

Evaluation of Returns of Salmonids to Weirs in Michigan's Waters of the Great Lakes.

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Background

A fish weir is an obstruction placed wholly or partially across a river, which is designed to hinder the passage of fish. Weirs are historically used to catch fish, although they can be used to redirect fish as well; Fisheries Division uses them to catch salmon and steelhead in order to obtain eggs for our hatchery system and to collect key biological data. Eggs taken at the weirs are sent to state fish hatcheries where they are raised and stocked all over Michigan. Salmon harvest weirs in Michigan are located on the Little Manistee River near Stronach, Medusa Creek near Charlevoix, on the Boardman River in Traverse City, on the Platte River near Honor (upper and lower weirs), and on Swan Creek near Rogers City. Coho salmon eggs are taken at the upper Platte River weir, and Chinook salmon eggs are taken at the Swan Creek and Little Manistee River weirs. The Little Manistee River Weir is also used in the spring to collect steelhead eggs. The other weirs are backup locations for egg take operations or provide harvest facilities to prevent nuisance die-offs of salmon that have spawned.

Data on returns of stocked salmon and trout to Michigan rivers is used in many Great Lakes management and research efforts. Managers use weir return information, along with the other indicators, to make decisions about stocking levels, fishing regulations, and in evaluating progress toward meeting overall fisheries goals for lakes Michigan and Huron. We rely on returns of known-age fish at weirs to provide us with an annual index of salmon and steelhead growth. In addition, contracted salmon harvest operations provide additional options to examine salmon populations, and Fisheries Division monitoring ensures these contracted harvest operations meet contract requirements.

The objectives of this project are to: (1) Annually monitor and record returns of Chinook Salmon, Coho Salmon, and steelhead trout to Michigan weir operation facilities; (2) Mark Chinook Salmon, Coho Salmon, and steelhead trout at index sites and provide annual estimates of size at age; (3) Collect data and report on contracted salmon harvest operations; and (4) Provide annual data summaries of weir returns to be used in Management Unit reports, GLFC reports, MDNR web site updates, and for distribution to interested researchers and the public.

Key study results

- Chinook Salmon and/or steelhead were marked and stocked in the Little Manistee River, Medusa Creek, and the Swan River (as scheduled) in spring of 2015 (Photo 1). Tagging and fin-clip operations were coordinated with the Statewide Fish Marking and Mark Recovery Program. We also continued the collection of marked fish in 2014-15. Weir returns of these fish provided managers with standardized size and age indices for Chinook Salmon, Coho Salmon, and steelhead from lakes Michigan and Huron.



Photo 1. Stocking marked fingerling Chinook Salmon into the Medusa Creek Weir holding pen.

- In 2014, returns of Chinook Salmon to Lake Michigan harvest facilities (total=8,188) were below the long-term average (28,895 fish; Photo 2). Lake Huron returns of Chinook Salmon to the Swan River weir in 2014 (4,474 fish) were lower than the long-term average for that facility (16,323 fish).



Photo 2. Salmon harvest operations at the Medusa Creek Weir.

- Returns of Coho Salmon to Lake Michigan weirs (9,258 fish) in 2014 were lower than in 2013 and well below the long-term average from 1987–2013 (45,777 fish).
- Data collection for 2015 weir returns is ongoing.