

**SEASONAL MOVEMENTS OF RESIDENT AND LAKE SUPERIOR
ANADROMOUS FISHES IN THE BEAVER LAKES BASIN, PICTURED
ROCKS NATIONAL LAKESHORE, MI, USA**

Daniel J. Armichardy

Department of Biology, Northern Michigan University, 1401 Presque Isle Ave.,
Marquette, MI 49855; p: 906-227-1619, f: 906-227-1063, darmicha@nmu.edu

Jill B.K. Leonard

Department of Biology, Northern Michigan University; jileonar@nmu.edu

EXTENDED ABSTRACT ONLY – DO NOT CITE

The Beaver Lake drainage basin is located in Pictured Rocks National Lakeshore, Munising, MI. This drainage is composed of both lotic and lentic systems. Little is known about the movements and utilization of these dynamic systems by resident and anadromous fish species, or the response of these fishes to environmental stochasticity. The documentation of underlying environmental stimuli and patterns of movements of those fish within the drainage will provide critical insight into little known fish species life histories, behavior and ecology. This project will identify the number of anadromous adults using the drainage and characterize the timing and environmental factors that trigger their movement, as well as those of resident fishes, to spawning sites.

The Beaver Lake system is composed of two lakes (Beaver Lake and Little Beaver Lake) that are connected by a short channel, several small tributary streams, and an exit stream that connects Beaver Lake to Lake Superior. Fish resident or successfully introduced to the drainage include walleye, northern pike, bluegill, brook trout, yellow perch, burbot, slimy and mottled sculpin, a variety of cyprinids and several other common, north-temperate, cool-water species. Additionally, the system is thought to be used by anadromous steelhead, coho salmon and pink salmon. The system is under consideration for inclusion in the migratory brook trout (coaster) restoration program currently underway on the south shore of Lake Superior.

A bi-directional trap-and-weir scheme is being used in tributaries and in the channel between the lakes to identify the direction of travel of fishes. PIT-tags (passive integrated transponders) are being used to identify individual fishes for mark-recapture. To date, we have PIT-tagged 42 native brook trout (*Salvelinus fontinalis*) in the tributaries and identified 24 fish species residing in the drainage. During September 17th - October 1st of fall 2001, white suckers (*Catostomus commersoni*) were captured moving upstream in Beaver Creek (Fig. 1).

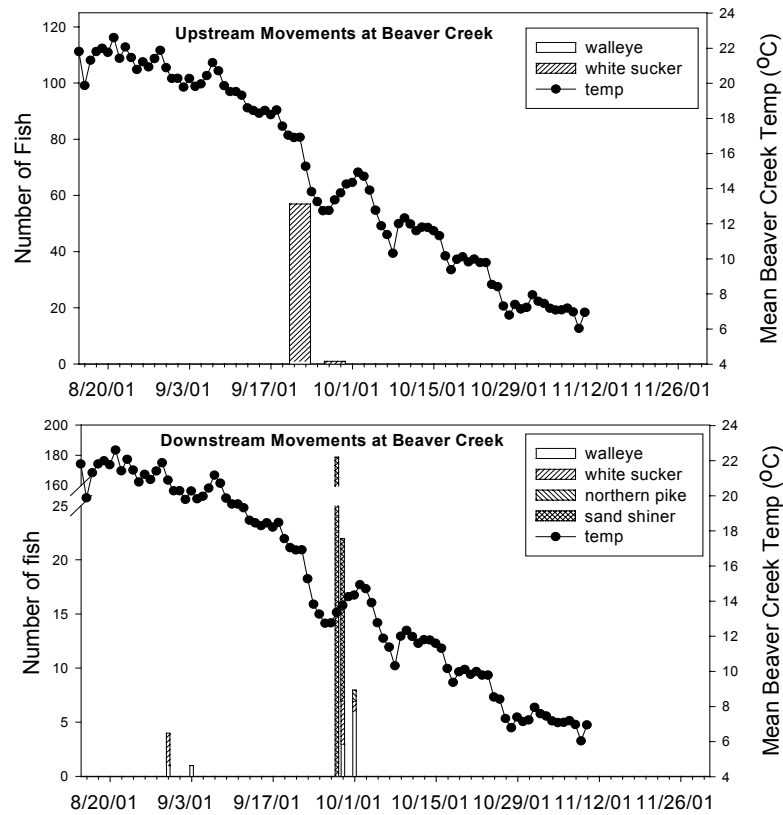


Figure 1. Passage of fish upstream (into the Beaver Lake drainage from Lake Superior) and downstream (out of the Beaver Lake drainage into Lake Superior) in Fall 2001 with respect to stream water temperature.

We captured sand shiners (*Notropis stramineus*) moving downstream during the last week of September and the first week of October. There was a drop in stream temperature of 4°C during this period. Walleye (*Stizostedion vitreum*) were captured moving from Little Beaver Lake to Big Beaver Lake during this same 2-week period (Fig 2). All the fish except the sand shiners were juvenile fish. Initial results suggest that several species are undertaking fall migrations in concert and are likely responding to similar environmental cues. This study will continue in 2002 and 2003 and will focus on the spring and fall movement patterns.

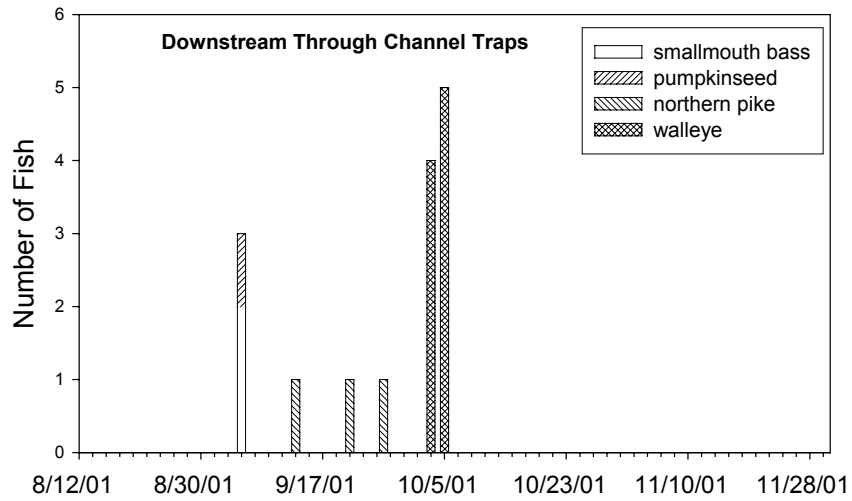


Figure 2. Passage of fish moving from Little Beaver Lake into Beaver Lake in Fall 2001.

