LOWER HUMBER RIVER BARRIER MITIGATION PROJECT

PROJECT GOAL

The Humber River watershed is the second largest watershed in the Greater Toronto Area (GTA) at 908 km^2. There are eight low head weirs on the Lower Humber River, from Bloor Street to just south of Hwy 401. The weirs prevent upstream fish movement from Lake Ontario. They were built following Hurricane Hazel in 1954 to control erosion in the Lower Humber River. Today, the southern most weir prevents parasitic sea lamprey from invading the upper reaches of the Humber River watershed.

Following the direction of the Humber River Fisheries Management Plan, six of the eight weirs were notched in the early 2000s as a temporary solution to facilitate the migration of trout and salmon. One of the weirs remains unaltered as it was deemed low enough for fish to jump over. The weir at Raymore Park was too high for a notch to be effective, so a denil fishway was built at this location instead. Since the completion of this project, Rainbow Trout have been observed spawning in the East Humber River for the first time in decades.

Dam Notch that Allows Jumping Species to Migrate Upstream

However, the weirs continue to block migration of all non-jumping fish species. The purpose of this project is to facilitate the movement of all desirable fish species past these weirs, while maintaining sea lamprey control. Objectives for this project included: keeping costs reasonable, keeping operations simple and safe, and maintaining a high standard for public safety.

THE NEED

In-stream barriers can reduce flow, which can reduce the migration motivation in adult fish. This

lack of current can also cause young fish to become disoriented and delay their downstream movement. In-stream barriers also prevent fish from moving between different stream segments, resulting in populations becoming isolated. When fish populations are isolated, the strongest individuals can no longer breed with one another, resulting in a more fragile overall population. Weirs also inhibit the upstream migration of fish to their traditional spawning areas.

- Upon completion, this project will serve to reconnect previously inaccessible habitats and provide access to necessary spawning, nursing, and feeding areas for all fish species.
- This project will directly improve fish habitat over an 11km stretch. It will result in the removal of all barriers to fish movement from Lake Ontario to the headwaters of the East Humber River at Lake Wilcox in Richmond Hill. The Main Humber River will also then allow fish movement up to Woodbridge.
- It will make significant progress in achieving the goals outlined in the Humber River Fisheries Management Plan and the Toronto Remedial Action Plan by rehabilitating fish habitat and enhancing or restoring connectivity between habitats.
- It will assist in meeting restoration goals under the Canada–Ontario Agreement through the rehabilitation of aquatic habitat leading to the re-establishment of fish populations upstream.
- The successful completion of this project could provide new and innovative information regarding fishway design and operation, as well as sea lamprey control methods for other areas of concern.
- Historically, there was a total of 57 fish species found in the Lower Humber River, which constitutes more than 80% of the fish species found in the entire watershed. The Lower Humber River is an important gateway for migratory fish making their way from Lake Ontario to essential spawning and rearing habitat upstream.

ACCOMPLISHMENTS

Ontario Streams and the Ontario Ministry of Natural Resources and Forestry (MNRF), with the help of the Toronto and Region Conservation Authority (TRCA), have been working on the Lower Humber Barrier Mitigation project since 2002. During this time, the following results have been achieved:

- The project has undergone an MNRF Class Environmental Assessment for Small Scale Resource Stewardship and Facility Development Projects. An Environmental Study Report was completed in 2006. This report outlined the preferred alternatives for each weir and the processes involved in reaching that conclusion.
- A technical and management consulting firm, AECOM, has developed preliminary design plans for each of the weir mitigation options A denil fishway design was proposed as a mitigation method for one of the weirs; a fishway incorporates fish passage, but also allows for the control and capture of invasive species such as Sea Lamprey, Common Carp, and Round Goby.
- Final design for the proposed fishway at the weir furthest downstream is under final review and awaiting approval.

Model of a Denil Fishway

- A 3D model of the denil fishway has been completed and is being used for public outreach and education at various events.
- Wooden baffles in the Raymore Park fishway were removed and replaced with metal baffles in the spring of 2009. This change is expected to improve fish passage and reduce maintenance costs.
- The existing fishway at Raymore Park is monitored regularly to ensure that there is no debris or garbage blocking fish passage.

PARTNERS

This project was initiated by the Ontario Ministry of Natural Resources and Forestry (MNRF) Aurora

District and Ontario Streams. Project partners include Toronto and Region Conservation Authority (TRCA) and the City of Toronto.

This project has received regular financial support from the Great Lakes Sustainability Fund and the Canada-Ontario Agreement supported by MNRF – Aurora District. Additional financial support for this project has been received through MNRF's CFWIP Program and from TRCA.