

Restoring Fish Habitat Along Vancouver Island Highways

Submitted by Kaitie Sly, Engineering Branch

I was fortunate enough to spend the past several months documenting restoration work being led on Vancouver Island, by Sean Wong in the Environmental Management Section.

With programs like the Environmental Enhancement Fund and the Culvert Retrofit Program, the team has been working long hours to restore salmon and trout habitat that has been damaged from past human activity. But why spend so much time and effort to protect just a couple of animal species?

Well, salmon and trout are actually considered "keystone species," which means that these fish have a huge impact on the rest of the ecosystem. They provide food for eagles, seagulls, ravens, ducks and other birds, as well as bears, wolves, invertebrates (i.e. crayfish), amphibians and more! Since salmon are residents of both fresh and salt water, they play a key role in both ecosystems as well. And when they die, their remains provide nutrients to the forests and to their newly hatched fry.

But Pacific salmon, named B.C.'s provincial fish in 2013, are also extremely important to our recreational and cultural activities. It's hard to beat the taste of a fresh-caught Coho. And without a healthy number of salmon and trout in our waters, we can say goodbye to our recreational fishing activities too...



Kaitie Sly looks over the newly constructed weirs at Oliver Creek near Youbou.



Environmental Technician Kiara Smith bioengineers native plants at Cherry Creek.

The field team for the Environmental Enhancement and Culvert Retrofit programs spend countless hours restoring stream banks and shorelines, and there are specialized techniques for this work. In almost all cases, large woody debris is used along the edge of streams and shorelines to provide erosion

protection on softer stream banks, and for habitat diversity. The team also plants native vegetation, integrating it into the area (a process known as bioengineering) to restore the riparian zone (the area around the stream or shoreline). In many cases, spawning areas are constructed in streams, using gravel that is ideal for spawning because it helps to maintain a cool and well-oxygenated



Constructing weirs for a stream around Port Alberni.

water flow over the developing fish embryos in the stream. Other techniques include creating off-channel rearing areas that provide sheltered and protected habitat; and installing wildlife enhancements such as snags and artificial bird nesting boxes.

Historically, migratory fish passage and environmental protection were not really

considered when constructing things like culverts underneath highways. In the case of a culvert at Oliver Creek in Youbou, the culvert outlet drop, length and gradient were essentially a fish passage barrier for about 50 years, preventing Coho salmon and trout from accessing high quality habitat. Weirs have been constructed downstream of the culvert to eliminate this outlet drop, so that fish could once again swim from the creek into the culvert. Metal plates that stand 35 centimetres high were installed and oriented perpendicular to the flow of water in the culvert, to increase culvert water depths and slow the water's velocity, enabling fish to then migrate through.

Nowadays, there is a lot more environmental legislation, and stewardship practices that ensure the environment is considered before and throughout a highway development and construction project. But for past oversights, the Environmental Management Section will be in the field, putting in their best effort to help ensure that everywhere our provincial roads exist, habitat and valued ecosystems are sustainably managed and restored. ♦



Juvenile Coho fry at Cherry Creek near Port Alberni.