

BROOK TROUT GENETICS IN MINNESOTA WATERS OF LAKE SUPERIOR AND ITS TRIBUTARIES

The Minnesota DNR is evaluating Brook Trout genetics in northeast Minnesota and need samples from populations above and below posted boundaries and natural barriers (e.g., waterfalls). Recently, the Minnesota DNR found genetically distinct populations in at least two North Shore rivers and evidence that populations above barriers were contributing to those below (L. Miller, MN DNR, unpublished data). The genetics samples (fin clips) were collected by volunteer anglers for the [Coaster Genetics Project](#) in 2018 through 2020, and by the MN DNR in the [2018 Coaster Brook Trout Assessment](#) and [Knife River fish trap](#). Unique strains of Brook Trout have been identified in southeast Minnesota trout streams (called heritage strain), but it remains unknown if unique strains exist in northeast Minnesota trout streams. Comprehensive sampling will identify any distinctive populations to examine further with advanced genomic techniques to understand their origins. Unique strains, if they exist, may need additional protection (e.g., special regulations or closed seasons), and could support future management and stocking efforts for brook trout in northeast Minnesota to sustain and expand the local strains. Understanding the movement and connectivity between above and below barrier populations will help identify key reproductive habitats that sustain populations in both areas.

This project will be an extension of the [Coaster Genetics Project](#). Anglers will be essential to the success of this study. Due to COVID, the Minnesota DNR staff are unable to sample Brook Trout in streams in 2020. Angling is an accepted activity and is proven as an effective gear to sample Brook Trout. The Minnesota DNRs Lake Superior Area Fisheries staff will utilize great relationships with anglers made through the [Steelhead Genetics Project](#) and the [Coaster Genetics Project](#) to recruit anglers collect samples in 2021.

Goals: 1) Characterize contemporary genetic population structure of Brook Trout in northeast Minnesota streams using microsatellite genetic markers, and 2) evaluate the contributions and gene flow of Brook trout populations above barriers to the populations captured below barriers, 3) collect and publish data to support lake wide research projects (e.g., DNR cooperative CSMI BKT proposal submitted for 2021 funding).

Sampling Protocols

PERMIT: Anglers need a Brook trout sampling permit from Minnesota DNR.

SAMPLE SIZE PER STREAM: Target sample size per river or stream is 30-50, with 30 being a minimum needed to meet genetic testing standards. We do not expect the minimum 30 sample size at each river or site in one day or even one year. The goal is to collect 30 or more throughout one or two seasons.

FISH SIZE: Target fish size= 5 inches (100 mm) or larger (applies to fish caught above and below barriers)

FISH MEASUREMENTS: Anglers need to measure every fish they sample. This extension of the CGP will be a more thorough and targeted special assessment. **NEW FOR 2021:** *Measuring boards are available to anglers upon request- ask Nick!*

LOCATION: Any tributary to Lake Superior in Minnesota that has Brook Trout, regardless of the size or stream or locations within the watershed, can be sampled for this study. We will need to know where all the samples were collected- being as specific as possible. For example, which tributary in complex stream systems or which section of streams with known barriers (e.g., above or below beaver dams, culvert, etc). *Catch locations will never be shared with other anglers.*

If you would like to get involved, please contact Nick Peterson at nick.peterson@state.mn.us or call (218) 302-3272 and leave a message with your contact information.