

Effects of protective stream regulations in rehabilitating adfluvial Brook Trout.

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Background

During the Pre-settlement period, it is likely that many tributaries to Lake Superior hosted spawning runs of large Brook Trout (Photo 1) that migrated from the lake to spawn in tributaries. Commonly referred to as “coasters”, these populations were highly vulnerable to overexploitation and habitat degradation, and since the mid 1800’s, have been reduced to a few scattered populations.



Photo 1. A large Brook Trout collected during electrofishing surveys.

Rehabilitation or restoration of coaster Brook Trout is a priority of state, provincial, federal, and tribal management agencies and coldwater conservation and angling groups (e.g., Trout Unlimited) in Lake Superior, and the United States Fish and Wildlife Service’s Wildlife and Sport Fish Restoration Program. To date, attempts to restore adfluvial (fish that live and grow in lakes and spawn in rivers) Brook Trout populations by stocking offspring from remnant coaster strains have not succeeded in restoring spawning runs.

Although several investigators have examined genetic characteristics of coasters, there are no data to suggest they are a distinct strain, and some researchers think the migratory lifestyle of “coasters” is only expressed under favorable conditions (such as low angling mortality). This theory is consistent with the observation that “coasters” still occur in Michigan waters that are lightly fished and have protective regulations for Brook Trout, namely the Salmon-Trout River in Marquette County and the waters around Isle Royale. Studies in Minnesota and Ontario also showed a positive response in numbers of large, old (coaster) Brook Trout to protective fishing regulations. In 2015, Michigan enacted protective regulations in portions of eight Lake Superior tributaries (Figure 1) in hopes of rehabilitating “coaster” Brook Trout abundance.

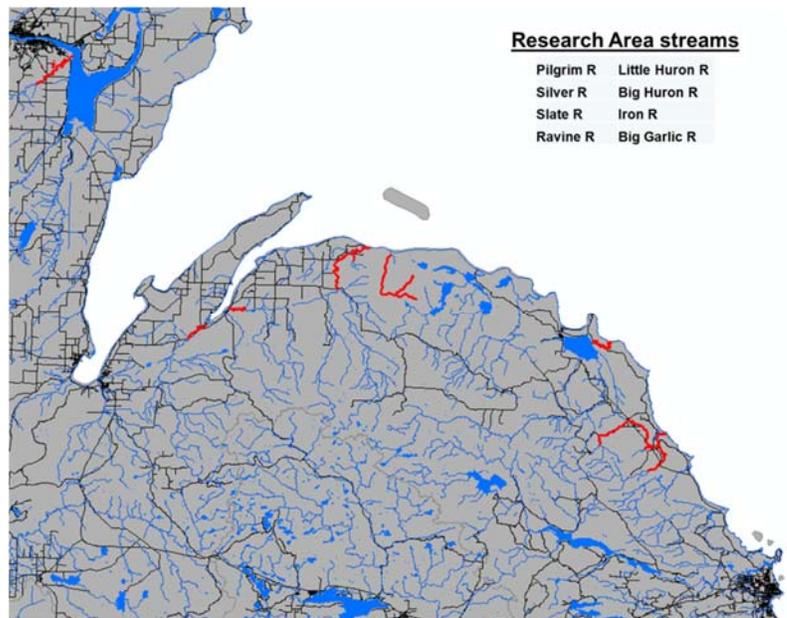


Figure 1. Map with stream reaches having protective regulations.

The purpose of the study is to evaluate whether more protective sport fishing regulations would rehabilitate spawning runs of “coaster” Brook Trout in these streams. The primary objective of the study is to conduct stream surveys and implement a volunteer angler diary program for quantifying changes in relative abundance and age and size structure of Brook Trout populations in response to at least 10 years of more protective fishing regulations in the eight tributaries with protective regulations. Secondly, we will examine key stream characteristics (e.g., hydrology, gradient, geographic factors, etc.) and Brook Trout population responses to aid managers in determining where protective regulations might be most effective at rehabilitating “coaster” Brook Trout.

Recent study results

We collected baseline data for comparisons from electrofishing surveys on 9 river reaches where the protective regulations are in place, and 6 reaches where regulations remain unchanged. While stream habitat appeared suitable, Brook Trout densities in the study reaches were relatively low, with typically fewer than 20 Brook Trout being captured in a 1,500-foot study reach. These numbers are comparable to Brook Trout catches that occurred in Lake Superior tributaries that were sampled along the North Shore of Minnesota, where “coaster” Brook Trout are being rehabilitated.

I initiated a volunteer angler log program for anglers who fish for Brook Trout in the study rivers or adjacent waters of Lake Superior. The number of anglers is currently small, fewer than ten. I am looking for additional Brook Trout anglers (Figure 2) who are willing to keep and provide a log their fishing activities for this project.



Figure 2. Poster requesting additional angler assistance.

Additional detailed information on this study can be found at http://www.michigan.gov/dnr/0,4570,7-153-10364_52259_19056-333302--,00.html.