

# MORNINGSIDE CREEK FISHWAY PROJECT



## PROJECT GOAL

The purpose of the Morningside Tributary Fishway Project was to construct a bypass fishway for the Toronto Zoo energy dissipation structure (pictured above). The construction of a bypass around the structure would allow fish to migrate past this large instream barrier.

## THE NEED



Morningside Dragon Tooth Energy Dissipater

Dams and other water control structures have contributed to the decline of fish populations by preventing access to spawning and nursery habitats.

Therefore, fishways are usually built in association with dams to keep upstream access available for migratory fish species.

The Morningside Tributary is a relatively small watershed with an area of 21.4 km<sup>2</sup>. It originates just east of Steeles Ave. and Markham Rd. and flows southeast for approximately 11.5km where it joins the main Rouge River within the Toronto Zoo property. The Morningside Tributary was one of the most pristine and secluded valleys in Rouge Park. It provided habitat for cold and cool water fish species, including the provincially endangered Redside Dace. Recently, this area has experienced rapid residential, recreational, and industrial development. The stream has been significantly altered to accommodate these changes. Hard engineering solutions were implemented to regulate flood waters and to control the streams power. As a result, aquatic habitat within Morningside Tributary has been severely degraded.

The Morningside Tributary energy dissipation structure is one example of a hard engineering solution. It is located within the Toronto Zoo boundaries in the City of Toronto. The structure was constructed to prevent the rapidly occurring erosion in this stretch of the channel due to massive storm water flows caused by runoff from urban

development in the watershed. The dissipater has a vertical drop of 8m and prevents fish from moving upstream.

## ACCOMPLISHMENTS

Due to the potential large scale of the proposed work, the Morningside Tributary Fishway Project went through the Ontario Ministry of Natural Resources and Forestry's (MNR) Environmental Assessment process. This phase of the project began in 2001. Several possible mitigation options were considered. Ultimately, based on the comments received from the local community, interest groups, non-government organizations, and other government agencies, the preferred alternative chosen was a diversion channel with a pool-riffle design. This type of channel would allow for the passage of all fish species around the dissipater, while also providing additional foraging and spawning habitat for aquatic organisms within the channel itself. The final design also allowed for control of non-native, invasive Sea Lamprey.



Bypass Channel Shortly After Construction

Construction of the fishway took place in 2003. The opening of the fishway consists of a concrete headwall and armourstone retaining wall with a corrugated steel pipe culvert (about 70 meters long) directing the water from the main channel to the fishway. The culvert ends with another concrete headwall and a lamprey control structure. The lamprey control structure consists of adjustable stoplogs that are put in place during the lamprey migration period. The channel itself consists of the series of pools and riffles. Two rocky ramps are constructed at the lower section of the fishway to reduce slope to a maximum of 5%. Live fascines and

brush mattresses were placed along the channel to stabilize the banks and to reduce erosion.

Several public tree planting events were held following the construction of the fishway to reforest the surrounding slopes that were disturbed by the heavy machinery used in this project. As the vegetation has become established, the project site now blends in with the surrounding forest cover.

The Toronto Zoo has a model of the fishway on display for public viewing as the stream is not located in a publicly accessible area.

## PARTNERS

Consultation for this large-scale project was received from the Ontario Ministry of Natural Resources and Forestry, City of Toronto, Toronto Zoo, Rouge Park Alliance, Toronto and Region Conservation Authority, Environment Canada, Fisheries and Oceans Canada, Friends of the Rouge River Watershed; Save the Rouge Valley System, and the Metro East Anglers.

Financial support was provided by Environment Canada through their Great Lakes Sustainability Fund and Habitat Stewardship Fund; Ontario Ministry of Natural Resources and Forestry's Community Fisheries and Wildlife Involvement Program, Natural Areas Protection Program, and Canada-Ontario Agreement funds; Rouge Park; Toronto Zoo; and TD Friends of the Environment Foundation.

In-kind contributions of materials, equipment, and labour were made by the Ontario Ministry of Natural Resources and Forestry – Aurora District and the Toronto Zoo. Volunteer labour was provided by Ontario Stewardship Rangers, Second Chance Program, Harrington and Hoyle Ltd., Scouts, Tecumseh Senior Public School, University of Toronto Nature Club, Hillside Outdoor Education School, Niagara and Centennial Colleges, Derek Lee's constituency office, and community volunteers.

Harrington and Hoyle Ltd. were contracted to design the fishway, Sexton McKay Limited conducted the land survey of the fishway construction site, and R&M Construction completed the heavy machinery work necessary to build the fishway.