

No Resting on This Perch



Dr. Joseph Buttner
Photo by Sharon Fleming

Armed with a shallow, pool-skimmer type net and a permit to collect fertilized perch eggs in the wild, Ekohawk's team heads for the warm shallows of the St. Lawrence River where early April conditions are right for perch to breed. Benedict will know when they come across the long gelatinous matrix of perch eggs. "Imagine a three-foot long white tube sock with a helix coil wrapped around it. Instead of DNA, it's got a coil of 50,000 eggs," describes Benedict. Sometimes the matrix is twice that size. Perhaps he'll hit a bonanza of 50 percent fertilized eggs of which 3 to 10 percent will hatch into nice, healthy fry—considerably less than yields achieved with controlled spawning of domesticated fish, an undertaking that Ekohawk is not yet able to do with its limited broodstock.

All perch culture photos courtesy of Ekohawk

When Joseph Buttner, then a professor at SUNY College at Brockport, began developing aquaculture techniques for several species of freshwater fish—some as a result of research funded by New York Sea Grant—he knew that his work would be applied in the field by many groups of anglers and business owners. But he couldn't have predicted how far-reaching an impact those techniques would have on the lives of a group of people in northern New York.

In 1995, Joe Buttner mentioned to Lloyd Benedict, Director of Ekohawk, a community enterprise on the Akwesasne Mohawk Reserve along the New York/Canadian border, that yellow perch was a promising species for domestication. The yellow perch fishery, whose historic abundance in the St. Lawrence River had made it the staple of the Mohawk diet, had been in decline for decades. Perhaps aquaculture of this popular fish was a to

solution providing both business opportunities and an improvement in diet to the residents of this somewhat remote expanse of 28,000 acres that straddles our national border. NYSG community issues specialist Dave Greene worked with Ekohawk to investigate various methods to "grow out" the perch to a marketable size in larger numbers making more fish available to the Akwesasne community.

To try out Buttner's net-pen techniques with perch, Benedict had two net-pens built in the bay adjacent to Cornwall Island within the St. Lawrence with the assistance of Arthur Mauger of the Quebec Ministry of Agriculture, Fisheries and Food. But it proved difficult to maintain a population of small yellow perch due to fouling of net-pens with a small mesh size. Although the pens are still functioning for larger perch, Benedict set his sights for the time being on Buttner's other suggested means of culturing the perch—in ponds and tanks. So, on Cornwall Island,



Harvesting wild perch eggs

Benedict built six half-acre ponds holding a million and a half gallons each with diesel pumps to maintain water levels. The ponds would soon be home to not only perch fry but the tiny organisms called zooplankton that fry need for food until they reach about 1 to 2 inches in length.

“Joe taught us how to maintain our zooplankton populations,” explains Benedict, who ferments horse feed pellets in 1500-gallon fermentation tanks to produce zooplankton culture. “The feed is cheap, breaks down quickly and forms a high-protein slurry which we



Stocking the pond with perch eggs

draw out of the tank and spray into the pond.” The slurry feeds tiny algae and zooplankton, giving the pond a greenish-purple sheen. As the algae bloom, they provide oxygen and food for tiny whirling rotifers and water fleas. “It’s a timing thing,” says Benedict. “We might have several blooms and crashes of zooplankton before the fry are actually in the pond.”

After collecting wild perch eggs from the river shallows, Benedict transports them to the hatchery where they’ll be incubated and treated with dilute concentrations of formalin to keep in check any fungus which could be rotting the unfertilized eggs. Says Benedict, “We continually monitor the eggs and when you see hearts beating in the embryos, then it’s time to move them into the pond.” In a few hours or a day they will hatch out into hungry fry and if the timing is right, immediately feast on a pondful of water fleas and rotifers.

When the fry are 1 to 2 inches long, they’re fingerlings and ready to come out

of the pond and into the hatchery building. In the past, the crew used long seines to gather the fingerlings—a pretty awkward setup. But the redesigned ponds have a clay bottom with a small sump beneath the drain. The ponds are drained of water leaving a 30 by 10-foot sump into which all the fingerlings are forced, making them easy to “scoop up.”

Inside the hatchery, Benedict has set up belt feeders to deliver cracker crumb-sized portions of ground trout food. As the fish grow larger, they are fed pellet food and move into culture tanks. If all goes according to plan, for the first time this year, fingerlings will be housed in a new culture building. The new facility has an inground water delivery system and industrial-strength wiring that will overcome some of the past problems of leaky ponds and finicky pumps. The fish will remain in twelve 2,400 gallon culture tanks until ready for market. Benedict predicts, “Inside of three years we’ll have a marketable fish of about a half-pound in weight.”

“Joe Buttner ignited a spark which made us go on to the next step,” says Benedict. Ekohawk will still put effort into growing perch in the net-pens, but ponds and tanks may turn out to be the best technique for domesticating perch for market. Getting these fish to market is of great importance to this community. Not only is the fishery of what was once the mainstay of the diet here greatly diminished, but Benedict believes that the reserve’s soaring diabetes rate may be linked in part to unfortunate dietary choices made during decades of dwindling fisheries. Providing a source of perch that is hand fed and free of contaminants to members of the Akwesasne community is the overarching goal of this Ekohawk project and is a fitting application of some important Sea Grant research.

—Barbara A. Branca

Extending Sea Grant Research to the Community

In accordance with the objectives of aquaculture to reduce and eliminate conditions that cause stress in fish, the new and future perch culturing facilities at the Akwesasne Reserve in northern New York include microfilters and ultraviolet sterilization techniques to improve water quality. Inspired by the NYSG pond culture research of Joseph Buttner, the new operation at Ekohawk will also include an improved filtering system and earthen grow-out ponds designed to shorten the time to bring perch to the already-waiting market.

Other benefits of perch aquaculture to the Akwesasne community are educational. With support from several governmental agencies, local development boards and school councils, Ekohawk’s Director Benedict has planned a 23-week long accredited training course for the community on the college level. The long-term impact to the community will be to foster student interest in the practicality of scientific careers. On a reserve with relatively high unemployment, this affords a unique educational opportunity.



Harvesting fingerlings