

# Fish Tales Newsletter

West Virginia's Aquaculture Newsletter is produced to help inform, educate, and update those interested in producing quality aquatic products, in a sustainable manner, for the recreational and food fish markets.

## Pond Oxygen Problems During the Summer

Some pond owners who manage their pond by feeding commercial fish feed, experience a sudden mortality of fish during the hot summer months. Why does this happen?

There are a number of reasons for a sudden drop in oxygen. To better understand the causes it is worth recalling that warmer water hold less oxygen than cooler water. The oxygen saturation level of 60°F water is about 10 ppm while 90°F water can hold only 7.2 ppm oxygen. 28% less oxygen.

The warmer water increases the metabolism of the fish in the pond which means the fish consume more oxygen than in cooler water. Warm water species like bass and bluegill grow faster in warmer water so they tend to eat more in the summer.

Adding fish feed to a pond will increase the oxygen demand. So when the summer rains come and the sun does not shine for a couple of days, reducing photosynthesis (oxygen production), a serious oxygen problem may develop.

Without the sun, **photosynthesis, which converts sunlight into plant energy and oxygen**, cannot occur. If you do not measure oxygen in your fed pond, you could lower the risk of a fish kill by reducing the feed during the cloudy hot summer days. Oxygen levels are lowest in the early morning.



## Farmer Profile: Fred Hays

Divergent Natural Interests (D.N.I.) has been supplying pond-stocking fish to satisfied customers throughout West Virginia for over ten years. DNI is a family run business owned by Fred Hays, a West Virginia native. Hays takes pride in providing sound pond management consultation and healthy fish at the best prices. Bass, bluegill, and catfish are the most popular game fish for

stocking. DNI is the first West Virginia vendor to sell Grass Carp (or White Amur) for weed control. In addition to Grass Carp, DNI also has a huge assortment of Koi and Goldfish for algae control and water gardens. Rainbow trout are also available seasonally.

Hays says understanding the dynamics of integrated fish populations and taking the time to listen to the customer are the keys to solving most pond problems. On new ponds, Hays recommends stocking early and stocking all fish at once with recommended size ranges for best results. DNI is located on a 150 acre farm with four spring fed ponds, filled with fish for sale by delivery or pick-up, in Elkview, W.Va.

Fred has a Masters degree from Marshall University and is a district conservation supervisor and a certified holistic management educator. He is also a past president of the West Virginia Aquaculture Association. Fred summarizes his business by stating, "I focus on helping folks develop balanced lakes or ponds that meet their needs rather than trying to sell them too many fish or the wrong species for their situation because I care about West Virginia, it's people, and it's resources." Hays continues, "It is rewarding when customers call just to thank me for the amazing results from grass carp clearing up their weed problem or to tell me about their grandchildren catching trophy sized bass that were stocked two years ago." His only regret about the business? "It's hard for me to find time to spend fishing!" Contact Fred Hays at 304-548-7117 or e-mail at [sustainableresources@hotmail.com](mailto:sustainableresources@hotmail.com) WCHS-TV's recently aired a DNI news story which can be accessed at <http://www.wchstv.com/traveling/2006/twv060518.shtml>

## Parson's Processing Plant Closes Doors for Now

Until this summer, the high quality specialty fish products marketed as *Five Forks* were being produced at the Parson's plant in Tucker Co. The Canaan Valley Institute (CVI) was leasing the plant from the Parson's Revitalization Organization.

Locals have enjoyed the delicious smoked trout products that found their way into dips, trout cakes, and fillets. Due to the recent reorganization of CVI, the processing of all *Five Forks* products has stopped. At the time of publication it is not known when or if the *Five Forks* label will continue to be seen in the specialty foods section of the local shops.



### One to Another

The opportunity to move from one prestigious organization to another does not occur very often in life, but for Dr. Julie Bebak-Williams it happened. In August, Julie moved from working for the Freshwater Institute as Director of Aquatic Animal Health to a position as Veterinary Medical Officer in Epidemiology for the USDA ARS Aquatic Animal Health Research Unit in Auburn, AL.

Julie spent 10 years with the Freshwater Institute working on disease prevention and control strategies for the recirculating and flow-through aquaculture industries. She also provided on-farm veterinary support to individual producers. Her species focus will change from salmonids (e.g., trout), to catfish. We all will miss her smiling face in the mountain state. She can be contacted by e-mail at: [jbepak@ars.usda.gov](mailto:jbepak@ars.usda.gov)

## Would you like your seedstock diploid, triploid or tetraploid?

Researchers at the National Research Center for Cool and Cold Water Aquaculture in Kearneysville, West Virginia are working on developing new technologies that may allow trout farmers a choice of sorts when it comes to ordering fertilized eggs or fingerling rainbow trout.

In the April/May 2006 issue (Vol. 9 issue 2) of *Global Aquaculture Advocate* **Dr. Bill Hershberger** and **Mark Hostuttler** report the latest on their research to develop different strains of trout with better production efficiency. Diploid, triploid and tetraploid trout are simply trout with two, three, and four sets of chromosomes, respectively. What does that mean for the farmer? Good news.

Triploid trout are desirable because triploids are sterile, which eliminates the potential problem of escaped trout reproducing with natural populations. Sterility will also reduce the losses associated with reproductive maturation, common to diploid (normal) trout.

The commercial production of triploid rainbow trout is presently accomplished by subjecting recently fertilized diploid eggs to carefully timed hydrostatic pressure that results in triploid trout. The problem is that this process is not always 100% effective.

The researchers are trying to determine the small variations of when to apply the hydrostatic pressure and for how long on each of the various strains that will result in tetraploid trout. This is important because by succeeding with only one strain of rainbow trout you would lose much of the genetic variability. It is important to maintain genetic variability in the tetraploid trout because variation will allow the researchers to select desirable production traits that can be passed along to the offspring.

When tetraploid trout are crossed with diploid trout the result is always 100% triploid trout. Recent research has shown that lower mortality results when a female tetraploid is crossed with a male diploid, resulting in all triploid trout. (continued on page 3)

A comparison was then made in a small growth study to see how the triploids grew in relation to the diploids of the same genetic stock. Initial results indicated that the triploids grew faster than the diploids. This occurred with triploids grown by themselves and with diploids and triploids grown in the same tank. The scientists are also looking to define a procedure that will result in all female triploids. This cutting edge research will eventually help trout farmers across the nation.

(continued from page 1)

## Fee Fishing Brochures

This summer a revised version of the West Virginia Fee Fishing brochure was printed and distributed to the 33 Fee Fishing sites in the state. In addition these brochures are available at county extension offices and visitor information centers within the state. The brochures are another way the cooperation between the WVU Extension Service and the WV Division of Tourism are helping to promote recreational fishing in the mountain state. The brochure can be found at the following web site:  
<http://www.wvu.edu/~agexten/aquaculture/mapinfo.pdf>

## Free Marketing

The West Virginia Division of Tourism will tell anyone who calls 1-800 CALL WVA about your business. All you have to do is let them know what your business offers. **Susan Ward** keeps the database up to date, and she can be reached at (e-mail address): station2612wvtourism.com Send her your information and improve your annual sales.

For those who have a business large enough to justify posting an ad on the blue interstate exit signs, the West Virginia Division of Highways has a program for you.

For information and application forms contact TODS/LOGO Coordinator, Traffic Engineering Division, WV Division of Highways, Room A-550, 1900 Kanawha Blvd. East, Bldg. 5, Charleston, WV 25305-0430, Telephone 304-558-3063.

## Aquaculture and Mycotoxins

You may know them as molds, fungi or grime, but the metabolites of these natural recyclers can cause sickness and even death in the fish we try to raise if we are not careful. Most of the mycotoxins that cause growth or health problems in animals that eat contaminated feed, are produced by *Penicillium*, *Aspergillus*, and *Fusarium sp.* Mycotoxins are known to cause immunosuppression in animals. They also have a negative influence on the liver.

With the environmental pressures on the aquaculture industry to reduce the levels of fish meal with plant based proteins, the occurrence of mycotoxin contamination in aquaculture feeds may increase, since plant based ingredients have a higher susceptibility for mycotoxin contamination. With quality ingredients, this is not a common problem. However, in tropical and subtropical climates, where grains are harvested and stored under hot, humid conditions, fungal contamination can easily occur. This is why a vigilant feed manufacturer should be your partner when selecting a commercial feed for your fish.

In a 1983 study reported in *Aquaculture*, Woodward et al. found that rainbow trout went off feed as a diet containing an increasing level of a mycotoxin produced by *Fusarium sp.* was fed to the fish. Complete refusal to eat the feed occurred at only 20 ppm. Reduced consumption was noted as the concentration increased from 1 to 13 ppm.

So what is a farmer to do? Ask your feed supplier about quality control when selecting raw ingredients, storage conditions for feeds and raw ingredients, and mycotoxin deactivators...you read it right, mycotoxin deactivators. Mycotoxins are heat stable so the pelleting process of extrusion does not appreciably reduce their effect on the animal that eats the feed.

Fortunately these mycotoxin deactivators are inexpensive and easy to include in the feed as a binder. Some of the common materials used for this purpose include clays, silicates of aluminum, and bentonites. Unfortunately, different mycotoxin groups react differently so it not possible to equally deactivate all mycotoxins by using one single ingredient. Some mycotoxins can be biologically deactivated through biotransformation. This is accomplished by using microorganisms or enzymes to degrade the mycotoxin into a non-toxic form.

Producing a high quality commercial trout feed requires continual attention to many different details. By asking your feed supplier how they select, store, and reduce the chance of fungal growth on their product will help you select the best feed quality for your fish.

**Quality Fish for Stocking!**

Rainbow trout, Bass, Bluegill, Yellow perch, Channel cats, Koi, Grass carp, Georgia giants-hybrid bream, Crappie, Fathead minnows. Bullfrogs tadpoles,

Delivery Available.

Rainbowhead Farms

Mike Nardella

**1-800-498-9260 or 304-288-5402**

**Fish for pond stocking. Lowest prices in area.**

**Koi, Grass carp, Bass, bluegills, goldfish, catfish, bullfrogs. 304-548-7117**

We are encouraging contributions to Fishtales newsletter by W.Va. residents. If you are interested in contributing, please contact Dan Miller at [dmille31@wvu.edu](mailto:dmille31@wvu.edu) or call 304-293-4832, ext. 4465. The deadline for the next issue of Fishtales is Dec. 1, 2006.

This publication is available, in a printable format, on the Web at:

[www.wvu.edu/~agexten/aquaculture/newsletter.htm](http://www.wvu.edu/~agexten/aquaculture/newsletter.htm)

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