



White Sulphur Springs

National Fish Hatchery

Conserving America's Fisheries



Leadership in Science and Technology



Above: Matthew working the FMCS Outreach Booth at the Trade Show. Photo by Diana Brubaker. Below: Standing room only at the symposium. Photo by Matthew Patterson.

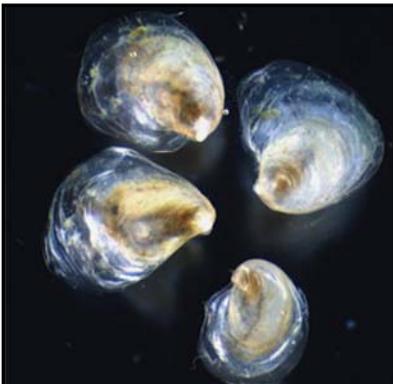
WSSNFH Organizes Mussel Symposium

Matthew Patterson, Fishery Biologist with the White Sulphur Springs National Fish Hatchery, chairs the Outreach Committee for the Freshwater Mollusk Conservation Society (FMCS), a professional society devoted to the advocacy for, public education about, and conservation science of freshwater mollusks, North America's most imperiled fauna. As Chair, Matthew organized and moderated a special symposium at the 68th Midwest Fish and Wildlife Conference in Madison, Wisconsin entitled "Freshwater Mussels: Ecosystem Functions to Provide Healthier Fisheries". The purpose of the symposium was to draw attention to the rapid decline of freshwater mollusks across North America and the effect this decline is having on the health of our rivers. Freshwater mollusks provide a variety of ecosystem services that are critical to the health of aquatic systems. A bed of 200,000 freshwater mussels, for example, filters over one million gallons of water per day, free of charge with no fancy filters, scrubbers, or chemicals. Unfortunately, the free ecosystem services they provide have been severely diminished by large-scale habitat loss. The half-day symposium drew large crowds of fish and wildlife professionals from across the Midwest eager to hear seminars on freshwater mussel biology, life-history, ecosystem services, ecotoxicology and propagation. FMCS also set up an outreach booth at the Trade Show complete with streaming video, mussel shells, field guides, freshwater mussel posters and FMCS merchandise.

Partnerships *Swedish Scientists Visit WSSNFH to See Biofence in Action*

Scientists with **Ostrea Sverige AB**, an oyster hatchery on the west coast of Sweden, visited White Sulphur Springs National Fish Hatchery in January to see our algae production facility (the Biofence) in action. The oyster hatchery is in the construction phase and they are searching for the best and latest technologies in bivalve production. They decided to come all the way to United States because very few hatcheries in Europe are currently using Biofence technology and those that are have not been using it long enough to provide adequate knowledge of system capacity, production rates and contamination threats. WSSNFH, on the other hand, has been using Biofences for over three years to feed both juvenile and adult freshwater mussels. In return for sharing our knowledge of Biofence technology, scientists with Ostrea Sverige AB agreed to share their extensive knowledge of bivalve culture techniques, larval ecology and larval feeding. The hatchery plans to grow the

European flat oyster (*Ostrea edulis*) primarily for the French food industry (per capita, France is the leading consumer of bivalves in the world). European flat oysters are fascinating little animals capable of changing sexes more than once during a season. Early in the spawning season oysters are male before switching to female later in the season. The European flat oyster is also a keystone species, providing habitat for an wide array of marine animals including anemones, barnacles and hooked mussels. Oyster reefs, with their complex structure, can increase the surface area of a flat bottom more than 50 fold.



Juvenile European flat oysters. Photo by Ostrea Sverige AB.



Green algae growing in a Biofence at WSSNFH. Photo by Matthew Patterson

Public Use

Winter Trout Spawning Set to Begin at WSSNFH

WSSNFH biologists raise two genetic strains of rainbow trout, one that spawns in the summer and another that spawns in the winter. Two spawning seasons allows hatchery staff to provide fish to the



A freshly hatched rainbow trout. Photo by Matthew Patterson
 general public throughout the year. Spawning of the winter strain is set to begin this month. Free tours of the rainbow trout spawning can be scheduled by calling the hatchery at 304-536-1361. In the wild, rainbow trout migrate to their spawning grounds. In fact, biologists that tag rainbow trout have discovered that some fish can migrate over 300 miles to spawn. Once they find a stream with nice clean gravel, a five-pound female can lay up to 6,000 eggs. After 2-3 weeks, the eggs hatch but its likely that only one or two of those 6,000 hatchlings will live long enough to reproduce themselves.



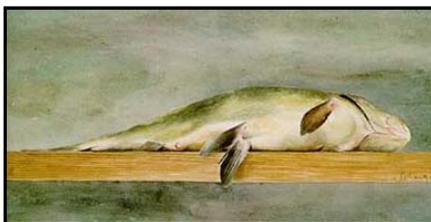
Tommy Watkins (left) and Mike Whited load fish for spawning. Photo by Matthew Patterson.



Fun Fish Facts

Let Sleeping Fish Lie

Unlike humans, most species of fish don't have eyelids so scientists have always wondered if they are able to fall asleep. Scientists from Stanford University, however, have recently discovered that fish can not only sleep, but they also can suffer from sleep deprivation and insomnia (a chronic inability to fall asleep or remain asleep). Some of the fish used in the study had a



"Sleeping Fish". Phillip von Schantz 1981. genetic mutation that prevented them from producing hypocretin, a substance that helps keep people awake. Those fish with the mutation slept 30% less than fish without the mutation. Fish that were sleeping had a drooping tail fin and stayed at the bottom of the tank.

Friends of the WSSNFH



Friends of the WSSNFH help by organizing the Freshwater Folk Festival, education and fundraising. For information about joining the Friends Group, please visit their website: www.wsshatcheryfriends.org

To receive this monthly newsletter via e-mail send your request to: matthew_patterson@fws.gov

Hatchery Mission

Working with partners to restore and maintain fish, mussels and other aquatic resources at self-sustaining levels for the benefit of the American public. Our seven priority areas include Partnerships and Accountability, Aquatic Species Conservation and Management, Public Use, Leadership in Science and Technology, Aquatic Habitat Conservation and Management and Workforce Management.

Hatchery Information

Established in 1900 to produce fish for the American Public, WSSNFH became part of the National Broodstock Program in 1976. Since then we have shipped millions of disease-free rainbow trout eggs to hatcheries across the country. In



1995, the hatchery added a new program, freshwater mussel conservation. Today, we provide shelter for freshwater mussels threatened by pollution and raise baby mussels to improve wild populations.



Hatchery Tours

Tours are available free to the public M-F, 8AM to 3 PM. Call (304) 536-1361 one week in advance to schedule a tour.



Photo by L.E. McKinney for The Times of Greenbrier County.

Hatchery Contact Information

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