\_\_\_\_

Form Cont on Next Page

Types of WQ Instrumentation \_\_\_\_\_

How frequently is WQ checked \_\_\_\_\_

Average highest water temp \_\_\_\_\_ Month \_\_\_\_\_

Average lowest water temp \_\_\_\_\_ Month \_\_\_\_\_

### **Fish Specifics**

SECTION SUMMARY: *Fish sourcing (wild vs. cultured, own broodstock vs. supplier-raised) and husbandry practices are more key elements of a biosecurity evaluation. Auditor should seek specific information about all sources of fish and what kind of attention is paid to morbidity/mortality levels and overall fish health to get a sense of what level of attention is paid to this important potential source of pathogens.*

Origin of individual lots

Source \_\_\_\_\_

Does source facility provide fish health certification? \_\_\_\_\_ If yes, what kind? \_\_\_\_\_

Type (eggs, fry, fingerlings) \_\_\_\_\_

Quarantine Procedures \_\_\_\_\_

### **Broodstock designation specifics**

Origin \_\_\_\_\_

Egg disinfection protocols

Disinfectant used \_\_\_\_\_

Concentration \_\_\_\_\_

Sequence/method of water-hardening/disinfection/shocking \_\_\_\_\_

### **Pathogens/Diseases**

SECTION SUMMARY: *This section gives auditor a sense of if and what kinds of pathologies are seen at this facility, and how infection or disease is managed when they occur. Questions should be tailored to the parasites and diseases specific to species raised at the facility or to conditions that are problematic in the region. Some questions should also target any preventative health measures taken at the facility.*

Pathogens/Parasites/Diseases routinely screened for: \_\_\_\_\_

Screening by whom \_\_\_\_\_

Types of Screening Tests \_\_\_\_\_

Prophylactic parasitic treatments? \_\_\_\_\_

Frequency \_\_\_\_\_

Type \_\_\_\_\_

Concentration \_\_\_\_\_

Duration \_\_\_\_\_

Prophylactic antibiotic treatments? \_\_\_\_\_

Type \_\_\_\_\_

Concentration \_\_\_\_\_

Frequency \_\_\_\_\_

Duration \_\_\_\_\_

Therapeutic antibiotic treatments? \_\_\_\_\_

Type \_\_\_\_\_

Concentration \_\_\_\_\_

Frequency \_\_\_\_\_

Duration \_\_\_\_\_

Vaccinations? \_\_\_\_\_

Type used (immersion, injection, other) \_\_\_\_\_

Manufacturer \_\_\_\_\_

Age/Size at vaccination \_\_\_\_\_

Anesthesia used? \_\_\_\_\_

Average mortality (hatchery) per month \_\_\_\_\_

How, where and by whom are mortalities recorded? \_\_\_\_\_

Number of mortalities that constitute an alarm threshold \_\_\_\_\_

Does the facility have a veterinarian (on staff or on call) \_\_\_\_\_

### **Other details**

*To obtain meaningful, useful results, the Biosecurity audit questionnaire MUST be tailored to the operation under review. Other key elements that one might consider for review are: nutrition, more info about suppliers (including a request for fish health certificates for stocked fish and the suppliers' or transporters' biosecurity practices), predator control on the facility, and visitor traffic (especially for fee-fishing or multi-use farms.)*

# SPECIFIC NOSB QUESTIONS THAT NEED TO BE ADDRESSED REGARDING PROPOSED ORGANIC AQUACULTURE STANDARDS

**JUNE 2007**

The National Organic Standards (NOSB) and the National Organic Program (NOP) are hosting an Organic Aquaculture Symposium on Tuesday, November 27, 2007 in conjunction with the Fall 2007 NOSB Meeting to be held Wednesday, November 28 through Friday, November 30, 2007 in Washington, DC. The purpose of the symposium is to obtain scientific and academic input to assist the NOSB in making final recommendations to the NOP on two major unresolved issues regarding the organic standards for finfish aquaculture.

## **A. Compatibility of Open Cage Net Pens with organic aquaculture standards**

1. How can open cage net pens be ecologically responsible? What requirements need to be included in the proposed regulation to assure this? How can the issues of water flow and rotational locations be included? What are the other issues?

2. Sea-lice: What is the prevalence or rate of sea lice infestation in wild fish populations where there are no net pens? What are the regional variations? Are sea lice infestations inherent with open cage net pen systems? How can they be controlled without prohibited substances in an organic system?

3. Escape: What is the current rate of escape in the conventional aquaculture and the developing organic aquaculture industry? How can the issue of escape be better controlled in an organic system than in a conventional ocean-based system? Are there any implications to containment farming of fish species not indigenous to that geographic area other than cross-breeding with native species?

4. Assimilation of waste: How much can any system expect to mitigate waste in outflow and settling of waste in open pen systems? Actual data regarding the inflow and outflow of nutrients of existing operations claiming sustainable practices would be the most helpful.

5. Predators: What is the risk to and from predators in open pen systems? In relation to language in the AWG document, in what ways is the section on predators adequate, or in need of changing, etc?

6. Migratory issues: How is migration a valid issue for these fish at the stage of life when they would be housed in open net pen systems? If so, what are these issues and their implications?

## **B. Alternative nutritional technologies to Fish Meal (12%) & Fish Oil (12%) at 24% of Total Feed**

1. What alternative nutritional technology is available, or in development, to fish meal and fish oil for fish that have a high requirement for nutrients provided in these feedstuffs? What are the prospects for research to yield new knowledge that would make it possible for fish meal and oil levels in feeds for farmed fish species to be reduced below the proportions in the diet that are considered the minimum today?

2. Would these alternatives meet the principles of organic production for allowance as a feed source?

3. Would the fish product resulting from the use of these alternative feed sources be considered nutritionally comparable for humans to fish consuming feed from their natural environment regarding such nutrients as omega-3 fatty acids?

4. What is the feed conversion rate of these different technologies compared to the traditional diets in current conventional and organic confinement systems? How would the feed conversion ratio be affected by using alternative protein and oil sources that were compatible with organic principles compared to current commercial diets containing fish meal and oil?

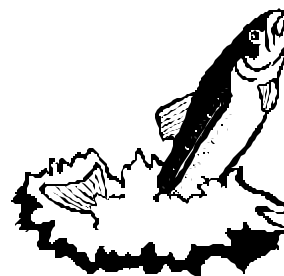
5. What is the state-of-the-art with regard to the minimum percentages of fish meal and oil needed in feeds for commercially important farmed fish species that currently are reared using feeds containing relatively high proportions of fish meal and oil?

6. Is utilization of wild-caught sources in organic fish farming systems feasible or acceptable to the organic community? Why or why not?

7. How can fish meal and fish oil from the waste processing stream of wild caught fish sources only coming from sustainably-fished species be separated and segregated in "the real world" from non-sustainably-fished species?

8. If wild-caught fish meal and fish oil were to be allowed as feed for organic fish, what would be a realistic time frame until organic sources of fish meal become available? Are wild caught sources feasible? What wild fish sourcing guidelines should be placed on the various potential fishery industries and what governmental agencies or NGO's should be utilized to monitor these fisheries? Special consideration should be given to consider that many of these fisheries would be out of US waters.

9. If the farmed fish species are the source of fish meal and fish oil, what are the implications of this practice? Discuss the environmental footprint of such procedures especially related to feed supply and environmental waste.





# Aquaculture Field Day & Vendors Fair, June 14, 2007

By Ron Johnson, Aquaculture Outreach Specialist

The first annual Aquaculture Field Day & Vendors Fair, held in Northern Wisconsin at Bayfield and at the Northern Aquaculture Demonstration Facility (NADF) in Red Cliff, was a tremendous success with over 85 people in attendance. The Field Day included workshops on Biosecurity, Fish Health Assessment, NADF project reviews with tours, aquaculture vendor booths, and ended with an optional evening boat tour among the Apostle Islands. The following day WAA and the Wisconsin Aquaculture Industry Advisory Council (WAIAC) held their quarterly meetings, ending back at NADF for WAA's annual fish fry picnic.

The morning sessions were held in the Lakeside Pavilion at Bayfield's City Dock overlooking Lake Superior, a great backdrop to discuss Wisconsin Aquaculture. Dr. Myron Kebus, State Fish Health Veterinarian, DATCP and Dr. Michele Walsh, Staff Veterinarian, Micro Technologies, Inc. Richmond, Maine started the Biosecurity workshop with presentations on "How to Protect Your Farm – Proactive Measures – protection from VHS and Other Diseases". Dr. Kebus talked about VHS – what it is, its characteristics, how the disease has progressed from the East Coast, transmission, regulations, how it is diagnosed, and how its confirmation in Wisconsin will affect fish farmers. He then went on to discuss formulating a plan of action and how private veterinarians and fish farmers will have to work closely together on biosecurity at the farm level. Dr. Walsh's talk, "Biosecurity Beyond Wisconsin", gave an overview of biosecurity, its importance and work she has done with farmers to prevent diseases from impacting their businesses. She talked about the virus Infectious Salmon Anemia (ISA), which is a reportable disease like VHS and a biosecurity nightmare for the salmon industry in Maine and North East Canada. She also talked about the biosecurity audit that she would be conducting during the afternoon session at NADF.

After a break, the workshop shifted to updates of the Aquaculture Outreach Specialists (AOS) and presentations regarding the work NADF has accomplished this past year including both applied research and extension outreach.

Ron Johnson, AOS, gave an overview of projects and contacts that the three specialists including Sarah Kaatz & Jim Held, have been working on since their hiring in January, 2007 funded by the USDA CSREES appropriations. The three specialists have conducted 27 farm visits, in addition to contacts with fish farmers through email and telephone; workshops, including Pond Fertilization, the Aquaculture Field Day, Yellow Perch Feed Training; numerous school visits; extension meetings; and development of an Aquaculture minor at UW Stevens Point. Their focus has been on getting the word out about these positions and working on the projects developed by the NADF Aquaculture Industry Advisory Council.

Gregory Fischer, NADF Facility Manager, gave an overview of applied research projects and what people can expect during the afternoon tours. Greg gave details about the USDA-ARS "Production of Yellow Perch utilizing state of the art technology" project, and updates on the NCRAC Baitfish (Spotfin Shiner) Project, Wetland Demonstration, Yellow Perch White Tail, Brook Trout Rearing, Walleye Rearing, Bayfield High School Aquaculture Class, Demonstration and Educational Lake Sturgeon Rearing, and Summer Intern Projects. The research project summaries, which give information on goals/objectives, progress, impacts and

follow-ups, were included with the workshop packets. These summaries and all the NADF projects can also be obtained by going to <http://www.uwsp.edu/cls/aquaculture/projects.html> then clicking on the individual project.

The morning sessions concluded and everyone moved to NADF for a catered lunch from Wild by Nature set up next to the Vendors Fair. Since WAA did not have an annual conference this year many members and vendors alike asked for booths to be set up during the June workshops. Three vendors: Wisconsin Flowgate & Culvert Company, Inc., Western Chemical, and Land O'Lakes – Purina Feeds had booths with representatives. Three companies sent brochures for display: R & B Aquatic Distribution, Inc., Aqualogic, Inc., and Memphis Net & Twine Co., Inc. Throughout the afternoon, attendees were able to talk to representatives and pick up the latest information on aquaculture products.

The afternoon sessions were kicked off by Gregory Fischer introducing the NADF staff: Kendall Holmes, Lead Technician; Dan Duffy, Technician; and UW-SP summer interns, Abby Purdy and Ryan Huber. People were divided into small groups and "stations" were set up with NADF staff giving demonstrations and explaining projects. People went from station to station, and this format allowed for one on one questions and demonstration of equipment.

The afternoon Fish Health Assessment Workshop was conducted by Dr. Robert Smith and Dr. Gretchen Gerber. The VHA demonstration was well attended with many farmers understanding that the VHA isn't just to comply with the law, but is helpful in understanding the current health of their fish. Many voiced their opinion of the usefulness of the Veterinary Assessment Report in purchasing fish and how the many different purposes for buying fish can lead to a different part of the fish health certificate with valuable information to the purchaser. Seeing first hand Dr. Gerber and Dr. Smith performing the assessment on the NADF perch and walleyes was revealing to the farmers in understanding what was involved with the process.

After the break the second phase of the Biosecurity Workshop was conducted by Dr. Michele Walsh; Dave Gollon, Jr. President of Gollon Bait & Fish Farm; Andrew Mc Cool, Syndel Laboratories Ltd. of Canada; and Ron Malnor, Western Chemical, Inc. Dr. Walsh used NADF as a backdrop to explain what a biosecurity audit is and why it is important. She emphasized that Biosecurity is: Practical, proven, proactive measures; Always in place; Prevention or reduction of disease transmission risk from one population or production unit to another; and Only as strong as the weakest link. (See separate article by Dr. Walsh for more details).

After Dr. Walsh's audit, Dave Gollon used the hatchery truck provided by the Red Cliff Tribal Hatchery to explain biosecurity measures that should be in place when hauling fish. Dave hopped up on the truck and went through the entire transportation process, talking about what steps are important to prevent any disease being spread to customers and preventing disease from coming back onto your facility. He talked about critical design elements in hauling trucks, proper equipment, cleanliness, disinfection using either chemicals or steam with pressure washers. Attendees were able to ask questions and they got frank answers from Dave about what works and what doesn't.

Andrew Mc Cool and Ron Malnor conducted a demonstration on how to properly use disinfectants. They showed how to calculate the dilution factors, what precautions to take and what disinfectants work best under different applications. They demonstrated proper use of foot baths and use of sprayers so everyone could go home and initiate these biosecurity measures on their farms. *Cont on page 11*

# A g e n d a s / M I N U T E S

Wisconsin Aquaculture Association  
Board of Directors Meeting, Sept 7, 2007  
Country Springs Hotel,  
1501 North Point Drive, Stevens Point, WI  
8:00a.m.—10:00 a.m.

## AGENDA

*Introduction of Board & Officers*

*Approval of Minutes*

*Secretary/Treasurer Reports*

*Committee Reports:*

*Fish Health/Stocking*

*Legislative/2009 WI Budget*

*2008 Conference*

*Extension/Upcoming Workshops*

*NCRAC*

*Other Old Business*

*New Business*

*Adjourn*

Due to the outbreak of the VHS virus in Wisconsin, the Agenda was dispensed with. Dave Gollon gave brief overview of March meeting.

Correction to minutes - Jim P – correction –take out “not”. 1<sup>st</sup> (?), 2nd by J Pierce, approved.

### **Report on closed door meeting with DNR, DATCP, and industry.**

It was decided that the WAA health committee can be a task force: looking at stocking issues for short/long term; to decide what the industry wants that is reasonable; what are risks, objections, timeline; hope in few weeks some stocking will be resumed; there will be communication between industry, DATCP, DNR. Mike Staggs wants to move fish in 3 weeks.

We need an agreement on stocking in positive areas and stocking in the long term, DATCP & DNR are already in some agreement, waiting for industry to make a move, need to get everyone on same page. The industry has to present what it wants that can be accepted by DATCP & DNR.

The industry has to take forefront to get to legislators - DATCP is stretched thin on money, resources, etc

### **VHS related issues brought up:**

Farmers are complying with the rules, but it is still difficult to be allowed to stock.

Both agencies want to make some decision on stocking and want to make it quick. They want to be sure they are going down the right path; they want the industry to tell them what level of testing the farmers can handle and what is reasonable. Stocking into positive areas is not the issue, stocking into negative areas with the least amount of risk of spreading VHS is the issue.

Having the paperwork sent to Madison instead of allowing the fish

managers to handle things is causing a backup, also need to know the chain of command (from farmers to DATCP to DNR ) on getting permits issued so you can find out who is responsible for what when things get hung up.

Farmers are meeting the standards that have been set by APHIS for interstate commerce. Can farmers: 1) live with these same standards for intrastate, 2) come up with an instate set of standards, 3) live with VHS testing for every species on the farm before they are allowed to stock into the waters of the state? The issues are: 1) the cost of testing to the farmer (*secretary note: \$750 and up*), 2) the length of time for test results (30 days), and 3) the bottleneck at the lab.

Currently, each farmer decides what level of risk he is willing to take in regards to what should be tested. Some farms are testing everything regardless if the species is on the list requiring testing.

Mike Staggs identified “low hanging fruit” – scenarios in which there aren’t as many restrictions for stocking – ex. if you don’t bring in any or haven’t brought in any live eggs or fish and your facility is out of the region and using no surface water, then a permit could be more easily issued.

The DNR is in same boat as fish farmers – they can’t move/stock their fish.

Do not want this to turn into the situation with CWD.

Common sense on where VHS would spread would have said Lake Michigan not Winnebago, that’s why regulatory agencies are in panic because VHS skipped Michigan and showed up in Winnebago, if shows up in other places that don’t make sense, there are 3 things DATCP/DNR are going to be looking at – this industry, their own policies and fish movement – birds or whatever else. What they are doing is trying to err on side of safety. They also have the tourist industry, lake shore owners, boat owners to worry about, they have more than just fish farmers to worry about, they are going to be looking at everything.

Dr David Scarfe explained the difference between regulations, policy, certificates, permits - Wisconsin has all these things in place. Ex - if a farm (cattle, hog, etc) is disease free, then a certificate of veterinary inspection is issued and then a permit can be issued. Permits are different from certificate – permit allows something to happen, a certificate is something that certifies that certain conditions have been met. The Ag Dept issues certificates daily for live-stock movement. A policy is an opinion. Does the industry want to take the same system that has been in place since the 20’s and apply it to aquaculture? The key to getting permits is that you sample a population - the fish being moved have to be certified that they come/originate from a unit that is cleared of disease – every state in the union should accept that. This is a system that has worked for decades. Aquaculture should not be any different from agriculture – you just need to separate farm from wild.

One issue is the numbers of fish for testing – APHIS is 60, OIE is 150, there is talk of maybe 70. Dr. Scarfe feels that farmers shouldn’t focus on number’s tested, but percent’s – ex. 95% assurance of disease free is epidemically accepted. To get this, you don’t have to increase your sampling size as your population increases, but as your population goes down, a higher percentage will be sampled - ex. 15,000 – 100,000 fish, your sample size should stay the same, but a population of 20 may require *Cont on pg 21*

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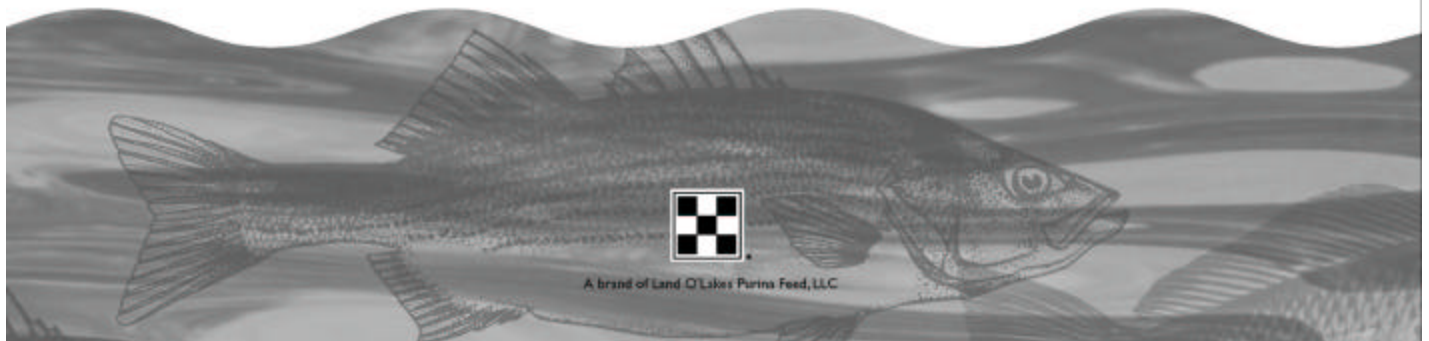


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that 19 be sampled.

Dr.'s Ehlenfeldt and Kebus have been asking for input – they are making policy rules, together with DNR, we need to give our input to help develop our own regulations. We need to keep in mind that this year will be different from next year, so we just need to survive this year, and so we need to put something together that we can live with for the long term and is acceptable to DATCP and they can present to DNR - the key is to develop a package that all can abide with so we all can be in business.

DATCP has a backlog: to 2-6mos on farm registrations and VHA's are taking 2-3 weeks (this is a problem because permits are only good for 30 days). Since the emergency rule, DNR now has partial control over import permits - prior was DATCP only. DATCP is short on bodies and money for aquaculture – that's why we are having this stalemate. DATCP has only 1.6 bodies for aquaculture and 7 field inspectors for the whole AG department.

Resolution discussion –

Only food fish are indemnified from VHS, farms that aren't food fish and have VHS will be shut down, depopulated and get a bill from DNR. For depopulation, we need to also address this issue. Should ask for more for DATCP? – no, go with minimum now. Ask for help for test costs? - no, usually then agencies add more test (ex. NY requires fish farms to test for 9 different diseases), if APHIS frees up some money, maybe then can ask about some form of compensation for the first year or so.

Everyone needs to contact legislators with the resolution. Dave wants to add to resolution relief for indemnification on aquaculture species (*secretary's note: this will be a separate resolution*) - Jim Pierce, 1<sup>st</sup>, Tim Winkle 2<sup>nd</sup>.

Beside this resolution, we need to be able to hand them a political solution and that, from a biological and business standpoint, you have something that is logical. We are not the only group going to the legislators, – ex. lake associations are as fired up as fish farmers are if not more and they are demanding that something be done. WAA needs to develop a policy so that everyone is on the same page and we are asking for the same thing, and if we can ally with some other group then we just increased our political clout. This is where the task force that was created from the Health Committee comes in.

Meeting was adjourned - Fritz Gollon 1st, Dan Gruendemann 2nd.

### Aquaculture Field Day, cont from page 18

The last session of the biosecurity workshop was a group discussion with questions and answers.

The Aquaculture Field Day & Vendors Fair ended with an optional boat cruise through the Apostle Islands, out to Raspberry Island and back. Lake Superior was spectacular and calm, providing a refreshing coolness after an unseasonably hot day. It was a great time for families and for everyone to socialize, soak in the day's events or unwind and enjoy the scenery. The comments received from the evaluations were very positive including: "Very informational on what's occurring with VHS; Refreshed my thinking on biosecurity; and Provided great discussion on health issues, production research introduction (could spend a week here)". Overwhelmingly, people responded that they want to have this as an annual event. So plans are underway to have the Second Annual Aquaculture Field Day & Vendor Fair on June 12, 2008.

## Wisconsin Aquaculture Industry Advisory Council Quarterly Meeting

### September 7, 2007 Quarterly Meeting Agenda

Location: Country Springs Hotel

1501 Northpoint Drive, Stevens Point, WI 715-341-1340

10:00 a.m. – 12:00 p.m.

#### AGENDA

- 1) Call to order at approximately 10:00 a.m.
- 2) Roll call/Introductions
- 3) June 15, 2007 Minutes
- 4) Council Discussion of Reports:
  - a) Fish Health Stocking Committee
  - b) NADF Advisory Council
  - c) Agency (DATCP, DNR, Commerce, DPI, WTCS)
  - d) UW-System (Madison, Milwaukee, Stevens Point,

Sea

Grant)

- 5) Other Business:
  - a) Unfinished:
  - b) New:
  - c) Issues to be addressed and discussed at the next

WAIAC meeting:

i) Speakers

ii) Topics

- 6) Announcements

a) Next Meeting: December

- 7) Adjourn at approximately 12:00 p.m.

## WAIAC MEETING MINUTES

**DRAFT**

June 15, 2007

Bayfield Inn, 20 Rittenhouse Ave. Bayfield, WI

#### WAIAC Members Present:

Ed Baum, David C. Gollon, Fred Gollon, Dan Gruendemann, Jim Pierce, Jeff Taylor, and Bill West. Greg Fischer, Myron Kebus, Jeff Malison and Phil Moy.

#### WAIAC Members Absent:

Sean Charette, Peter Fritsch, Ruby Kettula and, Brad Tork. Carol Dunn, James Gibson, Chris Hartleb, Jeff Hicken, Will Hughes, Bud Sholts, and Steve Yeo.

#### Others in attendance:

Anders Andren, Mike Bandli, Fred Binkowski, Rick Decker, Adam Fetting, Mike Foster, David Gollon, Lance Grahn, Randel Groshek, Dave Gruendemann, Jim Held, Terry Hogan, Jim Hurley, Mike Heilman, Cindy Johnson, Ron Johnson, Sarah Kaatz, Mike Kelm, Jeff Nuege, Matthew Rudig, David Saufe, Gary Sherman, Brian Shepherd, Bev Simonds, Mike Staggs, Greg Ubl, Pete Vanderloo, Jon Wagner, Michele Walsh, Larry Wawronowitz, Mark Williams.

#### Call to order:

The meeting was called to order at 10:20 a.m.

#### Minutes

Dave Gollon made motion to accept the minutes, Bill West 2<sup>nd</sup>, motion carried with all in favor. Minutes approved.

Cont on page 23



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**Steve Abernathy – Owner of Til-Tech Aquafarm**, which produces Tilapia fingerlings in an indoor recirculating facility.



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**Paul Williams – Owner of Owen and Williams Fish Farm**, producers of game fish, grass carp, and catfish.



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**Peter Fritsch – Farm Manager for Rushing Waters Trout Farm**, the largest Rainbow Trout producer in the Midwest.

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**Discussion of Aquaculture Funding and Research Programs -**

First Speaker - Dr. Anders Andren, Director, Wisconsin Sea Grant, UW-Madison

Dr. Andren presented an overview of UW-Sea Grant. The National Oceanic & Atmospheric Administration (NOAA) of the U.S. Department of Commerce provides authorization for the program and the Office of Management and Budget (OMB) mandates how funding is spent. Currently, about 60% of the Sea-Grant budget is spent on research projects, 20% spent on advisory and 20% on education and outreach. Aquaculture thematic funding in 2004-2006 was \$600,000-700,000. They are unable to fund facility development.

Dave Gollon asked how fish farmers could get involved with projects. Dr. Andren stated that fish farmers could work to help the governing committee to set priorities, review position papers and get on mailing lists for Sea-Grant publications.

Second Speaker - Dr. Brian Shepherd, Research Physiologist, Great Lakes WATER Inst. / Agricultural Research Service / USDA

Dr. Shepherd explained that the Agricultural Research Service (ARS) is the in-house research arm of the USDA whose mission is to conduct research and transfer information gained to the industry. Their mandates require that they work on animals that are agriculturally relevant. Funding sources include: 1) OMB mandates, 2) Congressional add-ons and 3) extramural funding sources like CREES, SBIR, NCRAC, Sea Grant and others. They have conducted a national workshop to form a national plan for aquaculture.

Currently, Dr. Shepherd is working on enhanced traits for yellow perch brood stock in their brood stock program.

**Council discussion of reports**

WAA— None

Agency (DATCP, DNR, Commerce, DPI, WTCS)

**DATCP**

Dr. Kebus reported to the council that there is a definite need to improve the quality of applications for the import permits and health certificates/permits. There has been an increasing problem of incomplete and illegible applications being submitted which puts a burden on staff performing reviews and creates delays in processing.

There is no model from other states or the national government for in processing health certificates under the restricted environment caused by VHS. There are no quick and easy answers and will take time to work out what is best in the long run for the industry. In the meantime, DATCP may associate risk levels with the levels of testing needed and conduct these on a case-by-case basis. This will take time.

**DNR**

Mike Staggs mentioned that the DNR is concerned about the impact VHS will have on natural bodies, and as a large fish farm, their hatcheries. They have suspended their live fish operations at some of the hatcheries and are trying to figure out what the long term strategy will be. Again, it will take time.

In April, the DNR created an emergency rule as part of a stepped approach for restricting live fish movement from waters with potentially infected fish. In August 2007, they will begin hearings with proposed rules to be approved in October and take effect in February, 2008.

The DNR has also issued television commercial as part of their outreach efforts.

The status of an aquaculture liaison is unknown.

**Commerce, DPI, WTCS**

Please see Commerce report e-mailed prior to, or available at the council meeting.

**Other Business:**

Requests for topics at next WAIAC Meeting: None

Other Announcements, questions and actions: Dave Gollon read two WAA resolutions that were passed in the morning WAA session.

The first resolution requested that funding be made available for indemnification for all aquaculture species in the event that a fish farm was required to depopulate.

The second resolution called for an increase in resources for DATCP – Animal Health that will allow the agency to better respond to the increase in workload caused by VHS in the present and potential other animal health issues in the future.

Dave Gollon motioned to accept both resolutions, Fritz Gollon 2<sup>nd</sup>, and both resolutions were passed with unanimous votes.

Representative Sherman urged fish farmers to contact their legislators to impress upon them the importance of expressing support for the funding initiative and the need to reach a settlement on the budget.

Matt Redig, U.S. Congressman David Obey's office was introduced.

Next Meeting September 7, in Stevens Point.

Motion to adjourn Dave Gollon 2<sup>nd</sup> by Dan Gruendemann

Respectfully submitted, Mike Bandli

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# The Importance of Home Grown Aquaculture to the American Consumer

by Cindy Johnson

As I was recently reading through several aquaculture magazines, I became aware of quotes, statistics, etc that pointed to the importance and value of farm raised fish for human consumption and the importance of homegrown fish and how this can have an impact on American economics. The recent discoveries of imported fish either being mislabeled or contaminated brought to our attention with headlines such as “TAINTED IMPORTED FISH FOUND TO CONTAIN BANNED CHEMICALS” (Alfa Farmer News, April 26, 2007) is bringing home the slogans “Buy Homegrown” and “Buy Local”.

## DOMESTIC FISH FARMS AREN'T MEETING THE NEEDS OF THE AMERICAN MARKET

The United States imports roughly 80 percent of its seafood.<sup>1,2</sup> This contributes to over \$8 billion to the US trade deficit.<sup>2</sup> Not only are we choosing seafood when we eat out, but we are also eating more at home - in 2005 Americans spent \$44.5 billion in seafood restaurants, a \$1.7 billion increase over 2004, and purchased \$20.5 billion worth of seafood for home consumption, an increase of 1.6 billion over 2004.<sup>1</sup>

These statistics reveal domestic fisheries alone are not meeting Americans' demands for seafood. “To meet the growing demand for healthy seafood, we absolutely must embrace and expand aquaculture,” said Dr. Steven Orwell, a University of Florida professor and member of National Academy of Sciences' Seafood Safety Committee.<sup>3</sup>

Aquaculture has become the fastest growing food supply in the world. And we have significant competitors in this market – globally, the United States remains third, behind Japan and China.<sup>1</sup> According to the UN Food and Agriculture Organization, global aquaculture production will need to nearly double by the year 2050 to meet consumer demand.<sup>3</sup> Rising global demand for healthy seafood has exceeded wild capture fisheries' ability to provide all fish meals demanded by consumers. “The fact is we can't sustain our level of consumption or expected increases in the future by solely relying on wild capture,” said National Fisheries Institute President John Connelly.<sup>4</sup>

In order for Americans to continue to have a reliable, safe seafood supply, our farms will need to be able to rise to meet the demand. Dr. Randy Macmillan, president of the National Aquaculture Association, reconfirms what fish farmers have been touting for years - “...farmed seafood allows greater numbers of Americans to enjoy the healthy benefits of fish in an environmentally-friendly way.”<sup>3</sup>

## ADD TO THAT CONTAMINATION OF SOME IMPORTED FOODS

Now comes along revelations that some of our imported food and even the food that we feed our animals and livestock (finned or terrestrial) has been contaminated. This is making customers avid label readers in order to try to avoid food that may not be safe.

China has become the world's manufacturing center for fish. The melamine scare/scam came about from greed. Wheat gluten is the protein portion of wheat and it is normally measured by the level of nitrogen. So someone at a Chinese manufacturing plant simply added melamine to wheat flour to create a “wheat gluten” product

that tested like high protein wheat gluten, but actually was wheat flour laced with nitrogen, in the form of melamine. Then the *New York Times* reported on a new contaminant. Cyanuric acid is used for cleaning swimming pools. Lacing fish feed with cyanuric acid falsifies the protein content thereby boosting the price. Chinese manufacturing plants are hygienically very advanced. The problem with China is its business practices. Melamine contamination was discovered because the combination of cyanuric acid and melamine was killing pets here.<sup>5</sup>

In late April and early May Alabama, Mississippi and Louisiana stopped sales of Chinese catfish when they tested positive for fluoroquinolones a banned group of antibiotics. The Alabama Department of Agriculture found fluoroquinolones in 14 catfish samples. Then the Mississippi Dept of Ag found the antibiotic in 12 catfish. Shortly afterwards 1 catfish and 1 basa sample in Louisiana tested positive, resulting in the requirement that all Chinese and Vietnamese seafood be tested. All the samples only had trace amounts that were not considered to pose an immediate health threat to humans according to the FDA, but Louisiana, Alabama and Mississippi all have a zero tolerance policy for fluoroquinolones.<sup>6</sup>

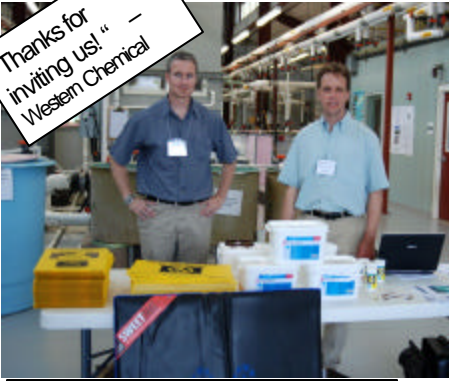
Greed is also fueling seafood fraud. Even though this is not a health concern, it is an economic issue. In Florida, Panhandle Trading and Panhandle Seafood was found to be guilty of substituting the less expensive basa for the much more expensive grouper, bass and some other fish species. And regionally, the inexpensive zander has been substituted for walleye. Since most fish is sold as fillets, it is difficult for the buyer to visually see any difference. In April the Associated Press reported that only 1.3 percent of all imported food is actually inspected. The National Marines Fisheries Service admits it lacks the resources to do it's job right and the USFDA is cash-strapped and overwhelmed with the food-safety issues. Currently retailers must comply with COOL laws, but food-service outlets are not required to,<sup>7</sup> so when you eat out, you may not be eating what you are paying for.

All of this is pointing to an opportunity for an economic boon for American fish farmers. There is no reason that the fish farmers in Wisconsin can't join in, becoming a significant supplier of safe, fresh, locally produced, environmentally friendly food product. We all know we have a great product, we just need to get it on the table. Make it a priority to keep in touch with your state representative, senator and their aides, invite them to your farm, show them around, let them know of your problems, successes, goals and potential. Let everyone know how great Wisconsin farmed raised fish is.

1. Aquaculture Magazine, Jan-Feb 2007, Seafood Consumption in United States Declines Slightly in 2005, page 12
2. Fish Farming News, Issue 2, 2007, Offshore Aquaculture Raises Concerns, page 22
3. Aquaculture Magazine, Jan-Feb 2007, Sustainable Aquaculture Critical to Feed the World, pages 8,9
4. Aquaculture Magazine, March April 2007, NFI Supports Introduction of Aquaculture Bill, pages 8,9
5. Fish Farming News, Issue 2, 2007, Melamine and Fluoroquinolones Just the Tip of the Iceberg, page 18
6. Seafood Business, 2007, Vol. 26, No. 6, Chinese Catfish Sales halted Due to Antibiotics, page 8
7. Seafood Business, 2007, Vol. 26, No. 6, Fighting Fraud, pages 24-26



"Thanks for inviting us!" — Western Chemical

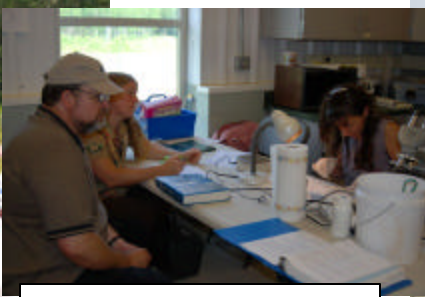


"It is a wonderful opportunity for NADF to provide an annual assessment of projects."



"Better understanding of VHS and surrounding issues and impacts on our processes and procedures."

"It was a GREAT event in a GREAT area and would love to go back next year!"



**HANDS ON DEMONSTRATIONS**



"Wow, it was a pleasure with the boat tour of some of the islands."



Feed Training Workshop  
Cool Water Farm



Feed Training Workshop, Lake Mills



Feed Training Workshop  
Lake Mills



Egg Disinfection Workshop Panel -  
T. Gollon, D. Aloisi, S. Marcquenski,  
G. Fischer, J. Kampa , Dr. J. Rolland,  
Dr. M. Kebus



Attendees at Egg Disinfection Workshop



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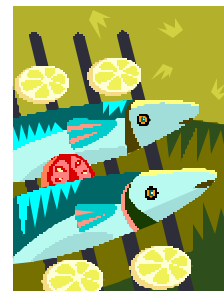
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### **THE COOK'S CORNER**

*the following recipe is from Cooking Fish and Game by Francine Dufresne*

#### **Pike Glazed with Honey**

1 pike (2 pounds)	Cloves
3 Tbl flour	1/2 cp apple juice
2 Tbl brown sugar	1 Tbl honey
Butter	Finely grated lemon rind
Cinnamon	

Wash and dry pike thoroughly and cut into 4 pieces. Dredge in a mixture of the flour and brown sugar. Place in a well-buttered pan and sprinkle with cinnamon and several cloves. Bake at 350° for 35 minutes. Halfway through the cooking, baste with the apple juice sweeten with honey. Sprinkle grated lemon rind over the pike.



## Memberships are a great value — Join Now

- ◆ Workshops, Annual Meeting, Conference and farm tour
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## WAA MEMBERSHIP APPLICATION

The Wisconsin Aquaculture Association (WAA) is the voice of aquaculture in the state. Legislators and state officials look to the WAA for input on legislation and regulations and often seek opinions from the Board regarding new research, marketing and financing programs designed to assist the expansion of aquaculture in the state.

WAA is a membership association which is solely supported by membership dues and by advertising in *The CREEL* and on the [www.wisconsinaquaculture.com](http://www.wisconsinaquaculture.com) website. **Memberships expire each year in December; renewals for the coming year are due in January.** Be sure and mail your check today and help promote aquaculture.

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City, State Zip Code \_\_\_\_\_

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