Protecting Salmon and Trout in the Capilano River

Above: Steelhead trout smolt from the Upper Capilano Watershed. Steelhead trout populations are listed by the Ministry of Environment at a level of extreme conservation.

Engineers created the huge Capilano Reservoir for a growing urban region when the Cleveland Dam opened in 1954. But the dam became a barrier for trout and salmon that tried to migrate from the reservoir behind the dam to the lower Capilano River.

Studies have estimated that up to 90 percent of the fish do not survive the long drop to the rocky pool at the base of the dam.

Metro Vancouver wants to improve those odds.

The region is working with the federal Department of Fisheries and Oceans, the provincial Ministry of Environment and BC Conservation – Living Rivers.

The goal: reduce the mortality of smolt or young fish during passage over the dam and improve fish habitat in the lower Capilano.

Above Left: The spillway on Cleveland Dam creates high mortality to out migrating smolts during the spring freshet.
Above Right: The lower Capilano River has impacted fish habitat conditions due to the Capilano Reservoir that is used as storage for drinking water.

In 2008, Metro Vancouver and its partners experimented with a “trap-and-truck” pilot project. The region engaged the services of InStream Fisheries Research Inc. and the Squamish Nation. A fisheries biologist and fisheries technicians caught migrating trout and salmon in rotary screw traps in the upper Capilano River and net traps along the shore of the Capilano Reservoir.

Above Left: Two rotary screw traps capture smolts on the Upper Capilano River.
Above Right: Net traps capture smolts along the shoreline of Capilano Reservoir.

Some of the captured fish were measured, weighed, and tagged, to learn more about the health of existing coho and steelhead in the Capilano. Trucks with fish tanks then brought the captured fish to the base of the Cleveland Dam, near the fish hatchery, where about 10,000 fish were released into the river.

Above Left: Smolts are inserted with a with a Passive Integrated Transponder (PIT) tag.
Above Right: Smolts are transported and released in the Lower Capilano River.

The result: an estimated quarter of the trout and salmon population in the upper Capilano was given safe passage to the lower Capilano.

In 2009, more traps will be used in the Capilano Reservoir, to increase the capture rate and increase the odds that more fish survive.

People involved in the project are also assessing the pool at the base of Cleveland Dam, to try and increase the survival rate of migrating fish that bypass the traps and go over the spillway. Some rocks at the base of the dam may be removed. The pool may also have to be deeper.

Above Left: Accumulation of rocks at the base of Cleveland Dam creates a hazard to migrating fish.
Above Right: The pool at the base of Cleveland Dam has also become shallower over time exposing more rocks.

The short-term initiative to reduce fish mortality through trap-and-truck operations is being combined with a parallel effort to collect information to use in determining a long-term strategy. Habitat assessments in conjunction with existing inventory data will be completed on the Capilano river system in preparation for the Capilano-Seymour water use planning process. This will help determine the projected carrying capacity for salmon and trout in the Capilano Watershed. That information, in turn, will be used to design long-term fish passage systems and opportunities to restore fish habitat.

Managing the fish habitat in Metro Vancouver watersheds demonstrates long-term watershed sustainability, while providing a safe, reliable source of drinking water.