

# Lake Huron: A System Changed

What does the future hold for one of Michigan's top walleye fisheries?



One evening later this month, Jack Noble and other members of the Michigan Steelheaders Thumb Chapter will open up the net pens they've set up in Harbor Beach to hold 15,000 young steelhead. The roughly 10-inch fish will gradually, steadily and calmly exit the net pens. Within days they will leapfrog a gauntlet of hungry walleye mouths and head for the safety of deeper water, where they'll fatten up on fish, insects and anything else they can find.

The steelhead net pens are part of a three-year study the Michigan

Department of Natural Resources is undertaking to learn how Lake Huron's new ecosystem may ultimately unfold. The old model — Chinook salmon getting fat on alewives and legions of happy anglers — has fallen victim to invasive species, most notably zebra and quagga mussels. The alewives disappeared. With nothing to eat the Chinooks soon followed, leaving dozens of thriving Lake Huron charter boats without quarry to chase. But bureaucracies do not change quickly. Michigan still stocks 1.4 million Chinook salmon into Lake Huron every year, even though by its own accounts the vast majority of them wind up in the bellies of walleye and some lake trout,

both winners in Lake Huron's new order.

This year the DNR's Fisheries Division is re-evaluating its Lake Huron Chinook salmon stocking program. By October, the division will have weighed the evidence and taken it to the public to help form its salmon-stocking policies in the years ahead. At the same time, the division is working to identify other salmonid species that can not only survive on Lake Huron's new food supply, but also thrive at a level that can restore Lake Huron as a destination for big-lake sport anglers.

"Multi-species management is the goal and it always has been," said Todd Grischke, the DNR's act-

ing Lake Huron Basin Coordinator. “How we achieve that is the devil in the details. When you have a drastic change in forage that’s unprecedented and unplanned, then you have to make some major changes.”

The possibilities include the pen-reared steelhead being released not only in Harbor Beach, but also in Oscoda and Harrisville. A brown trout fall-stocking program is in its third and final year. Atlantic salmon are also in the mix, as are the native lake trout that have rebounded since the demise of the alewife.

But before the department decides what comes next it must first decide what comes now, and that’s the evaluation of the Chinook salm-

cies, native species and stocked species began to interact in ways no one predicted. In the late 1980s, zebra mussels first appeared in the Great Lakes, followed a decade later by quagga mussels, which colonize deeper waters. Both are thought to have arrived in ballast water from ocean-going ships. From there:

- Zebra mussels trapped nutrients near shore and quagga mussels spread into the deep center of Lake Huron, each filtering out small particles of plant and animal matter. The result: Clear water but a disrupted food web.

- Those small particles were the food source for small shrimp-like crustaceans called daphnia, mis-

duce, mainly in undammed Canadian tributaries, creating a much larger Chinook salmon population than anyone realized.

- All those salmon devoured alewives, which were already struggling from a diminished food supply. Hard winters in 2002-04 took a further toll on what was left of the struggling alewives.

Without alewives, many chinooks moved on to more fruitful waters of Lake Michigan and Georgian Bay, while others grew emaciated and presumably died off. A decade ago alewives fed everyone. Now the prey base includes round gobies, rainbow smelt and some smaller minnows, in addition to insects that



on program that by all accounts is not succeeding.

### A LITTLE BACKGROUND

The salmon story actually began more than 100 years ago, when alewives swam from the Atlantic Ocean into the Great Lakes in the late 1800s. They reached Lake Huron in mid-century and by the 1950s became so abundant in the Great Lakes that massive die-offs turned mile after mile of beach into vast swaths of stinking fish carcasses. Salmon were introduced to the Great Lakes in the 1960s to control them, which they managed to do for nearly 40 years.

But along the way, invasive spe-

and diporeia, which rise off the bottom and feed by night in open water, then settle back to the bottom by day. Fish like alewives, whitefish and baby lake trout would feed on them when they migrated upward into open water.

- Without food, diporeia and mysis died off, removing the mechanism for spreading nutrients up into the water column, and thus the food web.

- Without the migrating crustaceans, alewives had little to eat in the open-water pelagic zone.

- In the 1990s, the millions of salmon that had been stocked in Lake Huron by Michigan and Ontario began to spontaneously repro-

duce into the lake.

And don't forget the 1.4 million chinooks Michigan's DNR still stocks in Lake Huron each spring. The young fish don't head for open water until September, leaving them near shore looking an awful lot like alewives.

In other words, they're food.

### WITHER THE SALMON

The DNR's fisheries division acknowledged the problem back in 2005, and the following year cut stocking in half to the current level. But even they didn't expect the grim numbers that have shown up in creel reports since then. By 2006, lake-wide creel surveys showed that

anglers caught the equivalent of 0.5 percent of stocked chinook salmon. That means for every 1,000 salmon put in the lake intentionally, five were caught by anglers.

It's a shockingly low number. And then it dropped even further.

Since 2008 the catch rate has held steady at 0.2 percent, or two fish boated per thousand stocked. Around the Thumb the number is .02 — one-fifth of a fish per thousand stocked. The Thumb gets about 300,000 stocked chinooks per year. In 2010, Harbor Beach anglers caught nine of them. Port Sanilac anglers caught six. In Port Austin the number was four. The lakewide total was less than 3,200 stocked fish.

Clearly something isn't working,

the pens and ate enough that within three weeks they had grown another 2-3 inches. By the time they were released they ranged from 5-11 inches, and upon release they bolted for deep water. Only a tiny fraction of fish had died in the pens, Noble said.

"We proved to ourselves that we could raise them," he said. "We lost 27 out of 15,000 fish. That is phenomenal."

The DNR agrees. This year the Thumb Steelheaders will pen-acclimate another 15,000 steelhead in Harbor Beach as part of a three-year study on the validity of that technique. This month the DNR will release an equal number of steelhead at Harbor Beach through the traditional truck-and-dump method, then

the lower two-thirds of that fish," said Jim Johnson, a biologist at the DNR's Alpena Fisheries Research Station. "I'll even send you recipes if you want."

## FINDING THE RIGHT PREDATOR

The steelhead study isn't the only one the DNR is undertaking to find the right predator for Lake Huron and its anglers. In 2009 the DNR began a three-year program to release brown trout in the fall, after ravenous cormorants have already flown south for the winter. This coming fall will mark the program's final release, and surveys to discover its ef-



which is why the Thumb chapter of Michigan Steelheaders began agitating a few years back for something different. For more than a decade the group reared Chinook salmon in net pens only to watch their numbers dwindle. They wanted to try something else.

"We've been trying to push the DNR not to plant any more chinook," said Jack Noble, the chapter's president. "It's a waste of time and money."

Last year the group convinced the DNR to let them try raising steelhead in their net pens. With little expectation the group started with 15,000 steelhead ranging in size from 3-6 inches. The fish adapted well to

spend the next three years watching and counting to see which method returns the most fish to the creel. A similar comparison will take place with earthen raceways along the Au Sable River at Oscoda and also near Harrisville.

A total of 100,000 steelhead will go into Lake Huron this year, and DNR biologists ask anglers to keep any fish that has a missing adipose fin (the one just forward of the tail on top) and turn the heads in to the DNR. Those marked fish have a wire imbedded in their snouts that will tell scientists where and how they were stocked.

"Even if you're an avid catch-and-release fisherman, PLEASE eat

fectiveness will continue in 2012.

The department is also conducting a study to test the feasibility of rearing Atlantic salmon. Others have found success with Atlantics, including fisheries managers in the New York and Ontario waters of Lake Ontario, where the fish is native. Lake Superior State University has fine-tuned an Atlantic salmon program that puts about 40,000 fish a year into the St. Marys River that subsequently seek out the big waters of Lake Huron before returning to the St. Marys to spawn.

For now the DNR's pilot Atlantic salmon program is designed only to see if it's possible to raise the species from egg to stocking size in the

state's existing hatcheries. No further action will be taken until there's more information, Grischke said.

Another species that may see a restoration effort is lake herring, a native that was commercially fished out of many parts of Lake Huron. Since the fish have a homing instinct — they spawn where they were hatched — once they're gone from an area they don't naturally repopulate it. Restoring them makes sense on a number of levels: Their niche is the same one that was eventually overtaken by alewives, so they could provide an important food source to Lake Huron's predators. But they're also a desired recreational fish and excellent table fare. The DNR is working to see how feasible resto-

ferent salmonid species are not one and the same.

"I want to separate the issue of chinook salmon stocking and the discussion of what, if anything, we put in their place," he said. "We need to evaluate chinook salmon stocking on its merits. Then when we make that decision we can start considering what kinds of things make sense to stock in the lake."

Grischke and Johnson both point to the difficulty of reconfiguring hatcheries. Chinook salmon are cheap to rear and can withstand crowded, less pristine conditions in the hatchery before they're released as fingerlings. The average cost of raising a chinook salmon from egg to release the next spring is somewhere

anglers to understand."

But before any of that goes into motion, the DNR will take its case to the public. Over the next few months, fisheries staff will reach out to user groups and citizens through a series of workshops to show them what's happening with chinook salmon. The difficulty, Johnson said, lies with the people who aren't paying close attention to the science. The last reduction in stocking came with push back from the public, even though the stocked fish clearly weren't landing in many boats.

"We're having a hard time getting beyond the people coming to the workshops," Johnson said. "We need to get everybody on the same page and make the decision



ration would be, but the eggs have thus far proven difficult to collect and keep alive.

On top of all that, lake trout have shown signs of recovery in the absence of alewives, which contain an enzyme that inhibits lake trout reproduction. Stocking programs between Michigan, Ontario and the United States Fish and Wildlife Service continue. The DNR is building near-shore reefs to give natives like lake trout and whitefish places to spawn.

## FIRST THINGS FIRST

Grischke said it's important to understand that the salmon program and any subsequent stocking of dif-

ferent salmonid species are not one and the same. Steelhead need colder water than chinooks and an extra year to grow. Same with brown trout. Atlantic salmon can't tolerate crowding in the hatchery. The cost of rearing those species can top \$5 per fish, which means more effort for a much smaller outcome. And some hatcheries are simply too warm to raise those cold-water species.

"Rearing salmonids to a lay person is just get rid of one and get another," Grischke said. "But that's not at all the way our hatchery system works. It's a complex system and each hatchery has a different character. It's not a simple one-to-one conversion, and that's important for

in a transparent way. But even so it will be pretty opaque because most people are not connected to us. We know something needs to be done, but we know we can't do it without pushback."

He fully expects a similar dialogue this time, but said that's all part of the day-to-day business of government.

"If this were an industry you could just go ahead and make the decision that this isn't working any more, like Ford did with the Ranger pickup truck," he said. "With public policy you've got to bring the public along. These (2010) numbers just came out this winter. Now we have to share it with the public." ■