

# Raising Double The Yellow Perch Soon Possible For Fish Farmers

COLUMBUS, Ohio — Aquaculture farms soon will be able to cheaply and successfully raise two crops of high-value yellow perch per year, said Konrad Dabrowski, aquaculture specialist at Ohio State University's School of Natural Resources.

With a little more study, a process of controlled reproduction and growth of yellow perch could be available commercially by next spring, Dabrowski said. The process would enable fish farmers to get two spawning cycles per year instead of the traditional one from adult yellow perch and feed the resulting young fish for as much as 98 percent less than the best performing commercially available feed, without a loss in growth performance.

Yellow perch, native to Ohio and the Great Lakes, is in such high demand that consumers pay up to \$15 a pound for the tasty fish. The demand stems from tradition, the yellow perch's low fat content and other physiological traits that help yellow perch products have a long shelf life, resist freezer damage, and minimize problems with off-flavor and cooking.

Each year, wild harvests from the Great Lakes yield 11 million-18 million pounds of yellow perch. Aquaculture farms contribute another 200,000 pounds per year. But large food distributors suggest the existing market could absorb 50 million to 100 million pounds of yellow perch each year, according to data from the North Central Regional Aquaculture Center, USDA, which co-sponsored the recent study.

With fisheries in the U.S. and Canada declining and demand already higher than supply, there is a great need for increased aquaculture production of yellow perch.

For 10 years, Dabrowski and other Ohio State University researchers have studied yellow perch and how to effectively reproduce and raise them in an artificial environment.

In 1996, they were able to

alter the yellow perch's spawning cycles with water temperature and light manipulations, so the perch spawn again in August and September — several months after when they naturally spawn in April and May. Using this system, fish farmers could feasibly raise two, or possibly even three, yellow perch crops a year.

But while two crops could be reproduced, they could not be successfully or economically raised in captivity using artificial diets or live food, such as brine shrimp, until this spring, Dabrowski said.

The main problem for one-sixth-inch to one-fourth-inch long yellow perch after hatching is inflation of the swim bladder within the first week of their feeding.

"The swim bladder gives the fish their natural buoyancy, and if it is not inflated during this early window of opportunity it never will inflate," Dabrowski said. "With no air bubble in their swim bladder, young perch have to expend energy swimming, or they will sink. This unnatural swimming is stressful to their body, hurts growth, and eventually the larvae die."

The key is creating an artificial environment in an aquaculture tank that mimics the fish's natural environment. The tank's temperature, lighting, water clarity, and other conditions should be as close as possible to the perch's natural setting. If it is not, the young fish's instinct to swim to the surface and take in an air bubble may not be triggered, Dabrowski said.

The second major problem with raising yellow perch on an aquaculture farm has been the expense of feeding them.

To raise yellow perch successfully in controlled, tank-culture conditions, fish farmers have had to provide a live diet of expensive brine shrimp, which cost about \$110 per pound to buy and rear. The best commercially available artificial feed costs about \$40 a pound.

In contrast, dry diets fed to

trout and other types of fish cost less than 75 cents per pound. But, yellow perch are not naturally attracted to those varieties of dry feed, Dabrowski said.

Studies this spring at Ohio State University showed that coating the dry trout diets with liquid protein, called hydrolysate, from krill — a small, shrimp-like crustacean — makes the diet more attractive to yellow perch. It smells and tastes better to them, and the perch eat two to three times the amount of the dry diet than they normally would, Dabrowski said.

Naturally, the fish grew more and had a higher survival rate because they ate more. They also can be weaned off live food and onto an artificial diet at three to four weeks of age — about a

month or two earlier than normal, he said.

This result was particularly important because it allowed the replacement of costly live food and opened numerous research possibilities to further identify substances present in hydrolyzed krill that have attractant properties, he said. The dry diet sprayed with krill hydrolysate costs only about 80 cents a pound.

"In spring 2000, yellow perch larvae were raised on Ohio State University's Columbus campus, and in some batches more than 70 percent successfully filled their swim bladders and showed excellent growth," Dabrowski said.

"Several thousand of the juvenile fish were then transferred to an artificial diet and contin-

ued to grow. This basically means that two technologies, controlled reproduction, and larval rearing can now be tested on a larger scale for commercial success."

With an effective and economical diet established, the next step will be to try to enrich it with vitamins and nutrients that could reduce disease and further improve yellow perch production, he said.

The recent successful experiments came about partially because of collaborative work with Manuel Yufera from the Marine Institute of Andalusia in Cadiz, Spain, Dabrowski said.

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