Bringing Back The Giants

The latest on saving the big brookies of the Great Lakes

By Ted Williams

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We called them "coasters" and "salmon trout" because they patrolled the coastlines of Lakes Superior, Huron, Michigan and Nipigon, and because they were the size of salmon. Then, before we had a chance to learn much about how they lived and reproduced, we essentially wiped them out. We caught and killed a lot of these giant brook trout-but that doesn't mean there had been a lot of them. Few if any species are as vulnerable to angling pressure. As with so many brook trout extirpations, this one was also accomplished by ripping up landscapes so silt and sand buried streambed spawning gravel, and by razing tree cover that shaded, cooled and slowed runoff.

Today there are only three recognized strains of wild coasters in the United States, all in Lake Superior and all in Michigan: the two stream-spawning populations of the Upper Peninsula's Salmon Trout River and Isle Royale's Big and Little Siskiwit rivers, and the shoal-spawners of Isle Royale's Tobin Harbor. There are countless rills in Minnesota that funnel brook trout into the lake at which point, by definition, they become coasters. Most of these fish aren't much over a pound and a half. Ontario provides eggs from its Lake Nipigon coaster strain to Ojibwa Indian and state managers around the Superior Basin.

Attempts at coaster rehabilitation began in 1890. It was going to be easy-just cluster-bomb the lake with hatchery brook trout. During the next 100 years Wisconsin alone stocked about 23 million fry, fingerlings and adults. Despite those efforts, the state is apparently without wild coasters. And the populations that persist in Michigan's, Ontario's, and Minnesota's Lake Superior shorelines are tiny remnants. In Ontario's Lake Nipigon (60 miles long and 40 miles wide) recovery is well underway.

Whether coasters can be restored to lakes Huron and Michigan is questionable, but there is reason for much optimism in Lake Superior. Since I last reported on coasters (in the July 2001 FR&R) Superior's Canadian and American partners-27 governmental, tribal, university and non-profit organizations-have pooled coaster research and coordinated management. At this writing working groups are about to publish papers that will answer some of our many questions about stream habitat, lake habitat, ecology, populations and genetics.

In 2001 it grieved me to report that Wisconsin and Michigan were thumbing their noses at coaster rehabilitation by permitting Lake Superior anglers to kill three fish a day, which only had to measure 15 inches in Wisconsin and 10 inches in Michigan. But now all partners have implemented strict lake-wide harvest regulations-one fish over 20 inches per day in the states; and one fish over 22 inches in Ontario. The tribes are doing even better-having basically committed to no-kill and, as has been their traditional practice, refusing to stock exotic species. Although Wisconsin and Michigan still allow the mass slaughter of potential coasters in most of their tributaries, Minnesota and Ontario have applied their one-fish limit in every stream at least up to the first migration barrier. The new state and provincial regs, which went into effect in 2005, are by far the best news coaster advocates have ever received. Minnesota and Ontario anglers report more and bigger coasters already, though it will probably be at least five years before they see dramatic results.

The only good coaster data we have comes from Lake Nipigon, but it is applicable to Superior because growth and maturity rates are identical. The previous limit on Lake Nipigon (in place from 1990

through 2004) of two coasters over 18 inches protected only 22 percent of the fish on South Bay Shoal, a major spawning bed. The year-old limit of one fish over 22 inches (also in effect in Ontario's Lake Superior waters) is protecting 87 percent. Rob Swainson of the Ontario Ministry of Natural Resources, the godfather of North American coaster rehabilitation, predicts a "huge" and speedy improvement in the Nipigon population and a slower but still impressive one in Superior's. When he took over coaster management in 1988 the fish were presumed extirpated from the Nipigon River (which meets Lake Superior north of Thunder Bay). When he asked his colleagues for coaster data they told him there weren't any.

Destroying brook trout habitat has long been a criminal offense in Ontario, but because managers assumed there was none left they'd been allowing Ontario Power Generation to flush and fill the river as if it were a toilet bowl, stranding eggs, fry and invertebrate prey in the process. Swainson got that stopped two years after he arrived, then set about the Herculean task of convincing the angling community that you can catch lots of brook trout or eat lots of brook trout, but that if you do the latter, you won't do either for long.

In 1989, despite an ugly confrontation with the fillet-and-release crowd-namely the Ontario Federation of Anglers and Hunters (OFAH)-he implemented a limit of two fish over 18 inches in Lake Nipigon and the Nipigon River. Seven years later-after another ugly confrontation with OFAH-he implemented a one-fish, 20-inch limit in the Nipigon River and Superior's Nipigon Bay. A year ago, when he proposed the one-fish, 22-inch limit for all Canadian coaster waters including Superior's tributaries to the first migration barrier, OFAH shrieked louder than ever, claiming that such a limit at the bottom of the tribs was anti-sportsmen and anti-father-and-son. So Swainson and his colleagues suggested that perhaps the trib limit could be one fish over 22 inches or one fish under 10 inches. This time, however, there was so much support for coasters among enlightened anglers that they shouted the proposal down.

Some coasters-the Tobin Harbor and Lake Nipigon strains, for example-are known to spawn in the lake (on shoals at the mouths of rivers or over upwellings of groundwater). But others-maybe most-spawn in feeder streams. In order to shut down the slaughter, not just in Canada but in Minnesota as well, managers had to show doubters such as OFAH that coasters need tributaries. Providing the evidence was graduate student Silvia D'Amelio of Trent University in Peterborough, Ontario. D'Amelio compared the DNA of trout captured in the tribs to that of trout captured in the lake and found that fish from both habitats were part of the same population, thereby dismantling the widespread superstition that coasters depend only on the lake. "My research showed that not all tributaries within Lake Superior contribute to the coaster presence within the lake," she writes me. "However, all the tributaries I looked at seem to have the potential to do so. Because coasters are not unique unto themselves, it is not possible to create a coaster broodstock. You can, however, create a broodstock with the potential to produce coasters. The key is in finding the trigger(s) that cause some brook trout to make the switch from resident to coaster. The most important point to remember for rehabilitative stocking is that to maintain the long-term integrity of these populations, closely related populations should be used to rehabilitate each individual tributary. Using a single source for the whole lake could greatly hamper the long-term survival of these fish."

One of the environmental triggers is obviously weather. Many of the small North Shore rills that ripple with brookies in May dry up in July. The fish don't have a choice; they have to go out into the lake, at which point they become coasters even if they're two inches long. In some cases fish above the barriers are genetically distinct from fish below, but when they get swept over the falls they apparently migrate to the lake also. There's a coldwater trickle collected by Superior near Swainson's house that produces no trout of its own; yet every spring it is full of young of the year brookies. In

summer they're gone. "Brook trout have very plastic life histories," observes Trout Unlimited's watershed programs director Laura Hewitt. "Full siblings can be two inches and living under an ice shelf and two feet and living in open water."

So does all this vindicate Wisconsin trout manager Dennis Pratt and his colleagues who don't even like to use the word "coaster" and who have been criticized by a host of fisheries professionals (including salmonid guru Dr. Robert Behnke) for arguing that, in their opinion at least, "a brook trout is a brook trout?" In a way it does-if, as I suspect, what they meant to say is "all brook trout with access to Lake Superior are probably potential coasters."

Still, each of the recognized coaster strains has distinctive genetic markers that allow managers to ID them from tissue samples. And there are measurable genetic differences between the coasters of the Salmon Trout River and resident brook trout farther upstream. Whether or not there's a genetic trigger to migratory behavior is not known. And while D'Amelio's research was hugely important in that it showed the link between stream and lake habitat, she has never pretended that it tells us anything about possible genetic triggers or even genetic differences between coasters and resident brookies. After all, if the trout she sampled in the tribs were the progeny of coasters, you'd expect them to share DNA.

Pratt makes an excellent point when he observes that Wisconsin's brook trout habitat has been so grievously damaged by logging, agriculture and development that there may no longer be sufficient competition to force trout out into the lake or sufficient food base for them to grow large enough to want to move out into the lake; and that, in any case, most of the wild trout are far upstream because the low-gradient river mouths are clogged with silt and sand. "We have extremely good groundwater flow," he told me, "with some streams influenced all the way to the lakeshore. But flow and velocity are so great that survival of eggs and fry is poor. Most Minnesota brook trout populations, on the other hand, are in fairly close association with the shoreline because of barrier falls."

To its credit Wisconsin is doing something about its habitat problem. It is controlling beavers, smoothing banks to stop sloughing, engineering logjams, flushing sand and silt off gravel by removing tag alder and woody debris, then letting the systems recover on their own (a process which, once the gravel is re-exposed, includes natural accumulation of woody debris).

Some of the most promising work is occurring on Whittlesey Creek, Graveyard Creek, and the Bark River-all subject to no-kill regs. In cooperation with the Fish and Wildlife Service, Whittlesey is being stocked with both strains of Isle Royale coasters. Seventy-six adults, about a third of them radio-tagged, were released in August 2003. Fertilized eggs and yearlings are scheduled in even-numbered years, fry in odd-numbered years. There will be four more years of stocking, then assessments for about five years. Graveyard Creek and the Bark River aren't being stocked in the hope that their native fish will become coasters.

In Michigan the Upper Peninsula's only viable coaster producer, the Salmon Trout River, is threatened by a massive metallic sulfide mine proposed by Kennecott Minerals Corporation. No mineral extraction is nastier: Target metals are bound in ores along with sulfur, and when the ore is removed and exposed to air and water it produces sulfuric acid and heavy metals, both of which can foul surface and ground water. Partly due to pollution from Kennecott's sulfide mine in Flambeau, Wisconsin, that state has essentially banned sulfide mining. Michigan has done about all it can by enacting a decent law, and at this writing a working group comprised of all interests is hashing out specific regulations. But regulations are only as good as enforcement; and there are few places in the nation where mining companies are much bothered by strict enforcement. Trout Unlimited is particularly worried about the

footprint. "For us the biggest concern is the relatively remote location of the mine means that all the ore has to be hauled by truck," says Rich Bowman, director of the Michigan TU Council. "You're talking 40 trucks per day moving 30 miles from the site to the railhead."

In cooperation with the Fish and Wildlife Service, the Michigan DNR had been stocking Tobin Harbor coasters in three streams in Pictured Rocks National Lakeshore. But the Park Service has wisely nixed the program because researchers using radio tags have found that the streams are producing little coasters of their own. Not messing with native genes is just common sense; and, what's more, the agency is mandated to "let natural processes proceed unimpeded within reason." Although spawning runs have yet to be seen, coaster stocking continues on the Keweenaw Peninsula in the Gratiot and Little Carp rivers.

Minnesota managers, who see silvery brookies in the mouths of essentially fishless tribs at spawning time, have shied away from stocking because they want to preserve the genes of the coasters they obviously have. "Our goal is to see if we can rehabilitate some of our own stocks with the restrictive regulation," comments Don Schreiner, the state DNR's Lake Superior fisheries supervisor. "Grand Portage [Ojibwa tribe] has been stocking for 10 years like there's no tomorrow. So we see no reason to reinvent the wheel. Let's watch them and see how it works. They do get fish to return, but what you want is to get those fish to reproduce, then discontinue stocking. Grand Portage hasn't made that leap yet, hasn't documented reproduction. They do see some young of the year, but that doesn't mean they came from the stocked fish." Schreiner and his colleagues would like to see that tribe and others make better efforts at assessment.

The one major disappointment I had in these most recent conversations with my coaster contacts was learning that the stocking of splake (artificially concocted lake trout-brookie hybrids) is still going hot and heavy in Wisconsin and Michigan. (Minnesota and Ontario mess around with these Frankenstein fish on inland lakes but have never polluted Lake Superior with them.) In 2001, when I suggested to Michigan DNR's Lake Superior Basin coordinator Steve Scott that his agency drop its Lake Superior splake program, he reported that he and his colleagues saw an opportunity to "replace splake with planted coasters." At that time the DNR was stocking about 80,000 splake a year. Now it stocks between 100,000 and 150,000. Wisconsin stocks about 60,000 (down from about 180,000 five years ago, but mostly because there was poor survival in Chequamegon Bay).

Splake were supposed to have been sterile; but, like the monsters of "Jurassic Park," they've found a way to reproduce. And in some parts of Lake Superior they're apparently mixing their warped genes with those of lake trout and brook trout. Not only do they compete with brook trout, they eat them-so voraciously, in fact, that managers actually use splake to control stunting when brookies become superabundant in Western lakes. Finally, the average angler can't tell the difference between a splake and a coaster. A confirmed Minnesota state record brook trout turned out to be a splake after someone decided to thaw it out and perform an autopsy. And in a recent court case a Michigan angler contested a citation he'd received for illegal possession of a coaster, contending that any reasonable person would have thought it was a splake. The judge agreed.

Wisconsin DNR's Stephen Schram submits that because lake trout spawning reefs are far off shore and splake haven't been seen on them, and because brook trout don't appear to be utilizing nearshore areas, splake stocking is "a nonissue." Other biologists disagree.

Dr. Casey Huckins, who teaches biological sciences at Michigan Technological University, told me this: "I don't believe it's a good idea to stock a hybrid of two species you're trying to rehabilitate. There's the potential for interbreeding, and I also question it on ecological grounds. Splake could potentially

compete and predate; and there's angler confusion as to what they have when they catch one." Henry Quinlan, the Fish and Wildlife Service biologist working on coaster rehabilitation at Whittlesey Creek, and Ed Baker, a research biologist with the Michigan DNR, heartily agree with Huckins.

Schram vows that if coaster recovery starts to happen in Wisconsin, his agency will abandon its splake program. But this is easier said than done. When I asked Baker why Michigan, which has three self-sustaining coaster populations, hasn't been able to do this he said: "Because anglers want splake." To me (and doubtless to Baker, who used the word "unfortunately" when he told me splake stocking was still underway) that's not an answer. Leading the public toward an ecological conscience and a refined taste in natural objects is, after all, why state resource agencies have information-and-education sections. But if you start giving anglers something, even something as offensive as splake, you have to be a lot tougher than your average DNR director to take it away from them. Michigan's internal review of its splake program has already spawned splake-defense groups. One, in Copper Harbor, is passing out caps bearing the shibboleth "I'd rather be splake fishing." And Doug Miron, president of the Alger County Fish and Game Alliance, is quoted by the Associated Press as intoning: "Do whatever you want with your coasters, just don't take away our splake."

We're still making major mistakes with coaster management. Unleashing splake in Lake Superior is pure insanity, as is killing generous limits of potential coasters in the feeder streams of Michigan and Wisconsin. And while the new lake-wide US regulation of one coaster over 20 inches (and the Ontario reg of one fish over 22 inches everywhere) is frankly better than most anyone had dared hope for, it should be remembered that in order to kill a trophy of this size one has to release a few dozen under that size. So a single, barbless-hook regulation like the one that exists in Lake Nipigon is desperately needed in Superior. So is a bait ban. Also, I remain unconvinced that you can kill any brook trout-even one a day-and expect a truly healthy population over the long term.

Still, at this writing coaster rehabilitation looks as if it's going to happen in Lake Superior-provided anglers don't get impatient (as they have with Atlantic salmon restoration in New England, for example). And it's easier to be patient if one is realistic in one's expectations. Coaster rehabilitation in the biggest char habitat on earth-now seething with exotic species and charter boats-doesn't mean a return to the days when businessman were checking into the posh Chequamegon Hotel on Friday, catching and killing 100 coasters over four pounds, then taking the train back to Chicago on Sunday night.

But it does mean that coasters can again be a significant part of the big lake's biota. And it means that, if everyone keeps on track, you will have an excellent chance of going out with a big streamer or a mayfly pattern in still or moving water and landing a truly giant brook trout-on purpose instead of by mistake.