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# Saving Michigan's Coaster Brook Trout

**This ancient stream is the final spawning site on the mainland United States for the coaster brook trout, one of the most glorious fishes in the Great Lakes. The fish now hovers on the brink of extinction. So why does hardly anyone care?**

Mar 2, 2009 Jeff Smith

I'm at a New Year's Eve party, talking with a man, and I tell him I'm working on a story about the coaster brook trout ([see the video here](#)). He tells me the fish has always fascinated him—so big and beautiful. Back when he was in college in [Marquette](#), on the shore of [Lake Superior](#) in the 1970's, he knew a local who understood where and how to catch coasters. "He could get as many as he wanted, could really slay 'em, then he'd bring them to the dorm and we'd cook 'em up," the man says.



Aaron Peterson

He pauses to recall the scene. "Every fish was this big," he says, and holds out his hands, the space between them spread a foot and a half or more. As he's telling me this, I too am picturing a pile of the giant speckled trout, their pink and green iridescent dots shimmering in the fluorescence of a dorm kitchenette, but I'm also thinking, I've never before met somebody who has eaten a measurable percentage of an endangered species population.

I concede I'm using the endangered species label loosely here, in a common-sense sort of way, or perhaps as nature herself might define it. Because, as incredible as it sounds, even though there are only an estimated 400 breeding adult coasters swimming in U.S. waters, the fish isn't by law an endangered species yet. An effort is underway to list it, but the outcome is uncertain. In the meantime, the coaster is perhaps the most endangered, least protected fish in the United States. Yet startlingly few people seem to know or care.

Come trout season, you could go out and catch a couple of coasters and [eat them](#)—consume some percent of the remaining breeding population in one

meal—and be entirely within the law, a situation pointed out to me by Casey Huckins, a fish researcher at Michigan Technological University. By comparison, Americans became alarmed in the early 1960's when, in the lower 48, nesting bald eagle adults fell to about 800, and timber wolves numbered maybe 700 individuals, though thousands more of each animal lived in Alaska.

The coaster breeds nowhere in the United States beyond two locations in the Lake Superior watershed, specifically, in a small tributary near Big Bay called the Salmon Trout River, and about 120 miles northwest of there in streams and on shoals of *Isle Royale*. Those estimated 400 adults are all the breeders our nation has.

The Bush administration had refused to even consider listing coasters until the Sierra Club and the Huron Mountain Club sued to force the review of their petition, submitted in 2006. The recommendation is expected by April 15, 2009. If listed, the coaster would be the first Great Lakes fish to receive the designation.

What exactly is the coaster? Even in our genome-mapping age, this is not an easy question to answer, but the answer is central to the endangered species decision. Ever since Europeans first learned of coasters, people have figured the fish were simply large brook trout (or, as Canadians call them, speckled trout), fish that swam out to Lake Superior by chance or choice and grew much larger there because of the larger environment. Many fish species vary in size based on environment, and coasters present a dramatic illustration of that trait. For example, a nice brook trout might measure 14 inches and weigh a pound. But the world record coaster, caught near Thunder Bay, Ontario, back in 1915, measured 34.5 inches and weighed 14.5 pounds—1,400 percent heavier than a decent stream brook trout. Historically, adult coasters along the southern shore of Lake Superior tended to weigh less than north shore coasters, in the 2-to-5-pound range. Nobody denies the coaster is different from a typical brookie, but to receive the endangered species designation it must be shown to be a distinct population, which is a difficult status to prove. More on that later.

Despite the coaster's obscurity today, the fish was once a star on the stage of Lake Superior angling. When Europeans first arrived here, biologists believe the fish swam by the millions along the rocky Lake Superior shore and up an estimated 105 Lake Superior tributaries (including at least 30 in the United States) to spawn, making it the dominant near-shore species.



From the mid 1800's on, sportsmen and sportswomen traveled from across America and even from Europe to catch the fish. The taste was marvelously subtle but memorable. The muscular fish was radiant when pulled sparkling from the water. And fishing guides and clients alike appreciated that the fish was especially easy to catch. But fishermen over-fished. Sand from logging poured into rivers and buried the clean, rocky stream bottoms that the fish needed for egg laying. Dams blocked or inundated other breeding stretches. Pollution changed the chemistry of streams. The coaster's population came crashing down. By the 1930's, George Shiras, a Marquette naturalist and early photographer for National Geographic, was already writing about the disappearing coaster.

Shiras's work provides vivid proof of the coaster's great PR conundrum: for decades, coaster devotees—government biologists, university researchers, tribal biologists and local advocates—have been warning of the fish's demise, but beyond this dedicated group there seems to be almost no broader awareness of the fish's plight and a puzzling hesitancy to ban fishing.

When coaster advocates asked the Michigan Natural Resources Commission to protect the fish in 2005, instead of a ban on fishing, the commission just reduced the bag limit to one a day and increased the minimum size to 20 inches. And despite all the reports written, there had been no long-term study of the coaster until one began in 1996. "We are still learning the basic ecology of the fish," Huckins says. Reminder, we're talking about a fish that was once a central piece of the Lake Superior food web and has tremendous angling potential (i.e., tourist dollars). We're not talking about saving some obscure minnow like the snail darter.

Dr. Ed Baker, Huckins's co-lead researcher and biologist at the DNR's Marquette office, has long championed the fish. I ask him how the coaster could have fallen this far before people pushed for endangered species protection. "In the current angler community there's a lack of experience with the coaster. They don't understand what coaster fishing was in 1900, so there's no cry for coaster restoration," he says. "When we try to get anglers interested, they start to change the subject. 'When are you going to stock more coho?'" In short: the

coaster needs a fan base.

Perhaps to help resolve the fish's publicity issues, Huckins and Baker agree to let me tag along on their August sampling study on the Salmon Trout River in the U.P. Their work for the study began back in 2000. Two main goals of the study are to chart population trends by recording the types and sizes of fish living in the Salmon Trout and to gather tissue samples for DNA analysis to see if the coaster is a distinct breeding population.

Such information is key to the coaster recovery. The study is finding, for example, that the non-native coho salmon and non-native rainbow trout have proliferated in the river and dominate the juvenile brook trout: should the non-native populations be reduced in the tight quarters of the Salmon Trout? And if the coaster is shown to be a distinct breeding population, should even more emphasis be placed on protecting the habitat of the remaining breeders?

With the a.m. sun barely above the tree line, photographer Aaron Peterson and I meet Baker in the lot of Cram's General Store, in Big Bay, and we drive the couple of miles to the guard gate at the Huron Mountain Club. The club, founded in 1889 by a group of industrialists, including Henry Ford, owns 100 percent of the land surrounding the coasters' mainland U.S. spawning waters. Club members, in addition to being party to the original petition to list the coaster, have been central to helping start and fund coaster research, an effort led by Peter Kryn Dykema, a club member since childhood and now an attorney in Washington, D.C.

Baker chats with the guard to get clearance for Peterson and me, and he waves us through. Soon we are walking through chest-high sedge and thimbleberry, the August dew soaking into our shirts, on the way to the banks of the Salmon Trout. Huckins is already in the river with three interns tying nets for the sampling work. Around them, mosquitoes swarm the water surface, each insect a shard of careening light under the early sun.

The researchers are sampling a stretch of river that they sample each year—one of five stretches they test on the Salmon Trout. They seal off the section by tying a fine-mesh net across an upriver point and stretch another at a downriver point—about a quarter mile apart. Then four of the men, two with shockers, wade the river as a team, stunning fish and catching them with nets when the fish go sluggish, but not dead.

As it shocks, the device sends out a near-continuous high ringing, so out of place amid the soft gurgle of the river, the quiet splash of the wading researchers and the occasional caw of a crow. The team doesn't talk much, but fragments float up the bank. "How about this guy?" "Hey, a nice brook trout." When a muskrat splashes loud and flees, startled by electricity, everybody laughs. At the end of each pass, Baker and an intern kneel under a tree on a streamside trail with buckets, digital scale and ruler to catalog the catch.

Fish by fish, the intern states the species; Baker writes as they go. Coho, longnose dace, burbut, creek chub, sculpin, brook trout, rainbow. They caught 19 brook trout on the first pass and will take a speck of tissue from the caudal fin (tail) of each that will go to a genetics laboratory at Michigan State University for DNA analysis. Nearly all of the brook trout are 2 or 3 inches long, with only a couple in the 6-to-8-inch range. There's no way to tell with brook trout this size whether they are coasters or just plain brook trout. The process is slow, and it takes till late afternoon to complete the three passes the researchers require.

The following daybreak, we meet the team again, this time heading farther up the river, to a deep valley of ancient trees near the waterfall that blocks the coaster's upstream movement. The fish population counts are similar to yesterday's: lots of invasive coho and invasive rainbow, few brookies. "This is the land of the coho and rainbow," Huckins says. Peterson and I leave late morning. A few weeks later, Huckins emails a photo to me. "We got this beautiful coaster just minutes after you left," the message reads.

Researchers are focused on the identity and habits of the coaster because if the fish are just common brook trout living large in a Great Lake, then one could argue there's nothing endangered about them: there are millions of ordinary brook trout in Michigan and throughout the Great Lakes basin. "You have to keep in mind that this is a complex listing because it's not the only brook trout in North America," says Jack Dingledine, a Fish and Wildlife Service biologist working on the petition. "Part of what we are doing is determining whether coasters are a distinct population segment of brook trout."



Note that Dingledine did not say "distinct species." To gain endangered species protection, separate species status is not required. Considerations such as where and how the fish lives and its breeding habits all factor in. In fact, scientists agree that the coaster is almost certainly not a separate species, that the long-held assumption that the fish is a large brook trout is probably accurate.

Genetic science does, however, come into play, but it is not focused on, say, Is there a gene that makes the fish big? Or Is there a gene that makes the fish migrate? That would be beyond the reach of the data. But genetics can be useful in helping determine whether the Salmon Trout coasters are a distinct breeding population. Based on tissue samples that Baker and Huckins collected in August, Dr. Kim Scribner, at Michigan State University, has found there are large and significant differences at the genetic level between brook trout in the Salmon Trout river and brook trout from other Lake Superior streams. There is comparatively less genetic difference between coasters and the brook trout they live among in the Salmon Trout. There is also evidence of interbreeding among coasters and resident brook trout.

So, couldn't biologists just dump regular brook trout in Lake Superior and just watch them grow huge? This was tried a number of times in the 20th century, but the coaster population continued to slide. Nature, it turns out, is more nuanced than that. Or, as Scribner says, "That is a naïve view of the world." And it remains one of the other great mysteries of the coaster: what makes them grow big?

Biologists did take a more nuanced approach to coaster stocking when they planted coaster fry in five Upper Peninsula streams—not the Salmon Trout—each year from 1997 to 2002. One stocking strain was from Canada's Nipigon River (the world's most stable coaster population) and the other from Isle Royale. "They'd grow and go out to the lake, but we just didn't see them coming back as spawners," Huckins says. A few stocked coasters were found in other streams, but if they did establish new populations it is not evident.

At this point, stocking the Salmon Trout would be "crazy" for fear of damaging the genetics of the coaster community, according to Huckins. Fish populations can become adapted to a river over the years, selected to do well under the conditions in that river. "If we stock new fish over the top of the local population, we can swamp that local population with alleles that weren't selected for, and you would reduce the population."

Biologists at the FWS are not, by law, allowed to tip their hand on how they will decide on the listing petition. So I call Huron Mountain Club member and attorney Dykema. He fell in love with the coaster when he caught one as a teen and, over the years, has not only raised money for the fish, but also spent time in waders helping with research. Is the coaster's a compelling case? "It seems to me the case is very strong, if not overwhelmingly strong. But I'm also hopeful that the new administration will enforce the endangered species act." Wishful thinking?

Rewind to early evening, that first day of sampling on the Salmon Trout. Huckins has to check a monitoring device that records water flow and temperature at the river mouth, so we jostle down the forest-dark two-track to Salmon Trout Bay and walk a mile along the sandy shore. The August sky glows a cloudless robin's egg blue. I stand at the river mouth and take in the arc of the bay and the shimmering cobalt beyond. Huron Island floats as a barely visible dark nub on the northwest horizon. East along the shore, the giant nest of a bald eagle bulges from a towering white pine. I hear a motor from a boat I cannot see, though I can see for miles.

This is the realm of the Salmon Trout coaster. And this interface between river and lake, now at my feet, is their threshold. Genetics might determine their size, but crossing from the safety of the river to the dangers of the big water is the act that defines the coasters, that earns them their name. They live on the coast. They swim along it, hence, coaster.

And so, the final curious thing that captivates me about the coaster: how its destiny is embedded in its name. The health of the coast, the future of the coast—the coaster habitat—is what will determine the fish's existence, endangered species listing or not. And a good, healthy coast, well, that will take many committed coaster fans to make happen.